

Trade Liberalization and Manufacturing Sector in Nigeria

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Abstract

This study analyzed the link between trade liberalization and manufacturing sector of Nigeria from 1986 to 2018. Autoregressive Distributed Lag (ARDL) and Pairwise Granger Causality econometric techniques were used for analysis. The existence of dynamic relationship was established between output of manufacturing sector and trade liberalization. Also, it was found that trade liberalization exerted indirect and significant impact on productivity of manufacturing sector while the causality findings indicated independent causality linking trade liberalization to output of manufacturing sector in Nigeria. This implies that trade policy impede the development and enhancement of manufacturing sector resulting from the country's over-reliance on foreign products. It was however concluded that policy on international trade has undesirable impact on output of manufacturing sector. Thus policies on trade barrier should be totally removed in order to make the economy more open to foreign trade and putting in place structures to enhance the survival and performance of local manufacturing firms. Also, policy that will ensure stability of the nation's currency in relation to major countries currencies should be formulated to make the importation of foreign raw materials more cheaper and facilitate exportation of manufacturing output.

Keywords

Autoregressive distributed lag, manufacturing sector, trade liberalization, trade openness

JEL Codes: C22, O, F41, E23, F13

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1. Introduction

Foreign trade is significant in an economy because trade encourages inflow of commodities that cannot be manufactured locally and exportation of goods foreign earnings which is beneficial to the economy. This prompted countries especially developing countries like Nigeria to formulate policies that improve the trade relation of the economy with more developed countries like China, United State of America, Germany and Great Britain. The policy of trade liberalization is formulated by government to promote international trade among countries. This policy which implies the elimination of impediment to trade encourages openness and enhances trade relationship of countries. Ojeyinka & Ajegboye (2017); Alawin *et al.*, (2017) opined that trade liberation has the capacity to provide employment opportunities, promote competition, facilitates transfer of knowledge and enhance standard of living through stimulation of trade relationships.

It has been argued in literature that policy of trade liberalization is a germane tool for enhancing economic performance (Chenery & Stout, 1996; Ratnaike 2012; Emerenini & Ohadima, 2018). Jayanthakumaran (2002) opined that trade liberalization has the capacity to encourage exports and output by taken advantage of comparative opportunities through openness to international market, superior technological improvement and greater productive efficiency. Furthermore, trade liberalization has the capacity to engender growth through the enhancement of sectoral production, cut inefficiency and reduce production costs which promote economic performance (Iyoha & Oriakhi, 2003; Ojeyinka & Adegboye, 2017).

Industrialization of the manufacturing sector has been the major focus of both developed and developing countries like China, Great Britain, United State of America, Russia, Germany, Japan, Nigeria, South Africa, Malaysia and Ghana among others. This is because manufacturing sector industrialization fast tracks and enhances real sector growth which is germane to achieving sustainable growth. Manufacturing sector development promotes economic efficiency and technological innovation. It enhances economic performance through creation of employment opportunities, enlargement of market size, efficient utilization of resources and promotion of technical efficiency (Kim, 2000; Ogu *et al.*, 2016). As result of the significance role of manufacturing sector in promoting economic performance, most less developing and African countries like Asian Tigers, China, Malaysia, Nigeria, South Africa and Ghana among formulated diverse policies aimed at industrialization their real sector. The linkage between trade liberalization and manufacturing sector resulted from the greater benefits inherent in international trade and degree of openness. Openness to trade through trade liberalization promotes technological invention and innovations and spillovers coupled with the importation of capital equipment and important raw materials which are germane for industrial growth (Umer & Alam, 2013). Also, trade liberalization increases

openness and access to international market which gives opportunities to countries to enjoy benefits accruing from trade such as international capital, innovations and markets for the sales of local industrial based goods.

Following the need to diversify the economy and enhance manufacturing sector efficiency and performance, government of Nigeria have formulated diverse policies among which include Green Revolution of 1980, privatization policy and other trade policies (Duru; 2012; Akinwale & Adekunle, 2018). These policies were aimed at promoting real sector growth, production of imported goods and encouragement export. However, trade liberalization gained higher attention in Nigeria through the adoption of liberalization policies in 1986. This policy was initiated to reduce the overreliance on crude which has greatly affected the economic structure and foreign reserves of the nation due to unstable in oil price with emphasis on important sector of the economy like manufacturing, mining and agriculture (Ebenyi *et al.*, 2017). Also, after the SAP policy, numerous policies have been adopted to ease obstacles to international trade and encourage openness of the nation to global market with the aim of ensuring that the real sector have access to raw materials and technological inventions offered by developed countries. Despite these policies, the input of the real sector to overall productivities has been sluggish over time. Base on availability statistics, manufacturing sector contribution to national output has been discouraging. Also, in terms of contribution to non oil export, the manufacturing sector has not enough as expected. The contribution of the sector to export though increased from 6.4% in 2013, to 9.11% in 2014 and 13.57% in 2015, it fell to 13.56% in 2016, 9.34% in 2017 and 8.68% in 2018 (CBN, 2018).

The manufacturing sector has continued to experience underperformance, shortage of raw materials, inefficiency and technological breakdown. While efforts has been made by government to enhance manufacturing sector performance through promotion of production and consumption of locally made products and SMEs development, the underutilization of resources and low capacity of the manufacturing sector is still worrisome. The manufacturing sector currently lacks the capacity to cater for the teeming population of the nation with over- dependence on imports. The implication of this has been greatly felt in the economy with nation currently experiencing high unemployment rate, increase in poverty, sluggish growth rate and balance of payments distortion (Ojeyinka & Adegboye, 2017). The implication of trade liberalization on manufacturing sector has been a subject of wide discussion among scholars in Nigeria with findings showing diverse results regarding the link between policy of trade liberalization and the growth and performance of manufacturing sector. While some studies established that trade liberalization is growth inducing to the sector (Adenikinju & Chete, 2002; Adebisi & Dauda, 2004; Asongo *et al.*, 2013; Umoru & Eborieme, 2013), more recent studies showed that trade liberalization hurt the manufacturing sector (Ogu *et al.*, 2016; Ojeyinka & Adegboye, 2017; Ebenyi *et al.*, 2017; Emerenini & Ohadima, 2018) which might result from different in time period and method of data analysis employed in the studies.

While some studies used ordinary least square such as Adenikinju & Chete (2002); Asongo *et al.*, (2013); Ogbu *et al.*, (2016), some employed error correction model (Adebisi & Dauda, 2004; Umoru & Eborieme, 2013; Ebenyi *et al.*, 2017; Emerenini & Ohadima, 2018). However, none of the reviewed literature employed a more dynamic technique to investigate how international trade policy influences the manufacturing sector's performance and proeductivity which was employed in this article. This would give room for new findings in knowing when trade liberalization policy is more effective which may be in a longer period or shorter time for adequate policy formulation. Furthermore, the reviewed literature failed to analyze the direction of causality between trade liberalization and manufacturing sector performance. By extension, this study advanced on existing studies by capturing the current situation of the Nigerian economy which is germane given the need to encourage diversification from oil which has been the mainstay of the nation to other sector like Nigeria. In light of the above, the consequence of international trade policy on manufacturing sector in Nigeria was explored. Following this section, the other section of the article is ordered into review of literature, methodology adopted in the study, discussion of findings and finally conclusion and implication.

2. Literature review

Trade liberalization involves the elimination of impediment to international trade. Ratnaik (2012), Gnanon (2017) averred that trade liberalization policy is as trade-related decisions involves the reduction or elimination of factors that impede the progress of international trade. Thus, the policy of trade liberalization encourages the unlimited international trade at more liberalized level among nations of the world (World Trade Organization, 2011b). Asongo *et al.* (2013); Emerenini & Ohadima (2018) stated that trade liberalization involves elimination of barriers with the aim of increasing integration in the world market for goods, tradable service, financial assets, human capital and even technology. Manufacturing activities involves the production of finished goods from diverse production factors. Manufacturing sector comprises of companies that engaged all factors production in the production of value enhancing goods for profit generation motive. The manufacturing sector has been identified has agent of development in terms of employment creation, generation of foreign earnings, contributions to gross domestic product and economic performance among others (Adenikinju & Chete, 2002; Ogbu *et al.*, 2016; Ebenyi *et al.*, 2017). Coupled with the need to diversify the economy and

significance role played by the manufacturing sector, governments of major nations in the world have formulated several policies to stimulate the activities and performance of the sector among which is trade liberalization policy. Theoretically, trade liberalization promotes the redistribution of limited economic resources from the areas of low or under utilization to the areas of effective efficiency and effectiveness of utilization, thereby improving standard of living, contributing to growth and promoting effective distribution of income (Gnangnon, 2018). According to Chenery & Stout (1996), stated trade liberalization contributes to enlargement of the manufacturing sector in term market size and scope of specialization. It encourages the flow of improved technologies and lower production costs which contribute to growth and development.

Kim (2000) studied how productivity growth of manufacturing sector is influence by trade openness in Korean. Findings indicated that trade liberalization had encouraging relationship with productivity performance. Jayanthakumaran (2002) undertook review of literature on how trade liberalization policy influence real sector performance. It was found that trade policy measures influenced productivity positively. Adenikinju & Chete (2002) looked at how liberalization policy affects manufacturing sector productivity in Nigeria. The study employed OLS regression technique and it was reported that trade liberalization was performance improving.

In their study, Adebisi & Dauda (2004) determine the effect of trade liberalization policy on industrial sector performance. It was found that the policy of trade liberalization significantly influence industrial output in Nigeria. Mouelhi (2007) found that international trade obstacles insignificantly influence manufacturing sector. Chandran & Munusamy (2009) found that trade openness had direct and important influence on manufacturing value added in Malaysia. Asongo *et al.* (2013) found that trade liberalization policy had mixed effect on manufacturing sector performance from 1989 to 2006. Umoru and Eboriemi (2013) analyzed the linkage between policy of trade liberalization and performance of industrial sector. Error correction model findings trade liberalization policy improved industrial sector output in Nigeria. Edeme & Karimo (2014) examined the effect of liberalization policy on industrial sector performance between 1986 and 2013. It was found from the regression result that financial deepening enhanced aggregate industrial sector productivity. Using Ordinary Least Square technique, Olowe & Ibraheem (2015) found that trade liberalization impede growth of Nigeria economy. Ogu *et al.* (2016) studied the effect of trade liberalization on manufacturing sector growth in Nigeria using OLS. It was indicated that liberalization policy negatively affects manufacturing sector performance. Alawin *et al.* (2017) examined the impact of the degree of trade openness on manufacturing sector productivity in Jordan. Chow test and co-integration techniques were employed. It was revealed that openness had direct relationship with manufacturing productivity.

Ojeyinka & Adegboye (2017) assessed how the policy of trade liberalization impacted agricultural and manufacturing sectors using GMM technique. It was found that trade liberalization policy improved agricultural sector but the policy impede the output of manufacturing sector. Ebenyi *et al.* (2017) found trade liberalization policy is did not contribute manufacturing sector performance in Nigeria. Gnangnon (2018) studied how bilateral trade liberalization influence economic growth rate in 150 countries from 1995 to 2015. The study showed that bilateral trade liberalization improved economic growth. Emerenini & Ohadima (2018) analyzed how trade liberalization influences the performance if manufacturing sector in Nigeria. It was found that the trade openness, exports and balance of payment had negative effect on manufacturing sector output.

In summary, in line with the gap indentified in introductory section, most of the studies adopted different econometric techniques which resulted in diverse result with some studies establishing trade liberalization policy enhanced manufacturing sector output while some found that foreign trade liberalization policy serves as bane to manufacturing sector. This paper however used dynamic technique to investigate the linkage between liberalization policy and performance of manufacturing sector. Also, the direction of causality between trade liberalization policy and output of manufacturing sector which was not conducted in previous studies would be established using Pairwise Granger Causality technique. Given the fact that most of the studies were conducted at different period of time, this study was extended to 2018 to capture the current situation in Nigeria.

3. Methodology of research

3.1. Design and source of data

Quantitative design was adopted to explore how trade liberalization policy influence performance of manufacturing output in Nigeria. It employed secondary data from 1986 to 2018. The data were collected from the Statistical Bulletin of Central Bank of Nigeria.

3.2 Model specification

The model for the study is supported by the liberalism theory of industrialization which stressed the role of government policies through openness of the economy to international market for new opportunities and investment. The theory emphasized that for an economy to witness overall growth; industrial sector must be developed through openness of the

economy to international relations. However, the model of Ojeyinka & Abiodun (2017) wherein manufacturing sector productivity and agricultural productivity were modeled as a function of trade openness and other control variables like Inflation rate and exchange rate. However, in this study, inflation rate, lending rate and credit to private sector are included in the model as control variables to capture the financial aspect of liberalization. Thus, the model for the study is given as:

$$MOUT = f(DOO, EXR, LR, CPS, INFR) \tag{1}$$

The above model can be stated in a multiple linear equation as follows:

$$LMOUT = a_0 + a_1DOO + a_2LEXR + a_3LR + a_4LCPS_t + a_5INFR + U \tag{2}$$

Where:

LMOUT = Log of Manufacturing Sector's Output. This is measured manufacturing sector's output in the growth of the economy; DOO = Degree of Openness. The percentage of total trade to overall economic productivity; LEXR = Log of Exchange rate. This is the exchange rate of dollar to naira; LR = Lending Rate. This measured the prevailing interest rate on borrowing; LCPS = Log of Credit to Private Sector. This measured the total amount of credit that flows from financial sector to real or manufacturing sector; INFR = Inflation Rate. This is captured by the prevailing consumer price index, a_0 = Constant; $a_1 - a_5$ = Parameters to be estimated; U = Stochastic error term.

3.3. Method of data analysis

The econometric model of the effect of the independent variables (measured as degree of openness, exchange rate, lending rate, credit to private sector, inflation rate) on the dependent variable (manufacturing output) is conducted using multiple regression econometric technique. However, prior to the model estimation of equation (2), Augmented Dickey-Fuller Unit Root Test (ADF) was employed to determine the order of integration of the time series data. The estimation of the stationarity property of the variables is important to avoid the problem of spurious regression and to ensure that variables conform to the Autoregressive Distributed Lag (ARDL) assumption of level or combination of level and first difference. Furthermore, the co-integration relationship among the variables was ascertained using Bound Test technique. The study used ARDL to estimate effect of degree of openness, exchange rate, lending rate, private sector credit, inflation rate on manufacturing sector output in short and long term period. The autoregressive distributed lag (ARDL) is appropriate when variables integrated at I(1) or the mixture of I(1) and I(0). The ARDL model also solves the problem of endogeneity unlike other methods of co-integrating techniques y.

$$LMOUT_t = \beta_0 + \sum_{i=0}^n \beta_1 i \Delta LMOUT_{t-i} + \sum_{i=0}^n \beta_2 i \Delta DOO_{t-i} + \sum_{i=0}^n \beta_3 i \Delta LEXR_{t-i} + \sum_{i=0}^n \beta_4 i \Delta LR_{t-i} + \sum_{i=0}^n \beta_5 i \Delta LCPS_{t-i} + \sum_{i=0}^n \beta_6 i \Delta INFR_{t-i} + \alpha_1 MP_{t-1} + \lambda_2 DOO_{t-2} + \lambda_3 LEXR_{t-3} + \lambda_4 LR_{t-4} + \lambda_5 LCPS_{t-5} + \lambda_6 INFR_{t-6} + e_t \tag{3}$$

Where D denotes the first difference operator, β_0 is the drift component, and e_t is the white noise residuals. The expression ($\beta_1 - \beta_6$) represents dynamism of the model in the short term period. The remaining expression with the ($\lambda_1 - \lambda_6$) representing long term period of the model. Finally, the direction of causality between trade liberalization and manufacturing sector performance was estimated with Pairwise Granger Causality Technique.

4. Results and discussions

Table 1. Summary of Unit Root at Level and First Difference

| Var. | At Level | | | | At 1 st Difference | | | |
|-------|-----------|-----------|----------|------|-------------------------------|-----------|----------|------|
| | T-stat | 5% | P-values | Rmks | T-stat | 5% | P-values | Rmks |
| LMOUT | -2.499751 | -2.957110 | 0.1249 | NS | -3.178048 | -2.963972 | 0.0314 | S |
| DOO | -3.221243 | -2.957110 | 0.0279 | S | - | - | - | - |
| LEXR | -2.544899 | -2.957110 | 0.1148 | NS | -5.655158 | -2.960411 | 0.0001 | S |
| LR | -4.605531 | -2.957110 | 0.0009 | S | - | - | - | - |
| LCPS | -1.346107 | -2.960411 | 0.5953 | NS | -3.937254 | -2.960411 | 0.0050 | S |
| INF | -2.533244 | -2.957110 | 0.1174 | NS | -4.746238 | -2.971853 | 0.0007 | S |

Source: Researchers' Computation, 2020

From the result on Table 1, both degree of openness and lending rate are integrated at order zero while log of manufacturing output, log of exchange rate, log of credit that flows to private sector and inflation rate are not integrated at order zero since their probability values are above 5% with their respective t-statistics lesser than the critical value at 5%. However, the study performed another unit root test at first differences and found that log of manufacturing sector output, log of exchange rate, log of credit that flows to private sector and inflation rate are integrated at order one as indicated by

the P-values which are significant at 5%. The fact that the variables are combination of order 0 and 1 necessitated the adoption of ARDL technique. However, the optimum lag will first be indentified before estimating the ARDL model.

Table 2. Selection of Lag

| Lag | AIC | SC |
|-----|-----------|-----------|
| 0 | 36.83369 | 37.11123 |
| 1 | 27.08415* | 29.02697* |
| 2 | 27.64365 | 31.25174 |

* is the selected lag

Source: Researchers' Computation, 2020

Table 2 shows that the lag at which the ARDL equation will be estimated and efficient is lag 1.

Table 3. ARDL Bounds Test Result

| | | |
|--------------|----------------------------|----------------------------|
| F-statistic | 3.825496 | K = 5 |
| Significance | Lower Bound Critical Value | Upper Bound Critical Value |
| 5% | 2.62 | 3.79 |

Source: Researchers' Computation, 2020

The ARDL Bounds co-integration test is shown in Table 3. It indicates the presence of long run relationship among log of manufacturing output, degree of log of exchange rate, lending rate, log of credit that flows to private sector and inflation rate. This is indicated by the F-statistic value of 3.825496 which is greater than lower critical bound value of 2.62 at 5%. This implies that trade liberalization influenced manufacturing sector activities in the long run.

Table 4. Short Run Dynamic Result

| DV: LMOUT | | | |
|-----------|-----------|-----------|-----------|
| Variables | Coeff. | t-Stat. | P-values. |
| D(DOO) | -0.098760 | -2.796111 | 0.0105 |
| D(LEXR) | 0.023442 | 1.013996 | 0.3216 |
| D(LR) | -0.006891 | -2.193831 | 0.0391 |
| D(LR(-1)) | -0.007378 | -2.566104 | 0.0176 |
| D(LCPS) | 0.128702 | 5.112058 | 0.0000 |
| D(INFR) | 0.002158 | 3.997849 | 0.0006 |
| ECT(-1) | -0.211052 | -5.181858 | 0.0000 |

Source: Researchers' Computation, 2020

The error correction dynamic result shown in Table 4 reveals that ECT is negative and significant which depict that the model has an adjustment mechanism in short run at 21.1% and the model would converge to equilibrium in the long run from shot run shock and disequilibrium. Degree of openness has negatively influence log of manufacturing sector output as indicted in table 4. Also, log of exchange rate has positive but insignificant relationship log of manufacturing sector output. Furthermore, result reveals that lending rate negatively and significantly influence log of manufacturing sector output. Finally, both log of credit to private sector and inflation rate improve log of manufacturing sector output in the short term period.

Table 5. Long Run ARDL Model Result

| DV: LMOUT | | | |
|-----------|-----------|-----------|----------|
| Variables | Coeff. | t-Stat. | P-values |
| DOO | -0.467944 | -2.103099 | 0.0471 |
| LEXR | 0.111072 | 1.080527 | 0.2916 |
| LR | -0.111624 | -2.595712 | 0.0246 |
| LCPS | 0.609812 | 10.516970 | 0.0000 |
| INFR | 0.010225 | 2.836389 | 0.0096 |
| C | 3.023756 | 7.143158 | 0.0000 |

Source: Researchers' Computation, 2020

The result in Table 5 reveals that degree of openness has negatively and significantly influence log of manufacturing sector output with a coefficient of -0.467944. However, positive and insignificant relationship is shown between log of exchange rate and log of manufacturing sector output at coefficient of 0.111072.

Furthermore, the long run result indicates that lending rate exerts negative and significant effect on log of manufacturing sector output at coefficient of -0.111624. Conversely, log of credit to private sector has positive and significant effect on log of manufacturing sector output at coefficient of 0.609812. Finally, inflation rate has direct and significant relationship with log of manufacturing sector output at coefficient of 0.010225.

Table 6. Pairwise Causality Test Result

| Variables | Obs | F-Stat. | P-values. |
|----------------|-----|---------|-----------|
| DOO and LMOUT | 31 | 0.04603 | 0.9551 |
| | | 0.33976 | 0.7151 |
| LEXR and LMOUT | 31 | 0.52299 | 0.5989 |
| | | 1.27992 | 0.2950 |

Source: Researchers' Computation, 2020

The result reported in Table 6 shows absence of causality between degree of openness and output of manufacturing sector in Nigeria as revealed by the probability values. Also, independent relationship is reported between exchange rate and manufacturing sector output in Nigeria as revealed by the probability values.

5. Conclusions

Policy frameworks of a nation are initiated towards enhancing sectoral and overall economic performance. Thus, trade policy as an important aspect of macroeconomic policies is formulated for the purpose of promoting trade relationship of a country with other countries to improve sectoral and overall performance. In line with this, the linkage between policy of trade liberalization and output of manufacturing sector in Nigeria was investigated. Trade liberalization was established to produce negative effect on output of manufacturing sector in Nigeria. This implies that the trade policy of the economy impede development and growth of manufacturing sector due to the country's over-reliance on foreign products. Despite the inflow of foreign investment and technology induced by trade liberalization, the manufacturing sector has not recorded significant growth given the undeveloped nature of the sector. The result is in line with the empirical findings of Ogu *et al.* (2016); Ojeyinka & Adegboye (2017); Ebenyi *et al.* (2017); Emerenini & Ohadima (2018). However, it does not conform to the findings of Okon & Ekpeno (2013) whose result indicated that trade openness improved the output of manufacturing sector in Nigeria.

Conclusively, trade liberalization has undesirable effect on manufacturing sector over the short and long term period. Thus there is need for government to re-assess the trade policy of the economy especially with advanced countries. Policies on trade barrier should be totally removed in order to make the economy more open to foreign trade and putting in place structures to enhance the survival and performance of local manufacturing firms. Also, policy that will ensure stability of the nation's currency in relation to major countries currencies should be formulated to make the importation of foreign raw materials more cheaper and facilitate exportation of manufacturing output. Foreign exchange should be supplied and subsidized to the manufacturing sector to facilitate the importation of important raw materials and modernize technology. Stable macroeconomic policy should be formulated and financial institutions should be encouraged to give loan to manufacturing sector especially to infant industries at single digit interest rate. Such loan should also be guarantee by government. Finally, infrastructural facilities should be provided to support the activities of the manufacturing sector.

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