INDUSTRIAL OUTPUT AND NIGERIAN TRADE POLICY: A DISAGGREGATED ANALYSIS

IKUBOR O. JUDE
Nigerian Defence Academy Kaduna, Kaduna State, Nigeria
ojikubor@nda.edu.ng

HARUNA H. GUSAU
Nigerian Defence Academy Kaduna, Kaduna State, Nigeria
hhgusau1@gmail.com

IGANIGA O. BENSON
Ambrose Alli University, Ekpoma, Edo State
beniga2015@gmail.com

ANTHONY ORJI
University of Nigeria, Nsukka, Enugu State, Nigeria
anthony.orji@unn.edu.ng

Abstract

The study examined the symmetric and asymmetric nexus between trade policy and industrial production disaggregated into manufacturing, electricity, mining and quarrying production in Nigeria. The study adopted the ARDL and NARDL framework based on annual time series data over the period 1970-2018. The findings depict that trade policy dynamics have short run non-linear effects on industrial output and its subsectors; manufacturing, building and construction, mining and quarrying output except electricity output and these effects dovetailed into the long-run and thus the asymmetric effects of trade policies on industrial output were confirmed. The results from the short-run non-linear ARDL further revealed that trade restrictions stimulate the performance of the industrial sector and the manufacturing subsector, while this performance plummets under trade liberalization. These results were confirmed by the short-run linear ARDL, while the long-run linear ARDL results reported the contrary without altering the asymmetric status of the nexus. The study therefore recommends guided liberal trade policy like the Korea, Indonesia and Japan model where some forms of protections allowed for rapid transformation of the industry and its subsectors.

Keywords: Trade Policy, Industrial Output, ARDL NARDL, Asymmetries

JEL classification: F13, L16, L52

1. INTRODUCTION

Trade and trade policies have been found to be important determinants of industrial growth and thus, economic growth and development. International trade offers opportunities for greater specialization, increased capacity utilization, economies of scale and imports of goods and services. (Adebiyi & Dauda, 2004) Most governments have expressed a desire for the industrialization of their economies, according to Ubi and Achibong (2018). This is a result of industrialization's catalytic potential to increase economic growth and development, per capita income, employment possibilities, and other factors. A country cannot wage a protracted war on poverty, unemployment, and other social and economic issues without producing more output and income. Furthermore, United Nations Industrial Development Organization (2020) opined that industrialization, as shown theoretically and empirically, can support sustained overall economic growth more effectively than traditional primary produce because: (1) they are likely to grow faster when the global economy expands due to low-income elasticity of demand (2) industrial produce are less susceptible to price swings (3) industrial subsector offers much greater prospects for dynamic production gains. Given the importance of industrial growth in achieving economy growth and development, many countries including Nigeria since independence have introduced and implemented various trade policies to stimulate the industrial subsector.

An apparent workable suggestion out of the dilemma which Nigeria seems to confront in its industrialization efforts was provided by Roemer (1994) quoted in Oyejide (2002), which says that a typical African country which needs to be outward oriented should do so gradually, eliminate import controls but compensate partly with higher tariff protection which can be reduced over a ten-year period through a legislated schedule that is publicly announced. This is to enable infant industries adjust, give credibility to trade policy reforms and make policy reversal by officials under pressure impossible.

The literature is saturated with different trade policies and their impact on economic growth without recourse to specific sector. Given these trade policies shifts, what are the symmetric and asymmetric (if any) effects on the industrial sector? Also, which of these trade policy options is most appropriate to maximize Nigeria’s industrial output amidst the African Continental Free Trade Area (AFCFTA) agreement? Answers to these questions among others form the main thrusts of this paper.

Following the introductory section, section 2, provides a review of related literature, information on the various trade policies in Nigeria. Section 3 gives a detailed explanation of the theoretical framework, model specification and analysis of results, while section 4 presents the summary and policy implications.

2. REVIEW OF TRADE POLICY AND INDUSTRIAL RESPONSE IN NIGERIA

The evolution of trade policies in Nigeria has been remarkable as posited by Bamidele (2013). Within the context of this evolution, five epochs are clearly discernible, and have conditioned Nigeria's trade policies since 1960. These five trade policies epochs have different implications for the industrial subsector. These various trade policies could be aptly discussed under the following.

The protection of infant industries becomes sacrosanct to stimulate the industrial subsector. The inward-looking Import Substitution Industrialization (ISI) policies were aimed at revenue generation, protection of infant industries and curtailing of external disequilibrium. (Oyejide, 2017). This dirigiste trade policy was reinforced by the initial success of the Soviet Union of achieving accelerated industrialization.

However, by the late 1980s, this ISI strategy appeared ineffective in stimulating the industrial sector due to a lack of foreign exchange, labor absorption, and the capital-intensive nature of industries. In the 1980s. the economy was faced with falling oil revenues, primitive accumulation of wealth and macroeconomic policy summersault. Consequently, in 1986, the structural Adjustment Programme (SAP) was introduced in July 1986 to liberalize trade and stimulate the hitherto repressed industrial subsector.

Unfortunately, by mid-2001, it becomes obvious that the Structural Adjustment Programme (SAP) could not improve industrial productivity, trade and Gross Domestic Product (GDP), the outward looking strategy of SAP was substantially modified (Essia, & Ibor, 2005)…Consequently, by 2002, with the advent of democratic governance, more trade policies were introduced to make the economy more market friendly and outward looking.

Table 1: *Trade Policy Regime and Industrial Response*

S/N	TRADE POLICY REGIME	TRADE POLICY STRATEGY	INDUSTRIAL RESPONSE
1	Protectionists 1970-1975 (Inward looking)	a) Import Substitution Industry adopted (ISI) b) High input duties imposed on Industrial Produce c) Exchange controls on the repatriation of dividends and points d) Oil boom era. e) Tax holidays for industries f) Repressed financial sector. g) Income tax reliefs, Capital allowances, depreciation	a). Contribution of industrial output to GDP Stood at 20% b). Capacity utilized increased c). Employment in the industrial subsector appreciates d). Light industries dominated). E) Many multinationals industry

		h) Nigeria Industrial Devt Bank (NIDB) established in 1964 now Bank of Industry (BOI).	established. f). Industrial profit very high
2	Lax Trade Policy 1976-1981 (Pre-SAP) (Outward looking)	a) Import duties on raw materials, agricultural equipment and machines were abolished b) Restrictions on Profit repatriation Relaxed c) Exchange rate controls relaxed	a) Mild structural transformation effected b) Industrial output growth remained sluggish c) contribution of industrial output to GDP is about 15% d) Gradual Movement from Light manufacturing goods to heavy industrial equipment
3.	Mixed: Lax cum Restriction (1982-1985)	a) Shift from Liberal to a more restrictive trade b) Economic stabilization Act of 1982 was promulgated c) Tariffs on 49 items were raised d) 29 and later 152 commodities were placed under specific licenses f) Exchange rate strictly regulated	a) Mild structural transformation effected b) Industrial output growth remained sluggish c) contribution of industrial output to GDP fell to as low as 7%
4	Liberal Trade Policy Regime (SAP) 1986-1993 output looking	a) Structural Adjustment program was introduced in July 1986 b) Privatization and Commercialization Act was promulgated in 1988 c) Ad valorem tax on imports was introduced d) Tariffs were deregulated e) Exchange rate deregulated f) Export Processing zone established in 1991	a) Cost of Industrial Inputs increased b) Low-capacity utilization c) High Job loss d) Low manufacturing exports output e) High exchange rate depreciates.
5	Intensive liberalization trade policy (1998- till date: Outward looking)	a) SAP oriented policies translated gradually towards market-oriented economy like NEEDS, SEEDS etc. b) Democratic governance introduced in 1999	a) High exchange rate depreciation b) Industrial contribution to GDP fell further c) Importation of Foreign goods

		c) Economic policy reform - vision 2020 d) Many bilateral, Multilateral, regional and continental trade agreements were signed e.g., ECOWAS, WTO, AFCFTA e) Trade Liberalization legislations, and rules introduced f) More tariffs were reduced g) Common external Tariffs introduced	

Source: Authors based on Nigeria's Trade Policy Documents

Since independence till date, the dilemma which Nigeria seems to confront in its industrialization efforts is how to balance the need to protect its industries with contemporary import liberalization and export promotion policies. The table clearly shows that trade policies over the years had little or no impact on the Nigerian industrial sector and made little or no contribution to the industrial sector because economic growth was reduced to less than 4% (4%) due to the havoc-causing ways these trade policies were introduced and managed by successive Nigerian governments.

The recently endorsed African Continental Free Trade Area (AfCFTA) agreement effect on the Nigeria's industrial subsector may not be different from the previous ones. The likely efficiency of this AfCFTA is further, constrained by the fact that members of this agreement are primary producers with low terms of trade and high elasticity of demand culminating in marginal and unprofitable transactions.

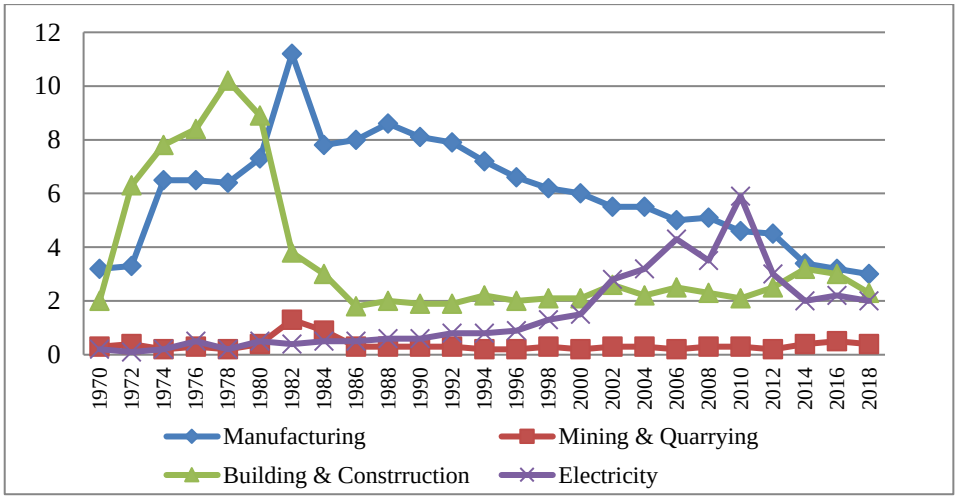


Figure 1: *Trade Policy and Industrial Response*

3. METHODOLOGY

Trade policies have important implications for sectoral production. Trade has been identified as the channel that affects the production of different sectors in an economy. Guzman et al. (2018) demonstrate that a competitive trade policy can be used as an instrument for industrial policy making. The literature is replete with the importance of trade and trade policies to the industrial sector and the economy at large using linear models with different estimation techniques.

3.1 DATA MEASUREMENT AND SOURCE

The indexes of the output of the industrial subsectors (electricity, manufacturing, mining and quarrying) are applied. Time series data for the period between 1970 and 2018 were obtained from Central bank and The National bureau of statistics. There have been a series of trade policy shifts within these periods, ranging from outright regulation (protectionism) to guided deregulation (mixed trade policy) and deregulation (free trade), which are proxies for trade openness at the time, measured as the sum of exports and imports divided by GDP. Due to the overlapping nature of regulated free trade, the two extreme regimes of regulation and deregulation become our focus.

3.2 ARDL and NARDL

The nonlinear nexus between trade policy dynamics and industrial output was tested with Nonlinear Autoregressive Distributed Lags (NARDL), which is built upon the Nonlinear Autoregressive Distributed Lags model developed by Shin et.al (2014). NARDL is based on the well-known bound testing approach by Pesaran et al (2001) which is a test for cointegration. The NARDL framework allows us to capture the effects of regulated and deregulated trade policies on industrial output and its sub-sectors in the Nigerian economy.

A descriptive model of a closed derived from the standard neoclassical production function by Solow (1956). Was built as follows

$$Yt = F(Lt, Kt, At) \quad 1$$

Where sectoral output (Y) is a function of sectoral inputs which are labour (L), Capital (K) and productivity (A).

The Nigerian economy being opened, equation 1 is adjusted to reflect this by introducing exchange rate and trade openness based on trade theory. Thus, equation 1 could be written as:

$$IIP_t = F\left(EXR_{t,}M_{2_{t,}}GFCF_t, TRP_t\right) \quad 2$$

With index of industrial output and its subsectors as dependent variables, the operational form of equation 2 becomes.

$$IIP_t = \lambda_0 + \lambda_1 EXR_t + \lambda_2 M_{2_t} + \lambda_3 GFCF_t + \lambda_4 TRP_t + U_{1_t} \quad 3$$

$$IMP_t = \propto_0 + \propto_1 EXR_t + \propto_2 M_{2_t} + \propto_3 GFCF_t + \propto_4 TRP_t + U_{2_t} \quad 4$$

$$IEP_t = \theta_0 + \theta_1 EXR_t + \theta_2 M_{2_t} + \theta_3 GFCF_t + \theta_4 TRP_t + U_{4_t} \quad 5$$

$$IMQP_t = \vartheta_0 + \vartheta_1 EXR_t + \vartheta_2 M_t + \vartheta_3 GFCF_t + \vartheta_4 TRP_t + U_{5_t} \quad 6$$

Introducing the ARDL and Error correction mechanism specifically to equation 3 – 6, we have:

$$\Delta IIP_t = \pi_0 + \pi_1 IIP_{t-1} + \pi_2 EXR_{t-1} + \pi_3 M_{2_{t-1}} + \pi_4 GFCF_{t-1} + \pi_5 TRP_{t-1} + \sum_{i=1}^{n} \pi_6 \Delta EXR_{t-1} + \sum_{i=1}^{n} \pi_7 \Delta M_{2_{t-1}} + \sum_{i=1}^{n} \pi_8 \Delta GFCF_{t-1} + \sum_{i=1}^{n} \pi_9 \Delta TRP_{t-1} + \propto_1 ECM_{t-1} + V_t \quad 7$$

$$\Delta IMP_t = \emptyset_0 + \emptyset_1 IMP_t + \emptyset_2 EXR_{t-1} + \emptyset_3 M_{t-1} + \emptyset_4 GFCF_{t-1} + \emptyset_5 TRP_{t-1} + \sum_{i=1}^{n} \emptyset_6 \Delta IMP_{t-1} + \sum_{i=1}^{n} \emptyset_7 \Delta EXR_{t-1} + \sum_{i=1}^{n} \emptyset_8 \Delta M_{2_{t-1}} + \sum_{i=1}^{n} \emptyset_9 \Delta GFCF_{t-1} + \sum_{i=1}^{n} \emptyset_{10} \Delta TRP_{t-1} + \propto_2 ECM_{t-1} + V_2 \quad 8$$

$$\Delta IEP_t = \propto_0 + \propto_1 IEP_t + \propto_2 EXR_{t-1} + \propto_3 M_{2_{t-1}} + \propto_4 GFCF_{t-1} + \propto_5 TRP_{t-1} + \sum_{i=1}^{n} \propto_6 \Delta IEP_{t-1} + \sum_{i=1}^{n} \propto_7 \Delta EXR_{t-1} + \sum_{i=1}^{n} \propto_8 \Delta M_{2_{t-1}} + \sum_{i=1}^{n} \propto_9 \Delta GFCF_{t-1} \sum_{i=1}^{n} \propto_{10} \Delta TRP_{t-1} + \propto_4 ECM_{t-1} + V_4 \quad 9$$

$$\Delta IMQP_t = \text{Ƶ}_0 + \text{Ƶ}_1 IMQP_{t-1} + \text{Ƶ}_2 EXR_t + \text{Ƶ}_3 M_{2t} + \text{Ƶ}_4 GFCF_t + \text{Ƶ}_5 TRP_{t-1} + \sum_{i=1}^{n} \text{Ƶ}_6 \Delta IMQP_{t-1} + \sum_{i=1}^{n} \text{Ƶ}_7 \Delta EXR_{t-1} + \sum_{i=1}^{n} \text{Ƶ}_8 \Delta M_{2_{t-1}} + \sum_{i=1}^{n} \text{Ƶ}_9 \Delta GFCF_{t-1} + \sum_{i=1}^{n} \text{Ƶ}_{10} \Delta TRP_{t-1} + \propto_5 ECM_{t-1} + V_5 \quad 10$$

The autoregressive distributed lag (ARDL) for the above models is shown below to capture the short-run and long-run effects of the independent variables on the dependent variables (IIP) by use of lags.

Non-linear Autoregressive Distributed Lag (NARDL) Models are constructed to measure negative changes and positive changes (non-linear effects) of trade policies on industrial output: (Regulated (+) low openness and deregulated (-) high openness. The regulated policy is a period of high protection strategies, while deregulated period is characterized with little or no trade barriers. The Nigerian trade policies have oscillated between these extremes low and high trade openness over the years. The NARDL short-run and the error correct version of equations 7, 8, 9 and 10 are as follow:

$$\begin{aligned}\Delta \mathrm{IIP}_t = {} & \pi_0 + \pi_1 \mathrm{IIP}_t + \pi_2\, \mathrm{EXR}_t + \pi_3 \mathrm{M}_{2_t} + \pi_4\, \mathrm{GFCF}_t + \pi_5 \mathrm{TRP}_t^{+} + \pi_6 \mathrm{TRP}_t^{-} \\ & + \sum_{i=1}^{n} \pi_7\, \Delta \mathrm{IIP}_{t-1} + \sum_{i=1}^{n} \pi_8\, \Delta \mathrm{EXR}_{t-1} + \sum_{i=1}^{n} \pi_9\, \Delta \mathrm{M}_{2_{t-1}} \\ & + \sum_{i=1}^{n} \pi_{10}\, \Delta \mathrm{GFCF}_{t-1} + \sum_{i=1}^{n} \pi_{11}\, \Delta \mathrm{TRP}_{t-1}{}^{+} + \sum_{i=1}^{n} \pi_{12}\, \Delta \mathrm{TRP}_{t-1}^{-} \\ & + \lambda_1\, \mathrm{ECM}_{t-1} + \mathrm{V}_1 \qquad 11\end{aligned}$$

$$\begin{aligned}\Delta\, \mathrm{IMP}_t = {} & \emptyset_0 + \emptyset_1 \mathrm{IMP}_t + \emptyset_2\, \mathrm{EXR}_t + \emptyset_3 \mathrm{M}_{2_t} + \emptyset_4\, \mathrm{GFCF}_t + \emptyset_5 \mathrm{TRP}_t^{+} + \emptyset_6 \mathrm{TRP}_t^{-} \\ & + \sum_{i=1}^{n} \emptyset_7\, \Delta \mathrm{IMP}_{t-1} + \sum_{i=1}^{n} \emptyset_8\, \Delta \mathrm{EXR}_{t-1} + \sum_{i=1}^{n} \emptyset_9\, \Delta \mathrm{M}_{2_{t-1}} \\ & + \sum \emptyset_{10}\, \Delta \mathrm{GCFC} + \sum_{i=1}^{n} \emptyset_{11}\, \Delta \mathrm{TRP}^{+} + \sum_{i=1}^{n} \emptyset_{12}\, \Delta \mathrm{TRP}_{t-1}^{-} \\ & + \lambda_2\, \mathrm{ECM}_{t-1} + \mathrm{V}_2 \qquad 12\end{aligned}$$

$$\begin{aligned}\Delta\, \mathrm{IEP}_t = {} & \propto_0 + \propto_1 \mathrm{IEP}_t + \propto_2\, \mathrm{EXR}_t + \propto_3 \mathrm{M}_{2_t} + \propto_4\, \mathrm{GFCF}_t + \propto_5 \mathrm{TRP}_t^{+} + \propto_6 \mathrm{TRP}_t^{-} \\ & + \sum_{i=1}^{n} \propto_7\, \Delta \mathrm{IEP}_{t-1} + \sum_{i=1}^{n} \propto_8\, \Delta \mathrm{E} \times \mathrm{R}_{t-1} + \sum_{i=1}^{n} \propto_9\, \Delta \mathrm{M} \\ & + \sum_{i=1}^{n} \propto_{10}\, \Delta \mathrm{GCFC}_{t-1} + \sum_{i=1}^{n} \propto_{11}\, \Delta \mathrm{TRP}_{t-i}^{+} + \sum_{i=1}^{n} \propto_{12}\, \Delta \mathrm{TRP}_{t-1}^{-} \\ & + \lambda_4\, \mathrm{ECM}_{t-1} + \mathrm{V}_4 \qquad 13\end{aligned}$$

$$\Delta \text{IMQP}_t = \text{Z}_0 + \text{Z}_1\text{IMQP}_t + \text{Z}_2\,\text{EXR}_t + \text{Z}_3\text{M}_{2t} + \text{Z}_4\,\text{GFCF}_t + \text{Z}_5\text{TRP}_t^{+} + \text{Z}_6\text{TRP}_t^{-} + \sum_{i=1}^{n} \text{Z}_7\,\Delta\text{IMQP}_{t-1} + \sum_{i=1}^{n} \text{Z}_8\,\Delta\text{E} \times \text{R}_{t-1} + \sum_{i=1}^{n} \text{Z}_9\,\Delta\text{mM}_{2t} + \sum_{i=1}^{n} \text{Z}_{10}\,\Delta\text{GCFC}_{t-i} + \sum_{i=1}^{n} \text{Z}_{11}\,\Delta\text{TRP}_{t-i}^{+} + \sum_{i=1}^{n} \text{Z}_{12}\,\Delta\text{TRP}_{t-1}^{-} + \lambda_5\,\text{ECM}_{t-1} + \text{V}_5 \quad 14$$

A' Priori expectations

$\text{TI}_0\ \text{TI}_1\ \text{TI}_3\ \text{TI}_4\ \text{TI}_5 > 0 \qquad \text{TI}_2\ \text{TI}_6 < 0$

$\acute{\text{O}}_0\ \acute{\text{O}}_1\ \acute{\text{O}}_3\ \acute{\text{O}}_4\ \acute{\text{O}}_5 > 0 \qquad \acute{\text{O}}_2\ \acute{\text{O}}_6 < 0$

$\alpha_0\ \alpha_1\ \alpha_3\ \alpha_4\ \alpha_5 > 0 \qquad \alpha_2\ \alpha_6 < 0$

$\text{Z}_0\ \text{Z}_1\ \text{Z}_3\ \text{Z}_4\ \text{Z}_5 > 0 \qquad \text{Z}_2\ \text{Z}_6 < 0$

From 11, $\pi_1, \pi_2, \pi_3, \pi_4, \pi_5$, and π_6 are the long run estimates, while short run estimates consist of $\pi_7, \pi_8, \pi_9, \pi_{10}, \pi_{11}$, and π_{12}. Any difference in the values or the statistical significance between the estimates of $\pi_5, \pi_6, \pi_{11}, \pi_{12}$ is a sign of non-linearity of the effect of trade policy on industrial production in the long run and short run respectively. The same applies to the estimates of models 11, 12, 13 and 14; while, $\lambda_1, \lambda_2, \lambda_3, \lambda_4$, and λ_5 represent the coefficients of the Error Correction Model (ECM) for models 11 through 14. While Δ represents first deference operator

Table 2: *Description of Variables*

S/N	Variable	Description	Measurement proxy
1.	IIP_t	Industrial Production Index	Industry (including construction), value added (% of GDP)
2.	IMP_t	Manufacturing Production Index	Manufacturing, value added (% of GDP)
3.	$IBCP_t$	Building and Construction Product Index	Construction
4.	IEP_t	Electricity Production Index	Electricity production from hydroelectric sources (% of total)
5.	IMQP	Mining and Quarrying Product Index	Mining and Quarrying
6.	EXR_t	Official exchange rate	Official exchange rate (LCU per US$, period average)
7.	TRP_t	Trade policy (Proxied by Trade Openness)	Trade
8.	M_{2t}	Broad Money Supply	Broad money (current LCU)
9.	TRP^+_t	Positive Trade Policy (Period of Regulated Trade Regime)	Period of regulated trade regime = positive differentials of TRP
10.	TRP^-_t	Nigeria Trade Policy (Period of Deregulated Trade Regime)	Period of regulated trade regime = negative differentials of TRP

Source: Compiled by authors

Note: TRP_t^+ and TRP^-_t are the dynamic forms of trade policy (see Bahmani – Oskoolee & Mohammadian, 2017)

3. 3 RESULTS

3.3.1 DESCRIPTIVE STATISTICS

Table 3 presents the data for the variables used in the estimation. A closer look shows that some of the variables are normally distributed while others are not. The standard deviations are fairly large enough for regression estimation, except for broad money supply (M_2), which is a little lower compared to others.

Table 3: *Summary statistics*

	Mean	Median	Max	Min	Std. Dev.	Skewness	Kurtosis	N
iip	23.037	27.07	39.250	0	13.407	-0.892	2.309	49
imp	15.304	10.44	53.680	0	13.906	0.914	3.073	49
iep	35.362	33.72	86.970	0	19.355	0.642	3.774	49
exr	68.811	21.89	306.080	0.55	85.006	1.125	3.506	49
trp	33.266	34.46	53.280	9.14	12.155	-0.442	2.231	49
m2	16.217	13.4	28.630	9.06	5.802	0.634	1.896	49
imqp	2429.701	149.81	13648.660	0	3841.879	1.539	4.055	49
gfcf	28.09	26.06	89.390	0	22.988	0.68	3.09	49
rpincrease	21.005	19.62	53.280	0	20.725	0.14	1.281	49
trpdecrease	12.262	0	44.530	0	15.623	0.774	2.006	49

Source: Authors' computation

According to the descriptive statistics in Table 3.3.1, there are no missing observations. As a result, there is a high level of confidence that the estimation will not be distorted due to missing data. The mean is the average of the data and is calculated as the sum of all observations divided by the total number of observations. It is often referred to as an expected value in a set of data. The standard deviation describes the degree to which the data collected for these variables is distributed around their means. A low standard deviation indicates that the data is clustered around the mean, whereas a high standard deviation indicates that the data is dispersed and allows for more precise decision-making. When the standard deviation is near zero, the data points are close to the mean; when it is large, the data points are above the mean. According to descriptive statistics, all variables have data sets that are evenly distributed around their means, allowing for accurate analysis. More so, moderate variability is indicated by standard deviation, while the means of these variables range from 12.262 to 2429.701. It also shows the maximum and minimum values as 13648.660 and 0 respectively.

3.3.2 CORRELATION MATRIX RESULT

There are two parts to a correlation coefficient. The first part is the sign, or direction, meaning whether the coefficient is a positive number or a negative number. The second part is the number. The number will always be between zero and one. That means that the correlation coefficient will always be somewhere between negative one and positive one. If the number is a perfect zero, that means

that the two variables are not related to each other at all. As a correlation moves from zero to one, it means that the relationship becomes stronger and stronger. A low correlation means that the two variables are somewhat related to each other, but not much. A high correlation, meaning one that's closer to the value of one, means that the two variables are very strongly related to each other.

Table 4: *Correlation Matrix Result*

Variables	iip	iep	imp	exr	trp	m2	imqp	gfcf
iip	1.000							
iep	-0.515	1.000						
imp	0.398	-0.701	1.000					
exr	0.141	-0.625	0.731	1.000				
trp	-0.189	0.232	-0.181	0.160	1.000			
m2	-0.316	-0.310	0.457	0.583	0.290	1.000		
imqp	0.106	-0.585	0.800	0.861	0.166	0.657	1.000	
gfcf	0.824	-0.286	0.166	-0.242	-0.469	-0.507	-0.275	1.000

Source: Authors' computation

The relationship amongst the variables is presented in Table 4 The incorporation of the indexes of the variables in the different models helps to reduce the incidence of multicollinearity as none of the coefficients is up to 0.9 or 90 percent. The relationships between the regressands and the regressors (EXR, TRP, M_2 and GFCF) are above average and relatively strong. More specifically, among the independent variables, exchange rate (EXR) is averagely and positively correlated with broad money supply (M_2) at 0.583; while the value of trade given the various Trade Policies (TRP) and Gross Fixed Capital Formation (GFCF), as well as broad money supply (M_2) and Gross Fixed Capital Formation (GFCF), are negatively and averagely correlated.

3.3.3 UNIT ROOT TEST

Table 5: *Unit Roots Test Results*

	Augmented Dickey Fuller (ADF)			**Phillip Perron (PP)**		
Variable	**Level**	**First Difference**	**I(d)**	**Level**	**First Difference**	**I(d)**
IIP_t	-2.944	-2.947**	I(1)	-2.936	-2.938**	I(1)
IMP_t	-2.944	-2.947**	I(1)	-2.936	-2.938**	I(1)
IEP_t	-2.947	-2.950 **	I(1)	-2.936**	-	I(0)
$IMQP_t$	-2.944	-2.947**	I(1)	-2.936	-2.938**	I(1)
EXR_t	-2.938	-2.941**	I(1)	-2.936	-2.938**	I(1)
TRP_t	-2.938	-2.941**	I(1)	-2.936	-2.938**	I(1)
M_{2t}	-2.938	-2.941**	I(1)	-2.936	-2.938**	I(1)
GFCF	-2.938**	-	I(0)	-2.936**	-	I(0)
TRPINCREASE	-2.936**	-	I(0)	-2.936**	-	I(0)
TRPDECREASE	-2.936**	-	I(0)	-2.936**	-	I(0)

Source: Authors' Computation. Note: ** Implies Statistical Significance at 5%

The variables are mixtures of stationarity at levels I(0) and at first difference I(1) which is a major pre-requisite for ARDL and NARDL framework. The positive

value of trade given the various trade policies (TRPINCREASE), the negative value of trade given the various trade policies (TRPDECREASE) and Gross Fixed Capital Formation (GFCF) were stationary at level I(0) while the remaining were stationary only at first difference. Augmented Dickey Fuller (ADF) and Phillip Perron (PP) offered similar verdicts except for Index of Electricity Production (IEP).

3.4 BOUNDS TEST COINTEGRATION RESULT

Table 6 shows the results of ARDL Model's Bounds test for cointegration. For clarity, only the values for 5 percent were reported and referenced. The statistic indicates that the variables in all of the models have a long-run relationship, as the F-statistics were greater than the upper bound critical values indicating evidence of cointegration.

Table 6: *Bounds Test Cointegration Result*

Linear ARDL Model						
Sig. Level	Critical Value					
	Lower Bound (I_0)	Upper Bound (I_1)	Model 7	Model 8	Model 9	Model 10
5%	2.86	4.01	5.259	4.671	7.034	6.920
Decision			Cointegration	Cointegration	Cointegration	Cointegration

Source: Authors' Computation

Decision rule: Accept if F < critical value for I(0) regressors;
Reject if F > critical value for I(1) regressors

3.5 RESULTS AND INTERPRETATION

3.5.1 INDUSTRIAL RESPONSE TO TRADE POLICY: SYMMETRIC RESULTS

The results of the analysis are presented in Table 7, which depicts the effects of trade policy and allied factors on industrial production and its subsectors. The results are interpreted model by model as follows:

Table 7: *ARDL Results*

ARDL ESTIMATES	**(Model 7)** lniip	**(Model 8)** Lnimp	**(Model 9)** lniep	**(Model 10)** lnimqp
ECM	-0.789***	-0.163**	-0.953***	-0.485***
	(0.16)	(0.08)	(0.229)	(0.093)
LR:lnexr	-0.097***	-0.313	0.129***	0.779***
	(0.033)	(0.273)	(0.023)	(0.13)
LR:lnm2	-0.09	-1.418	-0.062	-0.292
	(0.104)	(1.404)	(0.06)	(0.466)
LR:lngfcf	0.039	-3.296**	0.894***	-1.77***
	(0.116)	(1.534)	(0.071)	(0.539)
LR:lntrp	0.251***			
	(0.067)			
LR:trp		0.012	0.005**	0.013

		(0.025)	(0.002)	(0.01)
SR:D.lngfcf			-0.545***	
			(0.18)	
SR:LD.lngfcf			-0.627***	
			(0.187)	
SR:L2D.lngfcf			0.051	
			(0.144)	
SR:L3D.lngfcf			-0.352***	
			(0.12)	
SR:D.trp			-0.005***	0.019***
			(0.001)	(0.005)
SR:D.lnexr				-0.259
				(0.161)
SR:LD.lnexr				-0.188
				(0.156)
SR:L2D.lnexr				-0.452***
				(0.143)
SR:_cons	2.335***	3.041***	-.179	5.13***
	(0.665)	(1.06)	(0.392)	(1.497)
Observations	37	37	31	37
R-squared	0.459	0.43	0.763	0.756
Adjusted R-squared	0.3717	0.3377	0.6439	0.6747
F-Statistics	26.39***	91.44***	62.73***	424.05***
Bgodfrey LM Test	4.846	1.237	4.504	0.268
	(0.028)	(0.266)	(0.034)	(0.605)
IMtest, White	17.92	23.71	31.00	37.00
	(0.593)	(0.256)	(0.415)	(0.423)
Cusum	Stable	Stable	Stable	Stable

Standard errors are in parentheses
**** p<.01, ** p<.05, * p<.1*

Note: ***(1%), **(5%), *(10%) significance and probabilities are in parenthesis.
Model 7: Linear relation between Trade Policy and Index of Industrial Production (IIP)
Model 8: Linear relation between Trade Policy and Index of Manufacturing Production (IMP)
Model 9: Linear relation between Trade Policy and Index of Electricity Production (IEP)
Model 10: Linear relation between Trade policy and index of mining and Quarrying Production (IMQP)

Model 7

Model 7 displays the linear relation between Trade Policy and Index of Industrial Production (IIP). Trade policy (TRP) and exchange rate (EXR) are significant at 1% level of significance in determining the changes in industrial production (IIP) in the long-run. It shows that 1% change in exchange rate (EXR) will lead 0.097% change in industrial production (IIP) in the opposite direction, and 1% change in Trade policy (TRP) will lead 0.251% change in industrial production (IIP) in the same direction.

The implication of this is that, exchange rate devaluation affects industrial production negatively while positive trade policy is shown to improve industrial production in the long-run. This finding is in agreement with the work of Mlambo and McMillan (2020), who posit that exchange rate, imports and Foreign Direct

Investment have negative relationship with manufacturing performance. Hence, policymakers need to know which subsectors of the manufacturing sector will be affected by an exchange rate change and they also need to know the magnitude of the impact so that they can make informed decisions.

The model is stable, and the variables have long-run relationship. Any disequilibrium in the short-run will be corrected and revert back to equilibrium in less than 2 years at the adjustment speed of 78.9% at 1 percent significant level.

Model 8

Model 8 displays the linear relation between Trade Policy and Index of Manufacturing Production (IMP). Only Gross Fixed Capital Formation (GFCF) is significant at 5% level of significance in determining the changes in Manufacturing Production (IMP) in the long-run. It shows that 1% change in Gross Fixed Capital Formation (GFCF) will lead 3.296% change in Manufacturing Production (IMP) in the opposite direction.

This means that increasing the gross fixed capital formation will harm Manufacturing Production in the long-run. This finding is consistent with the study of Ajose and Oyedokun (2018), who investigated the influence of capital accumulation on economic growth in Nigeria 1980-2016. Their results showed that there is a long run significant relationship that exists between the variables examined and there is a causal relationship between capital formation and economic growth in Nigeria within the period under study. The result further revealed a negative non-significant relationship between economic growth and capital formation in Nigeria.

The model is stable, and the variables have long-run relationship. Any disequilibrium in the short-run will be corrected and revert back to equilibrium in about 6 years at the adjustment speed of 16.3% at 1 percent significant level.

Model 9

Model 9 displays the linear relation between Trade Policy and Index of Electricity Production (IEP). Gross Fixed Capital Formation (GFCF) and Trade policy (TRP) are significant at 1% level in determining the changes in Electricity Production (IEP) in both short-run and long-run, while exchange rate (EXR) is significant only in the long-run. The model shows that there is long-run relationship between the variables. Specifically, it shows that 1% change in Gross Fixed Capital Formation (GFCF) will lead 0.545% change in Electricity Production (IEP) in the opposite direction. The first and third year lagged values of Gross Fixed Capital Formation (GFCF) were equally significant at 1 percent level in the short-run. Similarly, Trade policy (TRP) is significant at 1 percent level but has a negative impact on Electricity Production (IEP) in the short-run. It shows that 1% change in Trade policy (TRP) will lead to 0.005% change in Electricity Production (IEP) in the opposite direction in the short-run.

In the long-run, a 1% exchange rate (EXR) will lead to 0.129% change in Electricity Production (IEP) in the same direction, and 1% change in Gross Fixed

Capital Formation (GFCF) will lead to 0.894% change in Electricity Production (IEP) in the same direction.

This means that there is a directional impact difference between the short-run and the long-run impact of Gross Fixed Capital Formation (GFCF) on Electricity Production (IEP). It is negative in the short-run but positive in the long-run.

The model also shows that exchange rate revaluation has a positive long-run impact on electricity production (IEP). This finding is partly consistent with the work of Ndubuaku, Onwuka and Chimezie (2019), who found that there was a positive and significant impact of exchange rate on Petroleum Gross Domestic Product, and recommended that Nigeria's economy should be diversified to enable the non-oil sector to become significant foreign exchange earners.

The model is stable, and the variables have long-run relationship. Any disequilibrium in the short-run will be corrected and revert back to equilibrium in less than 2 years at the adjustment speed of 95.3% at 1 percent significant level.

Model 10

Model 10 displays the Linear relation between Trade Policy and Index of Mining and Quarrying Production (IMQP). Trade policy (TRP) and the second-year lag of exchange rate (EXR) were significant at 1% level in determining the changes in Mining and Quarrying Production (IMQP) in the short-run. Furthermore, exchange rate (EXR) and Gross Fixed Capital Formation (GFCF) were significant at 1% level in determining the changes in Mining and Quarrying Production (IMQP) in the long-run. The model shows that there is long-run relationship between the variables. Specifically, the model shows that 1% change in Trade policy (TRP) will lead to 0.019% change in Mining and Quarrying Production (IMQP) in the same direction in the shot-run while 1% change in the second-year lag of exchange rate (EXR) will cause a 0.452% change in Mining and Quarrying Production (IMQP) in the opposite direction in the shot-run. Furthermore, the model shows that 1% change in exchange rate (EXR) will lead to 0.779% change in Mining and Quarrying Production (IMQP) in the same direction, while 1% change in Gross Fixed Capital Formation (GFCF) will lead to 1.77% change in Mining and Quarrying Production (IMQP) in the opposite direction in the long-run.

The implication is that exchange rate revaluation is beneficial for Mining and Quarrying Production (IMQP) as well as positive trade policies. This finding is in agreement with the study of Falaye Eseyin and Moyinoluwa (2019), who examined the impact of exchange rates on the performance of the Nigerian manufacturing sector using the independent variables of exchange rates like inflation rates, capacity utilization rate, the manufacturing sector's foreign direct investments, and imports over a period of 25 years. Their empirical findings indicated that Naira depreciation had a negative impact on the performance of Nigeria's manufacturing sector. They also ascertained that inflation rates, and capacity utilization rates had positive significant relationship with the performance of the sector, while exchange

rates, imports and manufacturing foreign direct investment had negative significant relationship with the performance of the Nigerian manufacturing sector.

The model is stable, and the variables have long-run relationship. Any disequilibrium in the short-run will be corrected and revert back to equilibrium in about 2 years, at the adjustment speed of 48.5% at 1 percent significant level. This conforms to trade theory which shows that trade restrictions reduce the price of exports and increase the price of imports, thus stimulating domestic output.

3.5.2 INDUSTRIAL RESPONSE TO TRADE POLICY: ASYMMETRIC RESULTS

The non-linear autoregressive distributed lag (NARDL) model is estimated to investigate any asymmetry relationship among the variables due to cyclical fluctuations in the macroeconomy and theoretical reasoning justifying potential asymmetry or non-linearity of monetary variables. The NARDL is used to check if the effect of an increase in the independent variable on the dependent variable is the same as a decrease in the independent variable on the dependent variable, as well as the size of the responses to negative changes and positive changes, and to isolate the effect of different directional changes in the independent variables on the dependent variable.

Table: 8: *NARDL Results*

NARDL ESTIMATES	(Model 11) iip	(Model 12) imp	(Model 13) lniep	(Model 14) imqp
ADJ	-1.028**	-0.636***	-1.331***	-0.554**
	(0.457)	(0.206)	(0.405)	(0.222)
Longrun positive effect				
lnexr	-8.716**	-16.029*	0.245***	-2988.601**
m2	0.524	2.341	-0.076***	-69.699
gfcf	0.783***	0.485	-0.011*	78.864
trpincrease	0.268**	0.346	-0.008	41.463
trpdecrease	0.336*	-0.063	0.017*	89.226
Longrun negative effect				
lnexr	-120.249	-299.468*	3.549	-3.10e+04
m2	-0.614	-0.967	0.029	159.215
gfcf	-0.027	0.071	0.003	-142.882
trpincrease	-0.288*	0.435	-0.022***	-136.659
trpdecrease	-0.247	-0.681	0.020*	144.475
Longrun asymmetry				
lnexr	2.232	3.217*	2.310	0.854
m2	0.046	1.598	5.051**	0.126
gfcf	12.570***	1.499	2.093	0.289
trpincrease	0.011	2.406	6.148**	0.652
trpdecrease	0.147	1.414	6.110**	2.105
Shortrun asymmetry				

lnexr	0.353	0.768	12.750***	2.037
m2	3.432*	0.463	0.129	3.550*
gfcf	1.151	0.020	4.473*	1.853
trpincrease	1.253	2.099	3.981*	0.166
trpdecrease	1.437	3.163*	5.648**	0.000
Breusch/Pagan heteroskedasticity test	0.9151 (0.3388)	0.3935 (0.5305)	0.4785 (0.4891)	0.5131 (0.4738)
Ramsey RESET test (F)	1.683 (0.2279)	3.123 (0.0700)	1.928 (0.2136)	8.318 (0.0058)
Jarque-Bera test on normality	3.592 (0.1659)	0.03196 (0.9841)	0.3177 (0.8531)	1.174 (0.5560)
Constant	2.145 (2.456)	4.32 (3.241)	5.872*** (1.813)	-549.344 (950.161)
Observations	47	47	43	46
R-squared	0.974	0.947	0.916	0.955
Cusum	Stable	Stable	Stable	Stable

Standard errors are in parentheses
**** p<.01, ** p<.05, * p<.1*

Note: ***(1%), **(5%), *(10%) significance and probabilities are in parenthesis.
Model 11: Non-linear relation between Trade Policy and Index of Industrial Production (IIP)
Model 12: Non-linear relation between Trade Policy and Manufacturing product (IMP)
Model 13: Non-linear relation between Trade Policy and Index of Electricity Production (IEP)
Model 14: Non-linear relation between Trade Policy and Index of Mining and Quarrying production (IMQP)

Model 11

Model 11 depicts the Non-linear relationship between Trade Policy and Index of Industrial Production (IIP). According to the model's result, exchange rate (EXR) and Gross Fixed Capital Formation (GFCF) and positive trade policy (TRPINCREASE) have significant long-run positive impact on the Index of Industrial Production (IIP) at the 5% and 1% level of significance.

Specifically, a 1-unit positive change (increase) in exchange rate (EXR) will cause 8.72 units decrease in Industrial Production (IIP). Conversely, 1-unit positive change (increase) in Gross Fixed Capital Formation (GFCF) will cause 0.78-unit increase in Industrial Production (IIP), and 1-unit positive change (increase) in positive trade policy (TRPINCREASE) will cause 0.27-unit increase in Industrial Production (IIP).

There is no variable that has significant long-run negative impact on the Index of Industrial Production (IIP), except positive trade policy (TRPINCREASE) which is only significant at 10% level. Among the regressors, only Gross Fixed Capital Formation (GFCF) has a significant long-run asymmetry. This means that the effect of an increase in the Gross Fixed Capital Formation (GFCF) on Industrial

Production (IIP), is not the same as a decrease in Gross Fixed Capital Formation (GFCF) on Industrial Production (IIP).

Model 12

Model 12 shows the Non-linear relationship between Trade Policy and Manufacturing product (IMP). According to the result of the model, no significant long-run positive or negative impact on Manufacturing product (IMP). This could be due to the neglect of the manufacturing sub sector with the soaring price of crude oil in late 1990s and early 2000s and the few industrial outputs are substandard. Equal exchange theory was also validated and economic dependence where developing nations are at the mercy of the developed ones. Similarly, there is no long-run or short-run asymmetry. However, there is significant adjustment speed to equilibrium at 63.6% rate.

Model 13

Model 13 depicts the Non-linear relationship between Trade Policy and Index of Electricity Production (IEP). According to the model's result, exchange rate (EXR) and broad money supply (M_2) have significant long-run positive impact on Electricity Production (IEP) at 1% level of significance. Positive trade policy (TRPINCREASE) has significant long-run negative impact on Electricity Production (IEP)

Specifically, 1-unit positive change (increase) in exchange rate (EXR) will cause 0.25-unit increase in Electricity Production (IEP). Conversely, 1-unit positive change (increase) in broad money supply (M_2) will cause 0.08-unit decrease in Electricity Production (IEP). Also, 1-unit negative change (decrease) in positive trade policy (TRPINCREASE) will cause 0.02-unit increase in Electricity Production (IEP).

Broad money supply (M_2), positive trade policy (TRPINCREASE) and negative trade policy (TRPDECREASE) have significant long-run asymmetric effect on Electricity Production (IEP). This means that the effect when they increase is different, i.e., nonlinear compared to when they decrease. Similarly, exchange rate (EXR) and negative trade policy (TRPDECREASE) have significant short-run asymmetric effect on Electricity Production (IEP).

Model 14

Model 14 shows the result of the Non-linear relationship between Trade Policy and Mining and Quarrying production (IMQP). The model shows that exchange rate (EXR) has a significant long-run positive impact on Mining and Quarrying production (IMQP). It revealed that 1-unit positive change (increase) in exchange rate (EXR) will cause 2988.60-units decrease in Mining and Quarrying production (IMQP). The model also showed that there is significant adjustment speed to equilibrium at 55.4% rate.

3.5.3 DIAGNOSTIC TESTS

The postestimation tests shows that the models are stable and have considerable predictive powers. Bgodfrey LM Test, IMtest, White, Breusch/Pagan and the Ramsey RESET are insignificant implying the absence of auto-correction and heteroscedasticity in the models with only the exception of model 8 and 10. The adjusted coefficient of determination ($\overline{R}^2$) For ARDL and NARDL models have high explanatory power and a viable goodness of fits. This is further confirmed by the significance probabilities values of the F-values. While the CUSUM test is particularly useful for detecting systematic changes in the regression coefficients, the CUSUM Q test is significant in situations where the departure from constancy of the regression coefficients is haphazard and sudden. All the coefficients of the regressors are stable (CUSUM).

The basic requirements for the error correction term (ECM) namely; (a) it must be negative, (b) statistically significant and (c) less than one in absolute term, were all met in ARDL Models in Table 3.5.1, except for the NARDL models 12 and 14 in Table 3.5.2 that failed to conforms fully to these criteria.

3.5.4 NON-ASYMMETRIC EFFECTS OF TRADE POLICY AND INDUSTRIAL OUTPUT

In the short-run, exchange rate (EXR) and regulated trade policy regime have significant asymmetry effects on Electricity Production (IEP) while broad money supply (M_2), deregulated trade policy regime, as well as regulated trade policy regime also have significant asymmetry effects on Electricity Production (IEP) in the long-run. Furthermore, Gross Fixed Capital Formation (GFCF) has a significant asymmetric effect on industrial production in the long-run.

4. CONCLUSION AND RECOMMENDATION

The study examined the relationship between trade policies and industrial output disaggregated into manufacturing production, electricity production, mining and quarrying production based on ARDL and NARDL methodology.

The findings show that trade policy dynamics have non-linear effects in both short-run and long-run on aggregated industrial output and it constituent: Electricity Production (IEP) and industrial production (IIP). Thus, trade policy dynamics have short-run linear effect on electricity. Trade restriction stimulates the performance of aggregated industrial sector and manufacturing subsector as shown in the analysis (short run).

Furthermore, monetary policy instruments: exchange rates, money supply variations and gross fixed capital formation had marginal positive effects on industrial output and some of its components with few exceptions in both the ARDL and the NARDL models.

The findings have the consequence that improved access to exchange rates for production will have a major long-term impact on industrial production. In order to close the gap between supply and demand for exchange rates and increase the value of the domestic currency, it is suggested that additional foreign money be made available. Additionally, additional financial resources for industry will have a big impact on Nigeria's industrial output. This merely indicates that the output in the subsector will increase if more credit is allocated to the sector.

Furthermore, to stimulate and attract greater capital inflows and to provide a favorable and enabling environment for the growth of gross fixed capital formation, Nigeria's policymakers must implement a number of investor-friendly measures. It is necessary to downplay speculative businesses and invest in the actual economic areas. Additionally, there is a need to lower the rate of capital flight out of the nation. Inflows ought to be connected to specified, pertinent, and useful projects. Long-term, this will contribute to the creation of employment opportunities. The guiding principles in the management of accruals from official capital inflows and transfers should be caution and proper responsibility. Governments in power are expected to invest these funds in worthwhile projects rather than squandering them.

The policy thrust of these results is that trade policies in Nigeria have some non-linear effects on industrial output. The effect on industrial output depends on the type of trade pursued by the government. Succinctly, the effect of trade policy on industrial and manufacturing output are greater than that of liberalization. It finds no positive effect of trade liberalization on industrial output as evidenced in the literature. This may not be unconnected with the fact that domestic industrial output is unable to compete with better quality goods often imported. Unfortunately, Intra-African trade as entrenched in the African Continental Free Trade Area (AfCFTA) agreement is marginal unprofitable as most of the countries are primary producers with low terms of trade and high elasticity of demand. Also, free trade tends to promote the exploitation of poor nations and the development of the center at the expense of the periphery because of unequal exchange and economic dependence. Hence, the models of Korea and Japan should be applied to grow the industry through guided restrictions on trade.

REFERENCES

Abiodun, S. A. (2004). Nigeria’s Industrialization strategy under Multilateral Trade Agreement, NES 2004 NES conference proceedings..

Adebiyi, M. A. & Dauda. R. O. S. (2004) Trade Liberalization Policy and Industrial Performance in Nigeria: An Error Correction Mechanism (ECM) Technique, NES conference proceedings.

Adenikinju and Olofin (2000). Economic Policy and Manufacturing Sector Performance in Africa. *The Nigerian Journal of Economic and Social Studies* 42(1), 1-22

Adenikinju, A. (2002) African Imperatives in the New World Trade Order: A Case Study of the Manufacturing Sector, Nigeria. Report Presented to AERC, Nairobi, Kenya.

Adenikinju, A. F & L. Chete (1995) Productivity, Market Structure and Trade Policy Reforms in Nigeria. AERC June.

Adeoye, B. W. (2004) Industrial Development in Nigeria in the Context of Globalization. NES Conferencing proceedings.

Ajose, K. & Oyedokun, G. E. (2018). Capital Formation and Economic Growth in Nigeria. International Journal of Finance & Banking Studies (2147-4486) 7(3) DOI:10.20525/ijfbs.v7i3.37

Asongo, A. I. Jamala, G. Y. Joel, L & C. Wain du, (2013) Impact of Trade Liberalization on the Performance of the Manufacturing Sector in Nigeria (1989 - 2006) *Journal of Economic and Finance. 2(2)*

Bahmani – Oskoolee M. & Mohammadian, A. (2017) Asymmetric Effects of Exchange Rate changes on economic production in Japan. *International Review of Applied Economics 31(6),* 1-17

Bamidele, R. (2013). Nigeria's Trade Policy and Economic Development: From the Lens of World Trade Organization (WTO). Nnamdi Azikiwe University Akwa Journal of Sociology 5.

Bankole, A. S. (2004) Nigeria Industrialization strategy under Multilateral Trade Agreements. *NES Conference Proceedings*

Berg, A. & Krueger, A. (2002) Lifting all boats: why openness help curb poverty, Finance and Development, Washington, D.C. IMF.

Bhagwali, J. N, (1988) Export – Promoting Trade Strategy: Issue and Evidence. *The World Bank Research Observer*. January, 27 – 57.

Bruton, H. (1989) Import substitution. In Handbook of Economic Development. 2, Holis Chenery's and T. N. Strinivasan (eds.) North Holland, Amsterdam.

Chete, L. N. Adeoti, J. O Adeyinka, F. M & O. Ogundele (2011) Industrial Development and Growth in Nigeria: Lessons and challenges: Learning to Complete. *Brookings Institution Working Paper*

Dhonte, P. (1995). Three propositions on African Economic Growth. IMF PaperM. Policy Basic and Assessment, PPAA/9519, Research Department.

Egwaikhide, F (1997) Import Substitution Industrialization in Nigeria. *The Nigeria Journal of Economic and Social Studies* 39(2), 183-203

Ekpo, A. H (1995) Openness and Economic Performance in Nigeria: A Time Series Analysis In. External Trade and Economic Development in Nigeria. *Selected Paper for the NES.*

Ekpo, A. H (2005) industrialization and Nigerian Economic Development In: Challenges of industrialization: A pathway for Nigeria becoming a highly Industrial country in the year 2015. NES.

Ekpo, V. N. (2014) Nigeria Industrial Policy and Industrial Sector Performance: Analytical exploration. *Journal of economic and finance* 3(4). 1-11

Essia, U. & Ibor, U. E. (2005) Industrialization and Import Addition in Nigeria. A Keynesian structures perspective. In: challenges of industrialization. A pathway for Nigeria becoming a highly industrialized country in the year 2015. NES, Ibadan.

Ewetan, O. O & Ike, D. N. (2014) Does Financial Sector Development Promote industrialization in Nigeria.? *International Journal Research Social Science* 4(1). 17-25

Ezeoha, A. E. (2007) Industrial Development Banking in Nigeria: A Forty – Year Failed Experiment. *Journal of Economic Policy Reform* 10(3), 193-208

Falaye, A., Eseyin, O. & Moyinoluwa, N. (2019). Impact of exchange rate on the manufacturing sector in Nigeria. International Journal of Mechanical Engineering and Technology (IJMET). Volume 10, Issue 02. http://www.iaeme.com/IJMET/index.asp

Fosu, A. (1990) Exports and Economic growth: The African Case. *World Development. 18(6),* 831-835

Greenwald, B. & J. E. Stiglitz (2006) Helping Infant Economies Grow: Foundations of Trade Policies for Development Countries, *The American Economic Review,* 141 – 146

Guzman, M., Ocampo, J. A. & J. E. Stiglitz (2018). Real Exchange Rate Policies for Economic Development. *World DevT.* 110, 51 – 62.

Habibi A. (2019) Non – linear Impact of Exchange Rate Change on U.S Industrial Productivity. *Habibi Economic Structure*.

Iyoboyi, M. Na – Allah, A (2016) Source Growth and Diversification in the BRICS and a Paradigm for Nigeria's Economic Diversification. *NES Conference Proceedings*

Lai, D. & Rajapatirana, (1987) Foreign Trade Regimes and Economic Development. *World Bank Research Observer* 2(2), 189-217

Markevicius, N. (2011) Optimization of Economic Integration between Lithuanian Belarus. Socialiniu Mokslu Studijus *Social Studies* 3(1), 107-121

Mlambo, C. & McMillan, D. (2020). Exchange rate and manufacturing sector performance in SACU states. Cogent Business & Management. 7(1), 1787735, 2020 https://www.tandfonline.com/doi/full/10.1080/23311975.2020.1787735

Ndebbio, J. E. U, 1991 (1991) Industrial Development Policies/Incentivizes and their Impact in the Nigerian Economy. In: Ndebbio and Ekpo (eds). The Nigerian Economy at Crossroads: Policies and their Effectiveness. University of Calabar Press. PP. 11 - 13

Ndubuaku, V., Onwuka, K. & Chimezie, I. C. (2019). Impact of Exchange Rate Fluctuation on Selected Economic Sectors of the Nigerian Economy. DOI:10.18488/journal.26.2019.81.21.36

NESG (2017) Looking Inwards:Will Nigeria Tread the path of Economic Recovery and Growth in 2017? NESQ. Macroeconomic outlook 2017, NESG, Lagos

Obadan, M. I (2002) Towards Exchange Rate Stability In Nigeria. One Day Seminar of the Nigerian Economic Society (NES).

Ochinyabo, S. (2016) Economic Integration and Trade Tax Issue in Nigeria (1970–2015) Selected Papers for the (2016) Annual Conference.

Ogunjimi, J. A. (2020) Exchange Rate Dynamics and Sectoral Output inNigeria: A Symmetric Approach American. *Journal of Social Sciences and Humanities* 5(1)

Olarinde, M. O & Martins Iyoboyi (2016) Does Trade Liberalization Spur Economic Diversification? Evidence from Nigeria. NES Conference Proceedings

Oyejide, T. A. (2017) Managing Nigerian Economic in and Out of Recession *NES Public Lecture series*. No 13

Oyejide, T. A (2004) African Export Supply Response Capacity: An Explanatory Analysis, AERC, Nairobi, Kenya

Oyejide, T. A. (2002), "The Mechanics of Trade Policy Reform in Developing Countries: a Literature Survey", mimeo, University of Ibadan.

Pesaran, M. H., Shin, Y. and Smith, R. J. (2001). Bounds Testing Approaches to the Analysis of Level Relationships. Journal of Applied Econometrics, 16, 289–326.

Phillips, P. C. B & Peron, P. (1998) Testing for Unit Root in Time Series Regression. Biometrics 62.

Roemer, M. (1994) Industrial Strategies: Outward Bound. In: D.L Lindauer and M. Reomer (eds.) Asia and Africa: Legacies and Opportunism in Development. San Francisco: ICS press.

Sachs, J. D and Warner, A. (1995) Economic Reforms and Process of Global Integration. Brookys Papers on Economic Activity (1) 35 - 36

Shin, Y., Yu, B., & Greenwood-Nimmo, M. (2014). Modelling Asymmetric Cointegration and Dynamic Multipliers in a Nonlinear ARDL Framework. In: Sickles, R., Horrace, W. (eds) Festschrift in Honor of Peter Schmidt. Springer, New York, NY. https://doi.org/10.1007/978-1-4899-8008-3_9

Solow, R. (1956) A Contribution to the Theory of Economic Growth, *The Quarterly Journal of Economics* 70(1), 65-94

Ubi, P. & Achibong, N. (2018). A Re-Examination of Trade Policy and Industrial Sector Performance in Nigeria. *Journal of Economics and Sustainable Development 9(2)*, 90-102.

Udoma, J. A, & obiora, I. (2004) Trade Policy and Manufacture Exports in Nigeria: Performance, Challenges and Prospects. *NES conference proceedings*

United Nations Industrial Development Organization (2020). Industrialization as the driver of sustained prosperity. Vienna. URL: https://www.unido.org/sites/default/files/files/2020-04/UNIDO_Industrialization_Book_web4.pdf.

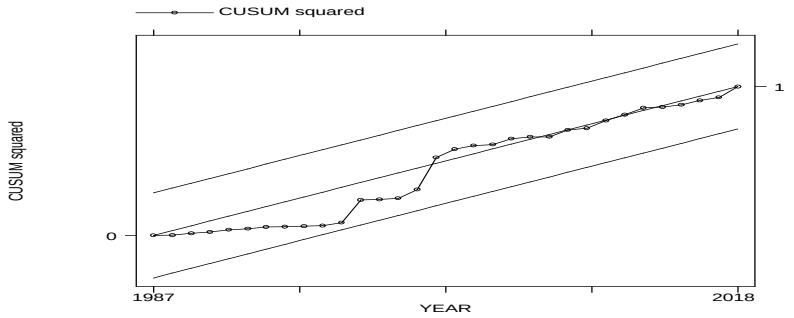
World Bank (1991) World Development Report. The Challenge of Development, New York: Oxford University Press. https://doi.org/10.1596/978-0-1952-0868-9.

Zerihun, G. K. (2015) Trade Openness, Structural Transformation, and Poverty Reduction: Empirical Evidence from Africa. Accessed on 24th April, 2020 from http//mpra. Ub. Uni S– muenchen. de/65537/.

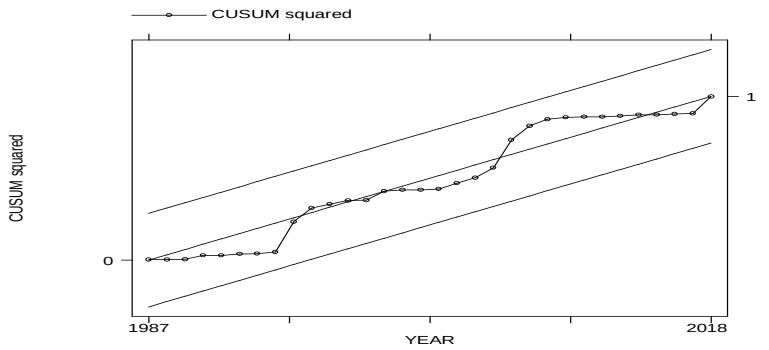
APPENDIX

Cusum Square Graph

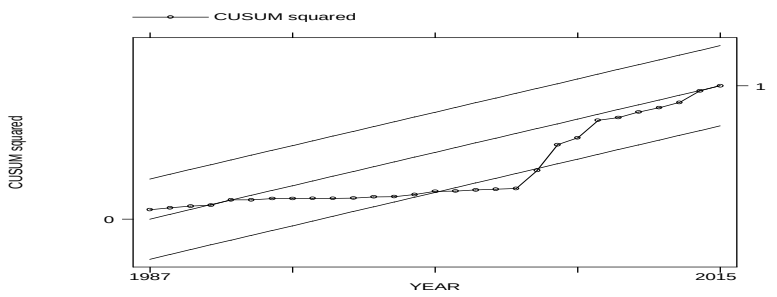
Model 7



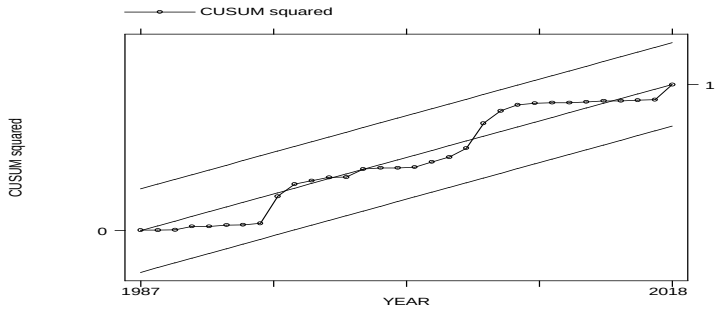
Model 8



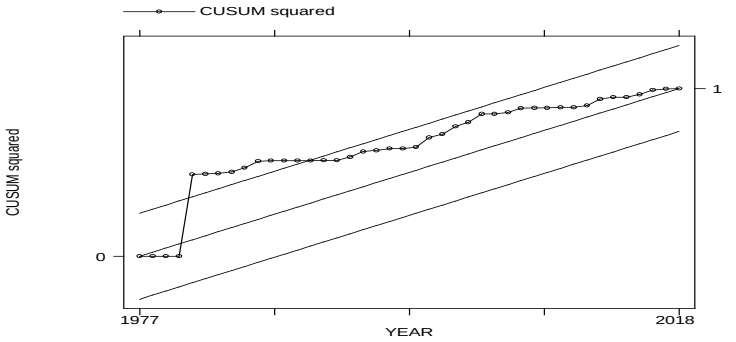
Model 9



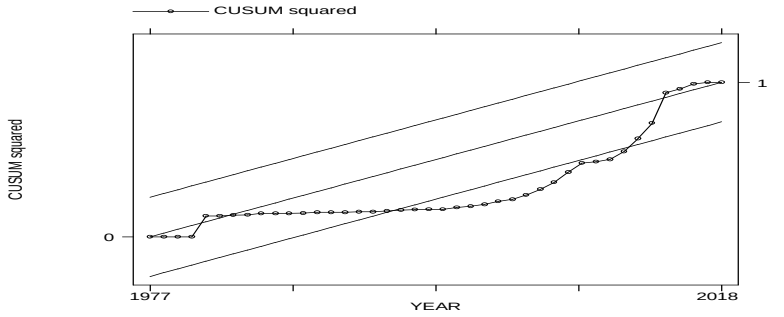
Model 10



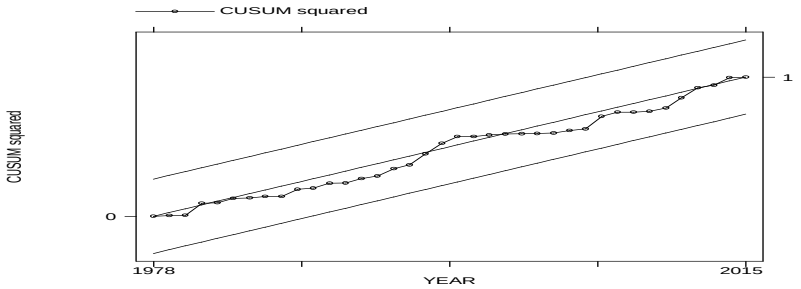
Model 11



Model 12



Model 13



Model 14