The International Journal of Business Management and Technology, Volume 2 Issue 3 May-June 2018
ISSN: 2581-3889

Research Article Open Access

Foreign Exchange Accessibility and Manufacturing Sector's Growth in Nigeria (1997-2016)

Dr. Akinmulegun Sunday O.
Department of Banking and Finance,
Adekunle Ajasin University, Akungba Akoko, Ondo State, Nigeria.

Abstract: *This paper examined the impact of foreign exchange accessibility on the growth of manufacturing sector in Nigeria. The study relied on secondary time series annual data and analyzed the collected data by using inferential statistics. The estimation techniques include Ordinary Least Square (OLS) method, Augmented Dickey-Fuller (ADF) Unit Root test, Johansen Co-integration test and Autoregressive Distributed Lags (ARDL) model. The study revealed that there was an existence of both short run and long run relationships among the variables of interest. The findings of the study revealed that the supply of foreign exchange and by implication, its accessibility is critical to the growth of the manufacturing sector considering the positive relationship of the lags of foreign exchange supply. Similarly, the amount of foreign exchange unutilised by the manufacturing sector (FXUM) was positively and significantly related to the growth of manufacturing sector. In the light of the forgoing findings, it was concluded that the time to time behaviours of foreign exchange supply by the Central Bank of Nigeria, forex utilization by the manufacturing sector and exchange rate all put together had a significant impact on the growth of Nigerian manufacturing sector. Consequently, it was recommended that government should ensure optimal and consistent supply of foreign exchange to the manufacturing sector as this has been found to have positive effect on the growth of the sector in this study. In addition, government should improve on her monitoring activities of the amount and distribution of foreign exchange allocations to the manufacturing sector of the economy in order to ensure that they are utilised for productive purposes only and reduce the incidence of diversion to unproductive and illegitimate purposes.*

Key Words: Foreign exchange, accessibility, *co-integration,* manufacturing sector.

I. INTRODUCTION

Foreign exchange is the mechanism that determines the value of one currency to another, facilitating the flow of goods and services across borders ("Invest Foreign Professionals", 2018). Thus, its importance cannot be overemphasised. Foreign exchange (Forex) facilitates the cross-border movement of goods and services connecting the global economy. The forex market is the most liquid and largest market in the world. According to the Bank of International Settlements Triennial Central Bank Survey, daily forex turnover is estimated at over US$5 trillion (S$6.5 trillion). Major market participants include central banks, sovereign wealth funds, global corporations, trading firms, investment managers, hedge funds and trading banks. The reasons for engaging in foreign exchange markets can vary in purpose and size, ranging from global trade and overseas investing to tourism and speculation. Companies that import or export goods and services are either making or receiving payments in currencies different from their own. This requires them to exchange one currency for another. Some companies will also use forex to protect overseas assets against changes in the exchange rate, a process known as hedging. Currencies are largely grouped into three categories: free floating, pegged and restricted. Free floating currency values are determined by market supply and demand. Pegged currencies are managed to keep the value consistent relative to another country's currency or a basket of currencies. The value and trading capabilities of restricted currencies are controlled by governments and/or central banks.

Before 1986, importers and exporters of non-oil commodities were required to get appropriate licenses from the Federal Ministry of Commerce before they could participate in the foreign exchange market. Generally, import procedures followed the international standard of opening of letters of credit (L/Cs) and subsequent confirmation by correspondent banks abroad. The use of Form 'M' was introduced in 1979 when the Comprehensive Import Supervision Scheme (CISS) was put in place to guard against sharp import practices. The authorization of foreign exchange disbursement was a

shared responsibility between the Federal Ministry of Finance and the CBN. The Federal Ministry of Finance had responsibility for public sector applications, while the Bank allocated foreign exchange in respect of private sector applications. Increased emphasis was placed on export promotion as a means of reducing pressure on the external sector. The Second-tier Foreign Exchange Market (SFEM) came into being on September 26, 1986 when the determination of the Naira exchange rate was made to reflect market forces. The modalities for the management of the Foreign Exchange Market have changed substantially since the introduction of SFEM, in line with the principles of the Structural Adjustment Programme (SAP) which emphasise the market-oriented approach to price determination. Apart from the institution of an appropriate mechanism for exchange rate determination, other measures increasingly applied in managing Nigeria's foreign exchange resources included demand management and supply side policies.

Despite the successive efforts that government had made to stabilize forex supply in Nigeria, there seem to be scarcity of forex in circulation which account for why the value of naira continues to depreciate against major convertible currencies, especially dollar. The problem of forex scarcity has also snowballed into the manufacturing sector with major manufacturing industry finding it difficult to access forex at official exchange rate. The forgoing problem has made many manufacturing investors to patronize parallel market for foreign exchange supply at exorbitant rate, hence, resulting in increase in the cost of production. It thus becomes imperative to investigate whether the current rate of forex supply to manufacturing sector has any relationship with the growth of the sector. Therefore, the research hypothesis for this study is that: H0: Foreign exchange accessibility does not have a significant effect on the growth of manufacturing sector in Nigeria.

II. LITERATURE REVIEW

Conceptual Review

Foreign Exchange and Foreign Exchange Market

Sunny (2017), defined Foreign exchange (Forex) as any currency other than the local currency which is used in settling international transactions.

Foreign Exchange Market on the other hand is a market where the buyers and sellers are involved in the sale and purchase of foreign currencies. It is a market where the currencies of different countries are bought and sold.]\

The foreign exchange market is a global online network where traders buy and sell currencies. It has no physical location and operates 24 hours a day, seven days a week. It sets the exchange rates for currencies with floating rates. This global market has two tiers. The first is the Interbank Market. It is where the biggest banks exchange currencies with each other. Even though it only has a few members, the trades are enormous. As a result, it dictates currency values. The second tier is the over-the-counter (OTC) market. That is where individuals trade. The OTC has become very popular since there are many companies that offer online trading platforms (Amadeo, 2018). The structure of the foreign exchange market constitutes central banks, commercial banks, brokers, exporters and importers, immigrants, investors, tourists ("Foreign Exchange Market", 2018). The foreign exchange market is the market in which participants are able to buy, sell, exchange and speculate on currencies. It is considered as the largest financial market in the world ("What is the 'Foreign Exchange Market", 2018)

How currency values are established depends upon whether they are determined solely in free markets, called freely floating, or determined by agreements between governments, called fixed or pegged.

CBN's New Policy Actions in the Foreign Exchange Market

In continuation of efforts to increase the availability of Foreign Exchange in order to ease the difficulties encountered by Nigerians in obtaining funds for Foreign Exchange transactions, the Central Bank of Nigeria (CBN), in 2017, made new policy aimed at providing direct additional funding to banks to meet the needs of Nigerians for Personal and Business Travel, Medical needs, and School fees, effective immediately. The CBN expects such retail transactions to be settled at a rate not exceeding 20 percent above the interbank market rate.

In order to maintain confidence in the FX market, the CBN immediately take the following steps:

- Give plan to meet all unfilled orders, while provision of FX to the manufacturing sector would remain the CBN's strong priority. Not only this, no more imposition of allocation/utilization rules on commercial banks, and more others to maintain efficiency in the market (Okorafor, 2017).

The manufacturing sector which is one of the real sectors of an economy, involves in the transformation of raw materials into finished goods. This sector,(made up of 13 sub-sectors according to the report of National Bureau of Statistics (NBS) in 2017, the food, beverage and tobacco, textile, apparel and footwear sub-sectors) contributed significantly to the Nigeria economy to the extent that it recorded a little less than 10 per cent contribution to the nation's Gross Domestic

Product. However, the sector had been badly hit by scarcity of foreign exchange as well as the harsh operating environment, which took its toll on the profit margins of companies operating in the sector (Ifeanyi, 2017).

Tony (2017), opined that though the sector might have experienced challenging times due to forex scarcity, the recent policies of government had started bringing back confidence in the economy.

III. THEORETICAL REVIEW

Purchasing Power Parity

The purchasing power parity theory states that the exchange rate between two countries" currencies equals the ratio of the countries price levels. The domestic purchasing power of a country's currency is reflected in the county's price level, the money price of a reference basket of goods and services. The purchasing power parity theory predicts that a fall in a currency's domestic purchasing power (as indicated by an increase in the domestic price level) will be associated with proportional currency depreciation in the foreign exchange market. In other words, purchasing power parity predicts that an increase in the currency's domestic purchasing power will be associated with a proportionate currency appreciation (Krugman 2009). Simply put, purchasing power parity (PPP) is the economic theory that price levels between countries should be equivalent to one another after exchange rate adjustment. This theory is based on the law of one price being the cost of identical good or service should be the same around the globe.

The Classical Theory of interest Rate

This theory according to the Classicists says that interest rate is determined by the intersection of investment –demand schedule and the saving – schedule. This schedule shows the relationship of investment and savings to the rate of interest. In the words of Ajie, (2000), the demand for capital represents investment which is influenced by the expected productivity of capital while the supply of capital represents savings which is influence by time preference and thrift. The equilibrium rate of interest is therefore determined by the intersection of the investment – demand schedule and the saving schedule. The classicalists argued that the rate of interest is inversely related to demand for capital and that it is a derived demand.

EMPIRICAL REVIEW

Empirical studies abound in the literature on exchange rate behaviour in Nigeria in relation with manufacturing sector as the nation depend majorly on it for the acquisition of both her industrial as well as her extractive goods. Nnanna (2015), researched on Exchange rate Fluctuation and Sustainable Economic growth in Nigeria and the essence of the research was to ascertained the relationship between real exchange rate and economic development applying those variables that adjudged to make up equilibrium exchange rate thereby defining how interrelated are Real Exchange Rate (RER), Gross Domestic Product (GDP), Export (EXP), Import (IMP), Foreign Exchange Reserve (FER) and Foreign Direct Investment (FXS) between 2004 and 2014. Analyzing the data using vector auto regression analysis (VAR) technique. Based on the prevailing situation in Nigerian economy within the period of study, the study found that RER fluctuation was significantly controlled by positive relation to real import as well as negatively relation to real GDP and foreign direct investment. In as much as the naira is been devalued by the CBN or forces of demand and supply in the foreign exchange market, the research shows that the tendency of increasing FXS would definitely pressurize for the appreciation of the naira, likewise would GDP growth.

Onoh (2014), analyzed the impact of exchange rate on the economic performance of Nigeria using the Ordinary Least Squares (OLS) method. The study covered the period of 13 years from year 2000 to year 2012.From his findings, exchange rate of naira to dollar has negative correlation with the GDP. Though the Nigeria GDP keeps increasing every year, the negative impact had not allowed the GDP to grow maximally as expected. The demand for dollar has remained so high, hence the increase in exchange rate and ultimately resulting to high cost of imported goods.

King-George (2013), set to find out the effect of exchange rate on the Nigeria manufacturing Sector. To evaluate his hypothesis, annual time series data on manufacturing gross domestic product, a proxy for economic growth, exchange rate, private foreign investment and manufacturing employment rate were collected from the year 1986 to 2010. A multiple linear regressions were adopted employing Ordinary Least Square (OLS) techniques. The results observed that exchange rate has no significant effect on economic growth of Nigeria. Also that dependent variable (Manufacturing Gross Domestic Product) can be controlled by exchange rate, private foreign investment and manufacturing employment rate.

Opaluwa, Umeh and Abu (2010) examined the impact of exchange rate fluctuations on the Nigerian manufacturing sector during a twenty (20) year period (1986 – 2005). The econometric tool of regression was employed for the analysis. The finding of the study revealed that fluctuations in the rate of exchange are not favourable to economic activities in

the manufacturing sector. It was discovered that the performance of the manufacturing sector was affected by factors such as high cost of foreign exchange for procuring raw materials and machineries required for production, availability of financial capital, technological under development, inadequate socio-economic infrastructure, shortage of technical manpower and foreign domination. Following the implementation of exchange rate devaluation, the manufacturing sector has not performed any better because of the influence of the earlier mentioned factors which affect the manufacturing sector performance. Ayodele (2014), analyzed the impact of exchange rate on the economic performance of Nigeria using the Ordinary Least Squares (OLS) method. The study covered the period of 13 years from year 2000 to year 2012. From his findings, exchange rate of naira to dollar has negative correlation with the GDP. Though the Nigeria GDP keeps increasing every year, the negative impact had not allowed the GDP to grow maximally as expected. This is as a result of the naira being cheaper as compared to dollar.

IV. METHODOLOGY

Sources of Data

This study relied on secondary mode of data collection and obtained time series annual data which ranges from 1997 to 2016. All the data were extracted from Central Bank of Nigeria (CBN) statistical bulletin 2016 edition. The RMGDP is the gross domestic product (GDP) of the manufacturing sector which represents the monetary value of the final goods and services produced in the sector for the period covered by this study. Using the Real Gross Domestic Product of manufacturing sector, amount of foreign exchange supply in Nigeria, total amount of foreign exchange utilized by the manufacturing sector and exchange rate as measuring parameters, the study examined the impact of foreign exchange accessibility on the growth of manufacturing sector in Nigeria. The methods of analysis or estimation techniques include Ordinary Least Square (OLS) method, Augmented Dickey-Fuller (ADF) Unit Root test, Johansen Co-integration test and Autoregressive Distributed Lags (ARDL) model

Model Specification

The model proxied Real Gross Domestic Product (RGDP) of manufacturing sector as the endogenous variable to measure the level of growth of the sector while amount of foreign exchange supply in Nigeria, total amount of foreign exchange utilized by the manufacturing sector and exchange rate represent the exogenous variables. The *a priori* expectations for the coefficients in the model are b1, b2 >0 and b3, < 0. Since the level of manufacturing sector growth is expected to functionally depend on the accessibility of foreign exchange, therefore, the implicit form of the model is specified as:

RMGDP = f(FXS, FXUM & EXCR)

The econometric equation thus becomes;

LogRMGDP = b0 + bLlogFXS+ b2 LogFXUM+ b3LogEXCR + Ut…… (i)

Where; LogRMGDP = log of the growth of manufacturing sector proxied by the Real Gross Domestic Product of the sector; LogFXS = log of the amount of foreign exchange supplied by the CBN; LogFXUM = log of amount of foreign exchange utilized by the manufacturing sector Nigeria; LogEXCR = average real exchange rate in Nigerian economy in the period under study

b0 = Intercept of relationship in the model(constant), b1 – b3 = coefficient of each exogenous variable, Ut = stochastic or error term

Table 1.0: Estimated Coefficients with OLS (Dependent Variable: LRMGDP)

Regressors	Coefficient	Std. Error	t-Statistic	Prob.
LFXS	0.178762	0.263519	0.678364	0.5072
LFXUM	0.969020	0.546287	1.773831	0.0951
LEXCR	-1.526615	0.420998	-3.626180	0.0023
C	-0.473562	2.003415	-0.236377	0.8161

R-squared	0.713874	Mean dependent var	7.955734
Adjusted R-squared	0.660225	S.D. dependent var	0.539230
S.E. of regression	0.314318	Akaike info criterion	0.700036
Sum squared resid	1.580738	Schwarz criterion	0.899183
Log likelihood	-3.000364	Hannan-Quinn criter.	0.738912
F-statistic	13.30646	Durbin-Watson stat	0.611155
Prob(F-statistic)	0.000129	Wald F-statistic	19.92618
Prob(Wald F-statistic)	0.000012		

Source: Author's computation

From the above multiple linear regression results, the regression equation depicting the linear relationship between the Real Gross Domestic Product of manufacturing sector (RMGDP), and forex supply(FXS), forex utilization by manufacturing sector(FXUM) and exchange rate (EXCR) can be stated as:
RMGDP = -0.473562 + 0.178762FXS + 0.969020FXUM – 1.526615EXCR

S.E: (2.003415) (0.263519) (0.546287) (0.420998)

T.ratios (-0.236377) (0.678364) (1.773831) (-3.626180)

P-values (0.8161) (0.5072) (0.0951) (0.0023)

From the estimated regression model, it can be deduced that both FXS and FXUM, in line with *a priori* expectation, maintain positive relationship with the Real Gross Domestic Product of manufacturing sector .Furthermore, since FXS and FXUM maintain positive relationships with RMGDP, it follows that a unit increase or decrease in both FXS and FXUM will resort to about 18% and 97% increase or decrease in the average or mean value of real Gross Domestic product of manufacturing sector respectively and vice versa. On the other hand, exchange rate (EXCR) maintains inverse relationship with RMGDP in conformity with *a priori* expectation, and thus means that 1% increase in EXCR will decrease average mean value of the manufacturing growth by about 152% and vice versa. The intercept coefficient of the model which is -0.473562 represents the value of the endogenous variable (AGDP), should the explanatory variables be held constant. The coefficient of determination (R^2) of 0.71 indicates that about 71% of the variation in the dependent variable, RMGDP, is accounted for by the independent variables, while the remaining 29% is accounted for by other extraneous factors not captured in the model. This figure increases the goodness of fit of the fitted regression model to the set of time series data. The R^2 as adjusted for the degree of freedom (n-k) associated with the sums of squares entering into the specified model is 0.66.

F-statistics value of 13.30646 shows that the model is significant and sufficiently captures the effect of foreign exchange on manufacturing sector's growth and this is corroborated further by the probability value of 0.000129. However, the OLS result is short run oriented in nature and because of the problem of non-stationarity of data, spurious regression is likely to occur. Consequently, the stationarity of data is established using the Augmented Dickey-Fuller (ADF) unit root test.

Stationary Test

Most economic time series are non-stationary time series and generally exhibits a stochastic trend. This study adopted Augmented Dickney Fuler to test the stationarity of the collected time series data. The decision rule for the ADF Unit

root test states that the ADF Test statistic value must be greater than the Mackinnon Critical Value @ 5% in absolute term for stationarity to be established at level and if otherwise, differencing occurs using the same decision rule.

Table 2.0

Augmented Dickey-Fuller test results

Unit root test at logarithmic levels

H0: b = 0; Ha: b > 0

Variables	Constant	Constant and trend	None	K	Order of integration
RMGDP	-1.238989	-4.522294*	-1.323123	4	I(0)
FXS	0.774100	1.619256	-1.707523	4	-
FXUM	-1.839768	-1.471586	-0.495581	4	-
FXUM	-1.501928	-2.225214	0.811204	4	-

Unit root test at first differences

Variables	Constant	Constant and trend	None	K	Order of integration
RMGDP	-3.339291*	-2.474280	-1.674552	4	I(0)
FXS	-0.688305	-3.810689*	-1.881305	3	I(1)
FXUM	-3.692496*	-2.811413	-3.434824*	4	I(1)
FXUM	-3.66809*	-5.195448*	-3.539923*	4	I(1)

Notes:*Denotes significance at the 5% level and the rejection of the null hypothesis of non-stationarity. Critical values obtained from ADF critical values are -3.040391, -3.759743 and -1.961409 for the first, second and third model respectively. The optimal lag lengths k were chosen according to Akaike's Information criteria.

The results indicate that each of the series is non-stationary when the variables are defined in levels with the exception for real GDP of manufacturing sector variable, where the tests indicate that it is I(0). But first differencing the series removes the non-stationary components in all other cases and the null hypothesis of non-stationarity is clearly rejected at 5% significance level suggesting that all other variables (quantity of forex supply, quantity of forex utilization by the manufacturing sector and exchange rate) are integrated of order one I(1). Thus, because of the different orders of integration of the variables, Auto-regressive Distributed Lags (ARDL) model was used to estimate the impact of foreign exchange accessibility on the growth of manufacturing sector in Nigeria.

Autoregressive Distribute6d Lag (ARDL) Model

The ARDL model proposed by Pesaran, Shin and Smith (2001) is adopted in this paper. The model is advantageous as it can be applied on a time series data irrespective the different orders of integration of the variables. In addition, a dynamic error correction model (ECM) can be derived from the model, which makes the estimation of both the short run dynamics and long run equilibrium possible simultaneously after a multivariate co-integration test. Also, the test is relatively more efficient in small sample data as the case is in this paper. Thus, the unrestricted error correction model (UECM) of ARDL model used to examine the long run and the short run relationship takes the following forms:

$\Delta \log RMGDP = \beta_0 + \beta_1 \log FXS_{t-1} + \beta_2 \log FXUM_{t-1} + \beta_3 EXCR_{t-1} + \Sigma \pi_i \Delta \log RMGDP_{t-1} + \Sigma \theta_i \Delta \log FXS_{t-1} + \Sigma \gamma_i \Delta \log FXUM_{t-1} + \Sigma \lambda_i \Delta EXCR_{t-1} + Ut$ ……(ii)

The variables are as earlier defined in equation (i). $\beta_1, \beta_2, \beta_3,$ refer to the long run coefficients or multipliers while $\pi_i, \theta_i, \gamma_i, \lambda_i,$ are the short run coefficients or multipliers. The null hypothesis of no co-integration H_0: $\beta_1 = \beta_2 = \beta_3 = 0$ and three alternative hypothesis H_1: $\beta_1 \neq \beta_2 \neq \beta_3 \neq 0$ implies co-integration among the variables in eq.(ii). The model in eq.(i) is estimated using Ordinary Least Square (OLS) to test for the existence of a long run relationship among the variables by conducting F-test for the joint significance of the coefficients of the lagged levels of variables i.e *H*0 as against *H*1. If the computed F-statistics is less than the critical value, then the null hypothesis of no co-integration is accepted. However, if the computed F-statistics is greater than the upper boundary critical value, then the null hypothesis of no co-integration is rejected. Once the cointegration is established, the next step is to estimate the ARDL long run model for logRMGDP. In the final stage we estimate the short run dynamic parameters by estimating an error correction model (ECM) associated with the long run estimates as follows:

$$\Delta logRMGDP = \mu + \Sigma \pi_i \Delta logRMGDP_{t-1} + \Sigma \theta_i \Delta logFXS_{t-1} + \Sigma \gamma_i \Delta logFXUM_{t-1} + \Sigma \lambda_i \Delta EXCR_{t-1} + \Psi ECM_{t-1} + Ut$$

Where $\pi_i, \theta_i, \gamma_i, \lambda_i,$ are short run dynamic coefficients to equilibrium and ΨECM_{t-1} is the coefficient that measure the speed of adjustment or convergence of ΔlogRMGDP to the equilibrium in case there is deviation; which must be negative and statistically significant for us to say that it is rightly signed.

Co-integration test

The co-integration test establishes whether a long run equilibrium relationship exist among the variables. Among other methods of testing for co-integration, Johansen method is adopted in this study. Thus, to establish co-integration, the likelihood ratio (trace statistic) must be greater than the tabulated Johansen co-integration trace test at 1% and 5% levels of significance. The co-integrating equation is chosen from the normalized co-integrating coefficient with the lowest log likelihood.

Table 3.0: Johansen Co-integration test results

r	n-r	Trace statistics	5% critical Value	1% critical value	Hypothesized No. CE(S)
0	4	91.40686	53.42	60.42	r = 0**
1	3	49.99266	34.79	40.84	r ≤ 1**
2	2	24.30725	19.99	21.73	r ≤ 2**
3	1	5.760382	9.13	12.73	r ≤ 3

Note: **indicates the rejection of null hypothesis of no co-integration at both 5% and 1% significance levels. Critical values are from the tabulated Johansen's Trace Test VECM2

Source: Author's computation

Considering the trace statistics, it indicates three co-integrating vectors or equations at both 5% and 1% significance level which implies that long run relationship exists among the variables. This translates to the rejection of null hypothesis of no existence of a bivariate co-integrating relationship between the growth of the manufacturing sector and each of the explanatory variables.

Table 4.0: Estimated short Run Coefficients with ARDL (1,4,3,3) (Dependent Variable: LRMGDP)

Regressors	Coefficient	Std. Error	t-Statistic	Prob.*
LRMGDP(-1)	-0.196619	0.283525	-0.693481	0.5139
LFXS	-0.173532	0.090059	-1.926876	0.1023
LFXS(-1)	0.321096	0.092098	3.486451	0.0130
LFXS(-2)	0.042147	0.124604	0.338246	0.7467
LFXS(-3)	0.167603	0.079051	2.120194	0.0783
LFXS(-4)	0.144568	0.068818	2.100747	0.0804
LFXUM	0.663753	0.191789	3.460848	0.0135
LFXUM(-1)	0.344103	0.266440	1.291483	0.2441
LFXUM(-2)	0.144377	0.157084	0.919111	0.3935
LFXUM(-3)	-0.134106	0.105280	-1.273797	0.2499
LEXCR	-0.354836	0.179499	-1.976819	0.0954
LEXCR(-1)	-0.926553	0.209055	-4.432109	0.0044
LEXCR(-2)	-0.616114	0.262235	-2.349468	0.0571
LEXCR(-3)	-0.187352	0.193266	-0.969398	0.3698
C	-1.518953	1.346027	-1.128472	0.3022
ECM(-1)	-0.451939	0.209881	1.094818	0.20643

R-squared	0.992181	Mean dependent var	8.163646
Adjusted R-squared	0.973937	S.D. dependent var	0.424810
S.E. of regression	0.068581	Akaike info criterion	-2.345798
Sum squared resid	0.028220	Schwarz criterion	-1.599710
Log likelihood	39.63088	Hannan-Quinn criter.	-2.183878
F-statistic	54.38456	Durbin-Watson stat	2.805914
Prob(F-statistic)	0.000039		

Source: Author' computation

Considering the short run dynamics estimates displayed in table 4.0, R^2 value of 99% shows a reasonable goodness of fit of the fitted data series in the model; this shows that the explanatory variables are responsible jointly for 99% variation in the endogenous variable. The probability value of 0.000039 is less than the critical value of 0.05 which confirms that the percentage of variation in the endogenous variable which is caused by the explanatory variables is not due to chance or error and that the explanatory variables are statistically significant to the estimated, as earlier indicated by the OLS result. The Durbin Watson value of 2.80 is greater than the benchmark of 2, and translates that the model is free of autocorrelation complicity. From the result of the analysis, lag 1 of the RMGDP is found to be negatively but insignificantly affecting the current value of real MGDP over the period of the study. For forex supply (FXS), all the lags are found to be positively related to the current value of RMGDP except its current value which negatively related to manufacturing sector growth. Moreover, while only the lag 1 and 4 are statistically significant while lag 2 and 3 are insignificant in their effect, and confirms same relationship with OLS result. The implication of the forgoing is that supply of foreign exchange is critical to the growth of the manufacturing sector considering the relationship of the lags of forex supply. The amount of forex unutilised by the manufacturing sector (FXUM) is positively and significantly related to the growth of manufacturing sector unlike its lag 1 and lag 2 which are found to be positively but insignificantly related to the growth of manufacturing sector at 0.05 significance level. The positive relationship between the foreign exchange utilization and manufacturing sector growth is in line with *a priori* expectation that the much of the forex purchased by the manufacturing sector are channeled to productive activities and this help the expansion of the sector. Both the current and all the lags of exchange rate are inversely related to the growth of manufacturing sector. The reason for the forgoing cannot be farfetched, increase in exchange rate is highly inimical to manufacturing sector as the sector spend more naira to buy few available forex and this decrease their productive capacity and increase their cost of production on the long run. The multiplier effect of the forgoing can be inflationary. Table 4.0 also shows that the coefficient of ECM(-) is 0.46 and statistically significant with expected sign. The negative value shows that there exist an

adjustment speed from short run disequilibrium to long run equilibrium. This indicates that a deviation from the equilibrium level in the current year will be corrected by 46% in year following; meaning that when the RMGDP is above or below its equilibrium level, the speed of its adjustment to converge to equilibrium is 46%. By this, there is an indication that it takes about 4 years to restore the long run equilibrium state on the growth of the manufacturing sector should the explanatory variables experience any shock.

V. CONCLUSION AND POLICY RECOMMENDATIONS

The study examined the impact of foreign exchange accessibility on the growth of manufacturing sector in Nigeria between 1997 and 2016. The paper employed Autoregressive Distributed Lags (ARDL) model and the Johansen Co-integration test and Error Correction Method. The co-integration test showed the existence of long run equilibrium relationship among the variables. The error correction model revealed that a deviation from the equilibrium level in the current year will be corrected by 46% in the subsequent year, meaning that when the growth of the manufacturing sector is above or below its equilibrium level, the speed of its adjustment to converge to equilibrium is 46%.

The high coefficient of multiple determinations (R^2) in the ARDL model of 71% and the corresponding p-value of 0.0000129 led to the overwhelming rejection of the null hypothesis; that foreign exchange accessibility does not have a significant effect on the growth of manufacturing sector in Nigeria. Thus, foreign exchange exacts positively on the growth of the manufacturing sector of the Nigerian economy. In addition, the F-statistics showed that the time to time behaviour of forex supply by the CBN, forex utilization by the manufacturing sector and exchange rate all put together cause a significant change in the growth of Nigerian manufacturing sector. In conclusion therefore, foreign exchange plays a crucial role in the growth of the manufacturing sector of the Nigerian economy.

Based on the findings of the study, the following recommendations were made, that:

- The government should ensure optimal and consistent supply of foreign exchange to the manufacturing sector as this has been found to have positive effect on the growth of the sector in this study;
- Government should improve on her monitoring activities of the amount and distribution of foreign exchange allocation to the manufacturing sector of the economy in order to ensure that they are utilised for manufacturing, productive purposes only and reduce the incidence of diversion to illegitimate purposes.

- Government should ensure stabilization of exchange rate through various intervention policies, and consider allocating forex to the manufacturing sector at concessional exchange rate based on the findings of this study that exchange rate was negatively related to the growth of manufacturing sector.

REFERENCES

[1.] Ajie, H. A. (2000). Fundamentals of Monetary Economics. Portharcourt:Peerafi Publications.

[2.] Amadeo, K. (2018). Foreign Exchange Market. Retrieved from https://www.thebalance.com/foreign-exchange-market-3306088

[3.] Anthony, W. (2016, November 21). How The CBN's Foreign Exchange Policies And The Foreign Exchange Act Of 1995 Plunged The Nigerian Economy Into Recession. Saharareporters. Retrieved from saharareporters.com/2016/11/21/how-cbns-foreign-exchange-policies-and-foreign-exchange-act- 1995-plunged-nigerian-economy.

[4.] Ayodele, T.D. (2014). An Empirical Evaluation of the Impact of Exchange Rate on the Nigeria Economy. *Journal of Economics and Sustainable Development*, Vol.5, No 8, pp. 25- 28.

[5.] Central Bank of Nigeria (2017). Foreign exchange Management before 1986. Retrieved from www.cbn.gov.ng

[6.] Economic Basics: Supply and Demand (n.d). Retrieved February 9th, 2018 from https://www.investopedia.com/university/economics/economics3.asp

[7.] Foreign Exchange Market. (n.d). Retrieved from https://businessjargons.com/foreign-exchange-market.html

[8.] Ifeanyi, o. (2017, November 26). Manufacturing sector contributes N4.6tn in nine months. Punch Newspaper. Retrieved from http://www.punchng.com

[9.] Invest Foreign Professionals. (2018).Retrieved from www.straitstimes.com/business/invest/what- is-foreign-exchange.

[10.] King-George, O.J (2013). The Effect of Exchange Rate Fluctuation on the Nigeria Manufacturing sector (1986-2010), pp. 20, 28- 29.

[11.] Krugman, P. (1994). "Defining and Measuring Productivity", The Age of diminishing Expectations.

[12.] National Bureau of Statisctics. (2017). Quarterly Report 2017. Nigeria: Author.

[13.] Nnanna O.J., (2015), "Bank Leading Behaviour and Output Growth" An Empirical Analysis with Implication on Monetary Policy in Nigeria" CBN Economic And Financial Review, Vol 40 No. 3 September.

[14.] Okorafor, I. (2017). The Central Bank of Nigeria's intervention in various segments of the Inter-Bank Foreign Exchange Market. Retrieved from https://www.proshareng.com/news.

[15.] Onoh, J.K. (2007), Dimensions of Nigeria Monetary Policies – Domestic and External Astra Meridian Publishers; Aba.

[16.] Opaluwa, D; Umeh, J.C; Abu A.A. (2010). "The Effect of Exchange Rate Fluctuation on the Nigerian Manufacturing Sector". *African Journal of Business Management* Vol.4 (14), pp. 2994- 2998. [

[17.] Oyetunji, A. (2018, January 30). .CBN sells $210m as naira closes at 364/dollar. Punch Newspaper. Retrieved from www.punchnigeria.org

[18.] Pesaran, M.H, Shin, Y., & Smith, R.J. (2001). Bound Testing Approaches to the Analysis of level \ Relationships. *Journal of Applied Economics*, 16(289-326).

[19.] Tony, A. (2017). CBN Releases New Policy Actions in the Foreign Exchange Market. Retrieved From https://www.proshareng.com/news/Forex/CBN-Releases-New-Policy-Actions-in-the- Foreign-Exchange-Market/33795 Domestic and External Astra Meridian Publishers Aba.

[20.] Philip, D. (2001). Analysis of Formal Lending to Agricultural Sector in Nigeria: 1978 – 1998
CBN Economic and Finacial Review, Vol 40, No3.

[21.] Sunny A. (2016). Definition of Foreign Exchange. Retrieved from www.businessdictionary.com/ definition/foreign-exchange-Forex-or-FX.html.

[22.] The market for foreign exchange (2018). Retrieved from www.economicsonline.co.uk/Competitive _markets/The_foreign_exchange_market.htmls.

[23.] What is the 'Foreign Exchange Market. (2018): retrieved April 7th from https://www.investopedia.com/terms/forex/f/foreign-exchange-markets.asp.