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ANALYSIS OF THE NON-LINEAR IMPACT OF TRADE LIBERALIZATION ON OIL INDUSTRIAL SECTOR OUTPUT IN NIGERIA (1981-2023)

AIGBEDION, I. Marvelous, ISA Grace Hezekiah, ATABOH, Adah Noah, NELSON Christopher

[1]Department of Economics, Bingham University Karu

marvelous.aigbedion@binghamuni.edu.ng

ABSTRACT

Trade liberalization is regarded as industrial growth catalyst, yet its true impact on Nigeria's oil sector remains uncertain, especially given the country's heavy reliance on oil exports, therefore, this paper is to examine if trade liberalization has a non-linear impact on oil manufacturing output, with a focus on capturing the disaggregate impact of trade liberalization indicators from 1981 to 2023. The study used descriptive statistics and Non-linear Autoregressive Distributed Lag (ARDL) framework which found that the error correction term (COINTEQ) at -0.341 is significant with a moderate short-run adjustment mechanism. The result also showed a Positive change in Trade Liberalization significantly stimulate oil manufacturing output (OMO). Also, foreign direct investment positively impacts oil manufacturing output but is not statistically significant in the long run. On the other hand, the GDP growth rate had a positive and significant impact on oil manufacturing output only in the long run. The study thereafter recommended that policymakers should prioritize initiatives like reducing trade barriers, streamlining customs procedures, and actively participating in regional and international trade agreements.

Keywords: Non-linear, Trade Liberalization, Oil, Industrial Sector, Output

JEL Codes: C63, F13, Q41, L60, D24

1. Introduction

The global oil industry, a linchpin of economic development and geopolitical influence, has faced unprecedented volatility in recent decades due to shifting energy policies, trade dynamics, and climate imperatives (Wang *et al.* 2024)). Nigeria, Africa's largest oil producer with 37.5 billion barrels of proven reserves, exemplifies the paradox of resource wealth: despite generating 90% of its export earnings and 65% of government revenue from oil, the sector's contribution to

sustainable growth and industrial output remains stymied by structural inefficiencies (Salaludeen *et al.* 2023). Between 1981 and 2022, Nigeria's oil industrial sector output has oscillated amid fluctuating global oil prices, regulatory instability, and domestic governance challenges. Globally, trade liberalization has been a double-edged sword for oil-exporting nations. While it facilitates access to international markets and technology transfer, excessive reliance on hydrocarbon exports exposes economies to price shocks and exchange rate instability (Chen *et al.* 2024). For instance, the 2025 U.S. tariff policies triggered a 10% plunge in oil prices, underscoring the vulnerability of Nigeria's oil revenues to external trade shocks (U.S. Energy Information Administration., 2023). Regionally, Nigeria's oil sector dominates West Africa's energy landscape, yet it lags behind peers like Angola in refining capacity and value-chain diversification. The Niger Delta, responsible for 90% of Nigeria's crude production, remains plagued by oil theft costing $3 billion annually and environmental degradation, which undermine both output and community health (Ndem *et al.,* 2019). These challenges reflect broader African struggles to convert resource wealth into equitable development, as seen in the continent's average life expectancy of 55 years compared to Gulf states' 75+ years.

Nationally, Nigeria's oil sector contributed 5.57% to GDP in 2024, yet systemic inefficiencies persist (Salaludeen *et al.* 2023). Trade liberalization has spurred foreign direct investment inflows in telecommunications and banking but yielded uneven results in oil due to corruption and infrastructural deficits (Idowu, 2019). For example, while the Petroleum Industry Act (PIA) of 2021 aimed to attract $10 billion in annual investments, political interference and inconsistent implementation have deterred foreign investors. Economic growth rates, though averaging 3% annually since 2021, remain insufficient to offset population growth, while exchange rate volatility exacerbated by a 100%-naira depreciation in 2024 has inflated operational costs for oil firms reliant on imported machinery. These variables collectively shape a complex, non-linear relationship with oil output, where liberalization's benefits diminish beyond optimal thresholds due to institutional weaknesses. Also, despite the Dangote Refinery's 650,000-barrel capacity, Nigeria continues to import 28.7 million liters of gasoline daily due to regulatory bottlenecks and underinvestment in ancillary infrastructure (Behera *et al.* 2023).

This study addresses critical gaps in understanding the non-linear thresholds at which trade liberalization's impacts on oil industrial sector output turn adverse, a dimension overlooked in non-linear models. By employing time-varying parameter analysis, the research offers policymakers insights into calibrating trade policies to mitigate volatility and enhance FDI quality. Stakeholders, including the Nigerian National Petroleum Corporation (NNPC) and international investors, stand to benefit from strategies that align trade openness with infrastructure

development. Ultimately, this analysis contributes to a framework for transforming Nigeria's oil sector into a catalyst for inclusive, sustainable growth. To achieve the objectives of this paper and to analyze the non-linear impact of trade liberalization on oil industrial sector output in Nigeria, while the specific objectives are to; examine the impact of trade liberalization on oil industrial sector output in Nigeria; assess the non-linear impact of foreign direct investment on oil industrial sector output in Nigeria; analyze the non-linear impact of the economic growth rate on oil industrial sector output in Nigeria and evaluate the non-linear impact of exchange rate on oil industrial sector output in Nigeria.

2. LITERATURE REVIEW

2.1 Conceptual Review

Foreign direct investment is a cross-border equity investment conferring lasting control (Wellhausen, 2018; Efthimiou, 2024). It requires a significant, sustained managerial influence in the host enterprise. This is distinct from passive portfolio investments. Official guidelines often use a 10% ownership threshold to signify control (Alfaro & Chauvin, 2017). Thus, FDI is defined by its dual characteristics of permanence and the investor's decision-making power over the affiliate. While, Economic growth is a sustained increase in economic output over time (Cornwall, 2025). It is measured by the rate of change in real GDP or GDP per capita (Callen, 2025). Growth is driven by capital, labor, and technological progress (Rodrik, 2020). It is a key indicator of general economic health (IMF, 2025). However, it is not synonymous with broader economic development. Development requires complementary policies for structural welfare improvements (World Bank, 2023).

On the other hand, An exchange rate is the relative price of one currency against another. Its value is determined by macroeconomic fundamentals like inflation and interest rates. Global forces, including commodity prices, are also major drivers (Chen *et al.,* 2024). Models propose an equilibrium rate based on productivity and price levels (Kiriev & Leonidov, 2019). For oil exporters, currency value is tightly connected to oil prices. A depreciation can boost local-currency oil revenues and sector output. While, Oil sector output is measured in value terms or physical units. Economists use the value of production or exports (Salaludeen, 2023). Sector analysts measure physical volume, like barrels per day (Idowu, 2019). Global output is tracked in millions of barrels daily (Hacquard et al., 2019). This output is highly sensitive to international oil prices (Jia et al., 2021). It is a key driver for national and global economies, encompassing both upstream and downstream activities.

2.2 Empirical Review

A synthesis of studies on Nigeria reveals a complex and often negative short-term relationship between trade openness and the manufacturing sector. Emerenini and Ohadinma (2019) found that trade openness had a negative short-run relationship with manufacturing output. Similarly, Akinwale and Oludayo (2019) concluded that trade openness produced an insignificant and negative effect on industrial output. This detrimental effect is further supported by Muhammad (2019), who documented the devastating impact of trade liberalization on the Nigerian textile industry, leading to lower sales and profits. Ojeyinka and Adegboye (2017) also found a negative and significant relationship between trade liberalization and manufacturing output, highlighting a consistent challenge for this specific sector.

Conversely, a separate synthesis of studies indicates that trade openness can have positive effects, particularly on broader industrial output and non-oil exports. Adofu and Okwanya (2017) showed that trade openness has a positive and increasing effect on industrial output in Nigeria. This is strongly supported by Adamu and Doğan (2017), who found a significant positive impact in both the long and short run, with causality running from openness to production. Furthermore, Ikpe *et al.* (2020) provided evidence that trade liberalization acts as a growth driver specifically for Nigeria's non-oil export trade. Agbionu and Onwochei (2017) also found a positive link between trade variables and the contribution of multinational manufacturers to GDP.

A final synthesis focusing on policy dynamics and sectoral comparisons underscores the mixed and nuanced outcomes of trade liberalization. Okoye *et al.* (2016) found that trade openness exerted a significant negative impact on industrial output, while Ogu et al. (2016) noted it hurt manufacturing in the short run but had potential long-term benefits. Riti *et al*. (2016) observed that the manufacturing sector's contribution to GDP was negative, despite growth in other non-oil sectors like agriculture. This aligns with the findings of Ojeyinka and Adegboye (2017), who reported that trade liberalization boosted agricultural output while harming manufacturing, demonstrating that its effects are highly sector-dependent within the same economy.

2.3 Theoretical Framework

This study is hinged on Heckscher-Ohlin theory which was introduced by Eli Heckscher first in his 1919 paper while in 1933 Bertil Ohlin expanded and formalized the theory in his book "Interregional and International Trade". The Heckscher-Ohlin theory posited that countries will export goods that use their abundant and cheap factors of production, and import goods that use

scarce factors. In oil-rich nations, trade liberalization allows these countries to specialize and export oil-based products, leveraging their natural resource endowment. One of the models used for examining manufacturing output is the production function, particularly the Cobb-Douglas, which is given by:

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

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

$$x = AK^{\alpha} \quad (2)$$

3. Methodology

This section comprises of the research design, nature and sources of data, method of data analysis and model specification of the study.

3.1 Research Design, Nature and Sources of Data

This study employed an ex-post facto research design and the study spans 1981 to 2023 and uses time series data for Nigeria. The impact of trade liberalization on Nigeria's Nigerian oil manufacturing sector output is examined. The data on oil manufacturing output (OMO) (measured as oil components of total manufacturing output), foreign direct investment (FDI) (measured as Foreign direct investment, net inflows % of GDP), Economic Growth (GDPG) (GDP, constant 2015 US$ growth rate) Exchange rate (EXR) (measured as Official exchange rate (Naira per US$, period average), and Trade Liberalization (TRL) (Trade (total import plus export) % of GDP). FDI is sourced from World Development Indicators (WDI) of the World Bank, while other variables were sourced from the CBN annual statistical bulletin and the period 1981 to 2023 was the only available data that justifies the use of the period.

3.2 Method of Data Analysis

Shin et al. (2014) used the asymmetric ARDL cointegration technique, which involves the breakdown of positive and negative partial sums. This method allows the detection of asymmetric impacts in both the long-run and short-run periods (Ibrahim, 2015 Abd; Ullah & El-Rasheed, 2021). The asymmetric ARDL specification enables the simultaneous analysis of non-stationarity and nonlinearity 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, like 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 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 study (Shin *et al.,* 2014).

3.3 Model Specification

Following Abdullah & El-Rasheed (2021), the paper derived an asymmetric ARDL framework from the conventional ARDL as follows:

$$lnOMO_t = \beta + \delta_1 lnOMO_t + \delta_2 TRL_t + \delta_3 FDI_t + \delta_4 GDPG_t + \delta_5 EXR_t + \mu_t \quad (3)$$

lnOMO is the natural log of oil manufacturing sector output, TRL is trade liberalization, FDI is foreign direct investment, GDPG is economic growth rate and EXR means exchange rate. Subscript t is the period, and μ is a stochastic error term. Now, the empirical model for the ARDL is driven by equation 3:

$$\Delta \ln OMO_t = \alpha_0 + \sum_{i=1}^{p} \sigma_1 \Delta \ln OMO_{t-1} + \sum_{i=1}^{q} \sigma_2 \Delta \ln TRL_{t-1} + \sum_{i=1}^{r} \sigma_3 \Delta \ln FDI_{t-1} + \sum_{i=1}^{s} \sigma_4 \Delta \ln GDPG_{t-1} + \sum_{i=1}^{t} \sigma_5 \Delta \ln EXR_{t-1} \quad (4)$$
$$+ \vartheta_1 \ln OMO_{t-i} + \vartheta_2 \ln TRL_{t-i} + \vartheta_3 \ln FDI_{t-i} + \vartheta_4 \ln GDPG_{t-i} + \vartheta_5 \ln EXR_{t-i} + \mu_t$$

Equation 4 clearly expressed the short-run and the long-run coefficients. Δ is a first difference operator. α_0 is constant. σ_1, σ_2, σ_3, σ_4 and σ_5 are short run estimates coefficients while ϑ_1, ϑ_2, ϑ_3, ϑ_4 and ϑ_5 represent the long run estimates. μ is the stochastic error term. TRL is decomposed into increasing and decreasing partial sums.

$TRL_t = TRL_0 + TRL_t^+ + TRL_t^-$

The partial sum for the positive and negative changes in TRL is generated using the following formula.

$TRL_t^+ = \sum_{i=0}^{1} \Delta TRL_t^+ = \sum_{i=0}^{1} max\ (\Delta TRL_i, 0)$

$TRL_t^- = \sum_{i=0}^{1} \Delta TRL_t^- = \sum_{i=0}^{1} max\ (\Delta TRL_i, 0)$

As in the conventional ARDL, the first part with the change symbol is used to analyze the short-run short-run asymmetric relationship, and the second is for the long-run long-run relationship. The long-run asymmetric impact can be tested using the Wald test by evaluating the Null hypothesis for an asymmetry. H_0: $\vartheta^+ = \vartheta^-$. The alternative is H_1: $\vartheta^+ \neq \vartheta^-$.

4. Results and Discussions

This section starts with some pre-estimation tests and procedures like Descriptive Statistics, Correlation Analysis, Unit Root Test Results (ADF)

4.1 Descriptive Statistics

Table 1: Descriptive Statistics

	OMO	TRL	EXR	FDI	GDPG
Mean	95.83191	29.13479	115.7410	1.238031	3.165188
Median	25.43834	30.53415	115.2551	1.078745	3.423656
Maximum	412.3001	55.02128	425.9811	4.282088	15.32916
Minimum	0.045442	7.522695	0.610025	-0.039522	-10.92409
Std. Dev.	119.1179	11.29225	119.1411	0.950780	4.955367
Skewness	1.042634	-0.059330	1.021358	0.911567	-0.410660
Kurtosis	2.952647	2.385797	3.221266	3.700421	3.929340
Jarque-Bera	7.613525	0.684819	7.387882	6.675211	2.691917
Probability	0.022220	0.710057	0.024874	0.035522	0.260290

Source: *Author's Computation Using EViews-12 (2025)*

Non-oil manufacturing sector output (OMO). The average value (mean) of OMO is 95.832, with a widespread indicated by the high standard deviation of 119.118. The distribution is positively skewed (1.043) and exhibits heavy tails (kurtosis: 2.953). The Jarque-Bera test rejects the assumption of normality (statistic: 7.614, p-value: 0.022). Trade Liberalization (TRL). TRL has a mean of 29.13479 and a relatively low standard deviation of 11.29225. The distribution is approximately symmetric (skewness: -0.059330) and mesokurtic (kurtosis: 2.385797). The Jarque-Bera test does not provide evidence to reject normality (statistic: 0.684819, p-value: 0.710057).

Foreign direct investment (FDI). FDI exhibits a mean of 1.238031 and a positive skewness of 0.911567. The distribution has higher kurtosis (3.700421), indicating heavier tails. The Jarque-Bera test rejects the assumption of normality (statistic: 6.675211, p-value: 0.035522). GDP growth rate (GDPG). GDPG has a mean of 3.165188; the standard deviation is 4.955367, indicating moderate variability. The distribution is slightly negatively skewed (skewness: -0.410660) and has a kurtosis of 3.929340. The Jarque-Bera test does not reject the normality assumption (statistic: 2.691917, p-value: 0.260290). Exchange rate (EXR). EXR has a mean of 115.7410, with a substantial standard deviation of 119.1411, suggesting wide variability. The distribution is positively skewed (skewness: 1.021358) and has a kurtosis of 3.221266. The Jarque-Bera test rejects the assumption of normality (statistic: 7.387882, p-value: 0.024874).

4.2 Correlation Analysis

Table 2: Correlation Analysis

	OMO	TRL	EXR	FDI	GDPG

OMO	1.000000				

TRL	0.121655	1.000000			
	0.4428	-----			
EXR	0.466616	0.013554	1.000000		
	0.0018	0.3321	-----		
FDI	0.129735	0.278027	-0.142731	1.000000	
	0.4129	0.0746	0.3672	-----	
GDPG	0.284448	0.438218	0.109603	0.364519	1.000000
	0.0679	0.0037	0.4896	0.0176	-----

Source: *Author's Computation Using EViews-12 (2025)*

Table 2 presents the results of the correlation analysis conducted to examine the possibility of multicollinearity among the independent variables. None of the series appears to be up to 0.80. Therefore, all the series can be in the same equation.

4.3 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 per cent level of significance.

Table 3: Unit Root Test Results (ADF)

Variable	**Augmented Dickey-Fuller (ADF) Test**		
	ADF	**@ 5%**	**Status**
OMO	-6.220375	-3.526609	1(1)
TRL	-8.604310	-3.526609	1(1)
FDI	-3.646700	-3.523623	1(0)
GDPG	-2.954952	-2.936942	1(0)
EXR	-4.935806	-3.526609	1(1)

Source: *Author's Computation Using EViews-12 (2025)*

Table 3 presents the ADF unit root test results. Only GDPG and FDI were found to be significant at this level. Therefore, the two are I (0), while OMO TRL and EXR are I (1) because they were found significant only after the first difference.

4.4 Co-integration of ARDL-Bounds Test

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

Table 4: NARDL Bounds Test

F-statistics	**3.972***					
	10%		5%		1%	
Sample Size	I(0)	I(1)	I(0)	I(1)	I(0)	I(1)
35	2.331	3.417	2.804	4.013	3.900	5.419
40	2.306	3.353	2.734	3.920	3.657	5.256
Asymptotic	2.080	3.000	2.390	3.380	3.060	4.150

Source: *Authors Compilation, 2024*

Note*: * signifies significance at 10 % while I(0) and I(1) are the stationary and non-stationary bounds*, respectively.

Table 4 presents the NARLD Bounds test. The F-statistics at 3.972 signifies cointegration at the 5 % level. This is because the F-statistics is higher than the two bounds (upper and lower) at the 5% level when the asymptotic sample size is considered. The paper, therefore, proceeds to estimate the long-run and short-run coefficients.

4.6 NARDL Regression Result

The Non-linear Autoregressive Distributed Lag (ARDL) estimates presented here provide significant insights into how trade liberalization impact on oil manufacturing output in Nigeria over short and long term.

Table 5
NARDL RESULTS

Short-Run Results			**Long-Run Results**		
	Coefficient	**Std. Error**		**Coefficient**	**Std. Error**
COINTEQ*	-0.341	0.084***	Constant	0.167	50.253*
ΔTRL^{+}	1.276	0.091*	$TRL^{+}{}_{t-1}$	2.607	2.351*
ΔTRL^{-}	0.886	1.264	$TRL^{-}{}_{t-1}$	-10.471	-3.153
ΔFDI	0.119	0.024	FDI_{t-1}	22.872	22.505

$\Delta GDPG$	-0.017	1.619	$GDPG_{t-1}$	-0.051	4.746**
	-1.269	0.308*	EXR_{t-1}	0.009	0.006
ΔEXR					
Adjusted R-squared	0.385				
F-statistic	7.516***				
Breusch-Godfrey Serial Correlation LM Test			0.331		
Heteroskedasticity Test: Breusch-Pagan-Godfrey			0.428		

Note: ***, **, * signify significance at 1, 5, and 10 percent while I(0) and I(1) are the stationary and non-stationary bounds, respectively.
Since cointegration is at 1%, the paper did not present the critical values at 5% and 10%.

Applying the Non-linear Autoregressive Distributed Lag (ARDL) framework to the study of the impact of trade liberalization on oil manufacturing output in Nigeria provides nuanced insights into the short-run and long-run interactions between these key economic variables. The findings, as presented in Table 8, unravel the intricate relationships that shape dynamics. In the short run, the significant coefficient of the error correction term (COINTEQ) at -0.341 implies a moderate short-run adjustment mechanism. It indicates deviations from long-run equilibrium in the variables (TRL, FDI, GDPG, EXR) are corrected in the short run with about 34% speed within a year, influencing the non-oil manufacturing sector output (NOM).

Positive changes in TRL significantly stimulate oil manufacturing output (OMO). In contrast, negative changes do not significantly impact either the short or the long run. This implies that a policy promoting trade liberalization has an immediate positive impact on oil manufacturing output. However, only the opposite change in TRL improves OMO. Specifically, a negative change in trade liberalization has no impact on OMO. The positive impact of TRL on oil manufacturing output is in line with the works of Hu and Liu (2014) for China and Jongwanich and Kohpaiboon (2017) for Thailand.

FDI positively impacts OMO but is not statistically significant in the long run. This implies that FDI does not influence OMO in both the long and short run. On the other hand, the GDP growth rate has a positive and significant impact on NOM only in the long run. This means improving GDP can improve oil manufacturing output in Nigeria, at least in the long run. An increase in the exchange rate (depreciation) will reduce oil manufacturing output in the short run. This is in line with expectations because an increase in the exchange rate (depreciation) is expected to increase

the prices of imported equipment used by the manufacturing sector. Therefore, this is expected to have a negative impact on the non-oil manufacturing sector.

The model diagnostics reinforce the validity of the analysis. The adjusted R-squared (0.385) highlights the model's ability to explain approximately 38.5% of the variation in the dependent variable. The significant F-statistic (7.516) attests to the overall statistical significance of the model, providing confidence in the reliability of the findings. Additionally, the absence of serial correlation, as indicated by the insignificant Breusch-Godfrey Serial Correlation LM Test (0.331), suggests that the residuals do not exhibit systematic patterns over time. The Heteroskedasticity Test (Breusch-Pagan-Godfrey, 0.428) further indicates no evidence of heteroskedasticity in the residuals, supporting the reliability of the model's standard errors.

Table 6: Coefficient symmetry tests

Variable	Statistic	Value	Probability
	Long-run		
TRL	F-statistic	6.290629	0.0178
	Chi-square	6.290629	0.0121
	Short-run		
TRL	F-statistic	0.673534	0.0183
	Chi-square	0.673534	0.0118
	Joint (Long-Run and Short-Run)		
TRL	F-statistic	3.591313	0.0400
	Chi-square	7.182625	0.0276

***Source**: Authors Compilation*

Table 6 presents the symmetry test to determine the appropriateness of conducting a non-linear ARDL estimation. The results, evidenced by the significant p-values, rejected the null hypothesis on symmetry. Therefore, the decision to use NARDL is appropriate.

4.7 Stability Test

To test for the stability of the model, the paper conducted a stability test using the CUSUM Squares, and CUSUM presented in figures 1 and 2 below:

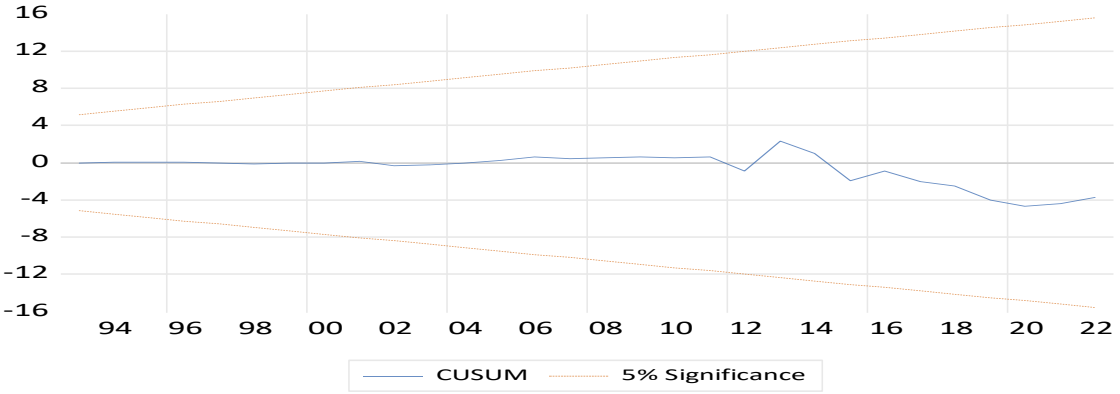


Figure 1: CUSUM

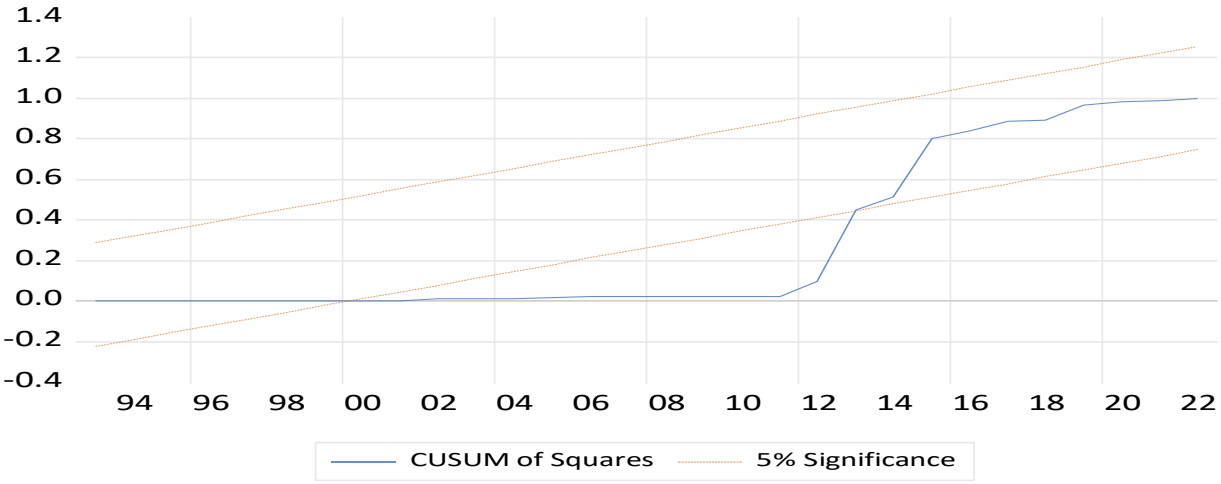


Figure 2: CUSUM of Squares

According to Figure 1, the model is stable, as the line lies within the 5% confidence interval. However, the CUSUM of squares does not lie within the 5% confidence interval, signifying a possible structural break in the series of interest.

5. Conclusion and Recommendations

5.1 Conclusion

The findings of this study shed light on the intricate dynamics of the oil manufacturing sector output in Nigeria, with a specific focus on the impact of trade liberalization. The comprehensive analysis utilizing the Non-linear Autoregressive Distributed Lag (NARDL) framework has provided nuanced insights into short- and long-run relationships among key economic variables.

The evidence suggests that positive changes in trade liberalization, as reflected in positive changes in trade liberalization, play a pivotal role in influencing the output of the oil manufacturing sector.

Furthermore, the observed adjustments in the error correction term (COINTEQ) emphasize the presence of a robust mechanism for correcting deviations from long-run equilibrium. This implies that policy interventions aimed at aligning trade liberalization with long-term equilibrium have an immediate impact on steering the oil manufacturing sector toward sustained growth. GDP growth rate also exhibits a long-run impact on oil manufacturing output. This underscores the need for targeted and sector-specific policies to optimize the benefits of economic growth.

5.2 Recommendations

Given the positive impact of positive change of trade liberalization on the non-oil manufacturing sector output, policymakers should prioritize initiatives that strengthen and expand trade liberalization policies. This involves reducing trade barriers, streamlining customs procedures, and actively participating in regional and international trade agreements. Such measures can contribute to a more immediate and sustained boost in economic activity within the non-oil manufacturing sector. Maintaining stability in exchange rates is crucial for the short-run performance of the non-oil manufacturing sector. Policymakers should implement measures to minimize currency volatility and enhance economic stability. A stable exchange rate environment will provide manufacturers with a predictable economic landscape, encouraging investment and production.

While overall economic growth contributes modestly to manufacturing output in the short run, policymakers should consider implementing targeted policies to stimulate the non-oil manufacturing sector. This may involve providing financial incentives, creating specialized industrial zones, and supporting research and development initiatives to enhance productivity and innovation within the sector.

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