ANALYSIS OF THE NIGERIAN MANUFACTURING SECTOR PERFORMANCE UNDER TRADE GLOBALIZATION

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Abstract

The paper analysed the Nigerian manufacturing sector performance under trade globalization. In line with the objectives of the study, secondary data covering the period 1986 – 2018 were obtained from the Central Bank of Nigeria Statistical Bulletin and was used to analysed the relationship between Manufacturing Sector Output as the dependent variable and Degree of Openness, Foreign Exchange Rate, Gross Capital Formation and Interest Rate as the independent variables. The Unit Root Test was employed to ascertain the level of stationarity of the variables. The Auto Regressive Distributed Lag Bound Test for Cointegration was also employed while the Short-run Dynamic ARDL Model was conducted to check the speed of adjustment. Based on our findings, the study recommends that for an improvement in the output of manufacturing sector in Nigeria, there is a need to match the embracement of innovation and modern manufacturing processes with action so as to improve the capacity to produce and make the sector producers of goods and services for both local and international use. There is also the need to encourage investment in the sector through the promotion of positive trade openness of the economy so as install/restore confidence of investors in the activities of the manufacturing output while policies to control the continuous fluctuation of the exchange rate should be enacted as a volatile exchange rate will discourage investment in the sector thereby leading to a fall in the sector's output.

Keywords: Trade Openness, Manufacturing; ARDL

JEL classification: F60; L6

1. INTRODUCTION

Globalization is a global economic phenomenon which has become a very important issue for discussion. This is so because helped by information and technological advancement, globalization has been embraced worldwide and has led

to the integration of national economies through trade and financial transactions thereby reducing the world economy into a global village where decision by one country impacts on another through trade links as well as investment and capital transmission across national boundaries. Following a clear and visible acceptance of economic liberalization and trade globalization, economies now compete amongst one another in the global market with the sole aim of survival and sustainability. The forces of globalization have thus demonstrated that economic management strategies must be directed at repositioning the economy vis-à-vis other countries in a new competitive world order through the availability of tradable manufactured goods with such strategies going beyond simple comparative advantage to global competitive factors, from dependence on foreign aid to innovation and expansion of productive capacity (Orubu and Awopegba, 2004).

While globalization is being offered as the answer to improving the economies of underdeveloped and developing economies through international trade, the manufacturing sector has been posited as the required tool to withstand and compete in this global competitive market. In Nigeria, recent trends in the fortunes of crude oil have reawakened the outcry for the diversification of the economy. Furthermore, the country lags in the pursuit of inclusive growth due to the fact that economic growth has not been broad-based as the trend in economic growth in the last two decades has been led by the service sector (NESG, 2018). From 2000 to 2015, the services sector contributed 61% to real GDP growth while the productive sectors accounted for only 15% of overall growth during the same period (NESG, 2018). Emphasis has thus continued to be made on the need to embrace the manufacturing sector as the sector to propel this drive based on the perceived value chain attached to the sector. In recognition of the potentials of the sector, successive governments in Nigeria have continued to articulate policies and programmes geared towards industrial growth and development centred on the improvement of the manufacturing sector. This has been helped by the visible industrialization level of developed countries with the manufacturing sector leading the process (Ajudua and Imoisi, 2018). The sector is seen as the productive and stimulating element of the industrial sector and the crux of structural transformation of an economy through the utilization of factor endowment for the achievement of self-reliance. In addition, it offers availability of varieties of products, improves export, improves balance of payment position, aid in the diversification the economy, creates jobs and have the potentials of breaking the vicious cycle of poverty amongst others. Despite the growth in the service sector, there are still cases of economic challenge with regards high unemployment rate suggesting that there is a case of low value added in the service sector, hence a clamour for an improved manufacturing sector with a productive value added.

The issue of whether the manufacturing sector can drive the Nigerian economy into prosperity in the face of globalisation has raised debate over the years. Scholars have propounded policies one of which summarily contends that trade openness stimulates technological advances required to drive the manufacturing sector by improving its domestic output, increasing the stock of knowledge for

technical innovation, expanding productivity and ultimately producing goods for domestic and international consumption. This amongst others led to the adoption of the liberalization policy by the Nigerian government in 1986.

However, the benefits from globalization on the manufacturing sector in Nigeria remain unclear. According to Ajudua and Okonkwo (2014), while globalization gives economies the prospects of improving their economic standing and performance, it also poses several risk and challenges as the benefits accrued to globalisation are not automatic. Prior to the adoption of a liberalized economic system, the manufacturing sector performance in Nigeria has been a case of mild growth and subsequent decline. A look at the performance indicators showed that the sector recorded substantial growth rate in the 1960s and 1970s. The percentage share contribution to GDP was averaging about 7% between 1960 and 1985 (CBN, 2013). The rising oil prices of the mid 1970s had a hit on the sector as high cost of energy negated on the growth rate of the sector which slumped by 26.3% in 1975, this translated into a drop in the sectors performance with the share contribution to GDP dropping to 5.4% in 1975. After the oil shock, positive growth rates were recorded in the sector until the end of the 1970s. The growth rate recorded by the sector in the 1970s coincided with the take-off of the new refineries which subsequently led to an expansion in the productive capacity of the petrochemical industries (Sharehu, 2015). Despite the adoption of the SAP programme, the sector is still not vibrant. Characteristics of the sector shows that there are cases of by low wages, low technology, production of light consumer goods and labour intensive (Ajudua and Imoisi, 2018). There is still a clear deterioration of infrastructures that diminishes the enhancement of capacity utilization rate. The abundance of evidences on the linkage between the performance of the manufacturing sector and the embraced worldwide globalization brings to fore the rationale for this study. The study therefore seeks to investigate the performance of the Nigerian manufacturing sector in the face of globalization.

2. LITERATURE REVIEW

2.1. CONCEPTUAL ISSUES AND THEORETICAL NEXUS

Globalization is a generic concept used to describe a multiplicity of processes encompassing economic, social, political, environmental and cultural dimension (Orubu and Awopegba, 2004). It is a systematic restructuring of the relationships and transaction between countries such that there is little or no barriers in the areas of culture, commerce, communication and several other fields of endeavour (Orga, 2012). However, the economic aspect is perceived to be at the heart of the globalization process (Obadan, 2001). While early scholars theorized that the early proponents of development in an economy centres on internalization of growth, recent economic theories have posited otherwise. New stands have it that due to the level of economic integration, it is futile for any country to remain isolated economically in a world rapidly becoming a global village. This amongst others gave a leeway to the establishment of the General Agreement on Tariff and Trade (GATT) in 1947 for the general movement towards free trade and subsequently the IMF,

WTO, and ECOWAS. Thus, leading to a widespread movement towards economic liberalization by nations and a general embracement of trade integration necessary for an increase in trade and capital inflow, that will be accompanied by a rise in consumption and investment in the economy which will ultimately enhance economic growth and development

The Nigerian economy has embraced globalization. This intensified with the adoption of the liberalization policy in 1986. It is noteworthy to state that the Nigerian economy is highly dependent on external trade. While openness has become a phenomenon in the Nigeria economy with its expected value chain gain to all sector, the manufacturing sector seem not to have peaked. The overall performance of the sector has been below expectation despite it being recognized as the fulcrum of economic growth in Nigeria. There is a low production of manufactured goods such that the performance of the sector is under par and with the dawn of globalization, outputs from the sector are light user goods that cannot compete with goods from countries with a better performing manufacturing sector. Today, Nigerians consume more of foreign manufactured goods. This coupled with other factors have led to a trend of sluggish growth recorded in the sector and has been disadvantageous to the economic benefits accrued from the integration of goods and services markets across the globe. Furthermore, the value added which should have aided in economic growth through the Keynesian multiplier process has remained poor. The downward trend in the value added showed that in 1981, the manufacturing value added as a percentage of GDP for Nigeria was 20.26371 of the GDP in 1981, fell to 17.7826 in 1990 and has remained below 10% since 2005 (CBN, 2013). This, in particular, is due to the over reliance and consumption of imported manufactured goods. Furthermore, the manufacturing capacity utilization rate which stood at 73.3 in 1981, dropped to 36.1 by 2000, and has hovered within an average of about 55 since 2002 (CBN, 2018).

On a theoretical perspective, the link between a vibrant and performing manufacturing sector and economic growth was in 1966 established by Nicholas Kaldor. In his published seminal paper, Kaldor posited a series of laws relating to the causation of economic growth and how it is influenced by the manufacturing sector. Kaldor observed a high correlation between living standards and the share of resources devoted to industrial activity in several economies worldwide. He posited that for an economy to achieve economic growth and productivity, output growth in the manufacturing sector is essential particularly in middle-income economies due to its increasing return (Marconi, de Borja Reis and de Araújo, 2016). He argued that the manufacturing sector tend to expand by drawing labour from other sectors of the economy where diminishing returns exists. This expansion tends to lead to an increase in manufactured products requires for trade in the international market.

In furtherance, he raised certain factors required for the achievement of industrialization chief among them being exports. This is because the import substitution process may become exhausted, and foreign demand for domestic exports is needed to avoid external constraints, which ensures that the manufacturing sector output may rise above domestic demand and enable the process of structural

change to continue. According to Kaldor an economy's development is centred on four essential concepts; increasing returns in the manufacturing sector; effective demand-constrained growth; the agriculture-industry relationship and internal-external market relations (Targetti, 1992). The growth of manufacturing provides capital goods and technical advances needed by other sectors; this will lead to increase in output and employment in the manufacturing sector thereby reducing the agricultural labour without reduction in agricultural output; the activities in the manufacturing sector subsequently produces greater turnover per worker in the distribution sector (Targetti and Foti, 1997). Based on these, Kaldor stressed that the manufacturing sector is the engine of growth and the more the outputs of the manufacturing sector; the greater is the productivity in the system (Ajudua and Ojima, 2016).

2.2. EMPIRICAL LITERATURE

Employing the Ordinary Least Square (OLS), Nwokoro (2017) examined the impact of foreign exchange and interest rates variations on the Nigeria's manufacturing Output with data spanning 1983-2014. He reported that foreign exchange rate and interest rate have negative and significant impact on the manufacturing Output. Kareem, Bakare and Ologunla (2013) examined the link between globalization and economic growth in Nigeria using secondary data from 1970-2008. They concluded based on their finding that trade openness has a positive and significant relationship with economic growth in Nigeria. Adopting the ordinary least squares (OLS) method, Ogunrinola and Osabuohien (2010) investigated the impact of globalization on employment generation in Nigeria's manufacturing sector. The study concluded that globalization has a positive impact on employment level in the manufacturing sector of Nigeria.

Obaseki (2000) in his study on globalisation and the Nigerian economy, analysed and concluded that Nigeria has not benefitted enough from globalization due to the overdependence on crude oil exports, low manufacturing exports and the under-development of the domestic financial markets. Akinmulegun and Oluwole (2014) assessed the contribution of manufacturing sector to economic growth in Nigeria in the era of globalization and concluded that little impact was seen on economic growth contributed by the manufacturing sector as the level of the development in the sector was highly insignificant. Usenobong and Atan (2015) examined the impact of globalization on three key sectors of the Nigerian economy: agriculture, manufacturing and international trade over the period (1970- 2011), using Error Correction Model (ECM). The evidence shows that globalization offers Nigeria brighter opportunities to improve on its economic performance in the selected sectors. Loto (2012) used pooled data to examine economic globalization and the manufacturing sector performance in the Nigerian economy. The result indicates that the global economic meltdown has insignificant effect on the manufacturing sector of the Nigerian economy.

3. METHODOLOGY

This study adopts an ex-post facto research design, since the dataset for analysis are secondary in nature gotten from the Central Bank of Nigeria, United Nations Conference on Trade and Development database and World Investment Reports (various issues) and covering the period 1986 - 2018.

3.1. MODEL SPECIFICATION

Based on known macroeconomic variables and examining their impact/influence on the manufacturing sector performance, the Ordinary Least Square (OLS) method was employed due to its BLUE features (Best, Linear, Unbiased, Estimator) and a mathematical functional relationship between the dependent and independent variables is specified thus:

$$f(DOO, FEX, GCF, INT) - (1)$$

Econometrically, the function above becomes

$$MSO = \alpha_0 + \alpha_1 DOO + \alpha_2 FEX + \alpha_3 GCF + \alpha_4 INT + \mu - - - - - - (2)$$

The variables measurement scale will be compressed by transformation to the logarithm form. This is in order to avoid the problem of heteroskedasticity (Gujarati, 1995). Thus, the symbolic form of the model becomes

$$LogMSO = \alpha_0 + \alpha_1 DOO + \alpha_2 FEX + \alpha_3 LogGCF + \alpha_4 INT - - - - - - (3)$$

Where
MSO = Manufacturing Sector Output
DOO = Degree of Openness. DOO is a metric used to show/calculate the extent an economy depends on trade with other countries or region. It shows the degree to which transactions (imports and exports) take place and impact on the economic growth of a country. It is the ratio of the sum of total imports and exports to Gross Domestic Product of an economy. $DOO = (Imports + Exports)/\ GDP$
FEX = Foreign Exchange Rate
GCF = Gross Capital Formation
INT = Interest Rate
α_1 to α_4 are the coefficients of the variables making the model a linear model

The Autoregressive Distributive Lag (ARDL) Model was employed in the study. The choice of ARDL model stems from the result and behaviour of the variables obtained from the diagnostic tests carried out in particular the Unit Root Test and Bound Test. The variables were integrated of either order zero or one, i.e. I(0) and I(1), hence it becomes necessary to employ the Autoregressive Distributive Lag Model to address its objective (Pesaran, Shin and Smith, 2001).

Explicitly, using the Autoregressive Distributive Lag (ARDL) (p, j_1, j_2, j_3, j_4), the long run model to be estimated is expressed as

$$LogMSO_t = \theta_0 + \sum_{q=1}^{p} \alpha_1 LogMSO_{t-1} + \sum_{q=0}^{j_1} \alpha_2 DOO_{t-1} + \sum_{q=0}^{j_2} \alpha_3 FEX_{t-1} + \sum_{q=0}^{j_3} \alpha_4 LogGCF_{t-1} + \sum_{q=0}^{j_4} \alpha_5 INT_{t-1} + \varepsilon_{1t} \text{----------} (4)$$

The short-run dynamic parameters of the relationship between the variables is stated thus:

$$\Delta LogMSO_t = \rho_0 + \sum_{q=1}^{p} \beta_1 \Delta LogMSO_{t-1} + \sum_{q=1}^{j_1} \beta_2 \Delta DOO_{t-j} + \sum_{q=1}^{j_2} \beta_3 \Delta FEX_{t-j} + \sum_{q=1}^{j_3} \beta_4 \Delta LogGCF_{t-j} + \sum_{q=1}^{j_4} \beta_5 \Delta INT_{t-j} + \delta ecm_{i-1} + \varepsilon_t - (5)$$

α_1 to α_5 in equation 4 are the long run multipliers of the variables while β_1 to β_5 in equation 5 are the short run multipliers of the variables. Also, $\theta_0$and ρ_0 in equations 4 and 5 respectively are the intercepts for the long run and short run models while $j_1 to\ j_4$ are the optimal lags length for each of the variables.

The ARDL bounds test was employed to check for long run cointegrating relationship amongst variables and as such whether to reject or accept the null hypothesis of no cointegration. The null hypothesis of no long run cointegration is stated as $H_0: \alpha_1 = \alpha_2 = \alpha_3 = \alpha_4 = \alpha_5 = 0$ with the alternative stated as $H_0: \alpha_1 \neq \alpha_2 \neq \alpha_3 \neq \alpha_4 \neq \alpha_5 \neq 0$. The result is confirmed using the F- Statistic and the Upper and Lower Bound class such that if F-Statistic is greater than the Upper bound, we reject the null hypothesis and accept that there exists a long run relationship between variables. Conversely, if F-Statistic is less than the Upper bound, we accept the null hypothesis and conclude that there is no long run relationship between variables employed in the model.

The VECM granger causality which allows for endogenous variables in a model was employed to analyse the causal link between manufacturing sector output and trade globalization (DOO).

The VECM granger causality model is stated as follows;

$$\Delta X_t = \mu_t + \sum_{i=1}^{p-1} \emptyset_1 \Delta X_{t-1} + \lambda_1 \Delta X_{t-p} + \varepsilon_t ----------(6)$$

4. RESULT ANALYSIS AND INTERPRETATION

Table 1. *Summary of Correlation Matrix Result*

	LOGMSO	DOO	FEX	LOGGCF	INT
LOGMSO	1.000000	0.288407	0.884528	0.835524	-0.215639
DOO	0.288407	1.000000	0.044517	0.035824	0.317160
FEX	-0.884528	0.044517	1.000000	0.829651	-0.249533
LOGGCF	0.835524	0.035824	0.829651	1.000000	-0.317298
INT	-0.215639	0.317160	-0.249533	-0.317298	1.000000

Source: Authors' Computation (2020)

In order to avoid a case of multicollinearity, the correlation matrix was carried out. From the result in the table above, there was no multi collinearity seen as the pair-wise correlation coefficient between two regression was not in the excess of 0.9. Furthermore, it was revealed that Degree of Openness and the Gross Capital Formation had positive correlation with Manufacturing Sector Output. Though the correlation between Degree of Openness and Manufacturing Sector Output seem to be weak. Also, Foreign Exchange Rate has a negative and strong correlation with Manufacturing Sector Output while Interest Rate also had a weak and negative correlation with Manufacturing Sector Output.

Table 2. *Summary of Augmented Dickey Fuller (ADF) Unit Root Test Results*

	LEVEL			FIRST DIFFERENCE		
Variables	ADF Test Statistic	Prob	Status	ADF Test Statistic	Prob	Status
LogMSO	-1.161678	0.6775	I(0)	-3.744465	0.0350	I(1)*
DOO	-3.544492	0.0130	I(0)*	-	-	-
FEX	1.296450	0.9981	I(0)	-3.983143	0.0045	I(1)*
LogGCF	-0.657845	0.8420	I(0)	-3.781178	0.0148	I(1)*
INT	-3.340240	0.0212	I(0)*	-	-	-
* indicate the rejection of the null hypothesis of non-stationary at 1%, 5% and 10% significant level						

Source: Authors' Computation (2020)

Time series data in some cases exhibit stationarity problem which will inadvertently lead to cases of spurious result in a study. In order to address this problem, the need to ascertain the stationarity properties of the data employed in a study becomes paramount. Consequently, in testing the unit root of the data in this study, the Augmented Dickey-Fuller (ADF) test is employed.

From table 2 above, the variables employed were stationary at the point where the absolute value of ADF calculated are greater than the critical value at 5%. The table revealed that variables employed in the study were either stationary at level or at first differencing. DOO and INT were stationary at level, while LogMSO, FEX and LogGCF achieved stationary at first differencing. Noticeably, the mixture of both I(0) and I(1) variables would not be possible under the Johansen procedure. This gives a good justification for using the bounds test approach, or ARDL model, which was proposed by Pesaran, Shin and Smith (2001).

In an attempt to carry out the ARDL estimation, the choice of lag length is paramount. We therefore utilized various lag length selection criteria: Sequential modified LR test statistic with each test at 5%, the Final prediction error (FPE), Akaike information criterion (AIC), Schwarz information criterion (SC) and the Hannan-Quinn information criterion (HQ). We adopted the HQ criterion on the ground that its optimal lag length is in between the AIC and SC based on frequent practical experience. It should be noted that a higher lag length results in a loss of observation in the series.

Table 3. *Optimal Lag Selection Length Result*

Lag	LogL	LR	FPE	AIC	SC	HQ
0	67.79541	NA	0.051929	-0.123486	0.112255	-0.049655
1	66.55987	4.66859*	0.003353*	-2.866198*	-2.583309*	-2.777601*
2	61.29524	20.83988	0.001398	-3.744500	-3.414463	-3.641136
3	64.39440	4.488438	0.001216	-3.889269	-3.512084	-3.771139
4	64.88281	0.673663	0.001268	-3.853987	-3.429654	-3.721091
* indicates lag order selected by the criterion						

Source: Authors' Computation (2020)

The above result shows that the lag length which minimizes HQ is lag one and therefore, our optimal lag length is lag one. We therefore proceed to test if the variables in the model move together in the long run.

Table 4. *ARDL Bounds Test for Cointegration Result*

Test Statistic	Value	K
F-statistic	4.934121	4
Critical Value Bounds		
Significance	I0 Bound	I1 Bound
1%	4.20	5.61
2.50%	3.88	5.02
5%	3.55	4.47
10%	3.01	4.05

Source: Authors' Computation (2020)

The ARDL result in table above shows that there exists a long run cointegration relationship among the variables employed in the model. The F-Statistic value is greater than the upper and lower boundary at 5% level of significance. This implies that the null hypothesis of no cointegration is rejected

Table 5. *Long Run ARDL Result*

Cointeq = LogMSO = 1.007643 + 0.018978DOO - 0.005224FEX + 0.794732LogGCF – 0.009877INT + 0.074861@TREND				
Variable	Coefficient	Std. Error	t-Statistic	Prob
C	1.007643	3.866892	0.260582	0.7963
DOO	0.018978	0.004968	3.820416	0.0007
FEX	-0.005224	0.001016	5.143645	0.0000
LOGGCF	0.794732	0.309024	2.571751	0.0157

INT	-0.009877	0.014068	-0.702079	0.4884
@TREND	0.074861	0.027312	0.368204	0.7712
R-squared	Adjusted R-squared	F-statistic	Prob(F-statistic)	Durbin-Watson stat
0.879990	0.862846	15.32860	0.000000	1.718343

Source: Authors' Computation (2020)

The long run result above showed that all variables were right signed and statistically significant. Interest rate however appeared with the expected sign but was not significant. This implies that a one percent increase in DOO and GCF will bring about 1.8 units increase in MSO. Also, a one percent increase in FEX will bring about 0.5 unit decrease in MSO. The implication here simply means that an improvement is required on these variables so as to attract desired increase in manufacturing sector output in the economy. The R-squared shows that about 88% variation in MSO is explained by all included independent variables, and the adjusted R-square shows that if other variables that influences MSO were put into consideration, they will still explain about 86% variation in MSO.

Table 6. *Short-run Dynamic ARDL Model*

Variable	Coefficient	Std. Error	t-Statistic	Prob
D(DOO(-1))	0.153719	0.195148	3.615580	0.0471
D(FEX(-1))	-0.032974	0.003377	-3.880440	0.0349
D(LOGGCF(-1))	0.000507	0.002782	-0.182195	0.8626
D(INT(-1))	-0.168000	0.245220	-0.685100	0.5237
CointEq(-1)	-0.261674	0.004566	-4.147652	0.0024
R-squared	Adjusted R-squared	F-statistic	Prob(F-statistic)	Durbin-Watson stat
0.813256	0.776139	5.570184	0.036903	1.775522

Source: Authors' Computation (2020)

The result in Table 6 is the short-run dynamic ARDL model. The result revealed that the co-integrating equation is negative and significant. The co-integrating equation of –0.261674 is the speed of adjustment from the short-run equilibrium to the long-run equilibrium. This means that the percentage of the error is corrected in each time period. This low speed of adjustment implies that it will take approximately four years to correct all errors/deviations and bring the economy back to equilibrium. A look at the variables employed showed that like in the long run, all variables appeared with expected signs and were statistically significant except interest rate which was not significant. The F-statistics shows the robustness of the model which was significant at 5 per cent level of significant while the Durbin Watson statistics further shows no autocorrelation or serial correlation in the model.

The stability of the model is essential for policy making; hence diagnostic post estimation test becomes important. To test the stability of the model, the Ramsey Linearity Test, the Breusch-Godfrey Serial Correlation LM Test and the Breusch-Pagan-Godfrey serial heteroskedasticity test were employed.

Table 7. *Ramsey RESET Test*

Equation: UNTITLED
Specification: LOGMSO C LOGMSO(-1) DOO(-1)FEX(-1) LOGGCF(-1) INT(-1)
Omitted Variables: Squares of fitted values

	Value	df	Probability
t-statistic	1.106868	25	0.2789
F-statistic	1.225157	(1, 25)	0.2789
Likelihood ratio	1.530987	1	0.2160

Table 7 shows the result of Ramsey Reset Test which was employed to test for a linear the dependent and independent variables in the model. The null hypothesis is that the model under study is linear and correctly specified. However, the result indicates acceptance of null hypothesis because the t-statistics, the F-statistics and the likelihood ratio are not statistically significant at 5% significance level.

Table 8. *Serial Correlation Test Result*

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.316138	Prob. F(1,4)	0.6040
Obs*R-squared	0.732457	Prob. Chi-Square(1)	0.3921

Table 8 above shows the result gotten from the Breusch-Godfrey Serial Correlation LM Test which test for the existence of autocorrelation. The result revealed the absence of autocorrelation. This is so because the F-statistics is not significant at 5% level. Therefore, we accept the null hypothesis of no serial correlation in the model.

Table 9. *Heteroscedasticity Test Result*

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	1.175136	Prob. F(5,26)	0.3480
Obs*R-squared	5.898595	Prob. Chi-Square(5)	0.3162
Scaled explained SS	6.174927	Prob. Chi-Square(5)	0.2896

The result in Table 9 is the heteroscedasticity test which is employed to test for existence of interdependence of error terms across time in the model. From the result, it can be seen that the F-statistics is not significant at 5% level. We, therefore, we accept the null hypothesis and conclude that there is the absence of heteroskedasticity in the model.

Using the cumulative sum (CUSUM) and cumulative sum squares (CUSUMSQ) tests, the study ascertained the stability of the model. This is essential as the stability test enables us to predict the dependent variables in a regression with a reasonable level of precision given the independent variables used in the analysis.

Figures I and II below shows the CUSUM and CUSUMSQ. From the figures, the plots fell within the 5 percent critical lines, hence the model can be said to be stable. This implies that the parameters used in the study did not exhibit structural instability during the period under study. Thus, estimated parameters are stable and are useful for policy decision.

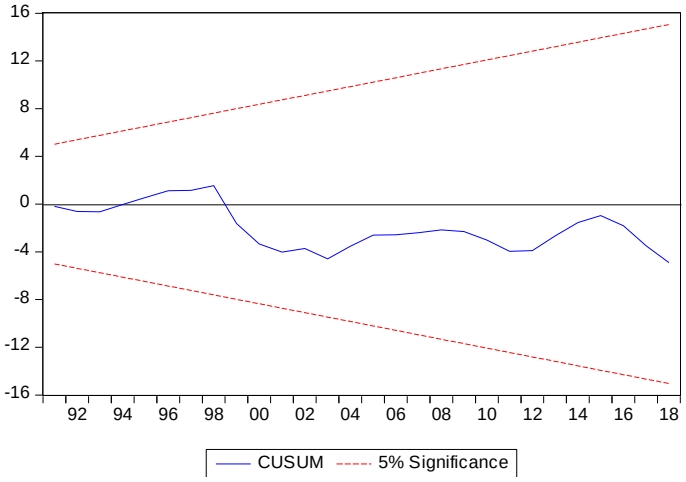

Figure I: *CUSUM Test*

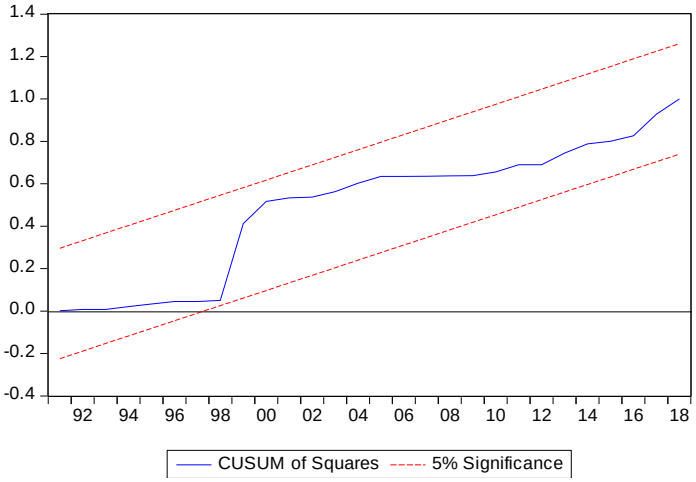

Figure II: *CUSUM of Squares Test*

5. CONCLUSION AND RECOMMENDATION

This study analysed the performance of the manufacturing sector in the face of globalization using data spanning from 1986 to 2018 while employing the Autoregressive Distributed Lag (ARDL) and VECM. Result obtained from the long-run and short-run estimated model, shows that there exists a relationship between manufacturing sector performance and globalization proxied by the economy's

degree of openness. This is so because variables employed in the study appeared with expected signs and conform to economic theories. Based on findings, the following recommendations are made;

- Innovation, modern manufacturing processes should be the watchword. This will improve the capacity to produce and make the sector producers of goods and services for both local and international use.
- With the positive relationship between manufacturing and capital formation, more manufacturing investments should be encouraged.
- The Nigerian government should promote the positive openness of her economy so as install/restore confidence of investors in the activities of the manufacturing output
- Policies to control the continuous fluctuation of the exchange rate should of great importance as a volatile exchange rate will discourage investment in the sector thereby leading to a fall in the sector's output.

REFERENCES

Ajudua, E. I., & Imoisi, A. I. (2018). Fiscal Policy and Manufacturing Sector Output Nexus in Nigeria, *Dutse Journal of Economics and Development Studies 6*(1), ISSN: 2536-6130

Ajudua, E. I., & Ojima, D. J.P. (2016). Modelling the Determinants of Output in the Nigerian Manufacturing Sector. *Journal International Journal of Innovative Finance and Economics Research, 4*(1), 1-12

Ajudua, E. I., & Okonkwo, O. N. (2014). Empirical Review of Globalization and Nigerian Economic Performance. *European Journal of Business and Management*, *6*(33), 36-45.

Akinmulegun, S. O., & Oluwole, F. O. (2014). An Assessment of the Nigerian Manufacturing Sector in the Era of Globalization. *American Journal of Social and Management Sciences, 5*(1), 27-32.

CBN (2013*). Central Bank of Nigeria Statistical Bulletin and Annual Report and Statement of Account*.

CBN (2018*). Central Bank of Nigeria Statistical Bulletin*

Gujarati, D. N. (1995). *Basic Econometrics.* 3rd edn McGraw-Hill. Inc., New York.

Kareem, R. O., Bakare, H. A., & Ologunla, E. S. (2013). Globalization and Economic Growth in Nigeria: Any Nexus. *Service Science and Management Research (SSMR), 2*(1), 9-17.

Loto, M. A. (2012). The Impact of Economic Downturn on the Performance of Agricultural Export in the Nigerian economy. *Journal of Emerging Trends in Economics and Management Sciences (JETEMS), 2*(6), 504-510.

Marconi, N., de Borja Reis, C. F., & de Araújo, E. C. (2016). Manufacturing and Economic Development: The Actuality of Kaldor's First and Second Laws. *Structural Change and Economic Dynamics*, *37*, 75-89.

Nigeria Economic Summit Group (2018). https://nesgroup.org/docs/manufacturingsector-nigerias-economic-growth-pattern

Nwokoro, A.N. (2017). Foreign Exchange and Interest Rates and Manufacturing Output in Nigeria. *International Journal of Business and Law Research*, *5*(1), 30-38.

Obadan, M. I. (2001). Africa and the Challenge of Globalization: How Should the Continent Respond? *Nigerian Journal of Economic and Financial Review, 6*(2), 35-42.

Obaseki, P. J. (2000). Globalisation and the Nigerian Economy. *Central Bank of Nigeria Economic and Financial Review, 38*(2), 17-33

Ogunrinola, I. O., & Osabuohien, E. S. (2010). Globalisation and Employment Generation in Nigeria's Manufacturing Sector (1990-2006). *European Journal of Social Sciences*, *12*(4), 581-593.

Orga, J. I. (2012). Globalisation: The Nigerian Experience. *Review of Public Administration & Management*, *1*(2), 154-179.

Orubu, C. O., & Awopegba, P. O. (2004). Market Economies, Globalisation and the Role of Good Governance in the Development Process: Challenges for the Nigerian Economy. *Journal of Social Sciences, 9*(3), 163-175

Pesaran, M. H., Shin, Y., & Smith, R. J. (2001). Bounds Testing Approaches to the Analysis of Level Relationships. *Journal of Applied Econometrics*, *16*(3), 289-326.

Sharehu, A. L. (2015). *Managing the Nigerian Economy: Trends and Dynamics.* Ahmadu Bello University Press Ltd, Zaria, Kaduna State.

Targetti, F. (1992). Nicholas Kaldor. The Economics and Politics of Capitalism as a Dynamic System. *OUP Catalogue*.

Targetti, F., & Foti, A. (1997). Growth and Productivity: A Model of Cumulative Growth and Catching Up. *Cambridge Journal of Economics 21(1), 27-43*.

Usenobong. F. A., & Atan, J. A. (2015). The effect of Globalization on Selected Sectors of the Nigerian Economy: Agriculture, Manufacturing and International Trade, *British Journal of Economics, Management and Trade, 8*(2), 144-156, Article No. BJEMT. 2015.106 ISSN: 2278- 098X