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**TRADE LIBERALIZATION – INDUSTRIALIZATION NEXUS; A CASE STUDY OF
THE NIGERIAN ECONOMY**

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ABSTRACT

This paper explores trade liberalization- industrialization nexus in the Nigerian Economy. Both long-run and short-run relationships between these variables were explored. The study spanned through 1981- 2016. The study applied the pre-estimation tests, such as the unit root test, the optimal lag length selection test was performed to ensure the appropriate lag length for the individual annual data series. The Vector Error Correction Model (VECM) analysis was applied following the result of the co-integration test and the pair-wise Granger causality tests was applied to investigate the causal relationship between trade liberalization and industrialization in the Nigerian economy. The results from the VECM analysis revealed a unidirectional long-run causal relationship between trade liberalization and industrialization; but no short run causal relationship between the variables. The pair-wise Granger-causality test result revealed that there was no short run Granger-causal relationship running from trade liberalization to industrialization. The study therefore recommends that the Nigeria government should focus on the production of capital goods and should also make effort at acquiring appropriate technology that will be channel at the improvement of the industrial sector of the Nigerian economy.

Keywords: Trade Liberalization, Nigeria Economy and Industrialization

1.0 INTRODUCTION

Nigeria's establishment of multilateral trade ties with other countries and implementation of the policy to liberalize trade were carried out believing that these measures will bring about improvement in Nigeria's trade and economic growth over the years through competition which will lead to efficient allocation of resources, increased flow of knowledge and investment, rapid capital accumulation and technological progress (Babatunde, 2009). However, with heightened unemployment rate, poor performance of Nigeria's industries and ever rising rate of importation of commodities and manufactured goods, trade liberalization comes under the microscope time and time again; with some economic experts challenging its relevance to the Nigerian economy and its industrialization. The results of studies carried out on the trade liberalization industrialization nexus in Nigeria are not unanimous in their findings. A close examination of these previous studies revealed that conscious effort was not made to determine the nature of the trade liberalization industrialization nexus and the direction of causation which exists between these variables. Therefore, this study examines the existence of both short and long-run relationships between trade liberalization and industrialization as well as determines the direction of the causal relationship between trade liberalization and industrialization in the Nigerian economy.

2.0. Review of Relevant Literatures

2.1. Export Liberalization

Given the numerous benefits to be reaped from the liberalization of trade, Nigeria was rightly positioned to realize these benefits from its exports given the insatiable appetite of China and other late industrializing nations for the commodity exports of less developed countries. These commodity exports are used by these nations as raw materials for manufacturing of consumer durables, consumer non-durables, capital goods and to fuel their rapid economic growth. This insatiable appetite triggered high prices for commodity export. With Nigeria's favourable demography, extensive agricultural resource and natural endowment, all it required do was to take advantage of the windfall from exports and channel these gains to develop its industries. Broadly speaking, liberalizing exports exposes the domestic economy to some positive external benefits; benefits such as efficient management styles and improved production techniques which are copied and adapted adopted by non-export sectors of the domestic economy (Feder, 1983), the alleviation of foreign exchange constraints (Esfahani, 1991) and increased productivity resulting from economy of scale enjoyed by industries in countries engaged in international trade (Helpman and Krugman, 1985). The adoption of SAP and by extension; the policy to liberalize trade by the Nigerian government is believed to have had an impact on trade (export and import). Exports and imports have on average increased steadily over the years spanning the period 1981 – 2016. In this interval, the dollar value of average total export was approximately 34 billion, total export was at its lowest in 1986 with a dollar value of 2.9 billion and it accounted for 5% of Gross Domestic Product (GDP) of the nation for same year. Exports peaked in the year 2012, having a dollar value of approximately 145 billion, accounting for 32% of GDP that year (World Bank, 2019).

2.2. Industrialization

Industrialization process is activity by which an economy is transformed from primarily agricultural based to the manufacturing of goods, man power is replaced by mechanized production, and craftsmen are replaced by assembly lines. 'Industrialization' is a general name for a combination of social-economic processes related to the discovery of more efficient ways for the creation of value. These more efficient ways are lumped together under the label 'industry' (Simandan, 2009). Nigeria's level of industrialization has declined over years and data collected on the contribution of industrial outputs to the nations GDP speaks volumes to that effect. The contribution of Nigeria's industrial output to her GDP actually declined from approximately 39% in 1981 to approximately 18% in 2016. It also made its least contribution in the year 2016 (World Bank, 2019).

2.3 Empirical Literatures

Hosseini and Leelavathi (2013) in a cointegration analysis, investigated the existence of a long-run relationship between trade liberalization and industrial growth in the Indian economy. They used the human capital model of endogenous growth, developed by Lucas (1988) as a theoretical basis for their analysis and employed secondary data -time series spanning 1970-2010- which were only stationary after first difference. The result of the co-integration analysis revealed the existence of a long-run equilibrium relationship between industrial growth and trade liberalization. They went further to investigate the existence of a long-run dynamic by developing and estimating an Error Correction Model (ECM). The result of the analysis of the ECM revealed a statistically significant error correction coefficient of -0.265 and by extension; the existence of a long-run dynamic.

Umoru and Eborieme (2013) investigated the trade liberalization and industrialization relationship in the Nigerian economy. The human capital model of endogenous growth, developed by Lucas (1988) was adopted for their analysis and modified so it includes trade

liberalization. Secondary data obtained from the Central Bank of Nigeria (CBN) Statistical Bulletin was employed for the study. The Johansen test of co-integration performed on the times series data spanning 1970 – 2010 after establishing that they became stationary after first difference revealed the existence of a long-run equilibrium relationship between all the variables in the human capital model of endogenous growth; even with trade liberalization. They developed an ECM and employed the estimation tool of regression based on the Generalized Method of Moment (GMM) in estimating the model. The result of the empirical analysis revealed positive coefficients of the variables (differenced logarithm of trade liberalization and lags of the differenced logarithm of trade liberalization) which were statistically significant. The probability associated with the F-statistic reveals that all the explanatory variables jointly influence industrialization. The coefficient (speed of adjustment) of Error Correction Term (ECT) is negative and having an absolute value of 0.89. The value is significant and therefore, there exists a significant long run dynamic.

Ejike, D.C., Arinze, A.S. and Onwuchekwa, F.C. (2018) investigated the existence of the relationship between trade liberalization and economic growth in the Nigerian economy. To do this, they developed an econometric model with GDP (as proxy for economic growth) as the dependent variable and trade openness, FDI, exports and imports as independent variables. This econometric model is anchored on the Export led Growth Hypothesis. Secondary data obtained from the Central Bank of Nigeria (CBN) Statistical Bulletin was employed for the study. Their study employed the estimation tool of regression based on Ordinary Least Squares (OLS) to estimate the parameters representing the short run impact of trade liberalization on economic growth. They employed the Johansen test for co-integration to investigate the existence of a long-run relationship between the variables after establishing that the variables became stationary after first difference. The result of the study revealed that all the independent variables made significant impact on the economic growth (dependent

variable) in the short-run. The probability of F-statistic also reveals that they jointly influence economic growth. Imports and exports made impacts which were contrary to a-priori expectation. The result also revealed the existence of a long-run relationship between economic growth and trade liberalization.

Adigwe, P.K., Okonkwo, V.I. and Echekeba, F.N. (2015) in their research study titled ‘trade liberalization and economic growth: the Nigerian experience (1971-2012)’, investigated the impact of trade liberalization (measured using variables like import, export, FDI, exchange rate and inflation rate) on Nigeria’s economic growth (measured by GDP). Secondary data (times series data) obtained from the Central Bank of Nigeria (CBN) Statistical Bulletin was used for this study. From theoretical literatures (literatures on Classical theory of trade, Neo Classical theory and Export led Growth Hypothesis) reviewed, an econometric model was developed; with GDP as the explained variable and trade liberalization as the explanatory variable. The estimation tool of regression based on OLS was employed to estimate the parameters in the model. The result of the regression revealed that only export and exchange rate had estimates which conformed to a-priori expectation. The estimates of the parameters for imports, exports and fdi were found to be statistically significant while those of exchange rate and inflation rate were found to be statistically insignificant. The result also revealed a statistically significant F-statistic which implies that the explanatory variables (trade liberalization) jointly influence the explained variable (economic growth).

3.0 METHODOLOGY

Trade is a very complicated phenomenon because it is not just an economic but also a social and political matter. Implementing a right trade policy will enhance the economic welfare and growth of the economy.

This theory suggests that ‘trade liberalization leads industrialization’ that is ‘trade liberalization causes industrialization’. Based on this claim of the classical school, the following model has been specified

$$\text{Industrialization} = f(\text{Trade Liberalization}) \quad 4.1$$

Employing the proxies/indicators for trade openness to represent trade liberalization and industrial output for industrialization, we obtain:

$$\text{Industrial output (INDO)} = f(\text{Export, Import, Fdi, Official Exchange rate}) \quad 4.2$$

Where

<i>Industrialization (industrial output)</i>	<i>INDO</i>
<i>Export</i>	<i>Exp</i>
<i>Import</i>	<i>Imp</i>
<i>Foreign Direct Investment</i>	<i>fdi</i>
<i>Official Exchange Rate</i>	<i>OER</i>

The exact (deterministic) form of the above linear function expressed in econometric (stochastic) form is given by the model below:

$$INDO_t = \beta_1 + \beta_2 Exp_t + \beta_3 Imp_t + \beta_4 Fdi_t + \beta_5 OER_t + \varepsilon_t \quad 4.3$$

$$INDO_t = \hat{\beta}_1 + \hat{\beta}_2 Exp_t + \hat{\beta}_3 Imp_t + \hat{\beta}_4 Fdi_t + \hat{\beta}_5 OER_t + v_t \quad 4.4$$

The a-priori expectations for the model above are given below:

$$\hat{\beta}_2 > 0, \hat{\beta}_4 > 0, \hat{\beta}_5 > 0 \text{ and } \hat{\beta}_3 < 0$$

$(\hat{\beta}_1)$ is a constant or intercept, $(\hat{\beta}_2, \hat{\beta}_3, \hat{\beta}_4, \hat{\beta}_5)$ are the coefficient of the independent variable, whereas (v_t) is the standard normal residual. The above equation expressed in the logarithm form as given below; where all the variables have been transformed to logarithm form with the exception of the official exchange rate (OER). All the time series were transformed into logarithm to improve the normality of the data; moreover, in their logarithm form, their coefficients are interpreted as elasticity.

$$\log INDO_t = \hat{\beta}_1 + \hat{\beta}_2 \log Exp_t + \hat{\beta}_3 \log Imp_t + \hat{\beta}_4 \log Fdi_t + \hat{\beta}_5 OER_t + v_t \quad 4.5$$

A VECM (a modified VAR) overcomes the above limitation of the VAR and is appropriate for investigating the direction of causation between trade liberalization and industrialization in the context of the Nigerian economy. The VECM for this investigation is given below.

$$\begin{aligned} \Delta Industrialization_t &= \hat{\beta}_{10} + \hat{\phi}_1 (industrialization_{t-1} - \hat{\gamma}_{1j} TradeLiberalization_{t-1}) \\ &+ \sum_{i=1}^{\rho} \hat{\beta}_{1i} \Delta Industrialization_{t-i} + \sum_{i=0}^{\rho} \hat{\alpha}_{1i} \Delta TradeLiberalization_{t-i} \\ &+ v_{1t} \end{aligned} \quad 4.6$$

$$\begin{aligned} \Delta TradeLiberalization_t &= \hat{\beta}_{20} + \hat{\phi}_2 (TradeLiberalization_{t-1} - \hat{\gamma}_{2j} Industrialization_{t-1}) \\ &+ \sum_{i=1}^{\rho} \hat{\alpha}_{2i} \Delta TradeLiberalization_{t-i} + \sum_{i=0}^{\rho} \hat{\beta}_{2i} \Delta Industrialization_{t-i} \\ &+ v_{2t} \end{aligned} \quad 4.7$$

The VECM representation of the relationship between trade liberalization and industrialization, where the openness indicators; export, import, foreign direct investment and official exchange rate has been used as proxy for trade liberalization and the logarithm transformation has been done is expressed below:

$$\begin{aligned}\Delta \log INDO_t &= \hat{\beta}_{10} \\ &+ \hat{\phi}_1(\log INDO_{t-1} - \hat{\gamma}_{12} \log Exp_{t-1} - \hat{\gamma}_{13} \log Imp_{t-1} - \hat{\gamma}_{14} \log Fdi_{t-1} \\ &- \hat{\gamma}_{15} \log OER_{t-1}) + \sum_{i=1}^{\theta-1} \hat{\alpha}_{11i} \Delta \log INDO_{t-i} + \sum_{j=1}^{\theta-1} \hat{\beta}_{11j} \Delta \log exp_{t-j} \\ &+ \sum_{k=1}^{\theta-1} \hat{\beta}_{12k} \Delta \log imp_{t-k} + \sum_{l=1}^{\theta-1} \hat{\beta}_{13l} \Delta \log fdi_{t-l} + \sum_{m=1}^{\theta-1} \hat{\beta}_{14m} \Delta \log OER_t \\ &+ v_{INDO,t} \dots \dots \dots 4.8\end{aligned}$$

$$\begin{aligned}\Delta \log exp_t &= \hat{\beta}_{20} \\ &+ \hat{\phi}_2(\log Exp_{t-1} - \hat{\gamma}_{21} \log INDO_{t-1} - \hat{\gamma}_{23} \log Imp_{t-1} - \hat{\gamma}_{24} \log Fdi_{t-1} \\ &- \hat{\gamma}_{25} \log OER_{t-1}) + \sum_{i=1}^{\theta-1} \hat{\alpha}_{21i} \Delta \log INDO_{t-i} + \sum_{j=1}^{\theta-1} \hat{\beta}_{21j} \Delta \log exp_{t-j} \\ &+ \sum_{k=1}^{\theta-1} \hat{\beta}_{22k} \Delta \log imp_{t-k} + \sum_{l=1}^{\theta-1} \hat{\beta}_{23l} \Delta \log fdi_{t-l} + \sum_{m=1}^{\theta-1} \hat{\beta}_{24m} \Delta \log OER_t \\ &+ v_{exp,t} \dots \dots \dots 4.9\end{aligned}$$

$$\begin{aligned}\Delta \log imp_t &= \hat{\beta}_{30} \\ &+ \hat{\phi}_3(\log Imp_{t-1} - \hat{\gamma}_{31} \log Exp_{t-1} - \hat{\gamma}_{32} \log INDO_{t-1} - \hat{\gamma}_{34} \log Fdi_{t-1} \\ &- \hat{\gamma}_{35} \log OER_{t-1}) + \sum_{i=1}^{\theta-1} \hat{\alpha}_{31i} \Delta \log INDO_{t-i} + \sum_{j=1}^{\theta-1} \hat{\beta}_{31j} \Delta \log exp_{t-j} \\ &+ \sum_{k=1}^{\theta-1} \hat{\beta}_{32k} \Delta \log imp_{t-k} + \sum_{l=1}^{\theta-1} \hat{\beta}_{33l} \Delta \log fdi_{t-l} + \sum_{m=1}^{\theta-1} \hat{\beta}_{34m} \Delta \log OER_t \\ &+ v_{imp,t} \dots \dots \dots 4.10\end{aligned}$$

$$\begin{aligned}\Delta \log fdi_t &= \hat{\beta}_{40} + \hat{\phi}_4(\log Fdi_{t-1} - \hat{\gamma}_{41} \log Exp_{t-1} - \hat{\gamma}_{42} \log Imp_{t-1} - \hat{\gamma}_{43} \log INDO_{t-1} \\ &- \hat{\gamma}_{45} \log OER_{t-1}) + \sum_{i=1}^{\theta-1} \hat{\alpha}_{41i} \Delta \log INDO_{t-i} + \sum_{j=1}^{\theta-1} \hat{\beta}_{41j} \Delta \log exp_{t-j} \\ &+ \sum_{k=1}^{\theta-1} \hat{\beta}_{42k} \Delta \log imp_{t-k} + \sum_{l=1}^{\theta-1} \hat{\beta}_{43l} \Delta \log fdi_{t-l} + \sum_{m=1}^{\theta-1} \hat{\beta}_{44m} \Delta \log OER_t \\ &+ v_{fdi,t} \dots \dots \dots 4.11\end{aligned}$$

$$\begin{aligned}\Delta \log OER_t &= \hat{\beta}_{50} \\ &+ \hat{\phi}_5(\log Fdi_{t-1} - \hat{\gamma}_{51} \log Exp_{t-1} - \hat{\gamma}_{52} \log Imp_{t-1} - \hat{\gamma}_{53} \log Fdi_{t-1} \\ &- \hat{\gamma}_{54} \log INDO_{t-1}) + \sum_{i=1}^{\theta-1} \hat{\alpha}_{51i} \Delta \log INDO_{t-i} + \sum_{j=1}^{\theta-1} \hat{\beta}_{51j} \Delta \log exp_{t-j} \\ &+ \sum_{k=1}^{\theta-1} \hat{\beta}_{52k} \Delta \log imp_{t-k} + \sum_{l=1}^{\theta-1} \hat{\beta}_{53l} \Delta \log fdi_{t-l} + \sum_{m=1}^{\theta-1} \hat{\beta}_{54m} \Delta \log OER_t \\ &+ v_{OER,t} \dots \dots \dots 4.12\end{aligned}$$

Data was gathered for the period of the years 1981 to 2016, from the Central Bank of Nigeria (CBN) Statistical Bulletin and the World Development Index; a total of Thirty Six (36) yearly observations for each of the variables. The Augmented Dickey-Fuller (ADF) and the Phillips-Perron (PP) unit root tests were employed to investigate the existence of unit root in the time-series of INDO, Exp, Imp, FDI and OER. To check for the existence of a long-run

relationship (existence of a co-integrating equation) between the variables, the Johansen and Juselius test of co-integration was employed. The test result of the Johansen and Juselius test reveals two statistics (the Trace Statistic and the Maximal Eigenvalue Statistic) whose interpretation indicates the presence or otherwise of co-integration between the variables in the model.

Determining the appropriate lag length is critical in any investigation into the direction of causation. Choosing very few lags will lead to serial correlation of the Standard Normal Residuals while too many lags will lead to too many parameters that have to be estimated with limited data. For the purpose of determining the appropriate lag length, the lag length specified by the Akaike (AIC) Information Criteria was chosen. This chosen lag length was used in the test for co-integration, for building and estimating the VECM and employed in Pair-wise Granger Causality Test. Meaningful economic inference can only be made from the statistic obtained from the estimation of the VECM after the overall fitness of the model has been checked. The overall fitness of the model was checked by carrying out diagnostic tests on the residuals. This diagnostic tests performed include

- ✓ VEC Residual Heteroskedasticity Test
- ✓ VEC Residual Normality Test
- ✓ VEC Residual Serial Correlation Test.

All empirical test results obtained in this study were checked against standard values at 5% level of significance and the 2T rule of thumb. The 2T rule is that if the t-statistic is greater than two (2) in absolute value, the estimate is “statistically significant at the 5 percent level”, meaning that the true value is unlikely to be zero. This amounts to a 95 percent confidence level that does not take zero into account.

4.0 DATA ANALYSIS AND PRESENTATION OF RESULT

Descriptive Statistics

Table 4.1 reports the descriptive statistics of the time series data 1981 to 2016 for the variables of trade liberalization and industrialization for the Nigerian economy which was used for this study.

Table 4.1 Descriptive Statistic of Log Variables: INDO, EXPORT, IMPORT, FDI AND OER					
	INDOLOG	IMPORTLOG	EXPORTLOG	FDILOG	OER
Mean	24.18003	23.30639	23.67042	21.19558	76.46666
Median	23.85642	23.21762	23.37935	21.17193	57.20175
Maximum	25.66562	25.20489	25.69943	22.90268	253.4920
Minimum	22.92511	21.49114	21.73824	19.05813	0.617708
Std. Dev.	0.810868	1.153883	1.105181	1.099619	71.94625
Skewness	0.441025	0.085634	0.251870	-0.096934	0.426105
Kurtosis	1.853271	1.731860	1.944782	2.042437	1.991855
Jarque-Bera	3.139498	2.456269	2.050858	1.431768	2.613930
Probability	0.208097	0.292838	0.358643	0.488760	0.270640
Sum	870.4812	839.0300	852.1351	763.0408	2752.800
Sum Sq. Dev.	23.01272	46.60058	42.74987	42.32064	181169.2
Observations	36	36	36	36	36

Source: Statistical Result Generated With Eviews 10

Unit Root Tests

This study employed both the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests to check for the presence of unit root in the data series of each variable. Results are presented against critical values 1%, 5% and 10% but decision will be made based on the critical value at 5% level of significance.

Table 5.2a: Result of Augmented Dickey-Fuller (ADF) Test					
Level	(ADF) Test Statistics	Critical Value at 1%	Critical Value at 5%	Critical Value at 10%	Probability
INDOLOG	-0.807368	-3.632900	-2.948404	-2.612874	0.8046
EXPORTLOG	-1.071067	-3.632900	-2.948404	-2.612874	0.7161
IMPORTLOG	-0.615680	-3.632900	-2.948404	-2.612874	0.8544
FDILOG	-1.532105	-3.632900	-2.948404	-2.612874	0.5059
OER	1.320063	-3.632900	-2.948404	-2.612874	0.9983
1 st Difference Series	(ADF) Test Statistics	Critical Value at 1%	Critical Value at 5%	Critical Value at 10%	Probability
INDOLOG	-4.497768	-3.639407	-2.951125	-2.614300	0.0010
EXPORTLOG	-6.521783	-3.639407	-2.951125	-2.614300	0.0000
IMPORTLOG	-4.724058	-3.639407	-2.951125	-2.614300	0.0006
FDILOG	-11.15280	-3.639407	-2.951125	-2.614300	0.0000
OERLOG	-3.644599	-3.639407	-2.951125	-2.614300	0.0099

Source: Statistical Result Generated With Eviews 10, copied and presented

Table 5.2b: Result of Philip Peron (PP) Test					
Level	(PP) Test Statistics	Critical Value at 1%	Critical Value at 5%	Critical Value at 10%	Probability
INDOLOG	-1.047689	-3.632900	-2.948404	-2.612874	0.7250
EXPORTLOG	-1.071067	-3.632900	-2.948404	-2.612874	0.7161
IMPORTLOG	-0.747147	-3.632900	-2.948404	-2.612874	0.8214
FDILOG	-1.281246	-3.632900	-2.948404	-2.612874	0.6272
OER	1.153870	-3.632900	-2.948404	-2.612874	0.9972

1 st Difference Series	(PP) Test Statistics	Critical Value at 1%	Critical Value at 5%	Critical Value at 10%	Probability
INDOLOG	-4.497768	-3.639407	-2.951125	-2.614300	0.0010
EXPORTLOG	-6.528054	-3.639407	-2.951125	-2.614300	0.0000
IMPORTLOG	-4.663021	-3.639407	-2.951125	-2.614300	0.0007
FDILOG	-11.15280	-3.639407	-2.951125	-2.614300	0.0000
OERLOG	-3.646136	-3.639407	-2.951125	-2.614300	0.0098

Source: Statistical Result Generated With Eviews 10, copied and presented

From both tables it can be seen that the ADF and PP tests confirm and support each other. From the findings in both tables, it was summarized that at level, the ADF and PP tests results revealed that the null hypothesis series has a unit root for all the variables (INDOLOG, EXPORTLOG, IMPORTLOG, FDILOG, OER) can't be rejected. Hence these series were non stationary at level. However, at first difference, results from both tests revealed that all the series became stationary and the null hypothesis (INDOLOG, EXPORTLOG, IMPORTLOG, FDILOG, OER) was rejected. Therefore, all the series are co-integrated at I(1).

Cointegration Test

The result of the Johansen and Juselius cointegration test answered the first research question:

*What is the nature of the relationship (short-run or long-run)
between trade liberalization and industrialization in Nigeria?*

From the result of the ADF and PP test for Unit Root, all the series were found to become stationary after first difference. That is, they were I(1) series, therefore they satisfy the condition for a test of co-integration. Below is the result of the Johansen and Juselius co-integration test.

Table 5.4: Johansen's Cointegration test Results				
Unrestricted Cointegration Rank Test (Trace)				
Hypothesized No. Of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.697349	88.34570	69.81889	0.0008
At most 1	0.569125	47.70969	47.85613	0.0516
e0.05 level denotes trace test 1 of cointegration * The 0.05 level denotes hypotheis rejection **MacKinnon-Haug-Michelis (1999) p-values				
Unrestricted Cointegration Rank Test (Maximum Eigenvalue)				
Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.697349	40.63600	33.87687	0.0067
At most 1 *	0.569125	28.62584	27.58434	0.0367
At most 2	0.289370	11.61453	21.13162	0.5860
Max-eigenvalue test indicates 2 cointegrating eqn (s) at the 0.05 level * 0.05 level is the pointer to hypothesis rejection				

Source: Statistical Result Generated With Eviews 10

The result from co-integration test reveals that the Trace Statistic and Maximum Eigen value tests of the Johansen's co-integration test unanimously confirm the presence of long-run relationship. This means the variables of trade liberalization and industrialization move together in the same the long-run. The Trace Statistic test reveals the presence of a co-integrating equation and Maximum Eigen value reveals the presence of a co-integrating equation. Hence, the null hypothesis

H_{0one} : There is no significant relationship (short run/long run) between trade liberalization (Export, Import, FDI, OER) and industrialization (INDO) in the Nigerian economy.

is rejected at 5% level of significance. This result was employed the estimation of the VECM.

Estimation of the VECM

Here, the result of the estimation of the VECM is presented. The researcher applied the VEC Granger Causality/Block Exogeneity WaldTests under the VECM to answer the second research question

what is the direction of the relationship between trade liberalization (Export, Import, Fdi, OER) and industrialization (INDO) in the Nigerian economy?

by investigating the second hypothesis

H_{0two} : There is no significant causality relationship between trade liberalization (Export, Import, Fdi, OER) and industrialization (INDO) in the Nigerian economy.

The second part of the VECM estimation is presented in table 5.5c below this result is easily read and understood with the probability values attached

Table 5.5c: Second part of the VECM result.

Error Correction: D(INDOLOG)D(EXPORTLOG)D(IMPORTLOG)D(FDILOG) D(OER)					
CointEq1	-0.145095 (0.04709) [-3.08134]	-0.138514 (0.08956) [-1.54654]	-0.277608 (0.05874) [-4.72604]	-0.194536 (0.10010) [-1.94339]	1.270051 (3.72573) [0.34089]
D(INDOLOG(-1))	-0.034823 (0.25620) [-0.13592]	0.376219 (0.48731) [0.77204]	0.023774 (0.31960) [0.07439]	-0.397887 (0.54464) [-0.73055]	-0.280842 (20.2713) [- 0.01385]
D(EXPORTLOG(-1))	-0.065153 (0.15029) [-0.43352]	-0.444270 (0.28585) [-1.55418]	0.022413 (0.18748) [0.11955]	0.001119 (0.31949) [0.00350]	-8.521075 (11.8912) [0.71659]
D(IMPORTLOG(-1))	0.108598	0.152948	0.012856	0.000990	4.394078

	(0.13844) [0.78446]	(0.26331) [0.58086]	(0.17269) [0.07444]	(0.29429) [0.00336]	(10.9534) [0.40116]
D(FDILOG(-1))	-0.074521 (0.08311) [-0.89668]	-0.122809 (0.15807) [-0.77691]	-0.221122 (0.10367) [-2.13289]	-0.725447 (0.17667) [-4.10614]	-2.599681 (6.57569) [0.39535]
D(OER(-1))	0.001433 (0.00305) [0.46934]	0.003586 (0.00581) [0.61754]	-0.005102 (0.00381) [-1.33963]	-0.005337 (0.00649) [-0.82219]	0.253883 (0.24158) [1.05092]
C	0.006817 (0.04294) [0.15878]	0.034910 (0.08167) [0.42747]	0.083141 (0.05356) [1.55226]	0.141020 (0.09128) [1.54497]	6.323756 (3.39728) [1.86142]

Source: Statistical Result Generated With Eviews 10

Long-run Dynamics

Table 5.5c reveals the existence of a long-run dynamic and therefore causation running from trade liberalization (EXPORTLOG, IMPORTLOG, FDILOG, OER) to industrialization (INDOLOG). This is evident from the negative sign on the coefficient (also called the speed of adjustment) of the error correction term and value of this coefficient in absolute term being less than one. Equally of importance is the statistical significance of this coefficient. The coefficient (speed of adjustment) was found statistically significant after evaluating its accompanying t-statistic using the 2T rule of thumb. This result suggests that 14.5% the last period's deviation from long-run equilibrium is corrected in the current period. This result confirms the validity of the result of the normalized cointegrating equation.

Table 5.5c also reveals the existence of one other long-run dynamic and therefore a causation in the relationship between industrialization (INDOLOG) and IMPORTLOG. This relationship is important as it points to the critical role industrialization plays in amplifying taste of domestic residence for foreign produced good and service. This heightened taste for

foreign goods amongst domestic residence points to the increased prosperity to import foreign goods and services as income of domestic residence increase in the long-run after the domestic economy attains the status of industrialization.

Short-Run Dynamics

Analysis of the short-run dynamic existing between the variables of trade liberalization and industrialization reveals the contribution(s) explanatory variables' (differenced-lag variables) in the equations in the VECM make to the explained variable in the short-run. Such contribution to the explained variables could be made individually by the differenced-lag explanatory variables or jointly by the differenced-lag explanatory variables. To accomplish this analysis of the short-run dynamics, the VEC Granger Causality/Block Exogeneity WaldTest was employed.

Table 5.6a: Short-run dynamic; causation running from Trade liberalization (exportlog, importlog, fdilog, oer) to Industrialization (indolog)

Dependent variable: D(INDOLOG)			
Excluded	Chi-sq	Df	Prob.
D(EXPORTL OG)	0.187939	1	0.6646
D(IMPORTL OG)	0.615379	1	0.4328
D(FDILOG)	0.804028	1	0.3699
D(OER)	0.220279	1	0.6388
All	1.955338	4	0.7440

Source: Statistical Result Generated With Eviews 10

The result of the VEC Granger Causality/Block Exogeneity Wald Test displayed on table 5.6a revealed that both individually or jointly, all the explanatory variables (proxy's for trade liberalization) do not make any significant contribution to the dependent variable (industrialization). This is evident from the probability values attached with each of the individual explanatory variables and the probability value of their joint (all) association;

which are all greater than 5%. Therefore, in conclusion, trade liberalization doesn't cause industrialization in the short-run.

Table 5.6b: Short-run dynamic; causation running from industrialization (indolog) to trade liberalization (exportlog)

Dependent variable: D(EXPORTLOG)			
Excluded	Chi-sq	df	Prob.
D(INDOLOG)	0.596044	1	0.4401
D(IMPORTLO)	0.337402	1	0.5613
D(FDILOG)	0.603583	1	0.4372
D(OER)	0.381361	1	0.5369
All	2.742122	4	0.6019

Source: Statistical Result Generated With Eviews 10

The result of the VEC Granger Causality/Block Exogeneity WaldTest displayed on table 5.6b revealed that the explanatory variable INDOLOG (proxy for industrialization) made no significant contribution to the dependent variable EXPORTLOG. This is evident from the probability values associated with the variable INDOLOG which is greater than 5%. Therefore, in conclusion, industrialization doesn't cause exports in the short-run.

Table 5.6c: Short-run dynamic; causation running from industrialization (indolog) to trade liberalization (importlog)

Dependent variable: D(IMPORTLOG)			
Excluded	Chi-sq	df	Prob.
D(INDOLO)	0.005533	1	0.9407
D(EXPORT)	0.014292	1	0.9048
D(FDILOG)	4.549202	1	0.0329
D(OER)	1.794618	1	0.1804
All	6.489401	4	0.1655

Source: Statistical Result Generated With Eviews 10

The result of the VEC Granger Causality/Block Exogeneity WaldTest displayed on table 5.6c revealed that the explanatory variable INDOLOG (proxy for industrialization)

made no significant contribution to the dependent variable IMPORTLOG. This is evident from the probability values associated with the variable INDOLOG which is greater than 5%. Therefore, in conclusion, industrialization doesn't cause imports in the short-run.

Table 5.6d: Short-run dynamic; causation running from industrialization (indolog) to trade liberalization (fdilog)

Dependent variable: D(FDILOG)			
Excluded	Chi-sq	df	Prob.
D(INDOLOG)	0.533701	1	0.4651
D(EXPORTLOG)	1.23E-05	1	0.9972
D(IMPORTLOG)	1.13E-05	1	0.9973
D(OER)	0.675989	1	0.4110
All	1.436075	4	0.8379

Source: Statistical Result Generated With Eviews 10

The result of the VEC Granger Causality/Block Exogeneity WaldTest displayed on table 5.6d revealed that the explanatory variable INDOLOG (proxy for industrialization) made no significant contribution to the dependent variable FDILOG. This is evident from the probability values associated with the variable INDOLOG which is greater than 5%. Therefore, in conclusion, industrialization doesn't cause the inflow of fdi in the short-run.

Table 5.6e: Short-run dynamic; causation running from industrialization (indolog) to trade liberalization (OER)

Dependent variable: D(OER)			
Excluded	Chi-sq	df	Prob.
D(INDOLOG)	0.000192	1	0.9889
D(EXPORT)	0.513499	1	0.4736
D(IMPORTLOG)			
)	0.160930	1	0.6883
D(FDILOG)	0.156299	1	0.6926
All	1.155333	4	0.8854

Source: Statistical Result Generated With Eviews 10

Pairwise Granger Causality Test

Here, the result of the short-run causality/dynamic between trade liberalization and industrialization obtained using VEC Granger Causality/Block Exogeneity WaldTest is confirmed using the Pairwise Granger causality test. For this test, lag one (1) as prescribed by the lag selection criteria was used along with first difference series of the variables.

Table 5.8: Pairwise Granger Causality Test

Pairwise Granger Causality Tests
Sample: 1981 2016
Lags: 1

Null Hypothesis:	Obs	F-Statistic	Prob.
DEXPORTLOG does not Granger Cause DINDOLOG	34	0.01945	0.8900
DINDOLOG does not Granger Cause DEXPORTLOG		2.63584	0.1146
DIMPORTLOG does not Granger Cause DINDOLOG	34	0.09355	0.7618
DINDOLOG does not Granger Cause DIMPORTLOG		3.56422	0.0684
DFDILOG does not Granger Cause DINDOLOG	34	0.06886	0.7947
DINDOLOG does not Granger Cause DFDILOG		0.01374	0.9074
DOER does not Granger Cause DINDOLOG	34	2.19989	0.1481
DINDOLOG does not Granger Cause DOER		0.81243	0.3744
DIMPORTLOG does not Granger Cause DEXPORTLOG	34	0.42787	0.5179
DEXPORTLOG does not Granger Cause DIMPORTLOG		1.18720	0.2843
DFDILOG does not Granger Cause DEXPORTLOG	34	0.24429	0.6246
DEXPORTLOG does not Granger Cause DFDILOG		0.00599	0.9388
DOER does not Granger Cause DEXPORTLOG	34	1.32274	0.2589
DEXPORTLOG does not Granger Cause DOER		1.82635	0.1863
DFDILOG does not Granger Cause DIMPORTLOG	34	0.04483	0.8337
DIMPORTLOG does not Granger Cause DFDILOG		0.00512	0.9434
DOER does not Granger Cause DIMPORTLOG	34	0.17092	0.6821
DIMPORTLOG does not Granger Cause DOER		0.25415	0.6177
DOER does not Granger Cause DFDILOG	34	0.00915	0.9244
DFDILOG does not Granger Cause DOER		1.08269	0.3061

Source: Statistical Result Generated With Eviews 10

The result of the Pair wise Granger Causality test displayed in table 5.8 confirms the result obtained from the VEC Granger Causality/Block Exogeneity Waldtest. This result confirms that at 5% level of significance, there is neither short-run causation running from trade liberalization to industrialization nor its reverse nor a bi-directional causation. This is evident from the associated probability values. These values are all greater than 5%, therefore the null hypothesis in each case cannot be rejected. Therefore, the macro economic variables trade liberalization (Export, Import, Fdi, OER) and industrialization- are independent in the short run but have a long-run relationship as evident from the error correction channel which the VECM provides. Thus the error correction channel of the VECM makes a very important additional contribution to the analysis of the causal relationship between trade liberalization and industrialization in the Nigerian economy.

6.0 CONCLUSION

In investigating the trade liberalization – industrialization nexus, it is quickly observed that industrial policies were intertwined with trade policies. Trade policies could either be in support of free trade (ultimately, trade liberalization) or encourage the imposition of restrictions. So far, industrial policies adopted in the Nigerian economy were poorly conceived and casually implemented. This has resulted in the dismal performance of the industrial sector of the economy as evident from recorded data. Though the government has made reasonable effort, the prerequisites for industrialization have not been met in the case of Nigeria. Thus far (short run), these policies have not helped to actualise Nigeria's industrialization aspiration.

It can be seen from the VECM analysis that there is a long run causal relationship running from trade liberalization (Export, Import, Fdi, OER) to industrial output (INDO) and

there no short run causal relationship from trade liberalization (Export, Import, Fdi, OER) to industrial output (INDO). It is also observed from the VECM analysis that there is no short run causal relation from industrial output (INDO) to Exports; industrial output (INDO) to Imports; industrial output (INDO) to Fdi and industrial output (INDO) to OER.

It is important to acknowledge the long run causal relationship running from industrial output (INDO) to Imports. This long run relationship between industrial output (INDO) and Imports describes the increased propensity of residents of the Nigerian economy to import; especially luxury product in the long-run (after Nigeria has attained industrialization) as they enjoying a high standard of living and higher levels of income. This behaviour points to the enriching potential of industrialization on the residents of a nation after industrialization has been attained. Imports was only one of the variables used in this study to proxy trade liberalization, and therefore doesn't strengthen the argument that industrialization causes trade liberalization in the long run.

From the result of the VECM analysis of the trade liberalization – industrialization nexus, the hypothesis

H_{0two} : There is no significant causality relationship between trade liberalization (Export, Import, Fdi, OER) and industrialization (INDO) in the Nigerian economy.

is rejected and it is concluded that there is a unidirectional long causal relationship from trade liberalization (Export, Import, Fdi, OER) to industrialization (INDO) in the Nigerian economy in the long-run.

The following recommendations arise based on the findings of this study;

1. Well conceived and carefully implemented policies will provide the much needed comparative advantage Nigeria needs over other countries in manufacturing/production sector and this will go a step further in making the nations products compete favourably in the international market.
2. Industrializing Nigeria requires manufacturing to focus the production of capital goods. Government should make effort at acquiring appropriate technology that will be channelled at the improvement of the industrial sector of the Nigerian economy
3. Provision of steady electric power, roads, rail system and other infrastructure should be given attention. National security should be strengthened and tightened to ensure the protection of investments in the country. This will go a long way in making the Nigerian economy attractive to foreign investors.
4. Selective liberalization of trade for the Nigerian economy should be encouraged. This policy played a vital role in the level industrialization attained by early industrialized countries such as Great Britain and other early industrializations. These countries only liberalized an industry only after the industry attained qualities of being competitive in the international market.

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OF THE NIGERIAN ECONOMY

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