

The Impact of External Reserve on the Performance of Manufacturing Industry in Nigeria

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Abstract: This study investigates external reserve and performance of manufacturing industry in Nigeria spanning from 1981 to 2020. Data for the study were obtained from Central Bank of Nigeria statistical bulletin and world banks world development indicators 2021. The model of the study was subjected to unit root test using the augmented dickey fuller unit root approach. The augmented dickey fuller unit root result revealed a mixed order of integration. This implies that some of the variables were stationary at levels while other became stationary after first difference. Based on this, the auto-regressive distributive lag model was adopted to ascertain the both the short-run and long-run result as well as the speed of adjustment. The auto-regressive distributive lag bound test result reported existence of long-run relationship between the variables. Further result revealed that, exchange rate and share of manufacturing sector to gross domestic product indicate that exchange rate is positive to influence share of manufacturing sector to gross domestic product. Also, external reserve and share of manufacturing sector to gross domestic product revealed that external reserve has a negative but significant relationship with share of manufacturing sector to gross domestic product. Finally, foreign direct investment and share of manufacturing sector to gross domestic product showed a positive but insignificant between foreign direct investment and share of manufacturing sector to gross domestic product. In the long-run. The study recommended among others that government should adopt a blend of monetary and fiscal policy measures to grow the economy. This implication of this is that fiscal policy measures will help the government improve on her external reserve which can also be allocated to critical sectors of the economy like the manufacturing sector.

Keywords: Exchange Rate, Foreign Direct Investment, External Reserve, Manufacturing Sector Performance.

Introduction

Manufacturing sector plays a catalytic role in a modern economy and has many dynamic benefits crucial for economic transformation. Gozgor (2016) and Lawal (2016) stress that the manufacturing industry has, traditionally, been one of the key drivers in most national economies. Ehinomen and Oladipo (2012) and Alam (2003) concur and assert that very few if any cases, anywhere in economic history, where a country has achieved sustained and sustainable economic development, which has not been led by manufacturing. The manufacturing sector is an avenue for trade expansion and it is a vital source of innovation and competitiveness and it makes outsized contributions to exports and productivity growth. Even though the tertiary sector in most economies is currently dominant as a percentage of the economy and employment creation, most of these economies were built from a strong manufacturing base (SEDA, 2012).

Manufacturing sector, thus, provides a channel for stimulating the growth of other activities, such as tertiary services, and achieving specific outcomes, such as employment creation and economic empowerment. Manufacturing sector has the highest economic multipliers because of its value addition, linkages to the upstream production sectors of the economy (mining and agriculture) and the downstream service sectors (Ehinomen and Oladipo, 2012). The development of a viable manufacturing sector is often seen as the key to self-sustaining development through the export of primary products (Akanbi and Dutoit, 2010; Adetiloye and Oyerinde (2008).

Manufacturing sector is a very prominent and valuable industry and can contribute immensely to economic growth, job creation and export earnings. It can thus be said that the manufacturing sector is a wealth-producing or wealth-creating sector in the economy. However, it must be noted that for the manufacturing sector to bring positive outcomes, manufacturing firms should adopt strategies that make them competitive. For manufacturing firms to achieve a competitive standing, there must be an enabling environment that gives manufacturing firms a competitive edge both locally and globally (Aremu *et al.*, 2006; CBN, 2013).

A strong and healthy manufacturing sector requires a strong and well-functioning external sector. 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; Nugee (2002). In view of the foregoing, this study examines external sector and manufacturing sector performance in Nigeria.

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. The country has some of the richest 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. 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; The Economy Watch,2017). 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 and 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. Besides, 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.

Empirical studies (Akinde, 2014; Ogu, et al, 2016) have shown conflicting influence of the external sector on the manufacturing sector performance. While Otokoni, et al (2016); Ilemona and 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. Also, most of these studies considered only the influence of external sector variables such as exchange rate and FDI on manufacturing sector performance. This is the gap present study intends to fill as it incorporates the influence of exchange rate, FDI, external reserves on manufacturing sector in Nigeria.

To this end, this paper empirically investigated the impact of external reserve on the performance of manufacturing industry in Nigeria for the period 1981-2020.

Literature Reviewed

Theoretical Literature Reviewed

Monetary Theory of External Sector

The monetary theory of the external sector was proposed by Frankel (1976). 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.

The Neoclassical Growth Theory

The neoclassical growth theory was initiated by Solow and Swan (1957). The theory assumes that the elimination of the exchange rate volatility will lead to an increase in output and economic growth can be made using the neoclassical growth theory and its extension to situations of dynamic economies of scale. This analysis featured prominently in the European Commission report „One Market, One Money“ (1990). According to this theory, elimination of exchange risk reduces the systemic risk. This would have the effect of lowering the real interest rate. The reason is that in a less risky environment, investors would require a lower risk premium to make the same investment. In addition, when agents discount the future, they are willing to use a lower discount rate. Due to this, there will be an accumulation of capital consequently leading to an increase in industrial production and an increase in the growth rate of GDP. This implies that, output prices and capital costs are assumed to be determined only by the forces of demand and supply. If this assumption were relaxed, and interest rate becomes fixed, then, there is no reason to suggest that less exchange rate risk will have any significant impact on industrial output and growth.

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. For example, Enekwe *et al.* (2013) also examined the effect of exchange rates fluctuations on the Nigerian manufacturing sector over a period of 25 years. The study employed the use of descriptive statistics and multiple regressions to examine the impact of exchange rates in Nigeria. The results of the study showed that all the independent variables as stated above have significant and positive relationship with the dependent variable (MGDP). In like manner, Ayinde (2014) examined the impact of exchange rates fluctuations on the Nigerian manufacturing via the sector’s contribution to GDP. As variables, study used the exchange rate, inflation rates, labour force and lending rates to establish the relationship. The results revealed that exchange rate has negative and significant relationship with the manufacturing sector. It also found that inflation rate has a positive relationship with the manufacturing sector. 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.

Anowor *et al.* (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 favorable conditions for knowledge exchange, improve technical education base to attract the inflow of FDI and intensively support Research and Development. Similarly, Otokini, *et al.* (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. 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. Ugwu (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.

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 been vibrant enough to spur economic growth. Nwafor (2017) examined external reserve as a solution to economic growth and in Nigeria. Two hypotheses were tested with data spanning from 2004 to 2015 using Ordinary Least Squares (OLS) regression technique.

Findings however revealed that external reserve has no positive significant impact on economic growth in Nigeria within the period under review and that external reserves have no positive significant influence on exchange rate in Nigeria. Other findings deduced from data description revealed that foreign reserve of Nigeria has been declining marginally within the period under study and that it was occasioned by the 2007-2008 global financial crisis supported by the nonchalant attitude of the government towards accumulation of international reserves. It was recommended amongst all that in accumulating excessive foreign exchanges, the country should have proper management of reserves. Ubom *et al.* (2017) investigated economic implications of foreign reserves management on the performance of the Nigerian economy. This study aimed to establish relationships among economic performance indicators (capacity utilization rate, manufacturing output, growth rate of gross domestic product) and foreign reserves management variables (foreign reserves position, exchange rate, imports, exports). The ordinary least square multiple regression model was used to analyze the data and it helped discover inverse relationships that exist among exchange rate, imports, exports and capacity utilization rate in Nigeria. The analysis found that exchange rate exerts significant impact on manufacturing output in Nigeria, and that there is an inverse relationship among manufacturing output, foreign reserve position, imports and exports. Moreover, positive relationships exist between foreign reserve position and both capacity utilization rate and growth rate of gross domestic product.

Discoveries showed that if greater parts of Nigeria’s foreign reserves were channeled to the productive sectors of its economy, capacities of productive machines would be fully utilized, domestic industries would perform well, real value of manufacturing output would increase, the domestic market would have significant positive improvements, and the growth rate of gross domestic product would be improved. On these grounds, proposed recommendations encompassed that the Nigerian government should redirect foreign exchange earnings and reserves in the productive sectors of the economy. Oriji *et al.* (2019) estimated the impact of exchange rate (EXCH) movements on the manufacturing sector in Nigeria over the period 1981–2016. Time series data and ordinary least square (OLS) estimation technique were employed in this study to address the

specified objective. Specifically, the findings showed that EXCH, government capital expenditure (GCEXP), imports and FDI were positively related to MGDGP. Kpagih *et al.* (2022) examined the influence of Nigerian external sector environment on the performance of the Nigerian manufacturing sector between 1981 and 2019. Estimate of the ARDL model reveals that in the short run exchange rate variations has 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 concludes that the Nigerian external sector environment has significant effect on the performance of the Nigerian manufacturing sector from 1981-2020.

Research Gap

Most of the studies reviewed examined the relationship between the external sector and the manufacturing sector using disaggregated 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 *et al.* (2016), Orji *et al.* (2015). 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.

Methodology

Secondary data were obtained from Central Bank of Nigeria statistical bulletin and world banks world development indicators 2021. Share of manufacturing sector to gross domestic product (SMGDP) proxy the dependent variable “performance of manufacturing industry while exchange rate (EXR), external reserve (ETR), and foreign direct investment (FDI) as a proxy for “external reserve”. The study covered a period of 39 years (1981-2020).

Methodological Framework.

This study is anchored on the monetary theory of 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.

Model Specification

In line with monetary theory of external sectors and the modified linear model of Kpagih, Amadi and Nyeche, whose work was focused on external sector and manufacturing sector performance in Nigeria? The model is expressed in a mathematical form of the modified model is expressed as:

$$SMGDP = f(EXR, ETR, FDI) \tag{1}$$

$$SMGDP = a_0 + a_1EXR + a_2ETR + a_3FDI \tag{2}$$

The econometric form of the equation is written as:

$$SMGDP = a_0 + a_1EXR + a_2ETR + a_3FDI + U_t \tag{3}$$

$a_1 < 0; a_2 > 0; a_3 > 0;$

Where:

- SMGDP= Share of Manufacturing sector to Gross Domestic Product
- EXR = Exchange rate
- ETR = External reserves
- FDI = Foreign direct investment
- a_0 = constant
- a_1-a_3 = co-efficient of the explanatory variables
- u = error term

Result and Discussion

Unit Root Test on External Reserve and Performance of Manufacturing Sector to Gross Domestic Product Model Using the Augmented Dickey Fuller (ADF) unit root test is use to establish the stationarity of the time series data used in the study. The result in table 1 are shown below;

Table 1

Variable	Levels			First Difference			Order of integration
	ADF statistics	1% critical value	5% critical value	ADF statistics at First Difference	1% critical value	5% critical value	
LSMGDP	-0.213783	-4.211868	-3.529758	-4.340008	-4.219126	-3.533083	1(1)
LEXR	-1.567314	-4.211868	-3.529758	-5.979067	-4.219126	-3.533083	1(1)
LETR	-3.605550	-4.211868	-3.529758				1(0)
LFDI	-2.664818	-4.211868	-3.529758	-9.422808	-4.219126	-3.533083	1(1)

Source: Extracts from E-view 10. * Level of significance at 5%

This study employs the Augmented Dickey-Fuller (ADF) unit root tests to check the order of integration of the variables and the results are presented in Table 1. The results of Augmented Dickey-Fuller (ADF) test showed that the variables are integrated in different order or a combination of I (0) and I(1) series. The ADF result revealed that LETR is stationary at levels 1(0) while, LSMGDP, LEXR and LFDI are stationary after first differencing 1(1). This condition makes the Autoregressive Distributive Lag (ARDL) Bounds test approach to co-integration appropriate for investigating the long-run relationship among these variables.

Co-integration Test

Table 2: ARDL Bound Test

Test Statistics	Value	K
F-statistics	6.690892	4

Significance	I (0)	I(1)
10%	2.72	3.77
5%	3.23	4.35
2.5%	3.69	4.89
1%	4.29	5.61

Source: Authors computation from E-view 10 Output

From table 2, the bound test result indicates that there exist long run relationships amongst the variables as the F-statistic value of 6.690892 exceeds both the lower and upper bound critical values. Thus, we reject the null hypotheses of no long run relationship and accept its alternative.

Table 3: ARDL Long-run-run Result

Variable	Coefficient	Std. Error	t-statistics	Prob
EXR	1.233919	0.188300	6.552944	0.0000
LETR	-0.300609	0.367329	-0.818364	0.4203
LFDI	0.165924	0.272829	0.608162	0.5482

Source: Authors computation from E-view 10 Output

The Autoregressive Distributive Lag (ARDL) Long run result in table 3 shows that exchange rate (LEXR) is positive (1.233919) with share of manufacturing sector to gross domestic product (LSMGDP). This means that a unit increase in exchange rate will result to about 1.23 unit increase in the share of manufacturing sector to gross domestic product (LSMGDP). The p-value of 0.0000 showed that the exchange rate is statistically significant to impact on the share of manufacturing sector to gross domestic product (LSMGDP). This result negates economic theory, because it is expected that increase in exchange rate will lead to a reduction in the performance of manufacturing sector. Nevertheless, the result would be desirable to investors in the manufacturing sector. The implication of this result is that as the domestic exchange rate increase, investors in the manufacturing sector can still invest, break-even and make profit. This situation will equally help to

create job, increase their production process and lead to massive export of finished and semi-finished goods. The coefficient of the log of external reserve (LETR) showed a negative (-0.300609) relationship with the log of share of manufacturing sector to gross domestic product (LSMGDP). This means that a rise in the log of external reserve (LETR) will lead to 30% fall in the log of share of manufacturing sector to gross domestic product (LSMGDP).

The p-value of 0.4203 equally indicates that the log of eternal reserve (LETR) is insignificant to influence the log of share of manufacturing sector to gross domestic product (LSMGDP). This result also negates economic theory. It is expected that increase in eternal reserve will lead to increase in the share of manufacturing sector to gross domestic product (SMGDP). The implication of this result is that as the country’s external reserve increase, manufacturing industries performance would decline. This might be that most of the foreign currency with the country’s highest financial institution (CBN) is allocated to unproductive sectors leading to very high inflation rate. This scenario will hinder manufacturing industries to acquire cheap but quality raw materials for production making most of them to wind-up. Finally, the log of foreign direct investment (LFDI), reported a positive (0.165924) relationship with the share of manufacturing sector to gross domestic product (LSMGDP). This implies that, a unit increase in the log of foreign direct investment (LFDI), will lead to 17% increase in the log of the share of manufacturing sector to gross domestic product (LSMGDP). However, the p-value of 0.5482 indicates an insignificant relationship between the log of foreign direct investment (LFDI), and share of manufacturing sector to gross domestic product (LSMGDP). The means that expansion of countries investment abroad is insignificant to improve on the manufacturing sectors in the country.

Table 4: ARDL Short-run Result

Variable	Coefficient	Std. Error	t-statistics	Prob
D(LEXR)	-0.026153	0.066164	-0.395271	0.6957
D(LEXR(-1))	-0.118215	0.074467	-1.587484	0.1240
D(LETR)	-0.085941	0.031886	-2.695258	0.0015
D(LETR(-1))	0.028603	0.030418	0.940326	0.3554
D(LFDI)	-0.003360	0.038355	-0.087611	0.9308
D(LFDI(-1))	-0.038908	0.038707	-1.005188	0.3237
Ecm (-1)	-0.163562	0.029994	-5.453192	0.0000

Adj R² =0.427635, F-Stat = 4.949157 (0.000829), DW =1.985157

Source: Extracts from E-view 10. * Level of significance at 5%

Table 4 shows the ARDL short-run result of the model. It is indicated that the log of exchange rate (LEXR), is negative (-0.026153 & -0.118215) with the log of share of manufacturing sector to gross domestic product (LSMGDP) both in the current and previous year period. This implies that a unit increase in exchange rate will lead to 3% and 12% fall in the log of share of manufacturing sector to gross domestic product (LSMGDP) both in the current and previous year period. The p-value of 0.6957 and 0.1240 indicates that the log of exchange rate (LEXR) is statistically insignificant to influence log of share of manufacturing sector to gross domestic product (LSMGDP)

both in the current and previous year period. The implication of this result is that with a high exchange rate investors in the manufacturing industries will have limited funds to acquire raw materials for production purposes. This situation based on the p-value is insignificant to enhance the performance of the manufacturing industries in the country. The coefficient of the log of external reserve is (LETR) negative (-0.085941) with the log of share of manufacturing sector to gross domestic product (LSMGDP), in the current year period. This means that a unit increase in the log of external reserve (LETR) will result to 8% fall in the share of manufacturing sector to gross domestic product (LSMGDP).

The p-value of 0.0015 showed that the log of external reserve (LETR) is significant to influence the share of manufacturing sector to gross domestic product (LSMGDP). This result does not conform to apriori expectation. It is expected that increase in external reserve will lead to an increase in the share of manufacturing sector to gross domestic product. The economic implication of this result is that, the value of the Nigerian currency will be very low compared to other currency. This means that investors in Nigeria would need much naira to purchase products from other countries. Finally, the log of foreign direct investment (LFDI) reported a negative (-0.003360 & -0.038908) relationship with share of manufacturing sector to gross domestic product (SMGDP), in the current and previous year period. This means that a unit increase in the log of foreign direct investment (LFDI) will result to 0.003% and 0.4% fall in the share of manufacturing sector to gross domestic product (SMGDP). The p-value of 0.9308 and 0.3237 showed that the log of foreign direct investment (LFDI) is insignificant to influence share of manufacturing sector to gross domestic product (SMGDP) both in the current and previous year period. The ECM (-1) which is the error correction term has a coefficient estimate which is negative and also significant at 0.05 level of significant. It indicates the model to adjust toward long run equilibrium at a speed of 16% annually. This implies that the previous year's error can be corrected with an adjustment speed of 16% annually. The adjusted R-Square (R^2) value indicates that 43% of the total variation in the dependent variable (SMGDP) is explained by the independent variables (EXR, ETR & FDI). The F-statistics is statistically significant at 5% level of significance indicating the overall model is significant. The Durbin-Watson statistics of 1.985167 reveals the absence of serial correlation in the model.

Diagnostic Test

Table 5: Ramsey Reset Test, Serial Correlation LM Test and Homoscedasticity Test Results.

	F-Statistic	Prob.Value
Ramsey Reset Test	0.483643	0.4929
Breusch-Godfrey Serial Correlation LM Test	0.841839	0.4428
Breusch-Pagan-Godfrey Heteroskedasticity Test	1.020330	0.4527

Source: Author's Computation using E-view 10

From Table 5 above, the results of the diagnostic test shows that the linearity test using Ramsey reset test indicates that the f-statistic (0.483643) with computed p-value of 0.4929 which is greater

than 5 percent (0.05) critical value, hence the study reject the null hypothesis and conclude that the model is correctly specified. The result of the serial or autocorrelation test using Breusch-Godfrey Serial Correlation LM Test shows that the f-statistic is 0.841839, with a Chi-Square probability value is 0.4428. This indicates that the probability value of about 44 percent (0.4428) is greater than 5 percent (0.05) critical value; hence the study confirms no serial correlation in the model. The result of the heteroscedasticity test using Breusch-Pagan-Godfrey test shows that the f-statistic is 1.020330 with a Chi-Square probability value of 0.4527. The result suggests that there is no evidence of heteroskedasticity in the model since the probability Chi-square value is more than 5 percent ($P > 0.05$). So, residuals do have constant variance which is desirable in regression meaning that residuals are Homoscedastic.

Discussion of Findings

(i) Exchange Rate and Share of Manufacturing Sector to Gross Domestic Product

Submission from the Auto-regressive Distributive Lag (ARDL) on the relationship between exchange rate and manufacturing sector performance indicate that the coefficient of exchange rate (EXR) is negative (-0.026153 & -0.118215) with share of manufacturing sector to gross domestic product (SMGDP) both at the current and previous year period in the long-run. The p-value of 0.6957 and 0.1240 indicate a statistically insignificant relationship between exchange rate (EXR) and share of manufacturing sector to gross domestic product (SMGDP) in the short-run. However, in the long-run exchange rate (EXR) reported a positive (1.233919) relationship with share of manufacturing sector to gross domestic product (SMGDP). This means that a unit increase in exchange rate will lead to about 1.23 unit increases in share of manufacturing sector to gross domestic product (SMGDP). The p-value of 0.0000 showed that exchange rate (EXR) is statistically significant to influence share of manufacturing sector to gross domestic product (SMGDP). This result negates economic theory, because it is expected that increase in exchange rate will lead to a reduction in the performance of manufacturing sector. However, the result is desirable to investors in the manufacturing sector. The implication of this result is that as the domestic exchange rate increase, investors in the manufacturing sector can still invest, break-even and make profit. This situation will equally help the create job, increase their production process and involve in massive export of finished and semi-finished goods. This result agrees with earlier studies by Dogruel *et al.* (2010) and Polodoo *et al.* (2011).

(ii) External Reserve and Share of Manufacturing Sector to Gross Domestic Product

Inference drawn from the Auto-regressive Distributive Lag (ARDL) on the relationship between external reserve and manufacturing sector performance submit that the coefficient of external reserve (ETR) is negative (-0.085941) with share of manufacturing sector to gross domestic product (SMGDP) in the current year period of the short-run. This means that a unit increase in external reserve (ETR) will result to about 9% decline in share of manufacturing sector to gross domestic product (SMGDP). However, the p-value of 0.0015 showed that external reserve is statistically significant to influence share of manufacturing sector to gross domestic product (SMGDP). This result does not conform to apriori expectation. It is expected that increase in external reserve will lead to an increase in the share of manufacturing sector to gross domestic product. The

economic implication of this result is that, the value of the Nigerian currency will be very low compared to other currency. This means that investors in Nigeria would need much naira to purchase products from other countries. This result is in line with earlier study by Nwafor (2017) and Ubom *et al.* (2017).

(iii) Foreign Direct Investment and Share of Manufacturing Sector to Gross Domestic Product.

Suggestion pinched from the Auto-regressive Distributive Lag (ARDL) on the relationship between foreign direct investment and performance of manufacturing sector revealed that the coefficient of foreign direct investment (FDI) is positive (0.165924) with share of manufacturing sector to gross domestic product (SMGDP) in the long-run. This means that a unit increase in foreign direct investment (FDI) will result to about 17% increase in the share of manufacturing sector to gross domestic product (SMGDP). However, the p-value of 0.5482 showed that foreign direct investment (FDI) is statistically insignificant to influence share of manufacturing sector to gross domestic product (SMGDP). The means that expansion of countries investment abroad is insignificant to improve on the manufacturing sectors in the country. This result is in line with earlier study by Anowor *et al.* (2016) and Orji *et al.* (2015).

Conclusion

Based on the empirical analysis, the study concludes that external reserve exerts significant influence on the performance of manufacturing sector. Specifically, the regression estimates of exchange rate (EXR) and share of manufacturing sector to gross domestic product (SMGDP) indicate that exchange rate (EXR) is positive to influence share of manufacturing sector to gross domestic product (SMGDP). The hypotheses tested prove exchange rate (EXR) was statistically significant in the long-run. The economic implication of this findings is that, as the domestic exchange rate increase, investors in the manufacturing sector can still invest, break-even and make profit. This situation will equally help the create job, increase their production process and involve in massive export of finished and semi-finished goods. Also, It was revealed that external reserve (ETR) have a negative but significant relationship with share of manufacturing sector to gross domestic product (SMGDP) in the short-run and at the current year’s lag period. This implies that as the country’s external reserve increase, manufacturing industries performance would decline. This might be that most of the foreign currency with the country’s highest financial institution (CBN) is allocated to unproductive sectors leading to very high inflation rate. This scenario will hinder manufacturing industries to acquire cheap but quality raw materials for production making most of them to wind-up. Finally, the study concludes that foreign direct investment had a positive but insignificant on share of manufacturing sector to gross domestic product in the long-run.

Recommendations

Given the findings of the study, the following recommendations are suggested;

- i. Government should adopt a blend of monetary and fiscal policy measures to grow the economy. This implication of this is that fiscal policy measures will help the government improve on her external reserve which can also be allocated to critical sectors of the economy like the manufacturing sector.

ii. Government should also make cheap foreign currency available to investors in manufacturing sector to enable them compete favourably in both local and international market. Through this means the manufacturing industries help improve on other sectors of the economy such as the agricultural and service sectors of the economy.

iii. The manufacturing association of Nigeria (MAN) should devise strategies such as; mobilization of savings, acquisition of cheap raw materials and labour that would enable them break even and grow the economy.

References

1. Adetiloye, K A., & Oyerinde, D. T. (2008). *The impact of external reserves and investment on the wealth of Nigerians*. University of Ibadan Press.
2. Adubi, A. A. (1999). *Price, exchange rate volatility and Nigeria's agricultural trade flows: A dynamic analysis*. National Centre for Economic Management and Administration.
3. Aizenman, J. (2007). *International reserves management and the current account*. Current account and external financing. Elvier Publication.
4. Akanbi, O. A., & Dutoit, C. B. (2010). Macroeconomic modeling for the Nigerian economy: A growth poverty gap analysis. *Economic Modeling*. <http://doi:10.16/j.eiowmod.2010.08.015>.
5. Akpan, E.S. and Eweke, G.O. (2017) Foreign Direct Investment and Industrial Sector Performance: Assessing the Long-Run Implication on Economic Growth in Nigeria. *Journal of Mathematical Finance*, 7, 391-411
6. Alam, M. I. (2003). Manufactured exports, capital goods imports, and economic growth: experience of Mexico and Brazil. *International Economic Journal*, 17(4), 85-105.
7. Ammani, A. A. (2017) An assessment of the impact of exchange rate deregulation and structural adjustment programme on cotton production and utilization in Nigeria, *Trends in Agricultural Economics*, 5 (1), 1-12.
8. Anowor, O. F., Ukwani, N. O., Ibiam, F. O., & Ezekwem, O. S. (2013). Foreign direct investment and manufacturing sector growth in Nigeria. *International Journal of Advanced Scientific and Technical Research*, 5(3), 1-8.
9. Aremu, J. A., Ojubamise, O., & Essienekak, M. (2006) *Dictionary of trade terms: Understanding multilateral trade system and globalization*. Development Information Network.
10. Ayinde, T. O. (2014). The impact of exchange rate on manufacturing performance: New evidence from Nigeria. *Fountain Journal of Management and Social Sciences*, 1(2) 83-92.
11. Central Bank of Nigeria. (2013). Modeling the Real Sector of the Nigerian Economy. Abuja: CBN Research Department.
12. Ehinomen, C., & Oladipo, T. (2012). Exchange rate management and the manufacturing sector performance in the Nigerian economy. *Journal of Humanities and Social Science (JHSS)*, 5(5), 1-12.

13. Enekwe, C.I. (2013). Effects of exchange fluctuations on Nigeria's Manufacturing Sector. *European Journal of Business and Management*, 5(20), 1-5.
14. Frenkel, J. (1976). A monetary approach to the exchange rate: Doctrinal aspects and empirical evidence. *Scandinavian Journal of Economics*, 76(3), 200-224.
15. Gozgor, G. (2016) International trade and manufacturing employment in developed economies: An empirical study. *Regional and Sectoral Economic Studies*, 1(6), 1-11.
16. Ilemona, A Okwanya, I (2017). Linkage between Trade openness, Productivity and industrialisation in Nigeria: A Co-integration Test. *Research in the world Economy*, Sciedu Press, vol 8(2), pages 78-87.
17. Kpagih, L., Amadi, C. R., & Nyeche, E. (2022). External sector and the Nigerian manufacturing sector performance, 1981-2019. *Journal of Economics, Finance and Management Studies*, (JEFMS), 5(1), 78-90.
18. Lawal, E. O. (2016). Effect of exchange rate fluctuations on manufacturing sector output in Nigeria. *Quest Journals Journal of Research in Business and Management*, 4(10), 32-39.
19. Nugee, J. (2002). *Foreign exchange reserves management: Handbooks in central banking*. McGraw Hill.
20. Nwafor, M. C. (2017). External reserves: Panacea for economic growth in Nigeria. *European Journal of Business and Management*, 9(33), 90 – 112.
21. Ogu, C., Aniebo, C., & Paul, E. (2016). Does trade liberalisation hurt Nigeria's manufacturing sector? *International Journal of Economics and Finance*, 8(6), 78 – 89.
22. Orji, A., Ogbuabor, J E., Okeke, C & Anthony-Orji, O I. (2019). Another Other Side of the Coin: Exchange Rate Movements and the Manufacturing Sector in Nigeria. *Journal of Infrastructure Development* 10(1-2) 63-79.
23. Otokini, T., F. O. Olokoyo, L. U. Okoye and J. O. Ejemeyovwi. (2018). 'Impact of Exchange Rate Deregulation on Manufacturing Sector Performance in Nigeria.' *International Journal of Environment, Agriculture and Biotechnology (IJEAB)* 3 (3): 994-1001.
24. Simon-Oke, O. O. and S. E. Aribisala, (2010). 'Exchange Rate Deregulation and Industrial Performance: An Assessment.' *African Research Review, an International Multi-Disciplinary Journal* 4 (2): 236-51.
25. Ubom, A U, Essien, J M & Ubom, Uduak B. (2017). Economic Implication of Foreign Reserves Management on the Performance of the Nigerian Economy, 1995 to 2013. *Expert Journal of Finance*, Volume 5, pp.31-40.
26. Ugwu O, J. (2017). Foreign exchange rate dynamics and manufacturing firms' performance in Nigeria. *International Journal of Humanities and Social Science Invention*, 6(9), 9-14.