External Sector and The Nigerian Manufacturing Sector Performance, 1981-2019

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ABSTRACT: No country is an island.   The globalization phenomenon is making all countries to be interdependent. The external sector environment has become critical for the success of every country and internal balance**.** Thus, it has become important to examine how much the externa sector environment impact on the performance of the domestic economy.   The present study, therefore, examined the influence of Nigerian external sector environment on the performance of the Nigerian manufacturing sector between 1981 and 2019. The study adopted exp-post research design approach and the Autoregressive Distributed Lag (ARDL) model estimation techniques. The empirical model consists of the Nigerian manufacturing sector output index as the dependent variable and exchange rate, trade openness, and foreign direct investment as independent variables and external sector environment variables.   Test of unit root results indicated that the variables have mix order of integration, while the co-integration analysis results indicated that the variables in the model have stable long run relationship. Estimate of the ARDL model reveals that in the short run exchange rate variations have negative, but significant effect on manufacturing sector performance, while trade openness, and FDI have positive but insignificant influence on the manufacturing sector performance in the short run. In the long run, exchange rate level and FDI inflows have positive and significant effect on the manufacturing sector performance, while trade openness has negative and significant effect on the Nigerian manufacturing sector performance. The study therefore conclude that the Nigerian external sector Environment has significant influence on the performance of the Nigerian manufacturing sector.

KEYWORDS: exchange rate, external sector, globalization, manufacturing sector, trade openness

1. INTRODUCTION

Nigeria currently imports various quantities of manufactured goods to satisfy the demand of her teeming population. This is very puzzling considering her huge industrial potentials. With a population of over 170 million people constituting a strong labour force, strong agricultural (base) that could serve as a spring board for industrialization. The country has some of the riches natural resources for industrial production in the world. Nigeria was once a key player in the global textile market. It was one of the manufacturers of steel in West Africa in the 1960s (Babatunde, 2016).

Prior to the discovery oil of in commercial quantities, the country depended largely on the locally produced goods which are basically primary in nature. The Northern region was noted for groundnut oil, cocoa butter, and Shea butter, production, the Eastern region for palm oil, soap and West for her cotton and textile (tie and dye) industries and the south for her salt and fishery. This success story was not sustained with the emergence of oil; locally manufacturing industries were abandoned and neglected by successive government in the country (Nwanne & Eze 2015).

However, the decline in crude oil revenue since 2014 has once again exposed the vulnerability of the Nigerian dependency on crude oil as a major earner of foreign exchange. Consequently, Nigeria is finding it difficult to pay for her import bills which are compounded by the unfavourable exchange earning from the fall in the value of Naira.

According to Simon Oke, (2010) the Nigerian manufacturing industry is believed to possess the potentials that drive not only food production but also other industrial products such cement, foot wears, car assembly, wood and wooden produce, chemicals and pharmaceutical products etc which can serve as a spring board from which the country's development can take off. The manufacturing sector is presumed to have a multiplier effect on any nations socio-economic and industrial fabric because of the multifunctional nature of the sector, developing therefore the manufacturing sector of a nation is an essential prerequisite for industrialization.

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On the other hand, external sector of a nation is that part of the economy that is in constant interaction with the economies of other countries. The external sector is dynamic in nature. It had evolved over time. From the time of the mercantilist till date, there have been significant changes in the international market. These changes in the external sector have caused structural alterations in the economy of many countries. Such changes include change in the basis and terms of trade, foreign exchange prospects, industrialization pattern and the general development of the countries. No country is excluded from the influence of its external sector, sometimes changes in the external sector has the potentials to eliminate the well-established comparative advantages the country had been enjoying and jeopardize industrialization processes ,especially in developing countries like Nigeria. (Nwosa, 2018).

Beside, past analysis of the external sector of the Nigerian economy as measured by the overall balance of payments revealed instability since 1960 due to the persistent high demand for foreign goods and services in the face of dwindling foreign exchange earnings. Structurally the sector which has been dominated largely with export of crude oil remained unaltered for over four and half decades for instance, over dependence on crude oil export and imported inputs, renders the economy to be highly vulnerable to external shock; sharply declining foreign exchange reserves; a largely "overvalued" naira, staggering external debt; alarming proportion of unemployment; balance of payment crises and the collapse of oil price.

Besides, past studies (Akinde, 2014; Ogu, Aniebo & Elekwa 2016) have shown conflicting influence of the external sector on the manufacturing sector performance. While Otokoni, Olokoyo, Okoye, Ejemeyovwi (2016); Ilemona & Okwanya (2017) found positive influence, others, such as, Ammani (2017) found no relationship, either positive or negative between external sector variables and Nigerian manufacturing sector. This suggests that there is no consensus in literature on how external sector variables impact on manufacturing industries in Nigeria. This problem has thus necessitated this study.

This knowledge gained from the findings of the study will guide policy makers in formulating and implementing effective trade policy that will support the Nigerian industrial development drive. The remaining part of the study is organized into four sections as follows: section two (2) is the literature review and centres on conceptual clarification, theoretical literature, empirical literature. Section three (3) is the methodology of the study. It presents the model specification and method of data analysis. Section four (4) is used for data presentation, empirical analysis, and the discussion of the empirical findings, while section five (5) is devoted to the summary and conclusion.

2. LITERATURE REVIEW
This section is devoted to literature review. It specifically presents the conceptual clarification of major themes of the study, a review of the theoretical literature relevant to the study

2.1 Conceptual Clarification
The external sector is the part of a country's economy that is in constant interactions with the economies of other countries. The external sector has two parts. In the goods market, the external sector consists of import and export of goods and services. In the financial sector, the external sector consists of financial flows such as capital external debt, foreign direct investment, external reserves, exchange rate, and foreign investment position. The external sector consists of everything that lies outside the boundaries of a country. The primary function of the external sector is to facilitate foreign trade. The external sector is also called foreign sector. In Nigeria, the external sector is made up of the foreign exchange market, the foreign direct investment flows, the capital account, the current account, external debt profile, external reserves, and balance of payment (CBN, 2013). The various components of the Nigerian external sector are explained below.

The manufacturing sector is the agglomeration of industries engage in chemical, mechanical and physical transformation of materials, substances and components into consumer or industrial goods (Web finance Inc,2019). Manufacturing sector refers to those industries which involve in the manufacturing and processing of items and indulge in either creation of new commodities or in value addition. The manufacturing industry accounts for a significant share of the industrial sector in developed countries. The final products can either serves as a finished good for sale to customers or as intermediate goods used in the production process (The Economy Watch,2017)

Manufacturing industries are the chief wealth producing sectors of an economy. These industries use various technologies and methods widely known as manufacturing process management. Manufacturing industries are broadly categorized into engineering industries, construction industries, electronics industries, chemical industries, energy industries, textile industries, food and beverage industries, metalworking industries, plastic industries, transport and telecommunication industries.

2.2 Theoretical Framework

In the field of macroeconomics, there are many different models for examining the relationship between the external sector and the internal sector. All the models have one thing in common: they are based on theoretical consideration, definitions of variables, and accounting system (Matlanyane, 2005). This section of the study presents a review of the relevant theories of the external sector.

The monetary theory of the external sector was proposed by Frankel (`1976), Musa (1976) and Bilson (1978). The theory is popular with Frankel and therefore has become attached to Frankel (1976). There are two versions of the theory. One assumes price flexibility, while the other assumes fixed price. Given the assumptions of the theory the monetary theory asserts that the exchange rate, as the relative price of moneys, is determined by the supply and demand for money. An increase in the supply of domestic money causes a proportionate depreciation. An increase in the demand for domestic money, such as results from an increase in domestic income or a decrease in expected inflation, causes an appreciation. The implication of the theory is that domestic output is a function of exchange movement, foreign income growth, and foreign price level. Thus, the output of the manufacturing sector is dependent on the exchange rate level and the export price index. These short coming in the monetary model lead to re-specification of the model in the form of the portfolio balance model.

The portfolio balance approach to flexible exchange rates was pioneered in a small country framework by Black (1973), Kouri (1976), Branson (1977), and Girton and Henderson (1977). The whole idea in the portfolio balance theory is that the external sector has impact on the internal sector through the exchange rate. Specifically, the theory pointed out the role of government external debt and the demand and supply of government debt through bond as the main determinant of the external sector performance and the link to the domestic economy. In the present study, the study variable, manufacturing and exchange rate has link through the exchange rate to the domestic output. Increase in domestic bond will reduce the price and increase interest rate. This will lead to the appreciation of the domestic currency and reduce the aggregate domestic output. Frankel (1980) estimate the portfolio balance model to verify the reality of the portfolio balance using the German mark. The result indicates that the portfolio balance like the monetary model performs poorly

In the theories, the basic variables of the external sector are the export trade, import trade, exchange rate, external reserve, external debt stock, foreign direct investment and portfolio investment, and trade openness. Export and import represent the current account balance, while, foreign direct investment; external debt and reserve are the capital account, trade openness proxy the overall institutional environment.

2.3 Empirical Literature Review

There is a plethora of empirical literature on the relationship between the external sector variables and the performance of the manufacturing sector indicators within and outside Nigeria. this section presents a review of a few empirical studies on the relationship between the external sector variables and the performance of the manufacturing sector.

Desbordes, and Loa Franssen (2019) adopted a cross-country, multisector approach to investigate the intra- and inter-industry effects of foreign direct investment (FDI) on the productivity of 15 emerging market economies in 2000 and 2008. Their findings indicate that intra-industry FDI has a large positive effect on total and exported labor productivity. The effects of FDI on total factor productivity are much more elusive, both in statistical and economic terms. This result suggests that foreign firms raise the performance of their host economies through a direct compositional effect. They recommended opening the economy for more foreign direct investment.

Ammani(2017) assessed the impact of exchange rate deregulation and the Structural Adjustment Program (SAP) on Cotton Production and Utilization in Nigeria. He used the average exchange rate of the naira to the dollar and the manufacturing capacity utilization of cotton industry from 1973 to 2017 using multiple regression model. The results show that exchange rate deregulation per se has no significant effect on cotton production in Nigeria; more cotton was produced in Nigeria during the post-SAP period.

Ilemona and Okwanya (2017) examined the effect of trade openness and total factor productivity on industrial output in Nigeria between 1981 and 2015. They used vector autoregressive (VAR) model for estimating the effect of trade openness on industrial sector output. The results show that trade openness has a positive and increasing effect on industrial output in Nigeria; while the effect of total factor productivity on industrial output is found to be insignificant. The impulse response function shows that over the long run period total factor productivity has negative effect on industrial output in Nigeria.

Ugwuanyi and Nkem (2017) carried out a study to analyze industrialization drivers and Nigeria economic growth between the periods 1980 to 2014 using time series data. The methodology employed was Unit Root Test, Co-integration Test, Error Correction model and Granger Causality Test in determining the objectives of the research. Findings revealed that Foreign Direct Investment

(FDI), Financial System Development which is proxy with Aggregate Bank Lending (ABL) and Exchange Rate (EXR) significantly stimulate the Nigeria economy while Trade Openness negatively influences economic growth in the long run. They concluded based on their results that Foreign Direct Investment, Aggregate Bank Lending and Exchange Rate are key determinants of industrialization

Ugwu Okereke (2017) studied the impact of EXCH fluctuations on the performance of manufacturing firms in Nigeria within the period 1986–2016 using firms' profitability as a proxy for performance. The estimation technique adopted for the study was multiple regression analysis based on the OLS technique. The findings of the study showed a positive and significant relationship between EXCH fluctuations and the profitability of manufacturing firms in Nigeria. Similarly.

Otokini, Olokoyo, Okoye, Ejemeyovwi (2016) examined the effect of exchange rate deregulation on manufacturing sector output performance from 1980 to 2016. He used nominal exchange rate and the manufacturing sector output index and the independent and dependent variables respectively. The results from the Granger causality test and the cointegration analysis shows that exchange rate variation has positive but insignificant impact on the manufacturing sector. He therefore recommended that the monetary authority should stabilize exchange rate through appropriate policy

Akpan, and Eweke (2017) examined the impact of Foreign Direct Investment (FDI) on Industrial Sector Performance in Nigeria and annual time series data for the period 1981-2015. The study employed the VAR method. The VAR estimate shows that FDI had a slight significant positive impact on GDP, while Industrial Sector Output had a small significant positive impact on GDP at present, with a negative relationship observed at previous periods. The impulse response functions clearly reveal that GDP exhibited negative response to shocks in FDI up to the 3rd period, while the effect was positive from the 4th period henceforth, while GDP also exhibited a negative response to shocks in Industrial Sector Output throughout the period observed. The variance decomposition analysis further revealed that GDP was mainly driven by shocks in FDI, with industrial sector output contributing very little. The study concludes that Nigeria is yet to fully reap the benefit of FDI since its contribution to GDP is still very low at the moment, whilst the contribution of the industrial sector in the country has not be vibrant enough to spur economic growth.

Anowor, Ukweni, Ibiam , and Ezekwem (2016) analyzed the contributions of foreign direct investment to the growth of manufacturing sector in Nigeria using annual time series data of the choice variables from 1970 to 2011. Among the findings was that Foreign Direct Investment (FDI), Domestic Investment (DINVT), Exchange Rate (EXR) and the Degree of trade Openness (DOPN) were all related to Manufacturing sector Output Growth in Nigeria. More so, the Foreign Direct Investment, Degree of trade openness, exchange rate and the lagged error term were statistically significant in explaining variations in Nigeria's Manufacturing Output Growth and Gross Domestic Product as a proxy for economic growth (GDP) in the models adopted in the study. It was recommended that there should be concerted support for technological capabilities of indigenous firms, should create favourable conditions for knowledge exchange, improve technical education base to attract the inflow of FDI and intensively support Research & Development.

Orji et al. (2015) studied the relationship between foreign direct investment and industrial sector output in Nigeria from 1970 to 2010. The study employed the classical linear regression model and discovered that within the period under review, FDI impacted negatively on the manufacturing sector. The study therefore recommends that competitive policies should be enacted by the government that will ensure proper functioning of the markets necessary to attract well targeted foreign investors in Nigeria

Most of the studies reviewed examined the relationship between the external sector and the manufacturing sector using disaggregate variable approach. That is, they examined one aspect of the external sector and, most times one part of the manufacturing sector. Examples of such studies include Anowor, Ukweni, Ibiam, and Ezekwem (2016), Orji et al. (2015). These studies are redundant in that they excluded many aspects of the external sector from the empirical models. The findings from such studies cannot be generalized to the manufacturing. The present study will bridge this gap by examining the various variables of the external sector and their impact on the manufacturing sector in general and specific impact of the industries in the manufacturing sector. All the empirical studies reviewed did not analyzed the specific effect of each of the external sector variables on each industry of the manufacturing sector. The impact of the external sector variables is not the same both in the short and long run. This present study will remedy this by estimating the specific impact of the external sector variables on the manufacturing sector output for both the long run and the short run.

3. METHOD OF STUDY

This section is centred on the steps adopted in gathering and analyzing the data for the study. They include: research design; model specification, data required, data collection and sources, and method of data analysis.

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3.1 Model specification

In line with the theoretical framework of the Keynesian's open economy theory and the empirical model of Ogu, Aniebo and Elekwa (2016), we specify the relationship between the external ector variables and the Nigerian manufacturing sector performance as follows:

$$MSO = f(EXR, OPT, FDI,) \qquad (3.1)$$

The econometrics form of the equation is written as:

$$MSO = \alpha_0 + \alpha_1\, EXR_i + \alpha_3\, OPT_i + \alpha_4\, FDI_i + \mu_1 \qquad (3.2)$$

The log linear form of the equation is written as:

$$\log MSO_i = \log \alpha_0 + \alpha_1 \log EXR_i + + \alpha_3 \log OPT_i + \alpha_4 \log FDI_i + \mu_1 \qquad (3.3)$$

$$\alpha_1 > 0;\ \alpha_2 > 0;\ \alpha_3 > 0;\ \alpha_4 > 0;\ \alpha_5 > 0;$$

Where: MSO manufacturing sector output, EXR is Exchange rate, OPT is Trade openness, FDI is Foreign direct investment, α_0 is constant . $\alpha_1 \ldots \alpha_4$ are co-efficient of the explanatory variables

μ_1 is a white noise error term

All data are secondary in nature and consists of annual time series of the variables. The data were collected from 1981 to 2019. Data required for the study were collected from various sources. Data for manufacturing sector output and pharmaceutical products industry output, and exchange rate of naira to the dollar were collected from the Central Bank of Nigeria's (CBN) statistical bulletin (various issues). Data for foreign direct investment inflows to Nigeria and openness to trade index were collected from the World Bank's World Development indicator (WDI). Supplementary materials were collected from the National Bureau of Statistics (NBS), the African Economic Research Consortium (AERC), International Monetary Fund Country Specific Financial Statistics, test books, research journals, and published and unpublished work of other scholars.

3.2 Method of Data Analysis

The study adopted the Auto-Regressive Distributed Lag (ARDL) econometrics regression techniques developed by Pesaran, Shin and Smith (2001) to analyze the data. The ARDL/ Bound testing approach has some advantages over the traditional approaches such as the Engle-Ggranger (1987),Johansen (1988) and Johansen and Juselius(1990).One advantage of the ARDL/ Bound test approach is that it can be applied in case of mixed order of integration, that is order 0, and 1. However, It breaks down in the presence I (2) series. It is efficient in small sample and requires just one equation set up for both long run and the short run. The ARDL/Bound test approach does not need separate unit root test apart from guiding against I (2) series in the model. The ARDL regression analysis method proceeds in this order:

3.2.1 Unit Root Test

Maddala (2007) observed that time series data are fraught with unit root. Ignoring unit root and running regression with the data will lead to spurious regression (Granger& Newbold, 1974) Therefore, it is advisable to examine the unit root properties of the data before applying them in regression analysis. The unit root test adopted in the study is the Augmented Dickey-Fuller approach. (Dickey & Fuller, 1987). However, several studies have established that the ADF has low power in differentiating from unit root and alternative close to 1 (Sjoo, 2008). Therefore, a researcher who is interested in examining unit root should conduct more than one test. Based on this advice, the ADF would be complemented by Phillips-Perron test (Phillips &Perron, 1988).

3.2.2 ARDL/Bound Cointegration Test.

The ARDL/Bound cointegration testing model for the study can be specified compactly as follows:

$$\Delta X_i = \alpha_0 + \sum_{i=1}^{i=n} \eta_i\, \Delta Y_{it-1} + \sum_{i=1}^{i=m} \theta_i\, Y_{it-1} + V_i \qquad (3.9)$$

Where ΔX is the first difference operator of dependent variable, and ΔY_{it-1} is column vector of the lag of the first difference of the independent variables, i=1…4. η_i is a row vector of the short run coefficients of the independent variables; while Y_{it-1} is column vector of the lag of the independent variables, and θ_i is row vector of the variables long run parameters. So, in one equation we have an estimator for the short and long run impact of the variables.

The Bound F-statistics test which is generated by the Wald test is compared with the critical upper and lower bounds at 5% probability level. The null hypothesis of no cointegration is rejected if the empirical F-statistics is greater than the upper bound critical value at 5% probability level. Then, the long run parameters can be estimated. It would be maintained if the empirical F-statistics is less than the lower critical bound at 5% probability level. In this case, there is no long run relationship. Only the short run parameters can be estimated Where the F-statistics fall between the upper and lower critical values the result is inconclusive.

3.2 .4 Model Diagnostic Test

Testing the basic assumptions of the Ordinary Least Square (OLS) is important in empirical studies. The important assumptions that may affect the estimates include residual distribution, autocorrelation, and heteroskedasticity.

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Normality Test: the Jacque-Bera(JB) test of normality approach would be employed at 0.05 level of significance. The test examines the distribution of the estimated residuals under the null hypothesis that the residuals are normally distributed.

Autocorrelation: autocorrelation test examines the estimated residuals if they are correlated; that is, if there is any correlation between successive term. Autocorrelation in the residuals affect the efficiency of the estimates. In the presence of autocorrelation, the parameter estimates are no longer ''BLUE''. The standard error is affected and hypothesis testing becomes misleading. the Breusch-Godfrey (BG) test techniques would be adopted for this test at 0.05 levels of significance. The BG test approach tests the null hypothesis that there is no autocorrelation in the error terms.

Heteroskedasticity. The heteroskedasticity test examines the variance of the error terms over time. If the variance is constant, then it is homoscedastic; otherwise, it is heteroskedastic. Heteroskedasticity like autocorrelation affects the efficiency of the parameter estimates and therefore affects the standard error. Hypothesis testing in the presence of heteroskedasticity would be misleading. The Breusch –Pagan- Godfrey (BPG) test of heteroskedasticity would be employed at 0.05 levels under the null hypothesis that the variance of the error terms is constant Multicollinearity test. Before combining variables in a multiple regression model, it is important to examine the data for multi-co-linearity problem. Multi-co- linearity among variables in a model will make unique estimates of the model parameters impossible. In the correlation matrix techniques for detecting multicollinearity, the researcher examines the pair-wise correlation coefficient between any two variables in the model. If the pair-wise correlation coefficient between any two variables is greater than 0.6, then there is evidence of multicollinearity among the variables in the model. Pair-wise correlation coefficient less than 0.6 prove there is no reason to suspect the problem of multi-co-linearity among variables in the model.

4. DATA ANALYSIS AND EMPIRICAL RESULTS

This section presents the analysis of the empirical data and the empirical results from the analysis. The results are presented as follows:

4.1 Descriptive Statistics

It is important to examine the statistical behaviour of the model in the empirical mode. this affords the researcher the opportunity to see variables that may cause problem in the model. This section presents the results of the descriptive statistic of the variables in the model.

Table 4.1: Descriptive Statistics of variable in the model

	LOGMSO	LOGEXR	LOGFDI	LOGTOP
Mean	2.787236	1.591079	9.187404	1.674590
Median	2.885292	2.027431	9.158103	1.714004
Maximum	4.095362	2.403279	9.946507	1.912822
Minimum	1.429526	-0.172071	8.276840	1.241274
Std. Dev.	0.869067	0.802749	0.460354	0.166002
Skewness	-0.187166	-1.107549	-0.010650	-0.880888
Kurtosis	1.737884	2.798744	2.197165	2.962697
Jarque-Bera	2.744015	7.833007	1.021247	4.916644
Probability	0.253597	0.019911	0.600121	0.085578
Sum	105.9150	60.46101	349.1214	63.63443
Sum Sq. Dev.	27.94527	23.84301	7.841253	1.019595
Observations	38	38	38	38

Source: E-view computer output

Table 4.1 shows the descriptive statistics of variables in the regression model. From the table, there are 38 observations. During the period under review, the exchange rate (EXR) had a minimum-0.172071. The maximum value of this variable was 2.403 while the mean and median of exchange rate were 1.591079 and 2.027431 respectively Foreign direct investment (FDI) level averaged 9.187404 during the period under review. In the 38 year, the manufacturing sector output (MSO) averaged 2.787236 billion naira per year in logarithms. The highest value during the period was 4.095362 billion; while the minimum value was 1.429526 billion. Trade openness index had mean of 1.674590. and the maximum and minimum value of 1.912822 and 1.241274

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The Skewness values for all the variables, are less than 0.00. This implies that the distributions of these variables are negatively skewed. The skewness values for FDI, and TOP are very close to zero, and so the distributions of these variables could be taken as central. The Skewness values for exchange rate (EXR) is far from zero and so have negative tails extending to the left. The kurtosis value for FDI, EXR, TOP, and MSO are less than 3.00. This mean that the distribution of these variables has flatter top than the normal distribution. They are platykurtic. The Jacque-Bera (JB) test of normality for the variables shows that all the variables have normal distribution. The P-value of the JB statistics for all the variables, are less than the critical 0.05

4.2 Multicollinearity Test- Correlation Matrix

This test has been conducted using the correlation matrix. If the pair-wise correlation coefficient, R^2, from the correlation matrix is in excess of 0.8, we conclude that there is presence of multicollinearity, but if the R^2 from the correlation matrix is less than 0.8, we conclude that there is no multicollinearity

Table 4.2.Descriptive Statistics Results

	LOGMSO	LOGEXR	LOGFDI	LOGTOP
LOGMSO	1.000000			
LOGEXR	0.910241	1.000000		
LOGFDI	0.703002	0.750468	1.000000	
LOGTOP	0.195235	0.353093	0.514792	1.000000

Source: E-view computer output

Following the correlation table, there is multicollinearity between Exchange rate (EXR)and Manufacturing sector output (MSO), and also, and FDI. According to Blanchard and Gujarati (2004), multicollinearity is God's will, not a problem with OLS or statistical technique in general. Hence, we followed the 'do nothing' school of thought as expressed by Blanchard (1998) to avoid specification bias. Thus, there is no reason to express fear over the problem of multicollinearity in the model.

4.3 Unit Root Tests

Table 4.3.Unit Root Tests Results

	Augumented Dickey Fuller (ADF)		Philips-Perron(PP)		Remarks	
Varaible	Level	Ist Diff	Level	Ist Diff.	ADF	PP
EXR	2.8569	5.7541**	2.5869	5.7541	I(1)	I(1)
FDI	3.7214 *	-	2.1329	6.5780	I(0)	I(1)
TOP	3.6355*	-	3.0355	-	I(0)	I(0)
MSO	4.3926 *	-	2.1021	3.4921	I(0)	I(1)

Source: E-view computer output

The unit root test results are presented in Table 4.3. From the results, the Augmented Dickey-Fuller (ADF) statistics shows that Foreign Direct Investment (FDI), trade openness (TOP), and manufacturing sector output variables are stationary at level. They are therefore I (0) series,and Exchange rate (EXR) is not stationary at level. It became stationary after 1st differencing. It is thus, I (1) series. The results from the Phillips-Perron statistics shows that variable exchange rate (EXR), and manufacturing sector output variables are not stationary at level. They are I (1) series.

From the unit root test results, we have mixed order of integration, that is, a mixture of I (1) and I (0) series. Therefore, the most appropriate model for specification and estimation of the models is the Autoregressive Distributed Lag (ARDL) developed by Pesaran, Smith, and Shin (2000). Thus, the analysis proceeded to estimate the ARDL models of the relationship between the external sector and the Nigerian manufacturing sector.

4.4 Cointegration Test- ARDL/Bound Test

The variables were examined to see if they have any long run relationship that can be modelled and estimated. Since the variable have different order of integration, the ARDL/Bound test to cointegration was employed. The results are presented in Table 4.3

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Table 4.3. Results of ARDL/Bound Test Cointegration

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
			Asymptotic: n=1000	
F-statistic	12.34456	10%	2.08	3
K	5	5%	2.39	3.38
		2.5%	2.7	3.73
		1%	3.06	4.15
Actual Sample Size	34		Finite Sample: n=35	
		10%	2.331	3.417
		5%	2.804	4.013
		1%	3.9	5.419

Source: E-view computer output

The figures in Table 4.3 shows the result of ARDL/Bound test cointegration of the variables in the model 1. From the result, the F-statistics is 12.3445. at probability of 0.05(5%), and for finite sample of 34(the actual size is 37, differencing removes 3) we look at the second row, and along the 5% critical value. The empirical F-statistic is greater than any of the upper and lower critical values of 4.013 and 2.804 respectively. Thus, the null hypothesis is rejected. This implies that there is a fixed and stable long run relationship among the external sector variables and the Nigerian manufacturing sector output. The variables have a long run equilibrium value that can be modelled and estimated. The analysis proceeded to estimating the long run values of the model parameters.

Table 4.4. Long Run Coefficients of Manufacturing Sector

Variable	Coefficien	Std. Error	T-statistic	P-Value
LOGEXR (-1)	- 0.1565	0.0437	-3,3579	0.0038
LOGFDI (-1)	0.05337	0.0491	1.0864	0.2986
LOGTOP (-1)	0.3779	0.1077	2.3147	0.0043

Source: E-view computer output

The long run coefficients presented in Table 4.4 shows that Exchange rate has negative and significant relationship to manufacturing sector output. This implies that fall in exchange rate, that is, the appreciation of the Nigerian currency would have a positive impact on the manufacturing sector out. The depreciation of the value of the Nigerian naira affected the manufacturing sector output negatively. Specifically, depreciation in the value of the naira by 1% brought about reduction in the manufacturing sector output by 0.15% after one-year lag.

Foreign direct investment has positive, but insignificant effect on the manufacturing sector output. This implies that during the period under review, increase in foreign direct investment spurred output in the manufacturing sector. However, the effect was not significant. In particular, increase in Foreign direct investment inflow by 1% lead to increase in the manufacturing sector output by about 0.05% on the average during the period under review.

The relationship between trade openness and the manufacturing sector is positive and statistically significant. Specifically, increase in the Nigerian trade openness index by 1% lead to increase in the manufacturing sector output by0.38% in the long run. We proceed to Table 4.5 to analyse the short run impact of the external sector on the manufacturing sector performance.

Table 4.5 Short Run Coefficients Manufacturing Sector

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LOGEXR(-1))	0.2551	0.0372	6.8438	0.0000
D (LOGFDI (-3))	0.1265	0.0264	4.7906	0.0004
D(LOGTOP(-1))	-0.1827	0.0411	-4.4352	0.0008
CointEq(- 1)*	-0.0253	0.0022	-11.3849	0.0000

Source: E-view computer output

The short run effect of the Nigerian external sector environment on the Nigerian manufacturing sector performance is shown in Table4.5. The table reveals that the effect of exchange on the manufacturing sector output is positive and statistically significant. Specifically, depreciation of the naira by 1% brought about fall in the manufacturing sector output by 0.26% after one-year lag.

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The empirical result shows that exchange rate has negative and significant impact on the manufacturing sector output. The result is in line with the a priori expectation for the variable. Specifically, the result implies that depreciation of the domestic currency stimulates output growth of the manufacturing sector. The finding of the study supports economic theory. Depreciation of the domestic currency relative to other currencies make the domestic output cheaper and so stimulate the demand for the domestic output. In the same line, the import of the same product becomes expensive to the domestic residents and so they do expenditure switching from importation to local products. This will stimulate output expansion in the manufacturing sector. the finding of the study is in line with the result of Otokini, et al (2016) which found positive influence of exchange rate depreciation on manufacturing sector output in Nigeria. However, the finding of the study with respect to exchange rate contradicts the finding of Ayinde (2014) which found negative effect of exchange on manufacturing sector output performance in Nigeria. The difference in result could be attributed to measures of exchange rate used. While Ayinde used real effective exchange rate, Otokoni et al used nominal exchange rate. Nominal exchange rate would give positive relationship, while real effective exchange rate will give negative results

Foreign direct investment (FDI) had positive and statistically significant effect on the Nigerian manufacturing sector output. During the period under review, increase in the level of foreign direct investment inflow by 1% led to the growth of manufacturing sector out by 0.1% after three years lag. The impact is statistically significant in the short run. The result is in conformity with the a priori expectation for the variable and economic theory. The result implies that increase in FDI inflows will stimulate output of the manufacturing sector, all things being equal. The expansion in manufacturing sector output result from the extra output from the foreign investors and from the technological progress associated with the inflow of FDI, and other forward and backward linkage effects of FDI inflows in the economy. The result supports the findings of Akpan, and Eweke (2017) and Anowor, Ukweni, Ibiam, and Ezekwem (2016) which found positive and significant effect of FDI inflow on the productivity and output growth in manufacturing sector in Nigeria. However, Orji et al. (2015) found negative, but significant effect of FDI on manufacturing sector output in Nigeria. We can attribute the difference between the findings to methods of the study. Akpan and Eweke used ordinary regression method. The VAR method is a better method and performs better in large sample. Again, the measure of FDI flows is more important here. The present study used only FDI inflows, the same as Akpan and Eweke (2017). Orji et al. (2015) net FDI, which includes both inflows and outflows. The inflow is more and negative. The net flows in smaller. And thus, the negative relationship.

The short run relationship between trade openness and the manufacturing sector output is negative and statistically significant. The table reveals that during the period under review, a 1% increase in Nigerian trade openness index brought about fall in the Nigerian manufacturing sector output of 0.18% in the short run. This implies that the more the trade openness index of Nigerian economy, the less the output of the Nigerian manufacturing sector. The result is contrary to the a priori expectation for the variable and economic theory. Economic theory proposed that more open economy entails large market and encourages economics of scale in the manufacturing sector. the findings of the study support the results of Ogu, Aniebo and Elekwa (2016) which found negative effect of trade liberalization on manufacturing sector output in Nigeria. The result is not in support of the findings of Ilemona and Okwanya (2017) which show that trade openness has a positive and increasing effect on industrial output in Nigeria. Method of analysis could be the main reason behind the different results. Ilemona and Okwanya (2017) used VAR method and focused on the long run impact; while Ogu Aniebo and Elekwa (2016) used the ARDL approach and focused on the short run impact of trade openness on manufacturing sector output. The present study also found positive effect of trade openness on manufacturing sector out in Nigerian in the long run.

4.6 Post Estimation Tests
Table 4.6: Results of Model Diagnostic Tests

Test	Techniques	Statistic	Empirical value	P-Value	Remarks
Residual Normality	Jacque-Bera	Jacque-Bera	3.6447	0.1800	Accepted
Serial Correlation	Breusch-Godfrey	X^2	4.1973	0.1226	Accepted
Homoskedasticity	ARCH	X^2	0.1579	0.9241	Accepted
Model specification	Ramsey RESET	F-statistic	0.0742	0.929	Accepted

Source: E-view computer output

The results of the post estimation test are presented in Table 4.6. The results show that the estimated residuals from the model parameters are normally distributed. Further, there is no evidence from the serial correlation test to suspect serial correlation

among the error terms. The residuals variances over time are constant. This implies that the error terms are homoscedastic, the report of the Ramsey RESET test of model specification shows that the model employed for the analysis was correctly specified. That is, there is no misspecification or specification bias. The implication of the model diagnostic test is that the model was adequately specified, and the estimated error terms are independently and identically distributed (IID) with mean 0 and constant variance. Therefore, standard hypothesis testing techniques can be applied.

5 .SUMMARY AND CONCLUSION

The objective of the study was to examine the effect of Nigeria's external sector on manufacturing sector performance in Nigeria from 1981 to 2018. The study used ex-post quasi-experimental research to examine the effect of the external sector on the Nigerian manufacturing sector performance. The ARDL/Bound test cointegration approach developed by Pesaran et al. (2001) was adopted as the method of analysis. The ARDL/Bound test results proved that all the variables in the model are cointegrated. The estimate from the ARDL model revealed that the external sector variables of had insignificant effect on the manufacturing sector output in the long run.

From the results of the study, we can conclude that the external sector has significant impact on the Nigerian manufacturing sector performance. It therefore implies that growing the Nigerian manufacturing sector and industrialization of the Nigerian economy rest heavily on the performance of the external sector. Effort to develop the economy through industrialization strategy must address the instability in the external sector within the context of policy instrument in the hands of the economic managers. One issue which has been a source of challenge to the manufacturing sector is the level and instability in the value of the domestic currency. The Nigerian naira value is rather too low compared to the exchange rate of her trading partners. This was used as a strategy to stimulate expansion in the manufacturing sector through economics of scale in the large market. However, the Nigerian manufacturing sector has little or no linkage in the domestic economy. Most of the inputs are imported and this   is imposing high cost on the manufacturing sector so much so that the sector has lost its competitiveness. The value of the domestic currency does not have to be this low to stimulate industrialization in Nigerian economy. There are two sides of the market: the demand side is important; likewise, the supply is equally important. A level of exchange rate that reduces the cost of production in the manufacturing sector will do the magic. The abundance of labour, natural resources, and large domestic market are just good enough compliments to optimal currency value to spur manufacturing sector output growth and industrialization in Nigerian economy. As a policy guide preference in the allocation of foreign exchange, should be given to the manufacturing sector and industries that are negatively affected by the exchange rate level and instability as we adopt strategic trade openness to protect critical industries in the economy.

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