

## Impact of Trade Liberalization on Non-Oil Manufacturing Sector Output in Nigeria: 1981-2022

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### Abstract

The non-oil sector's contribution to the Nigerian economy has raised concerns about whether or not the country has actually benefited from trade liberalization over the years, especially when considering the country's major non-oil manufacturing sector. It is against this background that, this paper used the autoregressive distributed lag (ARDL) technique to investigate the short-run and long-run impacts of trade liberalization on the output of Nigeria's non-oil manufacturing sector. The analysis utilized a unit root test to integrate the data in a distinct sequence, and the ARDL Bounds tests validate the co-integration, indicating a long-term equilibrium among the variables. Non-oil manufacturing sector output is strongly stimulated by positive changes in trade liberalization. The ARDL result shows that foreign direct investment and export had a negative and insignificant impact of -654.5800 and -0.000757 respectively. In a similar manner, import and exchange rate were positive and statistically significant for non-oil manufacturing sector output in Nigeria with value of 0.002375 and 73.74094 respectively. The findings suggest that the Federal Ministries of Finance and that of Trade and Investments should prioritize initiatives aimed at strengthening and expanding trade liberalization policies. This involves reducing trade barriers, streamlining customs procedures, and actively participating in regional and international trade agreements.

**Keywords:** *Trade, Liberalization, Non-Oil, Manufacturing Sector, Export, Import*

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### **Background to the Study**

Trade liberalization started in 1947 after the second World war with the inception of the General Agreement on Tariffs and Trade (GATT). The GATT was negotiated in 1947 by 23 countries of which 12 are industrialized countries and 11 developing countries. The main focal point of GATT was to lower trade barriers. GATT was later replaced by the World Trade Organization (WTO) in 1994 (Uzma & Mohammad, 2023). Generally, the primary objective of any development aspired country to be buoyant in international trade. However, the extent to which this could be achieved reckons on the ability of such country to expand and sustain exports through effective trade liberalization. The fact still remains that no nation can live absolute independently since all economies are directly or indirectly connected through assets or/and goods markets. This linkage is made possible through international trade and foreign exchange. Also, trade is an important source of growth for many developing countries. This is based on the implicit belief that trade creates jobs, expands markets, facilitates competition; disseminates knowledge and raises income both to individuals and government.

Also, the trade liberalization enlarges the market for a country's output while export may lead to growth in national output and may become an engine of growth. Economists like Chude and Chude (2023), Ajala and Adekunle (2023), Sidi and Osunaiye (2019) have been interested in factors which cause different countries to grow at different rates and achieve different level of wealth. One of such factors is trade liberalization. Over many centuries, trade liberalization has brought together remote parts of the world and different civilization; it has helped to improve disseminated knowledge and ideas, and shaped the course of regions and nations. In addition, trade liberalization helps to stimulate production, promote efficiency and reduce cost of production and thus increase international confidence in market mechanism of an economy (Nteegah *et al.*, 2017). Furthermore, trade liberalization has been praised for its beneficial effects on productivity in various sectors of the economy, the use of better technology and investment promotion which are mediums for stimulating economic growth. In addition, trade liberalization may generate significant gains that enhance a country's economic improvement. This suggests that trade encourages lower prices of imported goods and services and prevent price increase which in turns prohibit monopolies.

Nigeria been a blessed nation with diverse resources that can place her among the top emerging economies, as a nation has engaged in various trade liberalization policies and programs among them is Structural Adjustment Programme and this provided for a seven-year (1988-1994) tariff regime with the objective of achieving transparency and predictability of tariff rates. More recently programs and policies including industrialization strategy based on import substitution, export promotion and all other forms of administrative procedures were introduced by the government in Nigeria. The central objective of these policies is to diversify the country's export base and to continually strengthen trade with other countries (Abubakar, 2019). These trade liberalizations were expected to provide an opportunity for efficient producers to expand their output to a level more than what is demanded locally, resulting in a surplus for exports. Also, trade liberalization is expected to increase the demand for products because of a larger market leading to more exports, and more production.

Despite the introduction of these trade liberalization policies have not contributed significantly to manufacturing sector and other sectors, especially when compared with their performance in the late 80s. In addition, a critical look at the performance of the non-oil sectors such as the agricultural and manufacturing sectors revealed that the performance of the two sectors with regards to their contribution to gross domestic product (GDP) has been fluctuating (CBN, 2023). This then raise concern on whether the country has actually benefited from trade liberalization especially when considering the country's major non-oil manufacturing sectors. This study therefore seeks to examine the impact of trade liberalization on non-oil manufacturing sector output in Nigeria.

## **Materials and Methods**

### **Conceptual Review**

Trade liberalization generally refers to reductions in trade barriers, liberalized external capital flows, diffusion of technology and international migration of labour. It covers the control and the elimination of non-tariff measures as well as policies that shift the trade regime towards neutrality, a reduction in the bias toward a particular activity, especially the production of import substitutes (Oieyinka & Adegboye, 2017). According to Bakare and Fawhinmi (2011) trade liberalization is the removal of obstacles to free trade (obstacles such as quotas, nominal and effective rates protection and exchange controls. Also, Edoumiekumo and Opukri, (2013) opined that trade liberalization involves the abolishing of non-tariff barriers to imports, the rationalization and restriction of tariffs, the institution of market determined exchange rate and removal of fiscal disincentives and regulatory deterrents to exports and the motive is to create a competitive environment between local and foreign industries.

On the other hand, Tatyana (2015) stated that manufacturing output is what an industry produces as a national total output. Manufacturing output is a pre-requisite for economic development. Industry is an impetus realized to satisfy the rapid growing demand for manufactured goods which developing nations could not maximally because of balance of payment difficulties. While Wan and Zhang (2017) opined that manufacturing is a subset of the industrial sector (processing, quarrying, craft and mining). Manufacturing is the processing segment of the industrial sector that involves the conversion of raw materials into finished consumer goods or intermediate/ producer goods. While, non-oil manufacturing output is seen as the manufacturing sector products/services or industrial sector outputs, which are measured using various indicators and metrics to assess its performance and contribution to an economy (Uzma & Mohammad, 2023). Some common measures and methods for assessing non-oil manufacturing sector output include the value of production which is the total monetary value of goods produced by the manufacturing sector. It represents the market value of manufactured products, including factors like sales, exports, and inventory changes. Another measure is the Industrial Production Index (IPI) which is a composite index that measures the physical volume of production in the manufacturing sector.

### **Empirical Review**

Puepet *et al.*, (2023) examined the effects of non-oil exports on economic growth in Nigeria and the ARDL technique of estimation and the findings of the study showed that agricultural and services exports have a positive and statistically significant impact on economic growth in the short and long run. The study, therefore, concluded that agricultural and services exports are important for the economic growth of Nigeria in the short and long run while manufacturing export is necessary for economic growth only in the short run. The study recommended that agricultural, manufacturing, and services exports should be greatly promoted in Nigeria by granting tax concessions to companies, organizations, or individuals that export services, agricultural and manufacturing outputs to other countries. While, Chude and Chude (2023) investigated the effect of exchange rate policy on non-oil export in Nigerian economy 1981-2021 and Ordinary least square (OLS) method of data analysis was adopted. The variables were on non-oil export as the dependent variable, while trade openness, exchange rate and money supply as the independent variables. From the model it was discovered trade openness has significant impact on non-oil export in Nigeria and exchange rate sector has significant impact on non-oil export in Nigeria while money supply has significant impact on non-oil export in Nigeria. The study recommends that foreign exchange control should be adopted to determine appropriate exchange rate value. Government should adopt selective credit control to channel funds to the productive sectors of the economy and restrictive policy is also recommended to reduce pressure on foreign currency.

In another study, Ajala and Adekunle (2023) investigated the relationship that exists between trade openness and agricultural output in Nigeria. The methodology adopted was the Autoregressive Distributed Lag (ARDL) model, while the Cobb Douglas production theory was adopted. The data for the study was time series data spanning 39 years. Test of stationarity and the study was conducted using the Philips Perron (PP) approach. The findings revealed that the degree of openness had a positive relationship with agricultural output ( $T= 0.72$ ). It further revealed that government expenditure on agriculture had a negative correlation with the agricultural output or VAO ( $T= 1.28$ ) which negate the a-priori expectation. Labour participation in agriculture was positively related and was significant to the value of agricultural output ( $T=11.48$ ). The study recommends among others that government should regulate trade activities, most especially at the land borders of the country as it will help improve the outcomes of trade openness. While, Ikpe, *et al* (2020) empirically provided answer to the question of whether trade liberalisation policy enhances non-oil export trade in Nigeria. The study adopted an Autoregressive Distributed Lag model approach to the analysis of the impact of trade liberalisation policy on non-oil export trade. Evidence provided support for trade liberalisation policy as the growth driver for non-oil export, a sector that exports more but earns little in terms of revenue. As a result, the study recommends a well-thought-out public-private partnership arrangement for the efficiency of the private sector (a major player in non-oil export trade), to optimally harness the benefits of liberalisation in Nigeria's non-oil trade sub-sector.

Also, Sidi and Osunaiye (2019) examined the impact of trade liberalization on the export of non-oil sector of the Nigeria economy within the period 1986-2018 and the Autoregressive



Distributed Lag model (ARDL) was used for the analysis. The ARDL results affirmed that EXT, INF, EXR had a positive and significance relationship with non-oil sector. In view of this, the study recommends that there is need for the diversification of the economy from oil to non-oil sector, in order to encourage the export of the non-oil sector during trade liberalization. And Awoke *et al* (2019) investigated the impact of non-oil export on economic growth in Nigeria using the autoregressive distributive lag method (ARDL). The results demonstrate that exchange rate, real gross domestic product, non-oil export, trade openness, and inflation trend together in the long run. Yet, the effect of non-oil exports on economic growth is not substantial enough to take Nigeria to a fortunate economic level within the period studied. This is similar to this study even though there is a slight difference in terms of some variables; which are trade openness and inflation in Nigeria.

In another study, Mohammed (2018) investigated the relationship between non-oil trade openness (NTO) and the financial development effect on economic expansion in Saudi Arabia, focusing on the 1990-2016-time period and applying the fully modified ordinary least squares approach. In the long run, the findings suggest that the NTO, the private sector's domestic bank credit and the stock market are significant in their expected positive signs. In the short run, the results indicate that NTO and the stock market have an expected positive and significant coefficient but the domestic bank credit offered to the private industry has a noteworthy but negative unexpected sign. Consequentially, if the real GDP is out of equilibrium by 1 percent, a 26.8 percent adjustment will occur towards equilibrium by the end of the 1st year. While, Onuarah (2018) investigated the effect of non-oil exports on the economic development of Nigeria. The study analyzed data from 1985- 2017. The research employed the ARDL technique, and the variables used were technology as a proxy of non-oil exports, FDI, and government expenditure. The study revealed that a significant long-run relationship exists between non-oil exports and the growth of the economy in Nigeria. This is similar to this study in terms of the variable of non-oil exports but differs in capturing the variables of FDI, technology, and government expenditure.

Also, Ebenyi (2017) examined the impact of trade liberalization on manufacturing value-added in Nigeria between 1970 and 2014. The study employed the tools of quantitative empirical analysis technique to evaluate the impact of trade openness on the output of Nigerian manufacturing sector. Findings from the study revealed that the Nigerian economy has not changed its export structure over the 1970 to 2014 periods. The only changes that have taken place to its exports were just a mere shift in exported product indicating a sign of export substitution from primary agro industry-based exports to primary mining industry-based exports (i.e. crude oil). It should be noted that heavy reliance of the Nigerian manufacturing firms on imported machinery and equipment reflects the weak manufacturing base of the country. While, Akanbia *et al.*, (2017) examined the exchange rate volatility with ARCH model and its various extensions (GARCH, TGARCH, and EGARCH) using quarterly exchange rate series from 1986-Q1 to 2014-Q4. The impact of exchange rate volatility on non-oil exports was also examined using Error Correction Model (ECM) with two different measures of volatility. The results obtained confirm the existence of exchange rate volatility and also found a significant negative effect on non-oil export performance in Nigeria.

Therefore, the Nigerian government should ensure an appropriate policy mix that not only ensures a stable and realistic exchange rate but also conducive atmosphere for production and exportation.

In another study, Ojeyinka and Adegboye (2017) examined the impact of trade liberalization on manufacturing performance in the Nigerian economy, with special reference to agricultural and manufacturing sectors. The Generalized Method of Moment technique was used to estimate the role of trade liberalization on the performance of the selected sectors. The study shows a significant positive impact of trade liberalization on the output of agricultural sector while a negative but significant relationship exists between measures of trade liberalization and manufacturing output in Nigeria. The study concludes that government should embark on programmes that promote local production to fully harness the opportunity presents by trade liberalization. While, Kanang (2017) carried out a study to analyze the effects of trade liberalization on performance of manufacturing sector in Nigeria with specific emphasis on the effects on firm productivity, exports, and competitiveness. The results obtained are indicative of the position that whereas the import aspect of trade liberalization impedes productivity, the exports component enhances productivity. Thus, measures aimed at encouraging exports would be relatively more effective in improving productivity. Also, the findings show that higher productivity does not influence the decision on whether or not a firm would participate in exports, but higher productivity increases the share of exports in total sales for firms that are already participating in foreign markets.

In another study Vincent (2017) used the Real Gross Domestic Product (RGDP) as a measure of economic development in Nigeria, the Service Sector (SS), Agricultural Export (AGEX), and Exchange Rate (EXRA) as explanatory variables to analyze the specific effects of non-oil export on the expansion of the Nigerian economy. The Engel Granger Model (EGM) for co-integration was used in the study's adoption of Phillips Perron. The results demonstrated a convincing correlation between non-oil export and the rate of change in Nigeria's level of economic growth. This analysis is distinct from that one in that it considers exports of variable manufacturing. While, Kromtit, *et al* (2017) investigated the impact of non-oil export on the growth of Nigeria's economy from the period of 1985 – 2015. The idea of this theory was the endogenous model. Using the ARDL technique model with the RGDP as a component for economic growth (as a regressand variable), non-oil exports, and exchange rates as independent variables, their study found that a positive significant relationship existed between economic growth and non-oil exports in Nigeria.

Also, Nwodo and Asogwa (2017) examined non-oil export, global integration, and economic growth in Nigeria from 1986-2014, employed the ADRL technique also to analyze the research objective with Real Gross Domestic Product (RGDP) as the dependent variable while the degree of trade openness, government final expenditure, credit to the private sector, non-oil exports, size of the labor force as independent variables. The study indicated that non-oil exports significantly impacted the economic growth of Nigeria in the short run and consequently in the long run. Given the signs of their coefficients, it was discovered that trade and financial openness had an insignificant effect on economic growth. The study is similar to

this study by capturing the non-oil sector in the topic but differs from 1986-2019 employed in this research. Finally, Adewale (2016) examined the impact of non-oil export on the Nigerian economy. The empirical analysis used GDP as a dependent variable and non-oil exports, oil exports, non-oil imports, the exchange rate (EXR), and trade openness as independent variables. OLS method of estimation was used and the result concluded that oil has a greater contribution to the economic growth of Nigeria due to the neglect of agriculture since the beginning of the oil boom. The study differs in the areas of oil exports, non-oil imports, and trade openness as independent variables.

### Theoretical Review

The theoretical framework for this study is built on the Export-Led Growth Hypothesis (ELGH) as developed by Kindelberger (1962). The export-led growth hypothesis postulates that export expansion is one of the main determinants of growth. It holds that the overall growth of countries can be generated not only by increasing the amounts of labour and capital within the economy but also by expanding exports. According to its advocates, exports can perform as an “engine of growth”. The association between exports and growth is often attributed to the possible positive externalities for the domestic economy arising from participation in world markets, for instance, from the reallocation of existing resources, economies of scale and various labour training effects. Therefore, the study established that there is a functional relationship between trade liberalization and non-oil manufacturing sector output in Nigeria.

### Methodology

Theoretically, one of the models considered for examining manufacturing output is the production function, especially, the Cobb-Douglas, which is given by:

$$X = AK^\alpha L^{(1-\alpha)} \tag{1}$$

$X$ ,  $K$ ,  $L$ , and  $A$  represent output, capital, labor, and total factor productivity, respectively. Eq. (1) can be expressed in intensive form:

$$x = AK^\alpha \tag{2}$$

### Nature and Sources of Data

The study spans 1981 to 2022 and used time series data by empirically examining impact of trade liberalization on non-oil manufacturing sector output in Nigeria. The data on nonoil manufacturing output (NOM) (measured as non-oil components of total manufacturing output), foreign direct investment (FDI) (measured as Foreign direct investment, net inflows % of GDP), Export (EXP), Import (IMP), exchange rates (EXR) in Nigeria are sourced from World Development Indicators (WDIs) of the World Bank, CBN annual statistical bulletin.

### Method of Data Analysis

Shin *et al.*, (2014) purported the use of the asymmetric ARDL cointegration technique, which requires the decomposition of positive and negative partial sums. This technique enables the discovery of asymmetric impacts in both the long run and short run periods (Ibrahim, 2015 and Abdullah & El-Rasheed, 2021). The asymmetric ARDL specification enables the

simultaneous analysis of non-stationarity and nonlinearity by using an error correcting model. Additionally, it has the benefit of being applicable regardless of the integration order of the variables, whether they are integrated of order 0 (I (0)), order I(1), or a combination of both. This allows for statistical inferences to be made on long-term estimations. These are not achievable using alternative methods of cointegration analysis.

However, similar to the traditional ARDL method, the asymmetric ARDL cointegration methodology is not applicable when I (2) series are present. The asymmetric autoregressive distributed lag (ARDL) model is an innovative method used to identify nonlinearities by examining the differences in long-term and short-term asymmetries within economic series. This is an extension of the traditional ARDL concept. The asymmetric autoregressive distributed lag (ARDL) model is more effective in identifying cointegration in small sample sizes, as demonstrated in our own study (Shin et al., 2014). Following Abdullah & El-Rasheed (2021), the paper derived an ARDL framework from the conventional ARDL.

The functional is expressed below;  
 $NOM = f(FDI, EXP, IMP, EXR)$ .

(3)

Where NOM is non-oil manufacturing sector output, FDI stands for foreign direct investment, EXP is for export in Nigeria, IMP is import in Nigeria and EXR means exchange rate in Nigeria.

The model is represented in econometric format; and also shows the explicit function of the model:

$$NOM_t = \beta + \delta_1 FDI_t + \delta_2 EXP_t + \delta_3 IMP_t + \delta_4 EXR_t + \mu_t \quad (4)$$

NOM is no-oil manufacturing sector output, FDI stands for foreign direct investment, EXP is for export in Nigeria, IMP is import in Nigeria and EXR means exchange rate in Nigeria. Subscript  $t$  is the period and  $\mu$  is a stochastic error term.

Now, the empirical model for the ARDL is driven from equation 5:

$$\begin{aligned} \Delta NOM_t = \alpha_0 + \sum_{i=1}^p \sigma_1 \Delta NOM_{t-i} + \sum_{i=0}^q \sigma_2 \Delta FDI_{t-i} + \sum_{i=0}^r \sigma_3 \Delta EXP_{t-i} + \sum_{i=0}^s \sigma_4 \Delta IMP_{t-i} + \sum_{i=0}^t \sigma_5 \Delta EXR_{t-i} \\ + \vartheta_6 \Delta NOM_{t-1} + \vartheta_7 \Delta FDI_{t-1} + \vartheta_8 \Delta EXP_{t-1} + \vartheta_9 \Delta IMP_{t-1} + \vartheta_{10} \Delta EXR_{t-1} \\ + \mu_t \end{aligned} \quad (5)$$

Equation 4 clearly expressed the log run coefficients.  $\Delta$  is a first difference operator.  $\alpha_0$  is constant.  $\sigma_1, \sigma_2, \sigma_3, \sigma_4$  and  $\sigma_5$  are short run estimates coefficients while  $\vartheta_1, \vartheta_2, \vartheta_3, \vartheta_4$  and  $\vartheta_5$  represent the long run estimates.  $\mu$  is the stochastic error term.

$$NOM_t = \alpha_0 + \sum_{i=1}^p \sigma_1 \Delta NOM_{t-i} + \sum_{i=0}^q \sigma_2 \Delta FDI_{t-i} + \sum_{i=0}^r \sigma_3 \Delta EXP_{t-i} + \sum_{i=0}^s \sigma_4 \Delta IMP_{t-i} + \sum_{i=0}^t \sigma_5 \Delta EXR_{t-i} + ECM_{t-i} + \mu_t \quad (6)$$

Equation 6 above is used to adjust the estimation until the ECM turns negative. The negative sign of the coefficient of the error correction term ECM (-1) shows the statistical significance of the equation in terms of its associated t-value and probability value.

### Empirical Results and Discussions

This section starts with some pre-estimation tests.

**Table 1:** Descriptive Statistics

	NOM	FDI	EXP	IMP	EXR
Mean	4346.344	1.238031	6227897.	5194325.	115.7410
Median	1195.161	1.078745	1906839.	1435438.	115.2551
Maximum	27488.95	4.282088	27251572	27115109	425.9811
Minimum	28.14183	-0.039522	7502.500	5983.600	0.610025
Std. Dev.	6807.680	0.950780	7243131.	7108949.	119.1411
Skewness	2.103119	0.911567	0.992946	1.528542	1.021358
Kurtosis	6.763947	3.700421	3.052886	4.523062	3.221266
Jarque-Bera	55.75455	6.675211	6.906487	20.41458	7.387882
Probability	0.000000	0.035522	0.031643	0.000037	0.024874
Sum	182546.5	51.99729	2.620000	2.180000	4861.124
Sum Sq. Dev.	1.900000	37.06330	2.150000	2.070000	581978.7
Observations	42	42	42	42	42

**Source:** Output from E-view 12 (2024)

Table 1 shows the summary statistics or the descriptive statistics of the variables used in the study. From the table, the highest value for the non in oil manufacturing sector output in Nigeria during the period of study is 27488.95 billion, as shown in the maximum values in Table 1. while the peak values for Foreign direct investment, export, import and exchange rates in Nigeria are 4.282088, 27251572, 27115109, 425.9811 respectively. However, the lowest value for non in oil manufacturing sector output in Nigeria during the period of study was 28.14183. While the lowest values for values for Foreign direct investment, export, import and exchange rates in Nigeria are -0.039522, 7502.500, 5983.600 and 0.610025 respectively, on average, non in oil manufacturing sector output in Nigeria is 4346.344, while the values for Foreign direct investment, export, import and exchange rates in Nigeria are 1.238031, 6227897, 5194325 and 115.7410 respectively, as indicated by their mean values.

### Stationary Tests (Unit Root Tests)

This section shows the unit root of the variables using the Augmented Dickey-Fuller (ADF) Test to check the stationary at a 5 percent level of significance.



**Table 2:** Unit Root Test Result

Variable	Augmented Dickey-Fuller (ADF) Test		
	ADF	Critical Value	Status
NOM	-3.755333**	-3.574244	1(1)
FDI	-4.770939**	-2.957110	1(0)
EXP	-5.851615**	-2.957110	1(1)
IMP	-2.006012**	-1.951687	1(1)
EXR	-4.935806**	-3.526609	1(1)

\* implies significant at 1% level, \*\*implies significant at 5% level and \*\*\* implies significant at 10%

**Source:** Researcher's Compilation Using EViews-12 (2024)

Table 2 shows the stationary tests of NOM, EXP, IMP and EXR in Nigeria Thus, Table 2 of the ADF test results revealed were not stationary at the level until they were differenced once, and they were said to be integrated of order 1(1) at a 5 percent level of significance. On the other hand, FDI in Nigeria is stationary at level and it is said to be integrated at order zero 1(0). Given the mix result, as shown by ADF tests, as well as the order of integration of the variables, the long-run relationship among the variables was tested using the ARDL model, which can capture the characteristics of a mixture of 1(0) and 1(1) of the variables as postulated by Pesaran *et al.*, (2001).

### Co-integration of ARDL-Bounds Test

This section shows the ARDL co-integration bounds test of the variables used in this paper.

**Table 3:** ARDL-Bound Testing

Null Hypothesis: No long-run relationships exist		
Test Statistic	Value	K
F-statistic	9.783954	5
Critical Value Bounds		
Significance	I0 Bound	I1 Bound
10%	2.75	3.79
5%	3.12	4.25
2.5%	3.49	4.67
1%	3.93	5.23

**Source:** Researcher's Compilation Using EViews-9 (2024)

Table 3 shows the ARDL bounds test for co-integration that was carried out for all five models based on the research objectives. The model result shows that the F-statistic derived from the ARDL bounds test is 9.783954, and when compared with the critical values obtained from the Pesaran Table at a 4 percent level of significance, its value exceeded both 3.12 and 4.25 for 1(0) and 1(1), respectively. FDI, EXP, IMP and EXR in Nigeria as variables are co-integrated at a 5 percent level of significance.

### Estimation Results

This section presents the long-run and short-run results of the ARDL regression analysis, where the NOM, in Nigeria is the dependent variable and the FDI, EXP, IMP and EXR in Nigeria are the independent variables.

**Table 4:** ARDL Error Correction Regression

Dependent Variable: D(NOM)				
Co-integrating Estimates (ECM Estimates)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	217.6576	204.9813	1.061841	0.2989
@TREND	-160.5743	24.75907	-6.485472	0.0000
D(NOM(-1))	-0.529493	0.145536	-3.638238	0.0013
D(TOP)	32.78024	11.79929	2.778154	0.0104
D(FDI)	102.6900	99.74068	1.029570	0.3135
D(FDI(-1))	212.3233	99.32403	2.137684	0.0429
D(IMP)	0.000430	7.85E-05	5.475930	0.0000
D(IMP(-1))	-0.000438	9.63E-05	-4.547861	0.0001
D(EXR)	-10.08463	5.803279	-1.737746	0.0951
D(EXR(-1))	-19.03611	6.227218	-3.056920	0.0054
CointEq(-1)*	-0.299597	0.035572	-8.422213	0.0000
R-squared	0.888657	Mean dependent var	686.4684	
Adjusted R-squared	0.850263	S.D. dependent var	1290.902	
S.E. of regression	499.5258	Akaike info criterion	15.49361	
Sum squared resid	7236254.	Schwarz criterion	15.95805	
Log likelihood	-298.8722	Hannan-Quinn criter.	15.66154	
F-statistic	23.14565	Durbin-Watson stat	1.766037	
Prob(F-statistic)	0.000000			

**Table 5:** Long Run

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FDI	-654.5800	639.0381	-1.024321	0.3159
EXP	-0.000757	0.000413	-1.830626	0.0796
IMP	0.002375	0.001069	2.221916	0.0360
EXR	73.74094	34.98142	2.108003	0.0457

**Source:** Researcher's Compilation Using EViews-12 (2024)

From Table 4, the value of F-statistics of 23.14565 and the probability values of 0.0000 indicated that there is a long-run relationship between trade liberalization on non-oil manufacturing sector output in Nigeria. The R-square value of 0.888657 revealed that FDI, EXP, IMP and EXRs which jointly accounted for about 88.87 percent of the variation in the NOM in Nigeria during the period under review, while the remaining 11.13 percent was accounted for by other factors outside the model.

The short-run result and the ECT show the 1-period lag error correction term. Its value of -0.299597 indicates that it is negative and statistically significant, with a probability value of 0.05 at a 5 percent significant level. This means that the average speed of adjustment from the short run to the long run, should there be any disequilibrium, is 29 percent. While the long run

coefficient and probability values of each variable revealed that all the independent variables, which reveal that FDI and EXP in Nigeria had a negative and insignificant impact on non-oil manufacturing sector output in Nigeria at a 5 percent significant level while IMP and EXR had positive and significant impact on the non-oil manufacturing sector output. The probability values which were less than 5 percent significant level. had a positive and significant impact on non-oil manufacturing sector output in Nigeria.

### Post-Diagnostic Checks

**Table 6:** Results of Post-Diagnostic Checks

Test		Outcomes	
		Coefficient	Probability
Breusch-Godfrey Serial Correlation LM Test	F-stat.	3.235703	0.0586
Heteroskedasticity: Breusch-Pagan-Godfrey	F-stat.	1.220678	0.3221
Normality Test	Jarque-Bera	0.52409	0.7694

**Source:** Researcher's Compilation Using EViews-12 (2024)

Table 6 revealed that the variables are free from the problem of Serial Correlation since the F-statistics is 3.235703 and the P-value of 0.0586 is greater than the 5% significance level. This outcome suggests the absence of Serial Correlation in the model of the impact of selected revenue indicators on non-oil manufacturing sector output in Nigeria. Similarly, the Heteroskedasticity results show that variables are free from the problem of Heteroskedasticity since the F-statistics of 1.220678 and P-value of 0.3221 are greater than the 5 percent significance level. This outcome suggests the absence of heteroskedasticity in the model of the impact of selected revenue indicators on economic growth in Nigeria. Also, the Jarque-Bera test of normality shows that the error term in our specified equation is normally distributed. Finally, this is evidenced by the respective insignificant Jarque-Bera statistics of 0.524 and the probability value of 0.769.

### Discussion of Findings

The model which assessed impact of trade liberalization on non-oil manufacturing sector output in Nigeria revealed that negative and insignificant impact of FDI and EXP on the non-oil manufacturing sector output implies that these variables have not significantly drive growth in this sector. This suggests that policies solely focused on attracting FDI or boosting EXP may not effectively enhance the output of Nigeria's non-oil manufacturing sector while positive and significant impact of IMP and EXRs on the non-oil manufacturing sector output indicates that these variables play a crucial role in influencing the performance of the sector. A favorable EXR and increased IMP activity seem to stimulate output in the non-oil manufacturing sector, possibly by reducing production costs or enhancing competitiveness.

### Conclusion and Recommendations

The analysis reveals a long-run relationship between trade liberalization and the output of Nigeria's non-oil manufacturing sector. Approximately 88.87 percent of the variation in the sector's output during the study period is explained by FDI, EXP, IMP, EXRs. The remaining

11.13 percent is attributed to factors not included in the model. The short-run dynamics suggest a moderate speed of adjustment towards long-run equilibrium, with a 29 percent average adjustment rate. Therefore, the paper recommended the following:

- i. The government should implement policies that promote a conducive environment for imports and maintain stable exchange rates. This could involve reducing trade barriers, providing incentives for import-dependent industries, and adopting measures to stabilize the currency.
- ii. Reassess Strategies for FDI and Export Promotion: Since the findings indicate a negative and insignificant impact of FDI and EXP on non-oil manufacturing sector output, the government should re-evaluate its strategies for attracting foreign investment and promoting exports. This might involve identifying and addressing barriers that hinder the effectiveness of these policies, such as bureaucratic hurdles, infrastructural deficiencies, or lack of market access.

## References

- Abdullah, H., & El-Rasheed, S. (2021). A Re-examination of the impact of credit on economic growth in Malaysia: Further evidence from the Asymmetric ARDL cointegration technique, *Indonesian Economic Review*, 1(2), 116-129.
- Abubakar, A. B. (2019). Oil price and exchange rate nexus in Nigeria: Are there asymmetries, *CBN Journal of Applied Statistics*, 10(1), 1-28.
- Adewale, O. A. (2016), Impact of Oil and Non-Oil Export on Nigeria's Economy. *Journal for Studies in Management and Planning*, 2(8), 38-52.
- Ajala M. A. & Adekunle, L. W (2023). Trade openness and the implications for agricultural output in Nigeria, *African Journal of Sustainable Agricultural Development*, 1(10), 1-23.
- Akanbia, S. B., Alagbeb, H. A., Yusufc, H. A., & Oluwaseyic, M. H (2017). *Exchange rate volatility and non-oil exports in Nigeria: An empirical investigation*.
- Awoke, F., Iwuoha, J., & Chukwuemeka, A. (2019). Impact of non-oil export on economic growth in Nigeria, *Journal of Social Sciences*, 4(2), 201-216.
- Bakare, P., T. & Fawhinmi, N., H., (2011). Promoting Nigeria non-oil Exports, an analysis of Some Strategic Issues, *Research Report Submitted to AERC Nairobi, Kenya*
- Central Bank of Nigeria (2023). *Statistical bulletin*, Retrieved from [cbn.gov.ng](http://cbn.gov.ng).
- Chude, N. P. & Chude, D. I. (2023). Effect of exchange rate policy on non-oil export in Nigerian economy, *Iconic Research and Engineering Journals*. 6(9), 127-136.

- Ebenyi, G. O., Nwanosike, D. U, Uzoechina, B., & Ishiwu, V. (2017). The impact of trade liberalization on Manufacturing value-added in Nigeria, *Saudi Journal of Business and Management Studies*, 2(5a), 475-481.
- Edoumiekumo, S. G. & Opukri, C. O. (2013). Economic growth factor in Nigeria: The role of global trade. *American Journal of Humanities and Social Sciences*, 1(2), 51-55.
- Ibrahim, M. H. (2015). Oil and food prices in Malaysia: a nonlinear ARDL analysis, *Agricultural and Food Economics*, 3(1), 1-14.
- Kromtit, M. J., Kanadi, D. P. N., & Lado, S. (2017). The contribution of non-oil exports to economic growth in Nigeria (1985-2015), *International Journal of Economics and Finance*, 9(4), 253-261.
- Mohammed, A., (2018). Non-oil trade openness and financial development impacts on economic growth in Saudi Arabia. *International Journal of Economics and Financial Issues*, 8(5), 251-260.
- Nteegah, A., Nelson, M. & Owede, V. M. (2017). Trade liberalization and economic growth in Nigeria, *International Journal of Social Science and Economics Invention*, 3(1)
- Nwodo, O. S. & Asogwa, F. (2017). Global integration, non-oil export and economic growth in Nigeria, *Academic Journal of Economic Studies*, 3(1), 59-67.
- Onuarah, A. C. (2018). The role of non-oil export in the economic growth of Nigeria, *Journal of Emerging Trends in Economics and Management Science (JETEMS)*, 9(3), 132-140.
- Ojeyinka, T. A., & Adegboye, A. A. (2017). Trade liberalization and economic performance in Nigeria: Evidence from agricultural and manufacturing sectors, *African Journal of Economic Review*, 5(3), 1-15.
- Puepet, N. N., Ikande, E. U, Madaki, A. S. & Timnan, B. N., (2023). Modeling non-oil exports and economic growth in Nigeria (1986-2021), *International Journal of Economics, Commerce and Management, United Kingdom*, 11(3), 146-161.
- Shin, Y., Yu, B., & Greenwood-Nimmo, M. (2014). Modelling asymmetric cointegration and dynamic multipliers in a nonlinear ARDL framework, *Festschrift in honor of Peter Schmidt: Econometric methods and applications*, 281-314.
- Tatyana, P. (2015). Assessing the impact of infrastructure on economic growth and global competitiveness. *Procedia Economics and Finance*, 23, 168–1.
- Sidi, C. P. & Osunaiye, D. S. (2019). Impact of trade liberalization on the export of non-oil sector in the Nigeria economy, *International Journal of Development Strategies in Humanities, Management and Social Sciences*, 9(1), 149-166.



- Uzma, K., & Mohammad, K. A, (2023). An analysis of the effects of oil and non-oil export shocks on the Saudi economy, *Investment Management and Financial Innovations*, 20(1), 127-137. doi:10.21511/imfi.20(1).2023.12.
- Wan, G., & Zhang, Y. (2017). The direct and indirect effects of infrastructure on firm productivity: Evidence from Chinese manufacturing, *China Economic Review*, 49, 143