FOREIGN DIRECT INVESTMENT AND MANUFACTURING OUTPUT IN NIGERIA:
AN ARDL APPROACH

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ABSTRACT

Foreign direct investment in Nigeria is poised to expose the real sector to latest capital equipment purchase, human capital development, growth processes facilitation, technological advancement and eventual economic development; but inconsistency in policies, political instability and continual dependence on earnings from oil, hindered the sectorial growth, leading to decline in output and closure of some businesses. This necessitated the study to examine the impact of foreign direct investment on manufacturing output in Nigeria from 1986 to 2018. Foreign direct investment, trade openness, gross fixed capital formation and inflation on consumer prices were the independent variables while manufacturing output was the dependent variable. The Auto-Regressive Distributed Lag (ARDL) model was employed using time series data. The results of the analysis showed that foreign direct investment has a positive effect on the country’s manufacturing output. Inflation on consumer prices also has a positive effect, whereas trade openness and gross fixed capital formation were negative on manufacturing output. The conclusion derived from the results is a positive though insignificant relationship between foreign direct investment and manufacturing output in Nigeria while the reverse holds for trade openness and gross fixed capital formation. The recommendation is that the Nigerian government and policy formulators should embrace productivity enhancement of the manufacturing sector by implementing investor friendly policies geared towards attracting, encouraging,
FOREIGN DIRECT INVESTMENT AND MANUFACTURING OUTPUT IN NIGERIA

promoting and retaining foreign direct investment within a conducive and enabling environment, thereby making the sector more vibrant.

Keywords: Foreign Direct Investment, Manufacturing Output, Trade Openness, Inflation, Auto-Regressive Distributed Lag Model.

Introduction
The level of development in most countries of the world is brought about by the economic goals and needs of such countries (Nigerian Economic Summit 2018). As asserted by policy makers, foreign direct investment is essential to boost economic growth. The United Nations Conference on Trade and Development (UNCTAD), reported that the growth rates in foreign trade and GDP globally, cannot be compared to Foreign Direct Investment (FDI) flows as it has achieved higher growth rates (UNCTAD, 2015). A major source of acquiring funds for investments is FDI, hence the offering of incentives to stimulate it by most developing nations (United Nations, 2005). Production operations are expanded with FDI for its benefit of economies of scale, availability of larger capital, access to loan from international markets, access to trade information and so on, thereby leading to increased export in the host countries (Jaumatte, 2004). In addition, its ability to create new employment opportunities, improve technological development, managerial and marketing expertise and economic condition is an added impetus to the host country.

The impact of foreign direct investment on growth and development of a nation is expected to be positive as it is seen to enhance employment generation thereby improving income redistribution and poverty reduction. This calls for adequate planning especially in Nigeria where poverty rate in most areas is increasing at an alarming rate due to illiteracy, gender insensitivity, poor infrastructure and high population growth (Oladele 2015). In previous years, the Nigerian government granted tax incentives to foreign investors and provided an enabling environment, with the notion of improvement in the economic conditions of the nation, but the result had not been sufficiently encouraging. Skills acquisition in terms of technical, entrepreneurial and managerial are far below expectations from foreign direct investment in Nigeria (Agbarakwe 2019). Recently however, the influence of foreign direct investment through external resources on the role of globalization in a Nigeria is huge.

Increase in manufacturing sectors’ output as a result of technological transfer, improvement in human capital skills (managerial and marketing) to domestic industries, and eventual enhancement of productivity and economic growth to a larger part of the nation; is brought about by foreign direct investment inflows. (Chenery & Strout 1966,Afolabi, Lasehide, Oluwafemi, Atolage & Oluwafemi 2019).The manufacturing sector is poised to providing dynamic benefits essential for the transformation of the economy resulting in import substitution, foreign exchange earnings creation, expansion of export, growth of investment, increasing consumption, employment rate and per capital income in a dynamic way (Ayanwale 2007;Agbarakwe 2019). However, production inputs of FDI has been traced to unanticipated increase in volume of import thereby negatively impacting the economy and leading to profits been transferred abroad as a result of trade deficit and decline in the balance of payments of the host country (Todaro & Smith, 2015).
The impact of foreign direct investment on the manufacturing sectors output in Nigeria has been of interest to economist and policy makers for a long time. Its effects on investment level (foreign flow of capital) and the availability of credit in the nation cannot be over emphasized. The main motivation of this study is to assess the impact of foreign direct investment on manufacturing output in Nigeria and, in particular, whether increasing foreign direct investment have positive effect on the output of the manufacturing sector in the long run. Realization of the objective of the study is aided by testing the null hypothesis (H₀): Foreign direct investment has no significant effect on manufacturing output. There are empirical evidence in the literature about foreign direct investment in developed and developing countries (Todaro & Smith, 2015, Jaumatte, 2004 among others). Similarly, there are evidences from Nigeria (Agbarakwe 2019, Afolabi, Lasehide, Oluwafemi, Atolage & Oluwafemi 2019, Oladele 2015, Orji, Anthony & Okafor 2015, Osisanwo2013, Anowor Ukweni & Ezekwen 2013 among others).

Of these studies, many authors find multiplicative effects of foreign direct investment on manufacturing output with empirical studies showing both positive and negative effects and hence this study makes an attempt at filling the gap in the literature on manufacturing output using a wider scope of 1986 – 2018. This is pivotal to the study because the Nigerian economy has recently been experiencing a significant down turns in the manufacturing sector. In addition, the COVID ‘19 pandemic,(where all economic activities in the country and indeed the world, was shut down for more than six months); and the call for enabling environment by the manufacturing sector, gave the impetus to find out if the foreign direct investment policy implemented by the government have been capable of addressing manufacturing sectors output. This is because the manufacturing sectors’ output is germane to generation of employment and making informed investment decisions, and invariably leading to growth of the Nigerian economy. The main question in this respect is to determine the effect of foreign direct investment on output of the manufacturing sector in Nigeria over the period of 1986-2018. Our main results showed that foreign direct investment had a positive effect on the country’s manufacturing sector output, which confirms the theoretical knowledge.

Literature Review
Conceptual Review
According to Denisa (2010), the direct investment into a country’s production or business by another country in the form of outright purchase or expanding existing business operations is referred to as foreign direct investment. Mergers and acquisitions, building new facilities, reinvesting profits earned from overseas operations and intra-company loans are the forms of foreign direct investments (Wikipedia, 2020). FDI is therefore defined as the net inflows of investment (inflow minus outflow) to acquire a lasting management interest (10% or more of voting stock) in an enterprise operating in an economy other than that of the investor (World Bank, 2012). According to Alfaro et al., (2012) the types of FDI are Horizontal FDI, Platform FDI and Vertical FDI. Horizontal FDI is where a firm duplicates its home country based activities at the same value chain stage in a host country through FDI; Platform FDI is a FDI from a source country into a destination to a third country while Vertical FDI is where a firm through FDI moves upstream or downstream in different value chains (stage by stage) fashion
in a host country. International trade is reduced by horizontal FDI while platform and vertical FDI stimulates international trade.

The strategy of a stable political and economic environment is pivotal for countries interested in attracting FDI (Andersen & Babula 2008). According to Martins (2002), the forms of foreign capital flows were; aids, debts and foreign direct investment. Of these, FDI aids industrialization, enhances foreign expertise, adds to productive capital, promotes exports, brand names, market linkages, and employment. Idoko & Taiga (2018) opined that Foreign Direct Investment is one of the ways nations experiences international exchange of capital, labour and productivity. From the viewpoint of opportunity cost with other forms of inflows in a country, foreign direct investment is crucial for its developmental role of accelerating globalization, although with basic repercussions on the economy of the host country by affecting manufacturing prices and culture in the country.

**Theoretical Review**

This study employs the Augmented Solow and the Endogenous growth theories. Since technological progress comes to bear as a result of economic growth, the effect of such growth on labor, capital and technological change can be estimated separately, as stated by the Augmented Solow theory (1956). Due to low incomes, accumulation of physical capital stock through investment, for a developing country like Nigeria, is below average. The assumption of endogenous growth theory by Romer (1987) and Lucas (1988) is that technological improvements enhances further advancement in the economy, and positive spillover effects from investment in capital, makes diminishing return to scale nonexistent in the production function as a result of learning curve. With respect to the Solow model, capital accumulation and technological improvement is seen as an important factor which drives growth in the economy, and hence the link in this study of the Augmented Solow and Endogenous growth theories to the Keynesian IS-LM framework.

According to the Keynesian theory, inflation triggers the rise in demand and/or increase in cost of a product (Jhingan, 2010). The manufacturing sector’s output is poised to be negatively affected by the rate of inflation. Demand-pull inflation is a situation in an economy, where aggregate demand persistently exceeds aggregate supply at full employment. However, the cost-push inflation theory by the Keynesians, account for the supply side factors for inflation. Lucas (1972) propounded the rational expectation approach where anticipation of policy adjustments with its expectations on the agents of the economy, might lead to a failure in the pre-announced policy. Export is increased and import reduced as a result of devaluation in Keynesian absorption approach in spite of trade openness, thereby positively affecting domestic consumption and the national income, enhancing manufacturing output and ultimately leading to economic growth of the country.

**Empirical Review**

Agbarakwe (2019) empirically examined the effect of foreign direct investment and manufacturing output in Nigeria using the VECM model on the selected macroeconomic variables such as foreign direct Investment (FDI), interest rate (INT) and export (EXPT). The result obtained indicates that Foreign Direct Investment has a positive but poor effect and
contribution on the manufacturing sector output growth. The granger causality test established a bidirectional causality running from manufacturing output to foreign direct investment in Nigeria. Ekine & Nnadi (2018) examined the inflows of foreign direct investment in selected sectors and economic growth in Nigeria from 1980-2015. A growth model was estimated via the co-integrated and ECM techniques to establish the relationship between the inflow of FDI in manufacturing and telecommunication sectors and economic growth (GDP). The long run regression results depicted by the ECM reveal that there is a positive and significant relationship between foreign direct investment in telecommunication sector and economic growth. Also, foreign direct investment in manufacturing sector and economic growth were positively related.

Sectoral composition of foreign direct investment on economic growth was investigated by Ali & Ashger (2016) using panel data of five countries namely China, Pakistan, India, Bangladesh and Sri Lanka over the time of 2000 - 2015. The results showed that magnitude of FDI only in agriculture and manufacturing sectors has significant positive impact on economic growth, with the largest potential in increasing economic conditions of countries in the manufacturing sector. Azeroual (2016) studied the extent of importance of foreign direct investments’ impact on productivity growth in the Moroccan manufacturing sector using investment from France and Spain on the Total Factor Productivity (TFP) as it relates to the manufacturing industries sector in Morocco. Using Generalized Method of Moments, (GMM System) in dynamic panels for a subset of 22 branches of this sector between 1985 and 2012, the result revealed that the TFP is differently impacted in France and Spain. A negative and statistically significant impact was obtained in France while it is positive in Spain as corroborated by Ayawale (2007); Moussa, Amadu, Idrissa & Abdou (2019) among others. The literatures reviewed, are in contrast and this tend to inconclusiveness of the results. With focus on the manufacturing sector output, the variables of interest for foreign direct investment were individually considered and where such researches have considered an aggregation of these variables, some did not take into consideration, all the variables of interest. This study will add to the scanty literature using these independent variables (foreign direct investment, trade openness, gross fixed capital formation and inflation consumer prices) to analyze the effects, on manufacturing output in Nigeria.

Methodology
The research design used to analyze the relationship between foreign direct investment and manufacturing output in Nigeria is the ex-post facto empirical research design.

Theoretical Framework and Model Specification
This research work is anchored on Keynesian IS-LM framework with link to Augmented Solow growth model and the endogenous growth theory. Human capital investment is propelled by capital accumulation drive for economic growth as affirmed by the Augmented Solow growth model. However, to acquire capital, reasonable decisions are to be made as regards its quantum, since it influences the form of capital (domestic or foreign capital) that is existent in an economy. The content of the liquidity and prize puzzle stipulate that interest rate reduction will attract inflation and investment level. The pattern of the endogenous growth model is likened to the augmented Solow growth model. Here, capital accumulation
is an important criterion for growth in the economy even though technological progress is emphasized more. This research adapted the estimated model of Agbarakwe (2019). Interest rate and export were exchanged for trade openness, gross fixed capital formation and inflation rate as indicators of trade. For the purpose of this research, the functional relationship between dependent and independent variable is specified as follows:

\[
MFGQ = f (FDI, TOP, GFCF, INFCP) \quad (1)
\]

The above equation can be transformed into an econometric model in a form as follows:

\[
MFGQ = \beta_0 + \beta_1 FDI + \beta_2 TOP + \beta_3 GFCF + \beta_4 INFCP + \mu \quad (2)
\]

Where, MFGQ is Manufacturing output; FDI is Foreign Direct Investment; GFCF is Gross fixed capital formation; TOP is Trade openness; INFCP is Inflation consumer prices; \(\mu\) is stochastic variable or error term; \(\beta_0\) is constant term; \(\beta_1, \beta_2, \beta_3, \) and \(\beta_4\) are parameters for foreign direct investment, trade openness, gross fixed capital formation and inflation consumer prices respectively. The likelihood of multi-collinearity is possible between the manufacturing output and one of the variables. Finch, Bolin and Kelly (2014) postulated the use of centered values and this was adopted in this research work.

**Method of Data Analysis**

Stochastic properties of the data in form of descriptive statistics and unit root test were performed. The stationarity or non-stationarity of the series is necessitated by the Unit root test. (Mahadeva& Robinson, 2014). Augmented Dickey Fuller (ADF) test on each of the independent variables using the null hypothesis with intercept and trend were carried out to analyze the existence of stationarity or otherwise. Since the stationarity result reveals cointegration at level I(0) and first order difference I(1), the Autoregressive Distributive Lags (ARDL) of Pesaran, Shin, & Smith, (2001) is employed to estimate and assess the parameters and effects of the model; and apply the Wald bounds testing approach (F statistic), restricting the long-run estimated coefficients of lagged level (lag two) of each of the variables to be equal to zero, that is, (Ho; \(\beta_0 = \beta_1 = \beta_2 = \beta_3 = \beta_4 = 0\)) for equation (2)

**Data Description and Sources**

Secondary time series data on four variables were utilized on manufacturing output indicators. The independent variables include foreign direct investment (FDI), trade openness (TOP), gross fixed capital formation (GFCF) and inflation consumer prices (INFCP); while the dependent variable is manufacturing output (MFGQ). The period 1986 to 2018 for which data are available was covered, as major economic trade cycles occurred during this period. Central Bank of Nigeria Statistical Bulletin (2018) and the World Development Indicators (WDI) were sources of the data, which was used on E-views 9 econometric tool.

**Results and Discussion**

**Preliminary Analysis**

Figure 1 present the line and symbolic basic graph of the variables. MFGQ has its lowest point in 2010 while the highest was in 1988. FDI and GFCF were relatively stable in the period. INFCP had a sharp increase from 1992 to 1995 with the highest in 1995, but dropped
afterwards to the lowest in 2007. TOP had been relatively stable for the period of study (1986 – 2018).

Figure 1: Line and symbol basic graph
Source: Author’s computation 2020

Descriptive Statistics
Summary statistics (mean, median, maximum, minimum, standard deviation, skewness, kurtosis and Jarque-Bera) for foreign direct investment and manufacturing output in the model for the period of 1986 – 2018 are reported in table 1. In the table, INFCP’s standard deviation is relatively higher compared to other variables, revealing that inflation consumer prices is more volatile and unpredictable. Positive skewed values to the right, was observed for MFGQ, FDI and INFCP variables, while, TOP and GFCF are negatively skewed to the left. Kurtosis statistics of FDI and INFCP is greater than 3 indicating that it is highly leptokurtic, whereas, the distribution of MFGQ, TOP and GFCF are highly platykurtic. Jarque-Bera statistics and P-values presented that MFGQ, TOP and GFCF are normally distributed while the null hypothesis was rejected for FDI and INFCP variables.

Table 1: Descriptive Statistics of the variables

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Median</th>
<th>Max.</th>
<th>Min.</th>
<th>Std. Dev.</th>
<th>Skewness</th>
<th>Kurtosis</th>
<th>Jarque-Bera</th>
<th>Observations</th>
</tr>
</thead>
<tbody>
<tr>
<td>MFGQ</td>
<td>13.570</td>
<td>12.061</td>
<td>21.019</td>
<td>6.553</td>
<td>5.034</td>
<td>0.158</td>
<td>1.385</td>
<td>3.725</td>
<td>33</td>
</tr>
<tr>
<td>FDI</td>
<td>1.751</td>
<td>1.539</td>
<td>5.791</td>
<td>0.352</td>
<td>1.237</td>
<td>1.705</td>
<td>5.746</td>
<td>26.358</td>
<td>33</td>
</tr>
<tr>
<td>TOP</td>
<td>35.274</td>
<td>36.058</td>
<td>53.278</td>
<td>9.136</td>
<td>10.467</td>
<td>-0.435</td>
<td>2.849</td>
<td>1.074</td>
<td>33</td>
</tr>
<tr>
<td>GFCF</td>
<td>3.332</td>
<td>3.345</td>
<td>4.006</td>
<td>2.651</td>
<td>0.463</td>
<td>-0.149</td>
<td>1.587</td>
<td>2.867</td>
<td>33</td>
</tr>
</tbody>
</table>

Source: Author’s computation 2020
Unit Root Tests
A mixture of stationary I(0) and non-stationary I(1) series is presented in table 2 as the summary result of the unit root test. This implies a need for long-run relationship among the variables of which ARDL model can capture.

Table 2: Summary and Decision for Unit Root Test

<table>
<thead>
<tr>
<th>Variables</th>
<th>ADF Test Statistics (At Levels)</th>
<th>Critical Values @ 5%</th>
<th>ADF Test Statistics (At 1st Diff.)</th>
<th>Critical Values @ 5%</th>
<th>Order of Integration</th>
</tr>
</thead>
<tbody>
<tr>
<td>MFGQ</td>
<td>-1.2452</td>
<td>-3.5577</td>
<td>-6.6842</td>
<td>-3.5629</td>
<td>I(1)</td>
</tr>
<tr>
<td>FDI</td>
<td>-4.2677</td>
<td>-3.5577</td>
<td>-7.2151</td>
<td>-3.5628</td>
<td>I(0)</td>
</tr>
<tr>
<td>TOP</td>
<td>-3.332</td>
<td>-3.5578</td>
<td>-7.0099</td>
<td>-3.5629</td>
<td>I(1)</td>
</tr>
<tr>
<td>GFCF</td>
<td>-1.7710</td>
<td>-3.5577</td>
<td>-4.9808</td>
<td>-3.5629</td>
<td>I(1)</td>
</tr>
<tr>
<td>INFCP</td>
<td>-2.9834</td>
<td>-3.6032</td>
<td>-6.1602</td>
<td>-3.622</td>
<td>I(1)</td>
</tr>
</tbody>
</table>

Note - The decision is made on trend and intercept. Significant variable at level is I(0) while at first difference are I(1).
Source: Authors computation 2020

VAR Lag Order Selection Criteria
The optimal lag length of the variables included in the ARDL model with a critical band of 5% significant level, was selected based on the LR, FPE, AIC, SC and HQ, indicated an optimal lag length of two (2) as seen in table 3.

Table 3: VAR Lag Order Selection Criteria

<table>
<thead>
<tr>
<th>Lag</th>
<th>LogL</th>
<th>LR</th>
<th>FPE</th>
<th>AIC</th>
<th>SC</th>
<th>HQ</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>-361.3764</td>
<td>NA</td>
<td>12681.64</td>
<td>23.63718</td>
<td>23.86847</td>
<td>23.71258</td>
</tr>
<tr>
<td>1</td>
<td>-278.2798</td>
<td>134.0266</td>
<td>306.2382</td>
<td>19.88902</td>
<td>21.27675</td>
<td>20.34139</td>
</tr>
<tr>
<td>2</td>
<td>-227.4092</td>
<td>65.63949*</td>
<td>66.14605*</td>
<td>18.21995*</td>
<td>20.76412*</td>
<td>19.04929*</td>
</tr>
</tbody>
</table>

*Indicate lag order selected by the criterion (each at 5% level). LR = Likelihood Ratio test; FPE = Final Prediction Error; AIC = Akaike Information Criterion; SC = Schwarz Information Criterion; HQ = Hannan–Quinn Information Criterion
Source: Authors computation 2020

Stability Test
The Recursive CUSUM test results in figure 2 indicated no break in the regression coefficients and the departure of the parameters from the constancy were within the straight line that represents critical band at 5% significant level.
The Recursive CUSUM of squares results in figure 3 indicated that there is neither break in the regression coefficients nor departure of the parameters from the constancy on the straight line that represents critical band at 5% significant level.

**Bound Test**
Long-run trend between dependent variable (MFGQ) and the independent variables in the model (FDI, TOP, GFCF and INFCP), was arrived at by a co-integration analysis, using ARDL
bounds test, where null hypothesis of no co-integration ($H_0: \beta_0 = \beta_1 = \beta_2 = \beta_3 = \beta_4 = 0$) is tested. Table 4 reveals that the Wald F-statistic of 6.6997 is above both the upper and lower critical bounds of 2.86 and 4.01 at 5% significant level, implying rejection of the null hypothesis and affirming a long-run relationship among the variables for the period as established by Pesaran et al. (2001).

Table 4: ARDL Bound Test for Co-integration Analysis

<table>
<thead>
<tr>
<th>Foreign Direct Investment</th>
<th>Wald F-statistic: 6.699759; $K = 4$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dependent variable</td>
<td>Lower bound</td>
</tr>
<tr>
<td></td>
<td>Upper bound</td>
</tr>
<tr>
<td>F-statistic</td>
<td>I(0)</td>
</tr>
<tr>
<td>Bounds level</td>
<td>I(1)</td>
</tr>
<tr>
<td>10% critical bounds value</td>
<td>2.45</td>
</tr>
<tr>
<td>5% critical bounds value</td>
<td>2.86</td>
</tr>
<tr>
<td>2.5% critical bounds value</td>
<td>3.25</td>
</tr>
<tr>
<td>1% critical bounds value</td>
<td>3.74</td>
</tr>
</tbody>
</table>

Source: Author’s computation 2020

Table 5: Variance Inflation Factors

The result of the variance inflation factors for each of the variable are stated in table 5. Using the centered VIF, it implies that there is absence of severe multi-collinearity between the variables since all the values are less than ten (10). These establish the non-linear relationship of the independent variables.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient Variance</th>
<th>Uncentered VIF</th>
<th>Centered VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>FDI</td>
<td>0.065721</td>
<td>3.996139</td>
<td>1.302641</td>
</tr>
<tr>
<td>TOP</td>
<td>0.000751</td>
<td>13.55706</td>
<td>1.066611</td>
</tr>
<tr>
<td>GFCF</td>
<td>0.436789</td>
<td>65.98039</td>
<td>1.212523</td>
</tr>
<tr>
<td>INFCP</td>
<td>0.000347</td>
<td>3.344092</td>
<td>1.500756</td>
</tr>
<tr>
<td>C</td>
<td>5.848095</td>
<td>78.12090</td>
<td>NA</td>
</tr>
</tbody>
</table>

Source: Author’s computation 2020

Long Run Analysis

Table 6 displays the long run impact of MFGQ. It showed that FDI reduces/increases the impact of the MFGQ in Nigeria. The coefficient of FDI is positive but not statistically significant, which implies one percentage increase in FDI increases MFGQ by 1.72 percent and percentage decrease in FDI decreases MFGQ in Nigeria. The coefficients of TOP and GCFC showed a negative relationship with MFGQ but also statistically insignificant. This implies that one percent increase in trade openness and gross fixed capital formation significantly
decreases manufacturing capacity utilization by 0.21 and 7.16 percent respectively. INFCP coefficient showed a positive relationship with MCU but statistically insignificant.

Table 6: Long Run Coefficient of ARDL (2, 0, 1, 1, 2)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>FDI</td>
<td>1.720649</td>
<td>2.89695</td>
<td>0.593952</td>
<td>0.5592</td>
</tr>
<tr>
<td>TOP</td>
<td>-0.210215</td>
<td>0.268384</td>
<td>-0.78326</td>
<td>0.4427</td>
</tr>
<tr>
<td>GFCF</td>
<td>-7.16421</td>
<td>18.080464</td>
<td>-0.39624</td>
<td>0.6961</td>
</tr>
<tr>
<td>INFCP</td>
<td>0.626913</td>
<td>0.596669</td>
<td>1.050687</td>
<td>0.3059</td>
</tr>
<tr>
<td>C</td>
<td>26.024171</td>
<td>47.504187</td>
<td>0.547829</td>
<td>0.5899</td>
</tr>
</tbody>
</table>

Source: Author’s computation 2020

Discussion of Findings

The results of each of the variables reviewed in this work are at variant. Whereas a positive interaction existed between foreign direct investment and inflation on manufacturing output, the contrary nexus was obtained for trade openness and gross fixed capital formation. Conformity with the Augmented Solow growth and Endogenous growth theories predictions on foreign direct investment was established, as the foreign direct investment value, impacted positively on manufacturing output. The implication of this is that increase in foreign direct investment is desirable, but its synchronization with other economic agents in Nigeria, in order to improve manufacturing output and invariably, the growth of the economy, is essential. This is in line with the findings of Agbarakwe (2019), Ekine & Nnadi (2018), Ali & Ashger (2016), Idoko, & Taiga (2018) among others, but contrary to that of Ayanwale, (2007). When foreign direct investment increases, manufacturing output also increases as manufacturers would be more efficient in the use of resources such as capital, labor and information technology to be more productive to produce products of high quality standard tapping into human capital development and knowledge base of efficient production of the multinationals, and also have sufficient working capital to thrive their businesses. Whereas, when FDI is low, output tends to drop as the drive for efficiency, international competitiveness, innovativeness and informed decision is weakened.

The negative impact of trade openness recorded in this study is consistent with the findings of Siyakiya (2017), Yakubu & Akanegbu (2018) among others, but contradicted by Semancikova (2016), in their findings. The finding is consistent with Augmented Solow growth theory which predicts that increase in global trading caused by liberalization between countries, sends a signal to entrepreneurs and businesses, thereby reducing the level of growth of the manufacturing sector as many product would be available in the market at cheaper prices leading to decreasing demand in the locally manufactured products and eventual low output. The results of this study on gross fixed capital formation, is negative but insignificant, thereby corroborating the findings of Lucky & Uzah (2016). The positive effect
Conclusion and Policy Recommendations

Conclusion
This study analyzed the impact of foreign direct investment on manufacturing output in Nigeria from 1986 to 2018. The results revealed that in the long run, firstly, foreign direct investment had a positive relationship with manufacturing output as it is foreign capital inflows, which is in line with the findings of Idoko, & Taiga (2018), though insignificant. However, a sustainable level should be maintained. Secondly, trade openness had a negative relationship with manufacturing output, which confirms the theoretical knowledge. Thirdly, gross fixed capital formation has a negative and insignificant relationship on the manufacturing output. Lastly, inflation consumer prices have a positive and insignificant relationship with manufacturing output. From the variables used to measure the effect of foreign direct investment on manufacturing output, it is concluded that the policies put in place by the government should be such as to bring about sustainability and vibrancy in the manufacturing sector, and eventual productivity and performance of the manufacturing output in Nigeria.

Recommendations
The results and findings of this research work, led to the following recommendations:

1. The government should embark upon consistent and sustainable policies that would attract foreign investors to allow for manufacturing output maximization.
2. The fiscal policy measures of government budget should be directed in areas of infrastructural development on electricity, road accessibility and so on, in order to enhance improvement in manufacturing output.
3. Existing economic laws should be revisited and improved upon to allow for diversification in areas of foreign direct investment in the Nigerian economy thereby leading to expansion in the productive sectors of the economy.
4. A conducive political environment should also be provided by the government for effective functioning in productive activities of all the sectors in the country.

References
FOREIGN DIRECT INVESTMENT AND MANUFACTURING OUTPUT IN NIGERIA


