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TECHNOLOGY-BASED FDI, MANUFACTURING OUTPUT AND ECONOMIC GROWTH: A COMPARATIVE ANALYSIS BETWEEN NIGERIA AND MALAYSIA

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ABSTRACT

The inflow of technology-based FDI into a country helps to develop the manufacturing sector which brings about an increase in aggregate output which boosts economic growth. It is against this backdrop that this study examined the link between technology-based FDI, manufacturing output and economic growth in Nigeria and Malaysia, using the Vector Autoregression (VAR) model, pointing out the lessons Nigeria can learn from the Malaysian economy. The secondary data used in this study was obtained from the World Bank and the United Nations Conference on Trade and Development (UNCTAD) spanning between 1980 and 2017. The result from this study showed that Malaysia's FDI inflows are directed towards the manufacturing sector than the Nigerian economy, and this explains why the Malaysian manufacturing sector is more developed than that of Nigeria. Therefore, the study recommended that Nigeria should direct FDI to the manufacturing sector, as this will boost the growth rate of the economy.

Keywords: Foreign Direct Investment, Manufacturing Sector, Economic Growth.

JEL Codes: F21, O47, O43.

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1. INTRODUCTION

Foreign direct investment (FDI) is generally seen as an international investment ventured into in order to possess a long lasting management interest which is normally 10% of voting stock

in a corporation functioning in another country other than the home country by foreign investors [1], [2]. It is viewed as a medium through which the transfer of technology is made possible thereby contributing to the growth of an economy [3]. FDI is also a major source of capital formation capable of supplementing the low savings ratio needed for investment in any economy so as to boost the economy. It is a platform through which job opportunities are created alongside with managerial skills and expertise being transferred to the host country [4].

The manufacturing sector is a sub-set of the industrial sector. Manufacturing involves the conversion of raw materials into intermediate or finished goods for producers and consumers respectively. It is a process of learning to combine resources while utilizing technologies to produce products that are capable of satisfying the needs of the populace [5]. It also implies transformation in terms of production and distribution. The manufacturing sector as described by [6] is a way of improving the productivity of a country in relation to import substitution and export promotion, creating foreign exchange earnings, generating employment and per capita income which causes an unrepeated consumption pattern.The inflow of FDI into Malaysia was able to boost their economy because it was geared towards a more productive sector. The inflow of FDI was majorly directed into their manufacturing sector. The manufacturing sector is considered as the power house of any nation which has the capacity to provide plentiful job opportunities to her citizens, produce a wide variety of products in the country thereby making the country less dependent on imports. In enticing foreign investors into the Malaysian economy, a number of policies and incentives were put in place amongst which included the foreign direct investment liberalisation policy in the late 1980s. This policy was the bedrock behind the high inflow of FDI into the country.

According to [7], the inflow of FDI into Malaysia in 1970 was about US$ 94 million. It increased to about US$350.49 million, US$573.47 million in 1975 and 1979 respectively. It was observed that the increase in the inflow of FDI was due to the stability of the macroeconomic environment. But as at the time when this FDI liberalisation policy was initiated in the late 1980s, the inflow of FDI into the country increased to about US$1667.87 million in1989. This signified a drastic rise in the inflow of FDI into the country from 1970 to 1989. During that period, the country was also experiencing a growth rate of 39.94% and a real GDP of US$68 billion within the same period. As at 2016, the inflow of FDI into Malaysia has increased to about US$9.9 billion with a real GDP of US$344 billion within the same period [7].

From the foregoing, it is imperative to examine the lessons that the Nigerian government can learn from the Malaysian experience on how to attract technology-based FDI inflow into the manufacturing sector so as to boost economic growth in Nigeria. Therefore, the objective of this study is to examine the macroeconomic environment that made the massive inflow of technology-based FDI possible into the Malaysian economy as against the Nigerian economy. The study made use of the Vector Autoregression (VAR) econometric technique. Thus, this paper is structured as follows; following this introductory section is section two which is the literature review and theoretical framework. Section three presents the methodology employed in this paper. The results and discussions are presented in section four, while section five presents the conclusion and recommendations of the study.

2. LITERATURE REVIEW AND THEORETICAL FRAMEWORK

According to [8], he carried out a study on the effect of foreign direct investment on the economic growth of Nigeria and discovered that the inflow of FDI into the extractive industry did not produce sustainable economic growth as predicted. This is so because the extractive industry is a sector with little linkages with other sectors. It is also a sector characterised by a

highly capital intensive mode of production thereby making the transfer of technologies to be difficult and less unlike that of the manufacturing sector which is not. Nevertheless, his findings also concluded that FDI inflow into the manufacturing sector has more potential of boosting the economy thereby translating into economic growth. This could also be observed from the experience of Malaysia. According to [9], they examined foreign debt, oil export and foreign direct investment between 1960 and1984, they discovered that FDI is positively related to oil export and the study suggested that the greater the inflow of FDI, the better the performance of the economy.

According to [10], they examined an empirical investigation of the determinants of foreign direct investment in Nigeria using the co-integration analysis to ascertain a long run relationship. This study revealed that alongside with exchange rate as a key determining factor of the inflow of FDI into Nigeria, the availability of infrastructural facilities and domestic credit also influenced the inflow of FDI into Nigeria. Similar findings were found by [11] who discovered that real gross domestic product, interest rate and real exchange rate are key factors influencing the inflow of FDI into Nigeria. Amadi made use of the Ordinary Least Square (OLS) estimation and Johansen co-integration techniques. They also found out that the level of unemployment and inflation has a weak impact on FDI inflows. He opined that the macroeconomic environment is critical in determining the level of FDI inflow into Nigeria. In his study, [8] investigated the determinants of foreign direct investment in Nigeria for the period of 1970 to 1996 using the Johansen co-integration technique. The study found out that changes in domestic investment, market size, openness of the economy and the indigenization policy are the major determinants of FDI in Nigeria. In this vein, it is worth noting that the determinants of FDI differ from country to country. That is the determinant of FDI in one region may not be the same for another region [12].

According to [13], they studied the relationship between FDI inflows and economic growth in Malaysia between 1971 and 2009 using the Johansen co-integration and VECM technique to assess the long run and short run dynamics between the variables respectively. The finding of the study showed that there is an existence of a long run relationship between foreign direct investment and economic growth in Malaysia. In addition, they stated that the degree of causality between the variables ran from FDI to economic growth of Malaysia. They however concluded that FDI is key to the growth of an economy and future economic policies on FDI should be addressed. Similarly, employing the Vector Error Correction Model (VECM), [14] conducted a study on the determinants and impact of FDI in Nigeria for the period between 1970 and 2009;they discovered that exchange rate, interest rate, inflation rate as well as the degree of openness of the country was the determining factors of the inflow of FDI into the Nigerian economy.

Similarly, [15] examined the role of FDI inflows on the economic growth of Malaysia through the use of a time series analysis ranging from 1975 to 2010.This study adopted the Johansen co-integration econometric technique to establish a long run relationship (if any) and also employed the Hierarchical Multiple Regressions (HMR) analysis to find the momentum of Malaysia's economic growth and FDI inflows. The result of this study showed that the inflow of FDI coupled with the stock of human capital has a strong influence on the growth of Malaysia and concluded that efforts should be made to develop the stock of human capital to attract FDI inflows. According to [16], they investigated the determinants of foreign direct investment in the manufacturing sector of Malaysia alongside other 11 developing countries. The study covered the period between 1988 and 2000 and made use of a pooled cross sectional and time series log-log model. This study found out that gross domestic product, lending interest rate, and productivity of labour as well as export to home and import from home country

all had a significant effect on the level of FDI in the Malaysian economy. It also found that exchange rate, wages and openness index were not FDI inducing [39].

According to [17], the manufacturing sector is a more productive sector than any other sector. This is because the transfer of resources to such a sector has the capacity to promote structural changes. The manufacturing sector is assumed to be a sector that has the capacity to provide opportunities for capital formation. When there is productive investment in the manufacturing sector, this leads to higher total factor productivity, high saving ratio will be encouraged and this will boost the growth of the economy through capital formation. [5]asserted that this is true for developing countries. It is also observed that there is an evidence of a strong linkage and spillover effects in the manufacturing sector [15, 41]. These effects create positive externalities where by knowledge flows between sectors. The manufacturing sector also has a demand effect where quality goods produced have an increasing demand when traded. This will in turn boost economic growth.

The theoretical premise of this study is hinged on the eclectic theory otherwise known as the OLI-paradigm [18]. This theory combined the monopolistic advantage theory of FDI developed by [19] and further improved by [20]. It also added the internalisation theory developed by [21]. [18] however, introduced a third dimension of location theory which formed the OLI-paradigm. This theory rests on three sets of conditions for the inflow of FDI. This theory attests that the degree to which foreign investors venture into international investment through multinational corporations (MNCs) is determined by the combination of all the three sub-paradigms. The first sub paradigm has to do with the ownership advantage that foreign investors stand to gain as compared to other firms in the international market.The second sub-paradigm involves the location of alternative countries. Specifically, the designated country should possess advantages with respect to location such as less expensive raw materials, reduced wages, reduced taxes and so on. Furthermore, it states that the more the fixed natural endowment in the host country coupled with the ownership competitive advantage possessed by MNCs, the more the location preference for the country.The third sub-paradigm of the OLI tripod offers the condition for investing firms to establish subsidiary abroad rather than exporting or having local companies to produce for foreign market via license agreement [42].

2.1. An Overview of the Nigerian and Malaysian Economies

Nigeria is a country that is blessed with so many natural resources and a large market size in terms of population. Given these features, she qualifies to be one of the major recipients of FDI and is indeed one of the top recipients of FDI in Africa (Asiedu, 2003). In 1977, FDI inflow into Nigeria was about US$440.5 million. When this is compared to Malaysia that has the same pre-historical background (in terms of having so many natural resources but with a smaller population than Nigeria), Malaysia attracted about US$405.9 million as FDI inflows in 1977. It is expected that the qualities possessed by Nigeria, serves as a requirement for attracting foreign investors, this can further lead to a rise in the inflow of FDI into the country. This to an extent is true because the inflow of FDI into Nigeria increased from US$440.5 million in 1977 to US$610.5 million in 1987, increased to about US$1.6 billion in 1997 and further increased to US$1.4billion in 2012. As at 2015, FDI inflow is about US$4.1 billion. Comparatively, Malaysia had FDI inflow of US$405.9 million in 1977(which was lower than the Nigerian FDI inflow figure of US$440.5 million). Presently, Malaysia is now way above Nigeria in terms of FDI inflows. Following the same span of time with Nigeria, in 1987 Nigeria was still receiving more inflow of FDI than Malaysia that experienced a reduction in the inflow of FDI to about US$422.68 million. However, since 1990, the inflow of FDI into Malaysia has been higher than that of Nigeria. In 1990, the inflow of FDI into Malaysia was

about US$2.6billion while Nigeria received about US$1 billion. In 1997, Malaysia received an inflow of about US$6.3 billion while Nigeria receiving about US$1.6 billion. In 2016, Nigeria received an inflow of FDI of about US$4.4 billion while Malaysia received about US$9.9 billion [22]. The market size of Malaysia when compared with Nigeria is small and given that both countries were once relatively at par in terms of FDI inflows with Nigeria being higher, Malaysia is now able to attract huge inflow to a high level of development, this is partly attributable to their attractive policies that lured foreign investors into their country and most especially into their manufacturing sector as against Nigeria [22, 38].

2.2. Lessons from the Malaysian Economy

Prior to 1957, the economy of Malaysia formerly called 'Malaya' was based predominantly on the primary sector which consisted of agriculture and mining. Her production activities were controlled by the British Empire. Initially, the manufacturing sector was under-developed and engaged primarily in the processing of agricultural products, manufacturing consumer and intermediate goods alongside with imported raw materials. The country was also involved in the production of rubber and tin most of which was exported to other countries in their raw form. During this era, the primary industries accounted for about 45.7% contribution to GDP and employing about 61.3% of the populace. On the other hand, the manufacturing sector's contribution to the GDP of the Malaysian economy was small. It contributed about 11% to her GDP while employing only 10% of the labour force [23].

Due to the undue advantage of the labour industries resulting from the export oriented approach, the Malaysian government ventured into the heavy industry as a medium of reducing the importation of capital and semi-finished goods for sustained growth in the economy; create backup industries that will provide a better forward and backward linkages in the manufacturing sector; as well as follow the path of Korea and Japan in the developing heavy industries for industrial progress. This industry characterised the ISI II approach as it was assumed to provide a more robust linkage with domestic firms through the efficient use of natural resources. This approach launched the fourth Malaysian Plan (1981-1985) which aimed at promoting heavy industries [37], [38], [40]. As a result of all the strategies put in place by the government, the GDP per capita of Malaysia grew to 59% in the 1990s from 36% in the 1980s. It also led to a rise in the inflow of FDI into the country. The modification of foreign equity ownership resulted into a further increase of FDI into Malaysia [24]. According to [7], the inflow of FDI into Malaysia in 1970 was about US$ 94 million. It increased to about US$350.49 million, US$573.47 million in 1975 and 1979 respectively. It is one thing for a country to adopt policies that will be favourable towards foreign investors so as to fully exploit the benefit from it and it is another thing for these inflows to actually translate into economic growth.

3. METHODOLOGY

The model for this study established the relationship between economic growth, foreign direct investment and manufacturing output in Nigeria and Malaysia. The model is adapted from the endogenous growth theory which is used in examining the relationship among economic growth, foreign direct investment, and manufacturing output in Nigeria and Malaysia. In this study, the real gross domestic product (RGDP) is used as proxy for economic growth (Y), while foreign direct investment (FDI) is used as proxy for technological advancement (A). The manufacturing sector serves will as a proxy for capital *(K)* while the labour force participation rate is measured for labour (L). On the basis of the absorptive capacity of the host country proposed by the Eclectic FDI Theory, trade openness was introduced into the model. To this effect, the functional form of the model was based on the theoretical

foundation of the endogenous growth theory, and using the Cobb-Douglas production function is specified for Nigeria (1a) and Malaysia (1b) as:

$RGDPG_{NIG} = f(FDI_{NIG}, MVA_{NIG}, OPN_{NIG}, LPR_{NIG})$ (1a)

$RGDPG_{MAL} = f(FDI_{MAL}, MVA_{MAL}, OPN_{MAL}, LPR_{MAL})$ (1b)

Where: *f* is a functional relationship, *RGDP* represents the real gross domestic product; FDINIG represents the foreign direct investment (US Dollars at current prices in millions); *MVANIG* represents the manufacturing value added (% of GDP); *OPNNIG* represents trade openness (Trade to GDP %), *LPRNIG* represents labour rate participation; while *NIG and MAL* represents Nigeria and Malaysia respectively. Given the above, the equations for Nigeria and Malaysia are specified in their non-linear forms as shown in equations 2a and 2b.

$$RGDPG_{NIG} = FDI_{NIG}^{\beta 1} + MVA_{NIG}^{\beta 2} + OPN_{NIG}^{\beta 3} + LPR_{NIG}^{\beta 4} \quad (2a)$$

$$RGDPG_{MAL} = FDI_{MAL}^{\beta 1} + MVA_{MAL}^{\beta 2} + OPN_{MAL}^{\beta 3} + LPR_{MAL}^{\beta 4} \quad (2b)$$

To enhance estimation and obtain estimates that are BLUE- Best Linear and Unbiased Estimators (as seen in Ejemeyovwi et al. 2018), equations 2a and 2b are linearized using logarithm transformation as shown in equations 3a and 3b.

$$LnRGDPG_{NIG} = \beta_0 + \beta_1 LnFDI_{NIG(t)} + \beta_2 Ln\ MVA_{NIG(t)} + \beta_3 LnOPN_{NIG(t)} + \beta_4 LnLPR_{NIG(t)} + \mu_t \quad (3a)$$

$$LnRGDPG_{MAL} = \beta_0 + \beta_1 LnFDI_{MAL(t)} + \beta_2 LnMVA_{MAL(t)} + \beta_3 LnOPN_{MAL(t)} + \beta_4 LnLPR_{MAL(t)} + \mu_t \quad (3b)$$

Where: β_0 is the intercept term, $\beta_1, \beta_2, \beta_3 and \beta_4$ are coefficients of the explanatory variables μ represents the error term (which is assumed to be normally distributed with a mean of 0 and constant variance)

The *apriori* expectation for the variables is stated in such a way that the likely signs of the parameter in line with the empirical evidence are depicted such that: $\beta_1 > 0, \beta_2 > 0, \beta_3 > 0, \beta_4 > 0$. The coefficient of FDI (β_1) is expected be positive. This implies that an increase in foreign direct investment will lead to a rise in GDP growth rate. The coefficient of *MVA* (β_2) is expected to be positive, this means that, a rise in the contribution of manufacturing value added to GDP will lead to a rise in economic growth rate. The coefficient of *OPN* (β_3) is expected to be positive. This is because, the more open an economy is opened to trade, the more it leads to the growth of the economy as a result of an increase in trade. The coefficient of *LPR* (β_4) is also expected to be positive, such that a rise in the value of exchange will positively affect economic growth.

3.1. Technique of Estimation

Evaluating empirically a time series data on the effect of foreign direct investment and the manufacturing output on economic growth of Nigeria and Malaysia, the unit root test was conducted to determine the trend of the variables. The unit root test is performed to test for stationarity in a time series data [25, 26]. To test for unit root or stationarity at level and first difference, the Augmented Dickey-Fuller (ADF) and the Phillip Perron test was adopted. After the unit toot test, this study employed the Vector Auto-regression model because the variables were observed to be integrated at order 1 [1(1)]. The VAR model in this study is

used to examine the implication of shocks resulting from foreign direct investment and manufacturing output on economic growth of Nigeria and Malaysia.

3.2. Vector Auto-regression (VAR) Model

In a VAR system, all variables are endogenous, where the dependent variables are a function of its lagged values and the lagged values of other variables in the model (Igharo et al. 2018)

VAR MODEL FOR NIGERIA

$$LnRGDP_{NIG(t)} = \beta_0 + \beta_1 \sum_{i=1}^{p} LnRGDP_{NIG(t-1)} + \beta_2 \sum_{i=0}^{p} LnFDI_{NIG(t-1)} + \beta_3 \sum_{i=0}^{p} LnMVA_{NIG(t-1)} + \beta_4 \sum_{i=0}^{p} LnOPN_{NIG(t-1)} + \beta_5 \sum_{i=0}^{p} LnLPR_{NIG(t-1)} + \mu_t \quad (4a)$$

$$LnFDI_{NIG(t)} = \beta_0 + \beta_1 \sum_{i=1}^{p} LnRGDP_{NIG(t-1)} + \beta_2 \sum_{i=0}^{p} LnFDI_{NIG(t-1)} + \beta_3 \sum_{i=0}^{p} LnMVA_{NIG(t-1)} + \beta_4 \sum_{i=0}^{p} LnOPN_{NIG(t-1)} + \beta_5 \sum_{i=0}^{p} LnLPR_{NIG(t-1)} + \mu_t \quad (4b)$$

$$LnMVA_{NIG(t)} = \beta_0 + \beta_1 \sum_{i=1}^{p} LnRGDP_{NIG(t-1)} + \beta_2 \sum_{i=0}^{p} LnFDI_{NIG(t-1)} + \beta_3 \sum_{i=0}^{p} LnMVA_{NIG(t-1)} + \beta_4 \sum_{i=0}^{p} LnOPN_{NIG(t-1)} + \beta_5 \sum_{i=0}^{p} LnLPR_{NIG(t-1)} + \mu_t \quad (4c)$$

$$LnOPN_{NIG(t)} = \beta_0 + \beta_1 \sum_{i=1}^{p} LnRGDP_{NIG(t-1)} + \beta_2 \sum_{i=0}^{p} LnFDI_{NIG(t-1)} + \beta_3 \sum_{i=0}^{p} LnMVA_{NIG(t-1)} + \beta_4 \sum_{i=0}^{p} LnOPN_{NIG(t-1)} + \beta_5 \sum_{i=0}^{p} LnLPR_{NIG(t-1)} + \mu_t \quad (4d)$$

$$LnLPR_{NIG(t)} = \beta_0 + \beta_1 \sum_{i=1}^{p} LnRGDP_{NIG(t-1)} + \beta_2 \sum_{i=0}^{p} LnFDI_{NIG(t-1)} + \beta_3 \sum_{i=0}^{p} LnMVA_{NIG(t-1)} + \beta_4 \sum_{i=0}^{p} LnOPN_{NIG(t-1)} + \beta_5 \sum_{i=0}^{p} LnLPR_{NIG(t-1)} + \mu_t \quad (4e)$$

VAR MODEL FOR MALAYSIA

$$LnRGDP_{MAL(t)} = \beta_0 + \beta_1 \sum_{i=1}^{p} LnRGDP_{MAL(t-1)} + \beta_2 \sum_{i=0}^{p} LnFDI_{MAL(t-1)} + \beta_3 \sum_{i=0}^{p} LnMVA_{MAL(t-1)} + \beta_4 \sum_{i=0}^{p} LnOPN_{MAL(t-1)} + \beta_5 \sum_{i=0}^{p} LnLPR_{MAL(t-1)} + \mu_t \quad (5a)$$

$$LnFDI_{MAL(t)} = \beta_0 + \beta_1 \sum_{i=1}^{p} LnRGDP_{MAL(t-1)} + \beta_2 \sum_{i=0}^{p} LnFDI_{MAL(t-1)} + \beta_3 \sum_{i=0}^{p} LnMVA_{MAL(t-1)} + \beta_4 \sum_{i=0}^{p} LnOPN_{MAL(t-1)} + \beta_5 \sum_{i=0}^{p} LnLPR_{MAL(t-1)} + \mu_t \quad (5b)$$

$$LnMVA_{MAL(t)} = \beta_0 + \beta_1 \sum_{i=1}^{p} LnRGDP_{MAL(t-1)} + \beta_2 \sum_{i=0}^{p} LnFDI_{MAL(t-1)} + \beta_3 \sum_{i=0}^{p} LnMVA_{MAL(t-1)} + \beta_4 \sum_{i=0}^{p} LnOPN_{MAL(t-1)} + \beta_5 \sum_{i=0}^{p} LnLPR_{MAL(t-1)} + \mu_t \quad (5c)$$

$$LnOPN_{MAL(t)} = \beta_0 + \beta_1 \sum_{i=1}^{p} LnRGDP_{MAL(t-1)} + \beta_2 \sum_{i=0}^{p} LnFDI_{MAL(t-1)} + \beta_3 \sum_{i=0}^{p} LnMVA_{MAL(t-1)} + \beta_4 \sum_{i=0}^{p} LnOPN_{MAL(t-1)} + \beta_5 \sum_{i=0}^{p} LnLPR_{MAL(t-1)} + \mu_t \quad (5d)$$

$$LnLPR_{MAL(t)} = \beta_0 + \beta_1 \sum_{i=1}^{p} LnRGDP_{MAL(t-1)} + \beta_2 \sum_{i=0}^{p} LnFDI_{MAL(t-1)} + \beta_3 \sum_{i=0}^{p} LnMVA_{MAL(t-1)} + \beta_4 \sum_{i=0}^{p} LnOPN_{MAL(t-1)} + \beta_5 \sum_{i=0}^{p} LnLPR_{MAL(t-1)} + \mu_t \quad (5e)$$

3.3. Data Sources

This study is based on a time series analysis covering a period of 38 years (1980 to 2017) for both Nigeria and Malaysia. The secondary data was sourced from the World Bank and the United Nations Conference on Trade and Development (UNCTAD).

4. RESULTS AND DISCUSSIONS

4.1. Trend and Descriptive Analysis of Data

This sub section focuses on the features and characteristics of the variables under consideration as well as their movement and the direction of the variables over the years ranging from 1980 to 2016, as presented below:

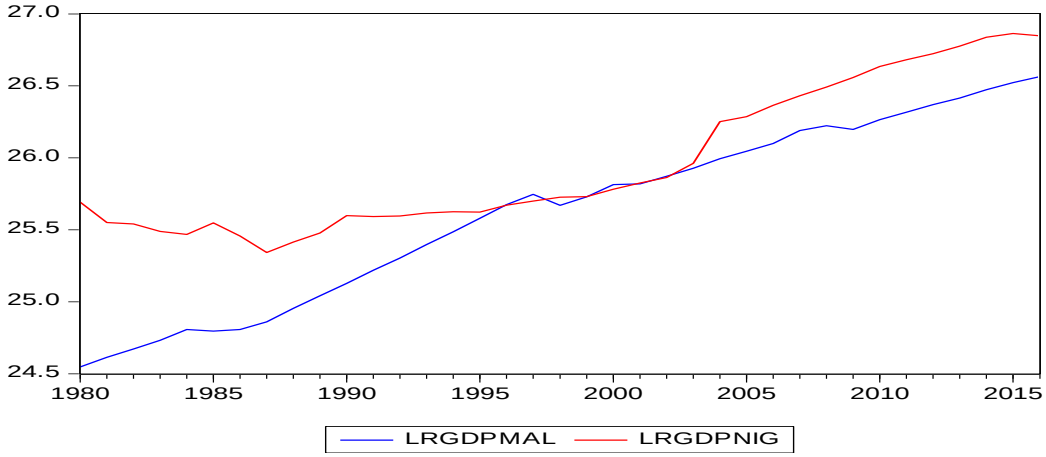

Figure 1: Trend Analysis of Real Gross Domestic Product (Malaysia and Nigeria)

Source: Authors' Computation, 2019.

Figure 1 represents the trend of the real gross domestic product from 1980 to 2016 for both Nigeria and Malaysia. For LRGDPNIG, the line shows that real GDP has been increasing and experiencing tremendous growth although not completely stable for the period. The Nigerian economy is a mono-dependent economy with the oil sector as a major contributor to the growth of her economy. Hence, the fluctuations of global oil prices causing unstable foreign exchange earnings have brought about the fairly unstable growth of real GDP. Likewise, the rebasing of the GDP in 2013 to a new constant price of 2010 as well as the incorporation of new sectors such as the entertainment and telecommunication industry also accounted for the increase in the GDP of Nigeria resulting in the overtaking of South Africa to be the "Giant of Africa". Similar to the LRGDPNIG trend, the LRGPMAL line showed that the real GDP has been increasing and experiencing tremendous growth throughout the period under review. This could be due to the robust productive activities that occur in Malaysia which contributes to the GDP of her country [27]. The sharp decline in the 1997 was due to the Asian financial crisis.

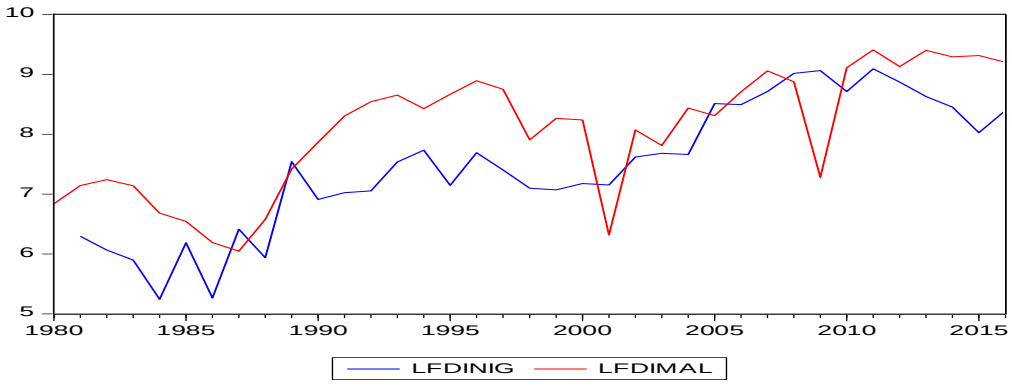

Figure 2: Trends of Foreign Direct Investments (Nigeria and Malaysia)

Source: Authors' Computation, 2019.

Figure 2 represents the trend of foreign direct investment from 1981 to 2015. For LFDINIG, the line showed excessive fluctuating trend with high and low tides throughout the period under review. The lowest point on the LFDINIG line was at 1984 and 1986 of

US$189.165 million and US$193.2 million respectively. This was probably as a result of the aftermath effect of the implementation of the indigenous policy that repelled foreign investors from investing into the economy. However, the abrogation of such policies in 1995 gave way to the influx of FDI into the economy. On the other hand, the Malaysian economy began to experience a large inflow of FDI in the late 1980s where the economy liberalized the economy leading to its large inflow. This inflow was short lived with the Asian financial crisis of 1997. The aftermath effect of such lingered for a short period of time as the Malaysian economy being proactive was able to actively respond to such shocks.

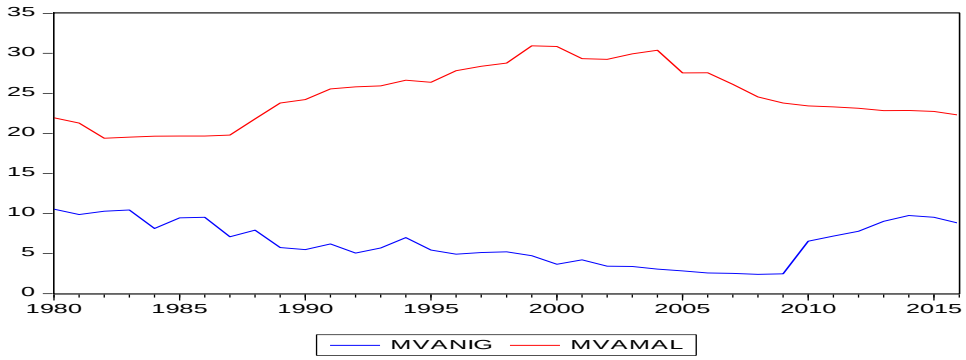

Figure 3: Manufacturing Value Added (% of GDP, Nigeria and Malaysia)

Source: Authors' Computation, 2019.

Figure 3 represents the manufacturing value added as percentage of GDP. The MVANIG has been fluctuating. Its contribution to GDP was about 10% in 1980. This value however declined at a steady rate but picked up again in 2010 and increased overtime. On the other hand, the MVAMAL has also been fluctuating. Her contribution to GDP was about 21.95% in 19980. The lowest point was at 1984 while the peak was in 1999 with 19.66% and 30.94% respectively. As at 2016, the contribution of the manufacturing sector in Malaysia is about 22.27%. According to [28]; [27], when the industrial sector that is the manufacturing sub-sector increases, its share of GDP among others is termed industrialisation.

The manufacturing sector of Malaysia has been experiencing an increase in her contribution to GDP. From the Figure 3, the wide disparity between the two countries reveals that the manufacturing sector in Malaysia is stronger than the Nigerian.

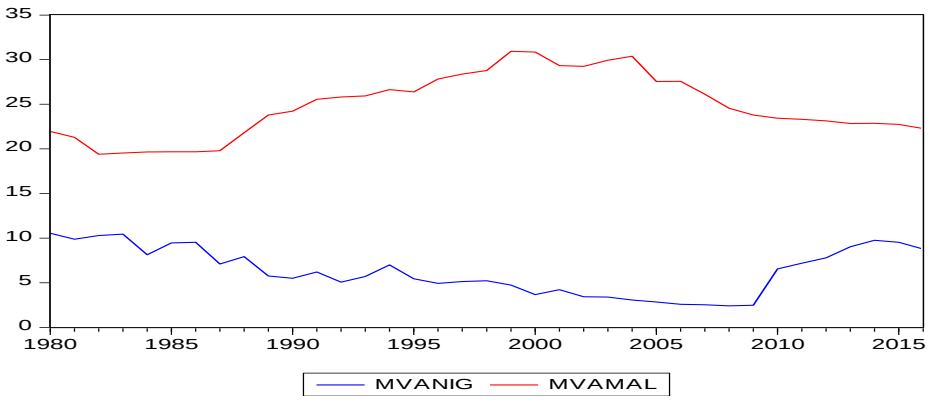

Figure 4: Labour Force Participation Rate (Nigeria and Malaysia)

Source: Authors' Computation, 2019.

Figure 4 represents the labour force participation rate. This showed how actively involved the population of country is involved in the economic activities of the country. For LPRNIG,

the line showed a downwards sloping trend. It is observed that in the 1980, about 58% of the population of Nigeria was actively involved in the economic activities of the economy. This rate steadily declined to about 55% in 2016. This could be ascribed to the fact that after the discovery oil in 1956, there has been a shift from labour intensive to capital intensive. Similar to LPRNIG, the LPRMAL line showed a downwards sloping trend. It is also observed that about 63% of the population of the Malaysian economy was actively involved in the economic activities of the economy. This trend however declined to 59% in 2016 from a 61.7 % and 63% in 1990 and 1980 respectively. In comparing both the LPRNIG and LPRMAL, it showed that although the population of Malaysia is small compared to that of Nigeria, the populace in Malaysia is actively involved in the economic activities of the economy leading to both the growth and development of the economy. The wide disparity in the graph analysis confirms this statement.

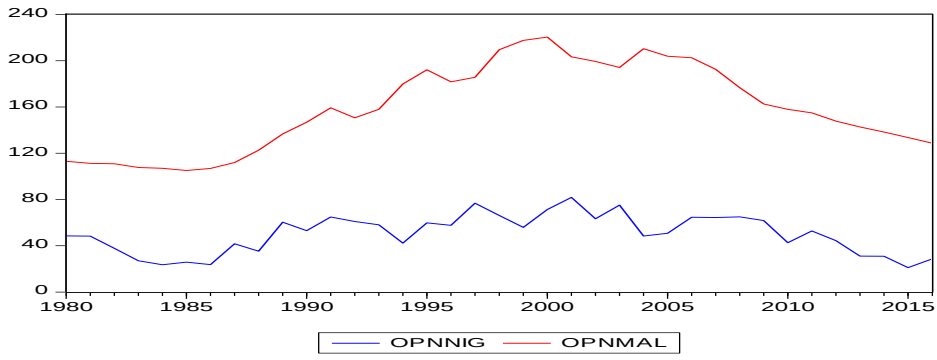

Figure 5: Degree of Openness (Nigeria and Malaysia)

Source: Authors' Computation, 2019.

Figure5 represents the degree of openness of both Nigeria and Malaysia. For OPNNIG the degree of openness was about 48.57 in 1980, which was probably due to the hostility and uncertainty of African countries especially Nigeria which prevented interaction with the rest of the world. Due to globalisation and the recognition of the need to interact more on the international market, the Nigerian economy has opened up more to other countries showing an increase in the degree of openness to 81 in 200. This value however declined to about 28.7 in 2016. On the other hand, the Malaysian economy's degree of openness was about 113% in 1980. It further increased to about 220.41 in 2000. This was probably due to the liberalisation policy that was implemented around the late 1990s to attract FDI into the country [25, 27].

4.2. Descriptive Statistics of Variables

The descriptive statistics of the data showed the characteristics and features, indicating the mean, maximum, minimum, standard deviation, skewness, kurtosis, Jarque-Bera, and the sum of squared deviation [25].

Table 1: Summary of Statistics of Variables (NIGERIA AND MALAYSIA)

	LRGDP		**LFDI**		**MVA**		**LPR**		**OPN**	
	NIG	MAL	NIG	MAL	NIG	MAL	NIG	MAL	NIG	MAL
Mean	25.96322	25.61823	7.467166	8.056823	6.300811	24.78568	56.34297	61.41811	50.44081	159.0270
Median	25.72598	25.72920	7.539651	8.304742	5.750000	24.22000	56.30000	61.70000	52.79000	157.9400
Maximum	26.86376	26.56406	9.095478	9.408993	10.54000	30.94000	58.13000	63.16000	81.81000	220.4100

Minimum	25.34250	24.54695	5.242620	6.046615	2.410000	19.40000	54.80000	59.07000	21.12000	105.0600
Std. Dev.	0.502563	0.626917	1.076514	1.013083	2.630692	3.549039	0.956539	1.428482	16.55368	37.14810
Skewness	0.635151	-0.216195	-0.295407	-0.476809	0.095370	0.113371	0.113999	-0.420864	-0.166463	0.035501
Kurtosis	1.823002	1.741348	2.266100	2.013376	1.744520	1.911738	1.952837	1.794353	2.041817	1.683300
Jarque-Bera	4.623444	2.730550	1.331504	2.902673	2.486109	1.905076	1.770656	3.333224	1.586305	2.680557
Probability	0.099090	0.255310	0.513887	0.234257	0.288502	0.385761	0.412579	0.188886	0.452416	0.261773
Sum	960.6392	947.8744	268.8180	298.1024	233.1300	917.0700	2084.690	2272.470	1866.310	5884.000
Sum Sq. Dev.	9.092491	14.14890	40.56085	36.94811	249.1395	453.4445	32.93877	73.46017	9864.871	49679.32
Observations	37	37	36	37	37	37	37	37	37	37

Source: Authors' Computation, 2019.

Table 1 showed the characteristics and features of values of the variables. The mean and the median represent measures of central tendency which seeks to understudy the propensity of clustering among values of variables along the mean and median. Meanwhile, the standard deviation measures the total sum of squared deviations from the mean. The likelihood of a large coefficient of variation is high if the mean is smaller than the standard deviation similarly the likelihood is reduced if the mean is greater than the standard deviation. LRGDPNIG, LFDINIG, MVANIG, LPRNIG, OPNNIG, LRGDP, LFDIMAL, MVAMAL, LPRMAL and OPNMAL have a small likelihood of having a large coefficient of variation. In Table 2, labour participation rate (LPRNIG) has the highest mean of 56.34297, while the degree of openness (OPNNIG) has the highest standard deviation of 16.55368, while manufacturing value added (MVANIG) has the lowest mean value of 6.300811 and real gross domestic product (LRGDPNIG) has the lowest standard deviation value. (OPNMAL) and the real gross domestic product (LRGDPMAL) have the highest and lowest standard of deviation respectively.

4.3. Econometric Results

This study examined the time series data for Nigeria and Malaysia using the same model spanning from 1980-2017. The study used the Augmented Dickey Fuller (ADF) test to determine the stationarity level of each of the variable, as presented in Table 2.

4.3.1. UNIT ROOT TEST

The Augmented Dickey Fuller (ADF) test as a preferred test was used to test for stationarity of variables in this study, because of its ability to properly deal with large samples of data which in this case is suitable. Table 2 represents the unit root test at levels for Nigeria and Malaysia using the augmented dickey fuller (ADF) test.

Table 2: Unit Root Test for Variables at Level (Nigeria and Malaysia)

	NIGERIA	MALAYSIA	ORDER	

	TEST STATISTICS		**CRITICAL VALUE @ 0.05**		**TEST STATISTICS**		**CRITICAL VALUE @ 0.05**		**OF INTEGR**	**REMARKS**
VARIABLES	ADF TEST	PP TEST	ADF TEST	PP TEST	ADF TEST	PP TEST	ADF TEST	PP TEST	ATION	
RGDPNIG	-1.758019	-1.737587	-3.540328	-3.540328	-0.753837	-0.622131	-3.540328	-3.540328	I(0)	Non-stationary
FDINIG	-1.590549	-2.367391	-2.945842	-3.540328	-3.388789	-3.384666	-3.540328	-3.540328	I(0)	Non-stationary
MVANIG	-1.063170	-0.994463	-3.540328	-3.544284	-0.327623	-0.671387	-3.540328	-3.540328	I(0)	Non-stationary
LPRNIG	-1.657887	-1.948167	-3.540328	-3.540328	-1.714136	-2.038478	-3.540328	-3.540328	I(0)	Non-stationary
OPNNIG	-2.096673	-1.896898	-2.945842	-3.540328	0.130451	-0.04787	-3.540328	-3.540328	I(0)	Non-stationary

Source: Authors' Computation, 2019.

Table 3 indicates the test for unit root at levels for Nigeria and Malaysia given their optimum lag. It is observed that all variables (RGDPNIG FDINIG, MVANIG, LPRNIG, OPNNIG, RGDPMAL, FDIMAL, MVAMAL, LPRMAL and OPNMAL) are not stationary at levels since the absolute value of ADF t-statistics is less than the absolute value of the critical values at 5% level of significance. However, form Table 3 the test for unit root at first difference of all variables (RGDPNIG FDINIG, MVANIG, LPRNIG, OPNNIG, RGDPMAL, FDIMAL, MVAMAL, LPRMAL and OPNMAL), given their optimal lag are stationary since the absolute value of ADF t-statistics is greater than the absolute value of the critical values at 5% level of significance.

Table 3: Unit Root Test for Variables at First Difference (Nigeria and Malaysia)

	NIGERIA				**MALAYSIA**				**ORDER**	
	TEST STATISTICS		**CRITICAL VALUE @ 0.05**		**TEST STATISTICS**		**CRITICAL VALUE @ 0.05**		**OF INTEGR**	**REMARKS**
VARIABLES	ADF TEST	PP TEST	ADF TEST	PP TEST	ADF TEST	PP TEST	ADF TEST	PP TEST	**ATION**	
RGDPNIG	-4.632601	-4.632601	-3.544284	-3.544284	-5.770336	-5.814076	-3.544284	-3.544284	I(1)	Stationary
FDINIG	-7.271346	-7.037822	-2.948404	-3.544284	-6.684612	-8.085141	-3.548490	-3.544284	I(1)	Stationary
MVANIG	-6.845880	-6.860512	-3.544284	-3.544284	-4.546920	-4.476754	-3.544284	-3.544284	I(1)	Stationary
LPRNIG	-4.730012	-4.730990	-3.544284	-3.544284	-4.794776	-4.786903	-3.544284	-3.544284	I(1)	Stationary

OPNNIG	-8268089	-8.616738	-2.948404	-3.544284	-3.797813	-4.229650	-3.552973	-3.544284	I(1)	Stationary

Source: Authors' Computation, 2019.

Table 4 presents the Vector Autoregressive (VAR) results from an over parameterized model. It showed the coefficient of all the fifty-five coefficients that is fifty slope coefficients and five intercepts. It also shows the standard error which showed the deviation that occurs from predicting the slope coefficient correctly. The t-statistics is obtained by dividing the coefficients by the standard deviation. However, to determine whether the t-statistics is statistically significant or not, the probability value is analysed. Also, from Table 4 the over parameterised model does not suffer from autocorrelation. The null hypothesis is accepted up to lag of 4 which are all greater than 0.05 but for Malaysia, the null hypothesis can only be accepted at lag 1, 3 and 4. The manufacturing sector is unarguably a crucial path to industrialisation in advanced and developing economies [29], [30], [43]. It is the power house of any nation, when it produces efficiently given the constant supply of electricity power [31], [32], [33]. It has the capacity to reduce unemployment to its minimum by providing job opportunities that fit the skill status of any citizen [29].

An obvious result, following the increment in labour participation will be a corresponding increase in productivity leading to economic growth. The manufacturing sector is the most productive sector because it creates forward and backward linkages with other sector of the economy through which other sectors such as the banking industry [29], [27], [28], [30]. are developed and will have a ripple effect on the overall growth of the economy In the economic recovery growth plan of 2017, the government has identified the manufacturing sector as one of the key sectors toward recovering fully from the recession.

Table 4: Vector Autoregressive Results

	NIGERIA	**MALAYSIA**		**NIGERIA**	**MALAYSIA**		**NIGERIA**	**MALAYSIA**
	Coefficient	**Coefficient**		**Coefficient**	**Coefficient**		**Coefficient**	**Coefficient**
C(1)	0.971752 [0.219524] (4.426630) 0.0000	1.144701 [0.257229] (4.450133) 0.0000	C(6)	0.020084 [0.013124] (1.530292) 0.1287	-0.003046 [0.010026] (-0.303820) 0.7618	C(11)	7.177827 [5.112518] (1.403971) 0.1630	4.124651 [2.414265] (1.708450) 0.0901
C(2)	-0.078119 [0.203428] (-0.384012) 0.7017	-0.211913 [0.246199] (-0.860739) 0.3911	C(7)	-0.021816 [0.050818] (-0.429284) 0.6685	-0.034991 [0.022912] (-1.527174) 0.1293	C(12)	-0.139457 [1.482786] (-0.094051) 0.9252	2.939089 [3.667963] (0.801286) 0.4245
C(3)	0.4853 [0.028821] (0.700012) 0.4853	-0.017660 [0.017920] (-0.985501) 0.3264	C(8)	-0.061785 [0.073738] (-0.837901) 0.4038	-0.002683 [0.028757] (-0.093295) 0.9258	C(13)	-0.343859 [1.374067] (-0.250249) 0.8028	-3.528828 [3.510684] (-1.005168) 0.3168
C(4)	0.005516 [0.029630] (0.186166) 0.8526	-0.004312 [0.012804] (-0.336759) 0.7369	C(9)	0.001236 [0.001343] (0.920019) 0.3595	0.000709 [0.001068] (0.663718) 0.5081	C(14)	0.176621 [0.194672] (0.907276) 0.3662	-0.020650 [0.255531] (-0.080813) 0.9357
C(5)	-0.004000 [0.014381] (-0.278169) 0.7814	0.008833 [0.008851] (0.997935) 0.3203	C(10)	-0.000438 [0.001243] (-0.352764) 0.7249	-0.000784 [0.000957] (-0.818880) 0.4145	C(15)	0.624788 [0.200140] (3.121752) 0.0023	0.207613 [0.182578] (1.137120) 0.2578
C(16)	-0.065003 [0.097135] (-0.669199) 0.5047	0.218252 [0.126216] (1.729201) 0.0863	C(21)	-0.004335 [0.008394] (-0.516428) 0.6065	-0.012305 [0.013646] (-0.901761) 0.3690	C(26)	-0.667184 [0.457410] (-1.458612) 0.1474	0.187888 [0.366994] (0.511965) 0.6096
C(17)	0.001339 [0.088649] (0.015100) 0.9880	-0.013063 [0.142972] (-0.091371) 0.9274	C(22)	41.68651 [34.53276] (1.207158) 0.2298	65.28446 [34.42633] (1.896353) 0.0603	C(27)	0.131652 [0.221998] (0.593033) 0.5543	1.148816 [0.253702] (4.528208) 0.0000

C(18)	-0.198726 [0.343256] (-0.578945) 0.5638	-1.119149 [0.326718] (-3.425432) 0.0008	C(23)	7.121080 [3.388834] (2.101337) 0.0378	-4.243337 [7.372857] (-0.575535) 0.5660	C(28)	0.040359 [0.202603] (0.199200) 0.8425	-0.415566 [0.287383] (-1.446037) 0.1508
C(19)	-0.271062 [0.498069] (-0.544226) 0.5873	0.356388 [0.410061] (0.869109) 0.3865	C(24)	-1.411851 [3.140360] (-0.449583) 0.6539	4.631908 [7.056716] (0.656383) 0.5128	C(29)	1.539639 [0.784494] (1.962589) 0.0521	-0.425849 [0.656725] (-0.648444) 0.5179
C(20)	-0.009759 [0.009072] (-1.075798) 0.2843	-0.000420 [0.015225] (-0.027558) 0.9781	C(25)	0.132328 [0.444913] (0.297424) 0.7667	0.043800 [0.513635] (0.085274) 0.9322	C(30)	1.733899 [1.138312] (1.523218) 0.1304	0.855093 [0.824251] (1.037417) 0.3016
C(36)	0.142580 [0.123908] (1.150692) 0.2522	0.121658 [0.150528] (0.808209) 0.4206	C(41)	0.121159 [0.317020] (0.382181) 0.7030	-0.158284 [0.241558] (-0.655262) 0.5136	C(46)	15.77389 [35.66379] (0.442294) 0.6591	12.28817 [52.57015] (0.233748) 0.8156
C(37)	0.021839 [0.127389] (0.171437) 0.8642	0.054693 [0.107553] (0.508525) 0.6120	C(42)	-0.008307 [0.005774] (-1.438650) 0.1530	-4.41E-05 [0.008969] (-0.004915) 0.9961	C(47)	2.710755 [5.052694] (0.536497) 0.5927	-2.214061 [3.826406] (-0.578627) 0.5639
C(38)	-0.044068 [0.061827] (-0.712760) 0.4774	0.069244 [0.074351] (0.931315) 0.3536	C(43)	-0.002077 [0.005343] (-0.388848) 0.6981	0.006140 [0.008039] (0.763790) 0.4465	C(48)	9.420061 [5.194618] (1.813427) 0.0724	3.515494 [2.733983] (1.285851) 0.2010
C(39)	-0.040548 [0.056425] (-0.718618) 0.4738	-0.105977 [0.084222] (-1.258316) 0.2107	C(44)	-0.259598 [21.98005] (-0.011811) 0.9906	27.23706 [20.27982] (1.343062) 0.1818	C(49)	-0.081451 [2.521143] (-0.032307) 0.9743	5.948698 [1.889995] (3.147467) 0.0021
C(40)	0.967452 [0.218482] (4.428068) 0.0000	0.991663 [0.192462] (5.152506) 0.0000	C(45)	-65.67078 [38.48560] (-1.706373) 0.0906	-16.11879 [54.92529] (-0.293468) 0.7697	C(50)	-0.678740 [2.300880] (-0.294992) 0.7685	-0.954721 [2.140905] (-0.445943) 0.6564
C(51)	-6.926639 [8.909173] (-0.777473) 0.4385	-9.530590 [4.892376] (-1.948049) 0.0537	C(52)	-8.048921 [12.92735] (-0.622627) 0.5348	8.949756 [6.140394] (1.457521) 0.1476	C(53)	0.040632 [0.235452] (0.172572) 0.8633	0.774004 [0.227983] (3.395012) 0.0009
C(54)	0.035529 [0.217863] (0.163082) 0.8707	-0.287407 [0.204340] (-1.406515) 0.1622	C(55)	2100.681 [896.2950] (2.343738) 0.0208	81.82266 [515.5112] (0.158721) 0.8742	Determinant residual covariance	0.000280	0.000163
[ ] standard error; ( ) t- statistics; below t-statistics is the probability value								

Source: Authors' Computation, 2019.

5. CONCLUSION AND RECOMMENDATIONS

The importance of the manufacturing sector cannot be underestimated as it is unarguably a crucial path to industrialisation in the advanced and developing countries. It is the power house of any nation. It has the capacity to reduce unemployment to its minimum as it provides job opportunities for the unemployed populace in any citizen. The Malaysian government has put in so much effort to develop its manufacturing sector thereby increasing her manufacturing output, which is boosting her economic growth. Nigeria, on the other hand, has to imbibe some lessons from the Malaysian economy. Nigeria needs to shift from the vague ideology that an increase in GDP is all there is to an economy towards the development of the economy. It has to ensure the proper development of the manufacturing sector which has the capacity to cater for the rising demands of the economy, tackle the problem of unemployment and create forward and backward linkages with other sectors of the economy as well as increase aggregate output which boosts economic growth. This assertion was also corroborated in studies by [34], [35], [36], [44].

Therefore, based on the findings of this study, the following recommendations are made. First, the result from this study showed that the foreign direct investment influences the manufacturing value added in Nigeria. There is a direct, significant relationship between manufacturing value added and foreign direct investment. In other words, an increase in the influx of FDI will lead to an increase in the manufacturing value added in Nigeria. This implies that for manufacturing value added to increase, FDI has to be increased. The government should make the economy more liberal towards attracting the inflow of FDI. The government should adopt some incentives like giving tax rebates to investors in order to attract foreign investors into the economy and especially into the manufacturing sector.

The Malaysian economy had tried in this regard. Second, a proper formulation of policies that addresses the key issues in the manufacturing sector should be enacted after accurately analysing the macroeconomic environment in Nigeria from the bottom to top approach for sustainability. Aside the accurate formulation of policies, proper implementation is also critical. Implementation of formulated policies has been an issue in the manufacturing sector. The government should therefore engage the services of well-trained experts who will track and monitor the implementation of all the stages of the policy enacted. Lastly, the Nigerian government should encourage industrialization, if her aspiration of becoming one of the industrialized economies in year 2020 as contained Vision 20:2020 is to materialize. The Nigerian government must make deliberate effort to develop the manufacturing sector. Drawing from the experience of Malaysia, it is seen that the manufacturing sector is one of the major factors that have explained the growth of her economy. It is one of the factors that have contributed to how the Malaysian economy has escaped from the vicious cycle of underdevelopment. This has given way to Malaysia to be recognised as one of the newly industrialized economies in the world.

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