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Manufacturing Sector Growth and Trade Policy in Nigeria

Oniore O. Jonathan
Department of Economics,
Faculty of Humanities, Social and Management Sciences,
Bingham University, Karu, Nigeria
jonathanoniore@gmail.com

Akatugba D. Oghenebrume
Department of Economics, Faculty of Social Sciences,
Niger Delta University, Wilberforce Island,
Bayelsa, Nigeria

Abstract

Trade policy or openness to trade in an economy has the potential of engendering growth. Theoretically, trade openness can lead to improvements in industrial growth through access to better and cheaper technology, economies of scale and X-efficiency as a result of exposure to foreign competition. Has this actually happened? It is against this backdrop that the present study investigated the relationship between trade policy and manufacturing sector growth and through that assesses the impact of trade policy on manufacturing sector growth in Nigeria between 1970 and 2016. The Dynamic and Fully Modified Ordinary Least Squares (DOLS and FMOLS) techniques were used for the analysis. The empirical results indicated that on one hand, trade policy measured by degree of openness, exchange rate and broad money supply are positively related to manufacturing sector growth. Interest rate on the other hand, was found to have an inverse relationship with manufacturing sector growth and statistically significant in the in the DOLS framework. Since the empirical evidence revealed that trade policy captured by degree of openness is positively related to manufacturing sector growth and further clears any ambiguity of whether trade openness promotes growth in manufacturing in Nigeria. It is therefore recommended that policy direction in Nigeria should focus on more open policies as a long-term plan. The pursuit of outward-looking strategies should be strengthened depending on the comparative advantages in the liberalised sector and as a cushion against vulnerability impacts of the exports and imports market.

Keywords: Trade Openness, Manufacturing Growth, Cointegration, Autoregressive Distributed Lag, Nigeria

JEL Classification: ***F41, C22, O55***

INTRODUCTION

Industrialization is the building up of a country's capacity by processing raw materials and manufacture goods for consumption or further production (Todaro & Smith, 2006). In recognition of this, the World Bank in its (1987) Development Report observed that 'Industrialization has a crucial role in long term development; it is one of the best training grounds for skill development; it is an important source of structural change and diversification; and it can increase flexibility of the economy and reduce dependence on external forces. Industrialization also provides employment, foreign exchange and domestic earnings' Similarly, Dijkstra (2000) and Zattler (1996) observed that, the attached importance to industrialization as a driver of structural change and long-run growth could be ascribed to two reasons. First, industries (especially manufacturing) have higher productivity growth and technological development than other sectors of the economy, and also technological spill over's. Second, countries that neglect industry depend on primary exports which are subject to long-run deterioration of the terms of trade. However, the extent of industrialisation depends on the prevailing macroeconomic environment, the dynamic and complementary nature of economic policies targeted at shifting resources from low productivity to high-productivity sectors. One of the surest ways to achieve the afore-stated goal is through trade policy.

Trade policy defined broadly as a dismantling of controls over import and foreign exchange allocation and a rationalization and general lowering of import tariffs, has been a central feature of the economic reform programs introduced in Sub-Saharan Africa in the 1980s (World Bank, 1994). Trade policy or openness to trade in an economy has the potential of engendering growth. Theoretically, various channels through which an open trade regime can lead to improvements in industrial growth exist in the literature. The channels include access to better and cheaper technology, economies of scale and X-efficiency as a result of exposure to foreign competition. For instance, firms that operate in an open economy have access to foreign technology, adopt the best production techniques and produce on a more efficient scale. With access to foreign technology, economies of scale and spillover effects, openness to trade fosters competition among firms and provides markets for their exports. Although there are a considerable number of studies examining the relationship between trade liberalization and growth in developing countries but many basic issues remain unresolved. For instance, one of the main ideas underlying trade liberalization is that this should lead to efficiency gains, partly because resources get allocated more efficiently (in line with comparative advantages) and partly because existing firms are forced to improve their performance in response to international competition. Has this actually happened? This is an empirical question that this study seeks to answer.

Trade policy has emerged as the main argument among economists and policy makers in explaining the growth phenomena in developing countries (Dawson, 2006; Dutta & Ahmed, 2001; Edwards, 1992; Salehezadeh & Henneberry, 2002; Weinhold & Rauch, 1999). Besides, due to continuous interest on the issue, new methods were also proposed (Lloyd & MacLaren, 2002; Ruíz Estrada & Yap, 2006). The positive contribution of trade openness towards growth stemmed from the notion that liberalization increases specialization and division of labour thus improving productivity and export capability as well as economic performance. It is widely recognized that trade openness has a positive effect towards economic growth. It is found that countries with more trade openness relatively outperformed countries, with less openness (Thirwall, 1994; World Bank, 1993). A study by Umoh and Effiong (2013) in Nigeria supported a similar opinion that trade openness has a significant positive impact on manufacturing productivity in Nigeria and long run and policy direction for the manufacturing sector in Nigeria should focus more on open policies through trade liberalisation as a long-term plan. Other noteworthy studies supporting the openness and growth relationship include Urata and Yokota (1994), Osada (1994),

Kajiwara (1994), Hwang (1998), Edwards (1998) and Jonsson and Subramanian (2001). In contrast, some scholars (Harrison, 1996; Rodríguez & Rodrik, 2001), however, have been more reserve in supporting the openness-led growth nexus.

The controversy on the trade policy-growth link remains, with some studies upholding a positive relationship (Thirwall, 1994; World Bank, 1993; Umoh & Effiong, 2013; Urata & Yokota, 1994; Osada, 1994; Kajiwara, 1994; Hwang, 1998; Edwards, 1998; Jonsson & Subramanian, 2001 and Dollar, 1992), others express doubts about the existence of such a relationship (Harrison & Hanson, 1999; Rodriguez & Rodrik, 1999). Lack of analysis at sectoral level may have contributed to the empirically mixed results reported in the literature, as giving emphasis to the wrong sectors or treating all countries to be homogenous in nature may lead to biasness. Therefore, an examination of the nexus at a country-specific level using disaggregated industrial sector data becomes apt and an important alternative to cross-country panel data analysis which has shown mixed results. A sector-specific analysis accounts for the complexity of economic environment and histories of the sector. For example, Umoh and Effiong (2013) and Dutta and Ahmed (2001) conducted a sector-level analysis and reported that trade openness is important to the industrial sector. This precisely is the thrust of this study.

The need for dynamic analysis, which links trade policy and manufacturing sector growth, is recent and emerged following the inadequacies of using traditional static analysis. It is therefore germane to employ appropriate estimators in order to overcome this problem. In the present study, the Dynamic Ordinary Least Squares (DOLS) estimator, engineered by Stock and Watson (1993) and the Fully Modified Ordinary Least Squares (FMOLS), originally developed by Phillips and Hansen (1990) are adopted. Both the DOLS and FMOLS approach introduces dynamics in the model specified while allowing for simultaneity bias. Thus, this study added to the literature by varying on the period covered, methodology adopted, variables used, and frequency of data among other factors to examine the empirical linkage between trade policy and manufacturing sector growth in Nigeria. This helps to validate past findings or bring forth new issues on the subject for further research.

Following the introduction, the rest of the paper is structured as follows. Section 2 presents a theoretical and empirical review of the literature. Section 3 describes the model and data, while the estimation technique and procedure is discussed in Section 4. Section 5 presents the empirical results and Section 6 concluded the paper.

THEORETICAL LITERATURE

Several opposing views exist on the impact of trade policy on growth starting from the Mercantilist School who advocated restriction on imports, provision of incentives for exports, and strict government control of all economic activities. Contrary to this, the Classical economists believe in free trade right from the time of Adam Smith who advocated for a policy of laissez-fair (a little government intervention in the economic system). For Smith, When each nation specializes in the production of the commodity of its absolute advantage and exchange part of its output for the commodity of its absolute disadvantage, both nations end up consuming more of both commodities (Salvatore, 1998)

Smith's idea of absolute advantage was later replaced by an influential theory of comparative advantage, initially introduced by Ricardo. According to the comparative advantage theory, countries specialize in the production and export of commodities over which they have less absolute disadvantage. The opening up of free trade between nations leads to an increase in

demand for the product of each country, in turn, making them to specialize in the production of that particular good over which they have a comparative advantage. The increased production further leads to an increased supply of goods and services in the market, in turn enhancing the welfare of the society. Both Smith's absolute advantage and Ricardo's comparative advantage have, however, many limitations that may not work in practice and in some cases does not tally with the situations that exist in developing countries.

Another important development in the area of international trade following the Classical theory is the Heckscher-Ohlin theorem. Unlike the former, which assumes that the value of output is determined by the value of labour that entered the production process, the H-O theorem includes capital as an additional factor. It proposes that the immediate cause of international trade is the difference in the relative price of commodities between countries, which, in turn, arise due to difference in factor supplies of the two countries. On the basis of this it predicts that a country will export a commodity that intensively uses its abundant factor and import goods that intensively use its scarce resources. In this case, apart from the gains mentioned under the comparative advantage theory, trade leads to equalization of relative and absolute returns to homogenous factors of production.

Despite its theoretical prominence, the H-O theorem also suffers from many of the assumptions that it considers. Among others, the theorem assumes that there is no factor intensity reversal (i.e. if a commodity is labour intensive in a labour abundant country it will remain labour intensive in the labour scarce country, and if it is capital intensive in the capital abundant country it will remain capital intensive in the capital scarce country). If such a situation does not exist the prediction of the theorem fails.

Views against the Classical trade theory get momentum after the work of Prebisch (1950) who supported the adoption of protectionist trade policies to protect infant industries and conclude that trade openness will promote unequal distribution of trade gains and deindustrialisation in developing countries. In addition, the debate on the relationship between trade openness and growth has been bolstered by significant improvement in the new growth theories as discussed by Grossman and Helpman (1991), Lucas (1988) and Romer (1986). With the assumption of endogenous technological change, the trade–growth link can be analysed within the framework of the new growth theories.

EMPIRICAL LITERATURE

Mulaga and Weiss (1996) examined the impact of trade reform on manufacturing in Malawi from 1970-91 within the trade liberalization element in the reform package on performance in manufacturing. Data derived from a survey of large manufacturing enterprises are used to estimate firm-level effective rates of protection and total factor productivity growth. A cross sectional regression model is then used to test for a relationship at the firm level between increased liberalization, as reflected in a decline in protection, and improved performance, measured as a rise in total factor productivity growth. The conclusions are highly sensitive to the way productivity growth is measured.

Kim (2000) explored the link between trade openness and total factor productivity growth in Korean manufacturing at a disaggregated level. Employing a number of policy measures of openness (legal rates of tariff, coverage ratios of quotas and nominal rates of production) within the underlying assumption of imperfect competition and non-constant returns to scale, he found that trade liberalisation impacted positively on productivity performance, though the productivity increase was not significant since trade liberalisation was not substantial enough in Korea.

Dutta and Ahmed (2001) examined the relationship between trade liberalisation and industrial growth in Pakistan using cointegration analysis within the endogenous growth model framework. Using two measures of trade liberalisation, namely, an outcome-based measure (real export) and incidence-based measure (average import tariff collection), the study found a significant relationship between the measures of trade liberalisation and growth of the industrial sector value added.

Chete and Adenikinju (2002) undertook a firm-level study of the impact of trade liberalisation on productivity growth in the manufacturing sector between 1988 and 1990. They found trade liberalisation to be growth-enhancing.

Adebiyi and Dauda (2004) investigated the relationship between trade liberalisation and industrial sector performance using an error correction mechanism (ECM) technique on annual data from 1970 to 2002 and found trade liberalisation, measured as degree of openness, to be a significant determinant of industrial production in Nigeria.

Adewuyi (2006) examined the impact of trade policy reform on technical efficiency in the manufacturing sector utilising panel data for 10 manufacturing sub-sectors over selected trade liberalisation episodes covering the period before, during and after the implementation of the structural adjustment programme (SAP). Technical efficiency measures were obtained using the non-parametric technique—Data Envelopment Analysis (DEA). He found trade policy measures to have fostered technical efficiency in the sector.

Chandran and Munusamy (2009) used time series data from 1970 to 2003 to investigate the long-run relationship between trade openness and manufacturing growth in Malaysia. They adopted a recent cointegration test called the bounds testing to establish if the variables are co-moving. They found that openness to trade had a positive significant effect on manufacturing value added, particularly in the long run, thus emphasising the benefits of openness as a long-term affair.

Umoru and Eborieme (2013) investigated the relation between trade liberalization and industrial growth in Nigeria. Adopted in the study is the human capital model of endogenous growth with modifications for trade liberalization within the Nigerian context. Co-integration and error correction estimation approaches were utilized. A unique co-integral relation between industrial production and the explanatory variables in the study is found. The study found a positive and significant correlation between trade liberalization and industrial growth in Nigeria. The results of the study suggest the need for government to embark on comprehensive implementation of trade liberalization policies in order to accelerate and sustain industrial growth in Nigeria. However, the implementation of trade liberalization polices should be done with a delay caution.

Umoh and Effiong (2013) attempted to establish relationship between openness to trade and manufacturing performance in Nigeria for the period 1970–2008 through a sector-specific analysis for meaningful policy insights. Using a modern econometric technique—the Autoregressive Distributed Lag approach to cointegration, the results suggested that trade openness has a significant positive impact on manufacturing productivity in Nigeria both in the short and long run. Therefore, the policy direction for the manufacturing sector in Nigeria should focus more on open policies through trade liberalisation as a long-term plan. Reduction in trade restrictions and implementation of appropriate incentives are vital for resuscitating the performance of the sector. In this aspect, policy-makers should leverage the benefits of openness to the comparative advantages in the liberalised sector.

Baldwin and Venables (2015) in a study titled trade policy and industrialisation when backward and forward linkages matter developed a model in which the interaction of forward and backward linkages determines the range of goods and of parts that are produced in a developing economy. Using a simple formalisation of the range and sophistication of parts used in different goods, the paper investigated the effects of trade and industrial policy. Linkages create multiplier effects so, for example, support for final goods producers can increase the range of parts produced, broadening the industrial base and attracting entry of further final goods producers. Effects depend on whether policy is targeted at appropriate margins. Policies that expand the range of parts on the margin are likely to spark more industrialisation than policies that promote parts production within the margin (parts that are already produced domestically), or parts far beyond the margin (highly sophisticated parts not used in locally produced final goods).

Ogu, Aniebo and Elekwa (2016) examined the role of trade liberalization in the growth of manufacturing output in Nigeria, focusing on the short to medium term period while not ignoring the very important long term on which most studies have focused. Error correction mechanism was adopted. Trade liberalization was found to hurt manufacturing output in the short run although it showed a real potential to boost it in the long term. An overhaul of competition policy was recommended with a view to establishing neutral status in manufacturing export trade.

METHODOLOGY

Model Specification and Data

The main objective of this study is to examine the relationship between trade policy and manufacturing sector growth and through that to assess whether trade policy spurs manufacturing sector growth. For this purpose the model adapted for this study is predicated on the endogenous growth framework of Lucas (1988) and a modified model of Umoh and Effiong (2013). The preferred model is represented as equation 1 below:

$$InMPI = \beta_0 + \beta_1 InDOP + \beta_2 InEXR + \beta_3 InINTR + \beta_4 InBMS + \mu \quad (1)$$

Where: MPI= Manufacturing sector output growth measured as manufacturing production index; DOP = Degree of openness as a measure of trade policy and this is measured as the share of trade to GDP; EXR = Official exchange rate; INTR = Interest rate and Broad money supply as a percentage of GDP. In = Natural logarithm, β_0 = the intercept or autonomous parameter estimate, $\beta_1 to \beta_4$ = Parameter estimate representing the coefficient of DOP, EXR, INTR and BMS respectively, and μ = Error term (or stochastic term). The a'priori' expectations are determined by the principles of economic theory and refer to the expected relationship between the explained variable and the explanatory variable(s). It is expected that $\beta_1 to \beta_4 > 0.$

For the necessity of uniformed scale of measurement and consistent interpretation of results, all variables were transformed to natural logarithms, which allow us to interpret the coefficients as elasticities.

The study depends on secondary data that were obtained from the Central Bank of Nigeria (CBN) Statistical Bulletin various issues, National Bureau of Statistics and World Development Indicators for Nigeria (WDI). It covers the period from 1970 to 2016. The choice of this period is predicated on the era being one of pronounced macroeconomic outcomes volatility, characterised by unfavourable balance of payments and rate of exchange, high commodities prices, and

declining sources of revenue due largely to economic rigidity which exposed the country to global economic shocks.

Justification of the Variables in the Model

To capture trade policy or openness, the study utilized share of trade to GDP. The *a priori* sign attached to this variable is, on one hand, due to the theory that openness encourages specialization in the production and marketing of certain goods in which we can establish comparative advantages. Therefore, relative lower labour cost advantages, availability of resources, and free and unconstrained access to international markets is expected to enhance "low-cost supplier of certain manufactured products"(Nemedia, 1998).

Also, the coefficient associated with trade openness and output growth is ambiguous (Berg & Krueger, 2003). Similarly, in view of Adeola and Olofin (2000), the impact of trade liberalization on the growth performance of manufacturing sector remains weak, contradictory and inconclusive. Nevertheless, there are several channels through which trade policy might affect manufacturing growth. First, a more liberal trade regime leads to increased competition from abroad, forcing domestic firms to adopt newer, more efficient technology to reduce inefficiency and waste. Second, it is often argued that freer trade eases foreign exchange constraints faced by most developing countries and hence enables a country to import needed raw material and capital goods. Finally, a more open economy results in a faster rate of technology. The latter point has been the main focus of the endogenous growth literature (Grossman & Helpman, 1989; 1991; Lucus, 1988; Romer, 1986; 1990). These studies show how trade liberalization may raise growth rates in the long run by generating economies of scale, operating R & D and knowledge spill-over's, human capital accumulation and or learning-by-doing.

The variables in the study include the exchange rate which we measure as the year on year change in exchange, where a positive change indicates depreciation and a negative change indicates an appreciation. We expect that the exchange rate should have a positive and significant effect on manufacturing growth performance since it has the potential to alter the value of prices in the economy without real changes in the production of goods and services within the economy (Arthur, Aigheyisi & Oaikhenan, 2015). It is expected that depreciation would reduce import as a result of the higher relative price of imported goods. Depreciation would thus increase net export and domestic income (output) would increase with depreciation through the goods market.

Interest rate play significant role as input in economic growth as a positive interest rate, increases financial depth through increased volume of financial savings mobilization and by extension promotes growth through increasing the volume and productivity of capital. A higher interest rate exerts a positive effect on the average productivity of physical capital by discouraging investors from investing in low return projects. In addition, the endogenous growth theory predicts a positive relationship between economic growth and interest rate (King & Levine, 1993).

Another factor that could positively affect the manufacturing sector in Nigeria is the steady flow of money supply as in view of Bahmani-Oskooee and Kandil (2007) expansionary monetary and fiscal policies could boost output growth in the long-run. The need to regulate money supply is based on the knowledge that there is a stable relationship between the quantity of money supply and economic activity and that if its supply is not limited to what is required to support productive activities; it will result in undesirable effects such as high prices or inflation.

Estimation Technique and Procedure

First, variables were investigated for their stochastic properties, using two traditional and one modern unit roots tests. The traditional tests deployed are the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP). The two tests were used to test for consistency and where conflicts exist, to decide on the most appropriate option (see Hamilton, 1994). However, traditional tests for unit-roots (e.g. ADF and PP) have low power in the presence of structural breaks, and have a tendency to "detect" non-stationarity which does not exist in the data. To avoid invalid inferences, the study employed unit root test with structural break by Perron (2006) to determine the break points/dates as well as further investigate the properties of the time series employed. The unit root tests are followed by Dynamic Ordinary Least Square (DOLS) estimator, engineered by Stock and Watson (1993) and the Fully Modified Ordinary Least Squares (FMOLS), originally developed by Phillips and Hansen (1990).

The DOLS approach is particularly useful because it introduces dynamics in the model specified while allowing for simultaneity bias. Thus the DOLS estimator of the cointegrating regression equation incorporates all variables in levels, in addition to leads and lags of values of the explanatory variables. To overcome the problem associated with the non-normal distribution of the standard errors of the cointegrating regression equation, the specified model was estimated by OLS using the Newey and West's (1987) Heteroscedastic and Autocorrelation Consistent (HAC) covariance matrix estimator, whose standard errors are robust, ensuring the validity of the inferences about the coefficients of the variables entering the regressors in levels. *Eviews 9.5* package was consequently employed to estimate the model by including 1 lead and 3 lags in the regressors. The lag selection was based on the Schwarz Bayesian Criterion (SBC). In like manner, the study employed the Fully Modified Ordinary Least Squares (FMOLS), a framework that provides optimal estimates of cointegrating regressions, and modifies least squares to account for serial correlation effects and for the endogeneity in the explanatory variables, when there is cointegration. The two frameworks thus help in dealing with validity of inference, serial correlation effects and the problem associated with endogeneity.

EMPIRICAL RESULTS

Unit Roots Testing

The results of the unit root tests (with trend and intercept) are presented in Table 1.

Table 1: Traditional Unit Root Test Results (Trend and Intercept)

Variables	ADF	Critical Values	Order of Integration	PP	Critical Values	Order of Integration
MPI	-4.543	-4.181*	I(1)	-4.591	-4.181*	I(1)
DOP	-9.299	-4.181*	I(1)	-9.387	-4.181*	I(1)
EXR	-6.424	-4.181*	I(1)	-6.407	-4.181*	I(1)
INTR	-7.693	-4.186*	I(1)	-8.742	-4.181*	I(1)
BMS	-5.908	-4.181*	I(1)	-6.902	-4.181*	I(1)

Note: * Indicates stationary at the 1% level, and ** Indicates stationary at 5% level.
Source: *Researcher's Computations Using E-views 9.5.*

The traditional tests of the ADF and PP indicated that all the variables tend to be stationary in first difference. All the variables under scrutiny are I(1) process, which means that they are stationary at first difference. However, traditional tests for unit-roots (e.g. ADF and PP) have low power in the presence of structural breaks, and have a tendency to "detect" non-stationarity

which does not exist in the data. It is crucial to have knowledge of break point because accurately evaluating any programme intended to engender structural changes in the economy depends on it (Piehl, Cooper, Braga & Kennedy, 1999). To avoid invalid inferences, the study employed unit root test with structural break by Perron (2006) to determine the break points/dates as well as further investigate the properties of the time series employed. The author provides the framework for the implementation of the general structure of the structural break with unit root (see Perron, 1997, 2006). The generalized test regression can be expressed as:

$$y_t = \mu + \theta DU_t + \beta_t + \gamma DT_t^* + \delta D(T_1)_t + \alpha y_{t-1} + \sum_{i=1}^{k} c_i \Delta y_{t-1} + e_t; e_t \sim iid.(0, \sigma_e^2 \text{ ----------(2)}$$

Where $DU_t = 1; DT_t^* = t - T_1 = t - T_1$ if $t > T_1$ and 0 otherwise; The T_1 represents the significant break point. The test considered is the minimal value of the t-statistic for testing that $\alpha = 1$ versus the alternative hypothesis that $|\alpha| < 1$ over all possible break dates in some pre-specified range for the break fraction $(\varepsilon, 1-\varepsilon)$. The implementation of the test regression follows the Innovational Outlier (IO) framework as it allows the change to the new trend function to be gradual rather than being instantaneous as assumed by the Additive Outlier (AO) framework. The results of unit root tests with structural break by Perron (2006) are presented in Table 2 below:

Table 2: Unit Root Tests with a Structural Break

	Innovational Outlier Model			Additive Outlier Model		
Variable	t-statistics	Break date	Lag	t-statistics	Break date	Lag
MPI	-2.105244	2014	0	-2.141124	1984	0
DOP	-3.060753	1986	0	-3.120485	1986	0
EXR	-3.134937	1994	0	-0.454339	1986	0
INTR	-2.965006	1986	0	-3.040043	1986	0
BMS	-3.586984	2011	1	-3.238287	1994	1
ΔMPI	-5.664111*	2014	0	-5.607945*	2006	0
ΔDOP	-9.930119*	2001	0	-10.17187*	2001	0
ΔEXR	-10.52100*	1995	0	-6.746328*	1988	0
ΔINTR	-8.855373*	1993	1	-9.655388*	1994	0
ΔBMS	-6.655476*	2010	0	-6.405299*	1995	0

Note: * denote significant at the 1 percent level.
Source: *Researcher's Computations Using E-views 9.5.*

In Table 2, the null hypothesis of a unit root is accepted for MPI, DOP, EXR, INTR and BMS in both innovational outlier and additive outlier model. In first difference however, all the series tend to be stationary. These stationary variables were then used for the linear regression analysis. Next, the study presents the estimated regression results from the dynamic OLS and FMOLS.

Table 3: Regression Results

Dependent Variable: MPI						
	DOLS			FMOLS		
Variable	Coefficient	t-Statistic	p-values	Coefficient	t-Statistic	p-values
LOG(DOP)	1.398*	5.515	0.00	0.081	0.341161	0.73
LOG(EXR)	0.054	1.403	0.18	0.058***	1.748898	0.08
LOG(INTR)	-0.617**	-2.176	0.04	0.467**	2.196301	0.03
LOG(BMS)	0.019	0.069	0.99	0.661**	3.294038	0.02
C	0.697	0.644	0.53	0.829	0.908050	0.37
R^2	0.93				0.58	
Adjusted R^2	0.82				0.54	
SER	0.151			0.324		
Long-run variance				0.177		

Note: *, ** and *** denote significant at the 1, 5 and 10 percent level respectively.
Source: *Researcher's Computations Using E-views 9.5.*

The coefficient of trade policy proxied by degree of openness is positively related to manufacturing sector growth in both the DOLS and FMOLS frameworks. Consequently, a rise in trade policy, captured by degree of openness exerts a positive impact on manufacturing sector output growth. The coefficient is statistically significant in the DOLS framework. This indicates that the recent trade liberalization efforts in Nigeria have resulted in better manufacturing output growth. By implication, a rise in liberalization, captured by degree of openness exerts a positive impact on manufacturing sector output growth. These results are appealing, given that by opening the economy, domestic competition can be promoted. In essence, liberalization is good for manufacturing sector growth as long as there is an enabling environment and other concomitant factors are in place. This outcome is in conformity with theoretical prediction and contradicts the research findings of Berg & Krueger (2003) and Adeola and Olofin (2000) that the coefficient associated with trade openness and output growth is ambiguous, weak, contradictory and inconclusive.

The coefficient exchange rate is directly related to manufacturing sector growth in both the DOLS and FMOLS frameworks and statistically significant at the 10% levels for the FMOLS framework. This outcome is in conformity with theoretical prediction, owing to positive adjustment of output in the long-run, and the enhancement in the export earnings resulting from currency depreciation.

The coefficient interest rate is significantly negatively related to manufacturing sector growth in the DOLS framework and positively related in the FMOLS framework. Thus, an increase in lending rate is inimical to the performance of the manufacturing sector as it discourages accessibility to credit from financial institutions. Specifically, 1% increase in interest rate is associated with -0.617 percent decreases manufacturing sector growth in the DOLS framework.

Broad money supply coefficient is positively related to manufacturing sector growth in both the DOLS and FMOLS frameworks. Consequently, a rise in broad money supply, captured as a percentage of GDP exerts a positive impact on manufacturing sector growth. The coefficient is statistically significant in the FMOLS framework. This finding is consistent with apriori expectation and study of Bahmani-Oskooee and Kandil (2007).

The goodness of fit of the DOLS estimate is adequate. About 93% in the variation in manufacturing sector growth is due to changes in the regressors; while in the FMOLS estimates, the explanatory variables employed in the model account for about 58% changes in manufacturing sector growth.

CONCLUSION AND RECOMMENDATIONS

The paper investigated the relationship between trade policy and manufacturing sector growth and through that to assess the impact of trade policy on manufacturing sector growth in Nigeria between 1970 and 2016. The Dynamic and Fully Modified Ordinary Least Squares (DOLS and FMOLS) techniques were used for the analysis.

The empirical results indicated that on one hand, trade policy proxied by degree of openness, exchange rate and broad money supply are positively related to manufacturing sector growth. Interest rate on the other hand, was found to have an inverse relationship with manufacturing sector growth and statistically significant in the DOLS framework. It is thus concluded that for Nigeria, trade policy impact positively on manufacturing sector growth and that the impact of the former on the latter is statistically significant in the DOLS framework. Since the empirical evidence revealed that trade policy proxied by degree of openness is positively related to manufacturing sector growth and further clears any ambiguity of whether trade openness promotes growth in manufacturing in Nigeria. It is therefore recommended that policy direction in Nigeria should focus on more open policies as a long-term plan. The pursuit of outward-looking strategies should be strengthened depending on the comparative advantages in the liberalised sector and as a cushion against vulnerability impacts of the exports and imports market.

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