Trade Openness and Manufacturing Sector Growth: 
An Empirical Analysis for Nigeria

Adegbemi B.O Onakoya  
Department of Economics,  
College of Social and Management Sciences,  
Tai Solarin University of Education, Ijagun, Nigeria  
Corresponding Author adegbemionakoya@yahoo.com

Ismail O. Fasanya  
Department of Economics  
University of Ibadan, Ibadan, Nigeria  
fasojnr@yahoo.com

Muhibat T. Babalola  
Department of Economics and Financial Studies  
College of Social and Management Sciences,  
Fountain University, Osogbo, Osun State, Nigeria  
temigal29@yahoo.com

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Abstract  This study examines the impact of trade openness on manufacturing sector performance in the Nigerian economy, using a time series data from 1975 to 2010. The effects of stochastic shocks of each of the endogenous variables are explored using Error Correction Model (ECM). The analysis shows that trade openness is positively related to the performance of the manufacturing sector while exchange rate, inflation rate have a negative impact on the sector performance. The error correction coefficient also indicates rate of adjustment for disequilibrium of the variables shows that growth in the manufacturing sector adjust slowly in the economy. The effective promotion and development of the Manufacturing sector have in Nigeria, not been seriously approached hence, the paucity of study on their impact on the economy. This could, be attributed to a plethora of factors, including a weak technological base and low level of capacity utilization. Also another major finding from this study is that there are significant pay-offs from the policy of trade liberalization. This study therefore recommends that government should avoid short-term fixes and front-loaded deals with other countries and move beyond arrangements that focus solely on the petroleum sector. Also to promote the imports of capital goods, there is need for transparent oversight by a largely monitored by regulatory institutions.

Key Words: Trade openness, Manufacturing Sector, Economic Growth, Cointegration

1.0 Introduction

Trade of a country is a crucial determining factor for the improvement of a nation’s industrialisation. The development experienced by an economy brings forth fluctuations in the structure of trade based on comparative advantage and resource endowments (Hulten, 1967). Trade is an integral part of Nigeria’s economic activity and, among Nigerians at least, it is widely perceived that Nigeria is a very open economy. The Nigerian economic circumstances have over the years, advanced because, of rapidly growing phase of industrialization. The Nigerian economy has also tremendously improved in part due to foreign direct investment supported by high quality research and development. For a considerable period, Nigeria under British colonial rule. After independence, several programmes were put in place to resuscitate the economy of the nation through a set of reforms. One of these reforms is liberalizing trade for improving growth. However, the deliberations over the linkage between growth and trade openness went on for years. A key aspect
of that debate is the imperative need for the poor countries to strive in order to catch up quickly with the best-of-the best in a competitive world.

Due to the efforts at negotiating bilateral connections with other countries, the Nigerian trade situation has over the last decades, received a great stimulus. An overview of the Nigerian economy will not be complete without citing the rising foreign direct investment, which has had positive influence on its commercial and trade business. There have been defective infrastructural facilities, which have hindered the stable growth of the country. However, several steps have been taken to resuscitate the country’s ailing industries via foreign investments and collaborations. The relationship between trade openness and manufacturing productivity growth is a highly debated topic in the growth and development literature, yet this issue is far from being resolved. No clear evidence on the connection between the productivity of manufacturing and trade openness have been presented in the existing growth empirical literature. Some works have provided strong evidence of positive impact of increasing openness on the growth of manufacturing output. Some others on the other hand, could not establish any positively robust relationships. Indeed, some recorded negative relationship between manufacturing output growth and trade openness.1

Several studies on trade openness both theoretical and empirical have based their studies on trade openness and economic growth, examples of the studies include, Harrison (1996), Edward (1998), Ynikkaya (2003), Wacziang (2001), Sinha and Sinha (2000), Njikam (2009) and Adebiyi (2006) among others. Past studies of trade openness on economic growth have found various results, there is however evidence that there is both positive impact and negative impact of trade openness on economic growth.

However, only limited studies explicitly recognize the fact that before there can be economic growth in an economy, there are variables that have to have been efficient and effective in their sectors before there can be economic growth. The manufacturing sector is a major determinant of economic growth, so the study is therefore a contribution to the role and impact that the performance of the manufacturing sector plays as regards trade openness in an economy.

Foreshadowing our main results, we find evidence of positive influence of trade openness on the manufacturing sector performance while exchange rate, inflation rate has a negative impact on the sector performance and also the adjustment for disequilibrium of the variables shows that growth in the manufacturing sector adjust slowly in the economy.

The remainder of the paper is organized as follows: Following section one is section two which deals with the literature review. In Section 3, the methodology and data of the study is pursued while the empirical results are discussed in section four. Section 5 concludes the paper.

2.0 Review of Relevant Literatures

A number of opinions in empirical literature have expressed different views on the linkage between domestic firms output growth and trade liberalisation in an economy. The contention of negative association between manufacturing sector performance and import penetration will hold given that the foreign competition demonstrate and exercises market power over the local companies firms in the domestic economy. The capacity of local companies to sustain prices over and above the average cost is greatly reduced in industries facing with significant import competition levels. This hypothesis found credence in for Pakistan (Amjad, 1977), India (Katkar, 1980), Turkey (Foroutan, 1996) and Morocco (Addadet, Al. 1996). A Malasian study by Beng and Yen (1977), India (Mitra 1997) and Mexico (Weiss, 1999) found concurrence in the supposition that tariffs allow producers to reap high domestic gains. The study of Mexico by Grether (1996) reported that sectors that enjoy less government protective tariffs behaved more competitively. Semenick and Morrison (2000) in another study, found that a reduction in industrial output could result from protectionism because of greater competition than before which may force producers to depart instead of expanding operations.

Protectionist laws attract a several high-cost but small, producers with the consequence for the fragmentation of the home market. An Indian study by Goldar (1986) reported negative effect of import-substitution policies on total factor productivity. This conclusion found concurrence in the Turkish industries case (Krueger and Tuncer 1982). Foreign exchange restrictions and non-substitutability between domestic and imports intermediate on the one hand and capital inputs, together with the level of fixed capacity may make an economy idle especially where import-substitution policy is in place. In a study of the Egyptian (Handoussa, Nishimizu and Page, 1986) and Chilean economy by Condon, Corbo and de Melo (1984) shows that the Technical Factor Productivity (TFP) promotes growth after trade opening. A study conducted in

Malawi, Mulaga and Weiss (1996) contends that between 1987 and 1991, the slim improvement recorded in TFP was due to trade reforms. The explanation for this being that as companies how hitherto previously faced foreign exchange shortage were able to stock up raw materials and spare parts in order to achieve higher operational capacity. The authors were not able to record linkage between the fall in protection and TFP when TFP estimates adjusted for change in capacity utilisation was used. The TFP in this case, does not reveal improvement in productivity, because of movement from one production frontier to another which do not seem to relate with exposure to foreign competition on a systematic basis.

Nishimizu and Robinson (1984) using the growth decomposition measure found a significant and positive linkage among import liberalization, export expansion, and growth. This arises from critical relevance of non-substitutable intermediate inputs importation, capital goods constraints and foreign exchange restrictions. The result is the growth of TFP in the manufacturing sector and higher level exports due also to the incentives of competitive cost-reducing in explaining the growth of productivity, a multiple regression framework of four industrialized countries: Yugoslavia South Korea, Turkey and Japan. The total factor productivity in South Korea grew at two-digit ISIC level. This was more rapid than the growth of Turkey and Yugoslavia. The outward-looking strategy adopted by South Korea appears to have promoted infant industries which demonstrated better performance. Turkey entered into rapid and fruitful export promotion during 1963 and 1976. The country experienced successful era of import substitution policies, which allowed its infant industries reached maturity level. The export from 1970 to 1973 in Turkey however declined largely because the government incentives of exports were removed. This is contradictory to the findings of Krueger and Tuncer’s (1982) that found that trade protection do not engender productivity growth. Indeed the supposition may not be true that well-defined production technologies do not exist in all plants and machineries within an industry. ybout (1992) went further by measuring plant level growth productivity in Morocco, Chile, and Colombia. The model of Tybout shows that expansion in output came not only from growth productivity, but also that change in productivity accompanied changes in the net entry or scale. Tybout (1992) also reported positively link between growth output and entry which did not significantly connect with the exit of firms, and higher rates of effective protection concomitant with large plant size. This is especially so at the lower end of size distribution.

Based on the argument aforementioned, the hypothesis of positive influence of trade opening on the growth of manufacturing productivity obtained some concurrence in the literature. Some of these works include India (Soo, 2008; Krishna and Mitra, 1997), in Cote d’Ivoire (Harrison, 1993), South Korea (Kim, 2000: Dongsuk 1992), for Mexico, (Weiss, 1992: Tyboutand Westbrook, 1995), Thailand, Indonesia (Kristiono, 1997: Sjoholm, 1997), for Chile, (Rodrigo, 1995) and Sri Lanka (Weiss and Jayanthakumaran, 1994).

Tybout (2000) and Epifani (2003) made a survey of developing countries on the possible impact of trade policies on manufacturing firms. Some of the studies examined the effect of internal economies of scale as correlate between productivity and trade liberalization. Tybout and Westbrook 1995 additionally concluded that the scale of efficiency gains are negligible and are not related to trade liberalization. Firm-level studies by Pavcnik (2002) and Tybout (2001) also submit that resources re-allocation from to less more productive firms account for the gains in productivity. Tybout (1996) had earlier, using Chilean firm data for the period 1975 to 1985, estimated the turnover effects linked to trade policies. The study reveals importance of net exit on rising aggregate productivity. The critical component of productivity gains, net exit was in fact responsible for the import of the competing industries. For Morocco however, the contrary, net entry caused decline in the aggregate productivity (Haddad, et al 1996). A third source of productivity gains at aggregate level was found to be related with policies of trade liberalization because of improvements of efficiency in intra-firm operations. The growth of productivity was also ascribed to intra-firm movements by Roberts (1996) who for Colombia deployed firm-level data for a period of ten years (1977- 1987. Without exploring why liberalization the trade may influence productivity, some industry-level and firm data were estimated by some studies. They report significant and positive association between productivity and trade measures (Haddad 1993, Paus et. al. 2003).

Sharma, Jayasuriya and Oczkowski (2000)’s study was based on the review of Nepalese manufacturing industries. They submit that although exchange rate and trade policy reforms are not sufficient conditions although such can be necessary variables for the improvement of productivity growth in the “least developed” economies. Some other factors such as human capital shortages, appropriate investment policies, and physical infrastructure will have to be addressed if the countries are to harness the potential productivity improvements. Jenkins (1995) in the Bolivian case, found very little evidence that trade liberalization is a necessary and sufficient condition for rapid productivity growth Bolivia experienced lack of investment, a high real rate of interest and lack of organizational change during this period. As a result, increased productivity through these factors was insignificant.

Finally, Nijkam, Binam and Tachi (2006) over the period 1965-2000 evaluated the factors accounting the variations, in total factor productivity (TFP) across sub-Sahara Africa (SSA) countries. The study using data in 3-year averages of annual, cross-section data, determined the fixed-effects as well as the seemingly unrelated regression (SUR). The results show that (i) openness to world trade is conducive to TFP in SSA region only if issues related to supply conditions such as poor
transport and communication infrastructure, erratic supply of electric energy. Corruption and bad governance, insufficient education of the labour force etc are adequately addressed, (ii) physical capital accumulation is important for TFP, (iii) the size of the financial sector matters for TFP, in some SSA countries and negative for TFP in other SSA countries.

In short, the results of research on the relation between openness and manufacturing sector growth vary depending upon the models, data and countries of analysis. Therefore, the debate over the impact of trade openness on manufacturing sector growth is on-going and left open to further study.

3.0 Methodology and Data

3.1 Model Specification

The theoretical foundation of this work rest on the Heckscher-Ohlin model. The Heckscher-Ohlin model is a general equilibrium mathematical model of international trade. It is predicated on the comparative advantage theory of Ricardo which by supposition, can be applied to predict patterns of production and commerce grounded on the endowments of factor resources of a trading region. The model states that countries will concentrate on exporting of products based on the abundance of cheap factors of production. In return, import are of the scarce resource factors. The Heckscher Ohlin model serves as a platform on which the empirical model is formulated as follows.

The empirical model starts with the pristine production function of the Cobb-Douglas type that reflects the true production of a given industry.

\[ Y = AK^\beta_1 L^\beta_2 \]  

Y is the output level, A is technical efficiency of the sector, L represents number of workers and K represents the stock of capital.

Endogenising trade impact into equation one with an assumption that the country is an open economy generates;

\[ Y = AK^\beta_1 L^\beta_2 T^\beta_3 \]  

The production function follows a constant return to scale (CRS) such that \( \beta_1 + \beta_2 + \beta_3 = 1 \)

In logarithms, the true production function can be expressed as:

\[ \ln Y = \ln A + \beta_1 \ln K + \beta_2 \ln L + \beta_3 \ln T \]  

We have adopted the model of Sinha and Sinha (2000), which states that the GDP growth has three growth components, namely; trade growth, labour growth and investment growth. The volume of trade (import plus export)/GDP is used as proxy of openness. The following equation is then derived.

\[ MYG = \beta_0 + \beta_1 IG + \beta_2 PG + \beta_3 TG + \beta_4 INF + \beta_5 REER + \varepsilon \]  

MYG refers to manufacturing output growth; TG is trade growth – proxy for openness; IG is Investment growth; PG is employment growth in the sector; INF is inflation rate; REER is real exchange rate; \( \varepsilon \) is the error term. This research is also concerned with the terms \( \beta_0 (=\ln A) \)

3.2 Estimation Technique and methodology

In order to develop strong, robust and reliable models that capture the relationship between trade openness and manufacturing output growth, the research work adopts the econometric techniques of the Error Correction Term (ECT) as the estimation technique. The method of ECT is extensively, used in regression analysis primarily because it is initiatively appealing and mathematically much simpler than any other econometric technique (Gujarati, 2003). The error correction term indicates the speed of the adjustment, which restores equilibrium in the dynamic model.

\[ \Delta MYG_t = \alpha_0 + \sum_{i=1}^{j} a_{1i} \Delta MYG_{t-i} + \sum_{i=1}^{j} a_{2i} \Delta TG_{t-i} + \sum_{i=1}^{j} a_{3i} \Delta IG_{t-i} + \sum_{i=1}^{j} a_{4i} \Delta PG_{t-i} + \sum_{i=1}^{j} a_{5i} \Delta INF_{t-i} + \sum_{i=1}^{j} a_{6i} \Delta REER_{t-i} + \alpha_7 ECM_{t-1} + \delta_t \]  

As this study involves time series data, the ordinary least square (OLS) method cannot, be applied unless it is, established that the variables concerned are stationary. For this paper, we have applied unit root test to check the stationarity of the variables under study. Specifically, the Augmented Dickey-Fuller (ADF) and Phillip-Perron test (PP) are used; the ADF and PP are used to
avoid spurious regression thereby subjecting each of the variables used to unit root test so, as to determine their orders of integration since unit root problem is a common feature of most time series data.

3.3 Data Sources

The research study makes use of secondary data. The data used are obtained from the Central Bank of Nigeria (CBN) statistical bulletin 2010 and Penn World Data.

4.0 Empirical Results

4.1 Descriptive Statistics

The summary of the statistics used in this empirical study is, presented in Table 1 below. As observed from the Table, MYG as a has the mean value of 11.21767 and the mean value of (INF) has the highest mean value of 20.55208 whereas the mean values of TG, IG, PG and REER are 11.21767, 11.36799, 11.36799 and 2.344606 respectively. The analysis was, also fortified by the values of the skewness and kurtosis of all the variables involved in the models. The skewness is a measure of the symmetry of the histogram while the kurtosis is a measure of the tail shape of the histogram. The benchmark for symmetrical distribution i.e. for the skewness is how close the variable is to zero while the case of the kurtosis is three (mesokurtic) but values lower than that is called platykurtic and above is referred to as leptokurtic.

Table 1

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean</th>
<th>Median</th>
<th>Maximum</th>
<th>Minimum</th>
<th>Std. Dev.</th>
<th>Skewness</th>
<th>Kurtosis</th>
<th>Jarque-Bera</th>
<th>Observations</th>
</tr>
</thead>
<tbody>
<tr>
<td>MYG</td>
<td>11.21767</td>
<td>11.59682</td>
<td>11.97767</td>
<td>8.917713</td>
<td>0.963798</td>
<td>-1.597378</td>
<td>3.902516</td>
<td>16.53151</td>
<td>36</td>
</tr>
<tr>
<td>TG</td>
<td>11.21767</td>
<td>11.59682</td>
<td>11.97767</td>
<td>8.917713</td>
<td>0.963798</td>
<td>-1.597378</td>
<td>3.902516</td>
<td>16.53151</td>
<td>36</td>
</tr>
<tr>
<td>IG</td>
<td>11.36799</td>
<td>11.32467</td>
<td>14.70862</td>
<td>8.521145</td>
<td>1.995797</td>
<td>0.244273</td>
<td>1.640693</td>
<td>3.129587</td>
<td>36</td>
</tr>
<tr>
<td>PG</td>
<td>2.492094</td>
<td>2.495455</td>
<td>3.111829</td>
<td>1.610936</td>
<td>2.6158</td>
<td>0.029297</td>
<td>2.404800</td>
<td>0.536545</td>
<td>36</td>
</tr>
<tr>
<td>REER</td>
<td>2.344606</td>
<td>2.968233</td>
<td>5.003275</td>
<td>-0.604404</td>
<td>1.489451</td>
<td>-0.161476</td>
<td>1.462111</td>
<td>3.704103</td>
<td>36</td>
</tr>
</tbody>
</table>

Source: Computed by the Researchers

4.2 Result of Unit Root Test

In this analysis, the model with constant is considered. The null hypothesis in both the ADF and PP test is that there is the presence of unit root. Table 2 and 3 below report the results of ADF and PP test respectively.

Table 2: Augmented-Dickey Fuller (ADF) Test

<table>
<thead>
<tr>
<th>Variables</th>
<th>ADF Values</th>
<th>Mackinnon Critical Values</th>
<th>Order of Integration</th>
</tr>
</thead>
<tbody>
<tr>
<td>MYG</td>
<td>-6.422229*</td>
<td>-3.6394</td>
<td>I(1)</td>
</tr>
<tr>
<td>TG</td>
<td>-7.2556*</td>
<td>-3.6394</td>
<td>I(1)</td>
</tr>
<tr>
<td>IG</td>
<td>-2.9249*</td>
<td>-2.6158</td>
<td>1(0)</td>
</tr>
<tr>
<td>PG</td>
<td>-5.1794**</td>
<td>-3.6394</td>
<td>I(1)</td>
</tr>
<tr>
<td>INF</td>
<td>-2.9827**</td>
<td>-2.9484</td>
<td>I(0)</td>
</tr>
<tr>
<td>REER</td>
<td>-5.6964*</td>
<td>-3.6394</td>
<td>I(1)</td>
</tr>
</tbody>
</table>

Source: Computed by the Researchers

Note: One, two and three asterisk denotes rejection of the null hypothesis at 1%, 5% and 10% respectively based on Mackinnon critical values.
The above results i.e. ADF test shows that all the variables are stationary at first difference with the exception of IG and INF. This means not all the variables are integrated of order 1, some are of level while the others are of order one.

Table 3: Phillip-Perron Test (PP)

<table>
<thead>
<tr>
<th>Variables</th>
<th>PP Values</th>
<th>Mackinnon Critical Values</th>
<th>Order of Integration</th>
</tr>
</thead>
<tbody>
<tr>
<td>MYG</td>
<td>-7.282436*</td>
<td>-3.6329</td>
<td>I(1)</td>
</tr>
<tr>
<td>TG</td>
<td>-7.1854**</td>
<td>-3.6394</td>
<td>I(1)</td>
</tr>
<tr>
<td>IG</td>
<td>-5.0592*</td>
<td>-3.6329</td>
<td>I(0)</td>
</tr>
<tr>
<td>PG</td>
<td>-7.6373**</td>
<td>-3.6394</td>
<td>I(1)</td>
</tr>
<tr>
<td>INF</td>
<td>-3.0478**</td>
<td>-2.9484</td>
<td>I(0)</td>
</tr>
<tr>
<td>REER</td>
<td>-5.7085*</td>
<td>-3.6394</td>
<td>I(1)</td>
</tr>
</tbody>
</table>

Source: Computed by the Researchers

Note: One, two and three asterisk denotes rejection of the null hypothesis at 1%, 5% and 10% respectively based on Mackinnon critical values

The above results i.e. Phillip-Perron test shows that all the variables are stationary at first difference with the exception of INF and IG. The two tests produce similar results. Therefore, the PP method is adopted for the research work where the findings reveal that nearly all variables are in the first difference, stationary at 99 percent significance level. Therefore, all variables are integrated and non-stationary of level order and order 1.

4.3 The Co integration Analysis Results and Interpretation

In determining the number of co integrating vectors, trace test and maximum Eigen value test using the more recent critical values of Mackinnon-Haug-Michelis (1999) was applied. The assumption of no deterministic trend and restricted constant was for all the variables. The choice was tested using (AIC) and Schwartz Information Criterion (SIC). The result for both trace test and maximum Eigen value for unrestricted co integration rank test are presented in Table 4

Table 4: Johansen Cointegration Result

<table>
<thead>
<tr>
<th>Hypothesized No. of CE(s)</th>
<th>Eigen value</th>
<th>Max-Eigen value</th>
<th>Critical value</th>
<th>Trace statistic</th>
<th>Critical value</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>0.85208</td>
<td>64.9788**</td>
<td>39.37</td>
<td>45.10</td>
<td>136.050**</td>
</tr>
<tr>
<td>At most 1</td>
<td>0.60727</td>
<td>31.7774*</td>
<td>33.46</td>
<td>38.77</td>
<td>71.0711*</td>
</tr>
<tr>
<td>At most 2</td>
<td>0.42079</td>
<td>18.5672</td>
<td>27.07</td>
<td>32.24</td>
<td>39.2936</td>
</tr>
<tr>
<td>At most 3</td>
<td>0.32645</td>
<td>13.4370</td>
<td>20.97</td>
<td>25.52</td>
<td>20.7263</td>
</tr>
<tr>
<td>At most 4</td>
<td>0.17458</td>
<td>6.52370</td>
<td>14.07</td>
<td>18.63</td>
<td>7.28931</td>
</tr>
<tr>
<td>At most 5</td>
<td>0.02226</td>
<td>0.76561</td>
<td>3.76</td>
<td>6.65</td>
<td>0.76561</td>
</tr>
</tbody>
</table>

Source: Computed by the Researchers

*(***) denotes rejection of the hypothesis at the 5 % (1%) level

From Table 4 above, it is observed that both the Trace test and Max-Eigen statistic indicates two integrating equations at 5% level of significance and one integrating equation at 1% significance level. Based on the evidence above, we can safely reject the null hypothesis (H0) which says that there is no co integrating vectors and conveniently accept the alternative hypothesis of the presence of co integrating vectors. Thus, we can conclude that a long run relationship exists among the variables. This result means that in Nigeria’s case, the hypothesis of no co integration among the variables should be rejected. Therefore there exists a long run relationship among the variables, which are –MYG, TG, IG, PG, INF and REER.

4.4 Model Estimation Issues and Discussion of Results

The result of our co integration test reveals that at least one co integrating vectors exist among the variables of interest. This means that we can estimate the Error Correction Model. An Error Correction Model is deployed for utilization in the event of co integrated and non-stationarity of series. The ECM has in built co integration relationship built into the specification so
that it restricts the long-run characteristics of the variables (endogenous) to congregate to their co integrating relationships while allowing for short-run adjustment dynamics. The use of the methodology of co integration and ECM add more quality, flexibility and versatility to the econometric modeling of dynamic systems and the integration of short-run dynamics with the long-run equilibrium. The Error Correction Models were evaluated using the conventional diagnostic tests and the Schwarz Information Criterion (SIC) was adopted in choosing the appropriate lag length. The model with the lowest (SIC) was adopted. The results are of the co integrating relationship amongst the variables within the ECM framework are presented in Table 5 below.

Table 5: Parsimonious Error Correction Estimate

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>6.8149</td>
<td>3.8716*</td>
<td>0.0037</td>
</tr>
<tr>
<td>D(In(MYG(-2)))</td>
<td>0.3684</td>
<td>1.49679</td>
<td>0.1475</td>
</tr>
<tr>
<td>D(TG(-1))</td>
<td>0.0092</td>
<td>0.2373</td>
<td>0.8144</td>
</tr>
<tr>
<td>D(In(IG(-1)))</td>
<td>0.5688</td>
<td>1.7169***</td>
<td>0.0989</td>
</tr>
<tr>
<td>D(PG(-2))</td>
<td>-0.2074</td>
<td>-0.5615</td>
<td>0.5796</td>
</tr>
<tr>
<td>D(INF(-2))</td>
<td>-0.0023</td>
<td>-0.4845</td>
<td>0.6324</td>
</tr>
<tr>
<td>D(In(REER(-1)))</td>
<td>-0.0648</td>
<td>-0.3070</td>
<td>0.7615</td>
</tr>
<tr>
<td>ECM(-1)</td>
<td>-0.3246</td>
<td>-2.0092**</td>
<td>0.0549</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.4839</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adjusted R-squared</td>
<td>0.4281</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Durbin-Watson stat</td>
<td>1.9414</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Computed by the Researchers

The analysis on the impact of trade openness on the manufacturing sector is presented in the table above. The result obtained from the dynamic model indicates that the overall coefficient of determination (R²) shows that 48.39 percent of growth rate of MYG is explained by the variables in the equation. As the adjusted (R²) tends to purge the influence of the number of included explanatory variables, the (R²) of 0.4281 shows that having removed the influence of the explanatory variables, the dependent variable is explained in the equation by 42.81 percent. The Durbin Watson (D.W) statistics of 1.94 as it is significantly below the bench mark of 2, we can conclude that there is no auto- correlation or serial correlation in the model specification; hence the assumption of linearity is not violated.

In terms of the signs and magnitude of the coefficients which signify the impact of trade openness on the manufacturing sector, it can be seen that all the variables MYG, TG, INF and REER except IG and PG concur with a’priori theoretical expectation. The significant coefficients of all exogenous variables clearly state that Nigeria’s economy manufacturing growth rate depends on growth of investment, population and foreign exchange in the long run. Above all trade openness has a positive impact on growth of MYG, though small but still significant. From the table a unit change in trade openness brings about 0.9% increase in growth of MYG thereby suggesting that there are other relevant variables apart from trade openness that can lead to manufacturing sector development. Also exchange rate has a negative impact on growth of MYG and this is because there has not been a stable policy in exchange rate by the CBN. The variable exchange rate is important but it does not significantly affect the growth of MYG positively. A unit change in REER brings about 6% decrease in the growth of MYG. Also inflation has a negative impact on BG. A unit change in INF brings about a 0.1% change in growth of MYG. In terms of t-statistics, all variables are not statistically significant with the exception of IG which is significant at 10%.

The estimated ECM term coefficient reveals the variables adjust needed to correct imbalance in the growth condition. The variable coefficients also highlights the short-run impact of the variations in the independent variables on the dependent variable. The results endorse the position that the growth in the Nigerian manufacturing output is rigged with an automatic transmission mechanism and that in Nigeria manufacturing output growth responds to deviances from equilibrium in a balancing manner. A (-0.324) value for the ECM coefficients means that a 32% fast speed of adjustment strategy. The results
of this paper authenticate the findings of Tybout (2000), Epifani (2003), Soo, (2008) and Madheswaran et al (2007) that trade liberalization has a substantially greater impact on manufacturing sector performance.

5.0 Concluding Remark

The study has been preoccupied with the impact of trade liberalization on the manufacturing sector in the Nigerian economy. The development of Manufacturing sector and its effective promotion have not been approached seriously in Nigeria; hence, the lack of their impact in the economy. Important findings were discovered during the course of this research, one is the relatively low productivity in the Nigerian manufacturing sector. This could be attributed to a plethora of factors, including a weak technological base and low level of capacity utilization. Also another major finding from this study is that there are significant pay-offs from the policy of trade liberalization. The current policy of trade liberalization, which emphasizes lower tariffs and increasing openness of the economy, was found to be growth enhancing.

The manufacturing sector is a very important sector in the economy requiring efficient and effective management to increase the level of growth and development. It is therefore, important to consider conditions that would ensure sustained growth in this sector. So the following recommendations are discovered from the cause of the study, they include;

i. Policies must be formulated to stimulate the importation of capital goods. Also, advanced and new technologies must be generated and developed to enhance industrial value added growth which should engender economic growth in positively.

ii. The Nigerian government should shun short-term solutions and focus arrangements beyond the sole focus on the oil and gas sector. Nigeria’s economy can only be temporarily driven using high commodity prices vehicle for driving a sustainable growth through diversified economic mechanism.

iii. Nigerians should be practical in striving to “build institutions.” In Africa countries especially Nigeria, previous institutional building attempts have not worked because they concentrated in just uprooting and transplanting developed countries institutions. The process is not revolutionary but dependent on strong leadership and political will in making the necessary changes.

References


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