International Trade and Economic Growth in an Oil-Dependent Country: Case of Nigeria

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This paper examines the effect of disaggregated international trade on the economic growth of Nigeria. The data and specified model were analysed with Autoregressive Distributed Lag and Toda-Yamamoto techniques. It was found that both non-oil and oil exports enhance economic growth. However, non-oil and oil imports impede economic growth. Furthermore, overall causality results revealed that while non-oil and oil exports and non-oil imports had bi-directional causality with economic growth, non-oil imports did not have causality with economic growth. Consequently, the government should prioritise export-led policy to facilitate economic performance in Nigeria. Findings emphasised the need for the diversification of the economy for higher economic growth and sustainability in the long run. The paper enriches the literature on the relationship between international trade and economic growth in Nigeria by adequately disaggregating trade components to reflect the economic structure of the Nigerian economy. Also, it brings new empirical findings on the trade-growth relationship in an oil-dependent developing country. This study can provide a theoretical framework for research in countries that oil dependent.

Keywords: international trade, economic performance, trade policy, developing economies, ARDL, Toda-Yamamoto
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Introduction

The level of openness across the globe has been increasing interdependence among nations, leading to high levels of cross-border cooperation and activities. This is because no single nation has all the necessary resources to promote growth and generate a high standard of living (Dare and Adekunle 2020). Therefore, international trade was established to support the resource deficiencies of nations. In theory, international trade is believed to promote economic growth and development (Abreo

2024). International trade can facilitate economic growth through the transfer and diffusion of knowledge and technology (Abendin and Duan 2021; Monyela and Saba 2024). Moreover, it has been argued that international trade could contribute to growth when countries focus on producing goods and services that give them advantages in the international market (Ji et al. 2022). This is expected to not only contribute to export performance, but also increase domestic consumption of local goods, which reduces the depletion of foreign reserves (Mullings and Mahabir 2018; Zhang et al. 2023).

As a result of the benefits of international trade, most developing countries like South Africa, Nigeria, Malaysia, Ghana, and other emerging countries adopted trade liberalisation policies to increase and promote cross-border trade. Restrictions and other factors that mitigate trade and international relations were removed, and the economy was opened to enhance the cross-border movement of goods and capital (Zahonogo 2017; Adekunle and Adodo 2019). The policy of trade liberalisation is anticipated to benefit developing countries through an increase in the inflow of foreign direct investment and capital inflow, promote economic specialisation and efficiency, and financially expand and incorporate the domestic market into the world market (Cantah et al. 2018; Espoir et al. 2024).

From a theoretical perspective, a country can benefit from international trade when it focuses its attention on resources in which it has a high competitive advantage over others (Heckscher 1919; Ohlin 1933). This has been empirically tested, and it was found that international trade represents one of the major instruments of growth and development, especially in developed countries (Zahonogo 2017; Abendin and Duan 2021; Monyela and Saba 2024). However, the positive direction of international trade on economic growth may differ in countries that are import-dependent, with low internal productive capacity to compensate for heavy importations of goods and services. There is an argument that some regions, such as sub-Saharan Africa, have yet to experience the positive impact of trade on macroeconomic indices such as poverty reduction, income equality, and employment (Sepehrdoust et al. 2019). To this end, Cerdeira and Moutinho (2016), Manwa et al. (2019), Menyah et al. (2014), Mullings and Mahabir (2018), Rahman and Mamun (2016), and Zheng and Walsh (2019) reported a negative relationship between international trade and economic growth of emerging countries. This has led to a debate on whether the trade openness policy favors the developed countries than the developing countries.



FIGURE 1 Stylised Fact of International Trade and Economic Growh (%) in Nigeria
SOURCE World Development Indicators

Nigeria, which is one of the sub-Saharan countries, has continued to experience underwhelming economic performance despite the openness policy of the country. For instance, figure 1, which shows a graphical presentation of the relationship between international trade and economic performance variables, which are GDP growth rate and GDP per capita growth rate, reveals that international trade in Nigeria has continued to fluctuate after the trade liberalisation policy of 1986. After this period, the Nigerian economy focused heavily on crude oil production and exportation, which is one of the major resources in which the country has a competitive advantage over other countries. This fluctuation in international trade has a major impact on both GDP growth rate and GDP per capita growth rate. Supporting this, in figure 1, the growth rate of the country's GDP fell from 2.6% in 2015 to a negative figure of −1.6% in 2016 before rising insignificantly to 0.8% in 2017 (World Development Indicators 2024). Although the GDP growth rate rose to 1.9% and 2.2% in 2018 and 2019, respectively, a negative figure of −1.8 was recorded in 2020. The GDP growth rate, however, peaked and rose to 3.6% in 2021; it later fell to 3.2% and 2.9% in 2022 and 2023, respectively (World Development Indicators 2024).

This shows fluctuation and deterioration of the economy in terms of overall productivity, with implications for the standard of living, with the country recording negative growth rates of GDP per capita of −4.1%,

−1.7%, −0.6%, −0.3%, and −4.1% in 2016, 2017, 2018, 2019, and 2020, respectively. While the growth rate of GDP per capita rose to 1.2% in 2021, it fell significantly to 0.8% and 0.4% in 2022 and 2023, respectively (World Development Indicators 2024).

Nigeria is still experiencing a high level of economic instability and vulnerability in terms of high inflation rate, high level of unemployment, adverse balance of payments, increasing poverty rate, and a widening gap between the rich and the poor (Yakubu and Akanegbu 2015). This is despite the vast resources of the country, especially its agricultural capacity, gold, bitumen, iron ore, coal, lead, zinc, and arable land. Over the years, diverse policies have been implemented by various governments aimed at diversifying the Nigerian economy away from its reliance on crude oil. Nevertheless, there is limited progress in developing other key sectors and harnessing other resources in the country. This points to the ongoing challenges in shifting the focus of the economy and realising its potential. From a structural perspective, Nigeria remains underdeveloped and lacks a cohesive framework, underlining the need for a comprehensive policy refocus and strategic realignment. To address these structural challenges in Nigeria, it is crucial to undertake a thorough analysis and investigate how components of international trade impact economic growth. This involves exploring how elements of trade such as oil exports, non-oil exports, oil imports, and non-oil imports impact economic growth. Understanding these dynamic relationships will give insights into optimising the trade policies of Nigeria and fostering sustainable growth and development.

However, while many studies have looked at how international trade affects economic growth (Ogudu et al. 2023; Ji et al. 2024; Celik et al. 2024), there is a gap in understanding the specific impact of international trade on economic growth in developing countries like Nigeria. This research gap is significant because Nigeria relies heavily on international trade and has a government policy that encourages trade relationships with other countries. To address this gap, the study breaks down the Nigerian international trade into oil exports, non-oil exports, oil imports, and non-oil imports, and examines their impact on economic performance. The study used the Autoregressive Distributed Lag method proposed by Pesaran and Shin (1999) to analyse the data, as it is suitable for understanding the short and long-term dynamic relationship among time series data with different integrations. Additionally, the

Toda-Yamamoto technique was employed to determine the direction of causality among the variables of interest.

This paper is structured as follows: Section 2 presents the theoretical and empirical literature that underpins the study. Section 3 focuses on the research methodology for addressing the research objective. Section 4 centres on the results from data analysis. Section 5 presents the discussion. Section 6 focuses on the conclusion, the policy implications, and recommendations emerging from the study.

Literature Review

CONCEPTUALISATION AND THEORETICAL UNDERPINNING

International trade, which involves the exchange of goods and services among nations with the use of foreign currency, has been changing the structure of the world economy in recent years (Ji et al. 2022). Abendin and Duan (2021) stated that international trade plays an important role in creating employment, foreign exchange earnings accumulation, and enhanced economic productivity through the adequate usage of domestic resources and revitalisation of the investment capacity of a nation. International trade can stimulate the economy through the promotion of cross-border activities that enhance economic performance and provide employment opportunities for the domestic workforce (Were 2015; Zahoor et al. 2023). Recently, developing countries have relied on international trade as a tool for enhancing growth (Nam and Ryu 2024). This is because trade relations with more developed economies promote comparative advantage, economies of scale, and technological innovation, which enhance the generation of income in an economy (Gwaindep et al. 2014; Shahzad et al. 2023). Also, international trade enables most developing countries to enjoy new and more advanced goods and services that cannot be locally produced from available resources (Fahlevi et al. 2024).

Theories in the ambit of international trade suggest that trade enhances economic performance and prosperity through the reallocation of capital and the reinforcement of competitive advantage as countries become more concentrated in the production and exportation of goods with which they have an edge over other countries: Mercantilist Theory, the Absolute Advantage Theory of Smith (1776), and the Comparative Cost Advantage theory of Ricardo (1817). A leading theory that demonstrates the linkage between international and economic growth is the

Heckscher-Ohlin theory (H-O) of Heckscher (1919) and Ohlin (1933). This model emphasises that international trade is driven by differences in the resources of countries. In addition, the H-O model proposes that comparative advantage is determined by differences in factors and intensity of production among countries (Lohani 2021). Moreover, the theory states that developing countries, in the absence of foreign trade, experience low economic growth due to their unskilled labour force and capital accumulation (Sujová et al. 2021). Hence, for a country to stimulate growth, there is a need to specialise in the production and exportation of products for which they have a greater advantage and an abundance of resources (Ji et al. 2022). Also, the country should engage in the importation of products that are costly to produce locally or that they lack resources to produce (Sujová et al. 2021).

In addition, multiple theories such as the Stolper-Samuelson (S-S) hypothesis, the factor-price equalisation theory, and the aggregate economic efficiency proposition have been developed following the H-O theory to provide a comprehensive explanation of the relationship between international trade and economic growth. The S-S hypothesis posits that an increase in the prices of a nation's intensively used factors will occur when there is a rise in the relative price of the commodity produced by that nation employing its abundant factor (Ji et al. 2022). On the other hand, the factor-price equalisation theory proposes that two trading nations that manufacture two identical items will face the same commodity prices and production methods (Krugman 2007). According to this theory, the presence of global commodity trade enables the prices of similar production components to be balanced among the participating nations. Furthermore, the aggregate economic efficiency illustrates that changes in prices that result from specialisation and trade relationship promote a higher level of exports and reduce imports for each country. This dynamic indicates that high welfare is linked to enhanced production and consumption efficiency, which result from these price changes (Krugman 2007).

Furthermore, the comparative advantage theory stresses that countries gain from trade when they specialise in the production of commodities in which they have a comparative advantage. In the context of Nigeria, the theory emphasises the potential advantages of engaging in international trade by adopting a trade liberalisation policy through high specialisation in a commodity such as crude oil. According to Krueger (1978) and Bhagwati (1978), trade liberalisation enhances specialisation in the sectors with

high economies of scale, thereby leading to increased long-term productivity and efficiency. In this regard, studies have supported this theory by finding a positive effect of trade on economic growth. Also, the endogenous growth theory of Frankel and Romer (1999) supported this by establishing a direct relationship between trade and economic growth resulting from global advancement and adoption of technologies. From the view of the endogenous growth theory, openness to trade can enhance innovation and transfer of knowledge, which is applicable in the case of Nigeria where collaboration with other nations can enhance its technological improvement. The level of openness of a developing nation can directly impact its ability to use the technologies manufactured in developed nations. Moreover, it has been argued that the cost of imitation could also play an important role in the trade-growth relationship (Pettinger 2019). Although it has been argued that developing countries can gain from going into trade with developed countries, there are arguments against this, especially when a country specialises in a sector where research and development have little or no impact (Monyela and Saba 2024).

EMPIRICAL REVIEW

Premised on the theories of international trade, many studies have been conducted to investigate the linkage between international trade and economic growth. For instance, Makhmutova and Mustafin (2017) investigated the linkage between international trade and the economic growth of China, the USA, Russia, and Germany. The study relied on descriptive statistical techniques, and it was discovered that while international trade hurt the economic growth of China, the USA, Russia, and Germany were found to achieve higher economic growth due to international trade. Findings from the research highlighted how emerging countries like China might experience a detrimental effect of trade on growth compared to developed countries such as the USA, Russia and, Germany. Moreover, in a digitalised economy, studies have shown that countries might experience a positive effect of international trade on economic growth. For instance, Abendin and Duan (2021) supported this, using data from 54 African countries analysed with panel regression technique, and it was discovered that the digital economy played a significant role in enhancing the relationship between international trade and economic growth. A similar study carried out in the context of sub-Saharan African countries by Yameogo and Omojolaibi (2020) showed that openness to trade, foreign trade, investment, and institu-

tional quality significantly improved economic growth and poverty reduction in the long run. This suggests that international trade might be beneficial to developing countries under some circumstances such as digital innovation and quality of institution, which may not be equally distributed. The implication of this is that some developing countries with these conditions may gain from trade compared to others.

The study of Ji et al. (2022) also looked into the effect of exports and imports in economic growth using the co-integration technique of Gregory and Hansen. The authors revealed that there is a long-run equilibrium relationship among exports, imports, and economic growth. Moreover, it was found that a bidirectional relationship existed among the selected macroeconomic variables. Sujová et al. (2021), focusing on Czechia's and Slovakia's wood process industries, explored the effect of foreign trade on economic growth. Analysis of data using the multivariate regression method showed that net exports will positively impact economic growth only when exports exceed imports. This implies that for countries to gain from trade, they must export more than what they import, which might not apply to a country like Nigeria which relies on high importation from other countries. This is supported by the findings of Khan and Pradhan (2022) who, analysing the effect of terms of trade on economic growth in Bangladesh, discovered that term of terms of trade significantly deteriorates economic growth both in the long run and short run.

Jain and Mohapatra (2024) studied the interplay between trade and macroeconomic indices (economic growth, poverty, and income equity) in 18 emerging countries. The study was based on panel data analysis and it was revealed that while trade is significant in reducing income inequality and promoting growth, it also has a significant linkage with poverty reduction. Banik (2023) analysed how the pandemic impacted the exports of Bangladesh through the transmission mechanism of the level of trade openness and credit growth. Results from the study revealed that while the pandemic negatively impacted exports in the short run, the relationship was positive in the long run through the credit growth channel. The author argued for an increase in credit support and an opening up of the economy after the pandemic to realise export recovery. Moreover, in the study of Mhaka et al. (2023) on the relationship between exchange movements and trade balances among five Southern African Customs Union (SACU) countries, it was found that although the depreciation in the exchange rate has the potential to improve trade balances in 8 countries, it hurt trade balance in 11 countries out of the 19 in

the region. However, Mehta et al. (2024) investigated whether economic openness through trade and capital openness impacted government size in India. The result of the study revealed that government size responded positively to trade openness, whereas capital openness diminishes government size.

In the context of Nigeria, studies have emerged to investigate the direction of the connection between international trade and economic growth. For instance, basing their research on Ricardian theory to explore how international trade impacted economic growth in Nigeria, Ajayi and Oguntomi (2022) argued that trade cost has a detrimental effect on the economic growth of Nigeria. This highlighted the current position of the Nigerian economy with increases in trading costs due to the high rate of inflation and the consumer purchase index, which resulted in high costs of importation. Moreover, the study of Owan (2023) which was based on a disaggregated analysis of international trade, revealed that both oil imports and non-oil imports hurt Nigerian economic growth, exposing the reliance of the country on importations, which is detrimental to economic prosperity. Furthermore, Shido-Ikwu et al. (2023) emphasised that international trade played no significant role in enhancing economic growth in Nigeria, especially with an increase in importation over exportation leading to a trade gap. This is supported by the result of Ihugba et al. (2024), revealing that an import dependency ratio negatively impacts the Nigerian economic stability. This reveals that for oil and import dependency countries like Nigeria, to realise economic growth from trade requires the reduction of overreliance on importation. Nevertheless, to achieve this, there is a need to look at the how the components of Nigeria's international trade impact economic growth.

Based on a comprehensive review of the literature, it is evident that there are differing views regarding the connection between international trade and economic performance. While some studies have indicated a positive relationship between international trade and economic growth, others have suggested that international trade has a negative impact on economic growth. These variations may be attributed to differences in research methodologies, the specific countries under study, and the scope of the research. However, it is worth noting that there is a significant gap in the existing literature, as there are few studies, if any, that analyse international trade in terms of oil exports, non-oil exports, oil imports, and non-oil imports, particularly in the context of Nigeria's trade relations with the rest of the world.

This study carried out an in-depth and comprehensive investigation of Nigeria's position in international relations by specifically focusing on essential trade components such as oil exports, non-oil exports, oil imports, and non-oil imports. It provides a detailed analysis of how each component performed and their overall influence on economic growth. The study not only highlighted the current challenges and opportunities within the country's trade framework, but also proposed strategic policy suggestions that could foster economic stability, boost trade competitiveness and enhance sustainable growth in the long run.

Therefore, the current research made a valuable contribution to the empirical literature by examining the disaggregated impact of international trade on Nigerian economic growth. This type of study is particularly relevant for developing countries like Nigeria, which is oil-dependent despite its vast natural resources.

Methods

The data set used in this research covered the years 1986 through 2023. Data on oil exports, non-oil exports, oil imports, non-oil imports, real gross domestic product, gross fixed capital formation, exchange rate, and inflation rate were obtained from The Central Bank of Nigeria Statistical Bulletin. These variables were selected according to the studies of Abendin and Duan (2021), Makhmutova and Mustafin (2017), and Mogoe and Mongale (2014).

VARIABLES DESCRIPTION

The dependent variable is economic growth. Based on existing studies such as Abendin and Duan (2021), economic growth was measured with real gross domestic product. This measured the overall production capacity of Nigeria's economy, adjusted for inflation.

The independent variable is international trade. As suggested in theories and literature, trade is an important part of the economy, and the openness and development of international trade can contribute positively to economic growth (Heckscher 1919; Ohlin 1933; Yameogo and Omojolaibi 2020). Thus, in this paper, international trade is divided into four components: oil exports, non-oil exports, oil imports, and non-oil imports, which reflect the nature of the Nigerian trade framework.

The control variables are gross fixed capital formation, inflation rate, and exchange rate:

TABLE 1 Variables Description

Variable	Measurement	Source of Data
Economic Growth (RGDP)	Log of Real Gross Domestic Product Growth	CBN Statistical Bulletin
Oil Exports (OIEXP)	Oil exports as a percentage of Gross Domestic Product	CBN Statistical Bulletin
Non-oil Exports (NON_EXP)	Non-oil exports as a percentage of Gross Domestic Product	CBN Statistical Bulletin
Oil Imports (OIMP)	Oil imports as a percentage of Gross Domestic Product	CBN Statistical Bulletin
Non-oil Imports (NON_IMP)	Non-oil imports as a percentage of Gross Domestic Product	CBN Statistical Bulletin
Gross Fixed Capital Formation (GFCF)	Investment as a percentage of Gross Domestic Product	CBN Statistical Bulletin
Inflation rate (INF)	Consumer Price Index	CBN Statistical Bulletin
Exchange rate (EXR)	Exchange rate of Naira to Dollar	CBN Statistical Bulletin

- Investment, which was measured as gross fixed capital formation, is the major driver of economic growth following the studies of Mishra (2020) and Ji et al. (2024). This is supported by the endogenous growth model which emphasises the positive role of investment in different sector of the economy as a factor to be considered in modelling the relationship between international trade and economic growth (Ji et al. 2024).
- Inflation rate measures the level of price changes internally and degree of economic stability (Fahlevi et al. 2024). Inflation rate is a major control variable in investigating the relationship between international trade and economic growth, because high inflation can reduce the competitiveness of a country's export in the international market and vice versa (Sahoo and Sethi 2020). Also, high inflation can increase the costs of imports, which may impact trade balance, especially when a country is import dependent (Ferrari et al. 2023; Ahmed et al. 2023).
- Exchange rate is used as a control variable to model the link between international trade and economic growth to control for the effect of trade balance, competitiveness and investment decisions, following the study of Ihugba et al. (2024). Moreover, exchange rate fluctuation can have a major impact on the relative prices of imports and exports, thus impacting the overall economic growth (Monyela and Saba 2024).

THEORETICAL FRAMEWORK AND MODEL

This study was based on multiple regression modelling to model the effect of international trade on economic growth in Nigeria. This is built on the theoretical framework of the Heckscher-Ohlin theorem developed by Heckscher (1919) and Ohlin (1933). The theory placed a strong emphasis on the significance of international trade as a vehicle for fostering national development and the necessity for countries to concentrate on producing and exporting commodities and services for which they have ample resources. This theory states that variations in comparative costs of production, which emerge from an abundance or scarcity of resources (labour and capital) among nations determine the growth of foreign trade. Therefore, to promote economic growth, nations must import commodities or resources that have become in short supply domestically and create and export commodities for which they have a low cost of production (Blaug 1992). According to this hypothesis, foreign trade should have a positive and significant effect on the economic growth of Nigeria.

However, the model for this study was built on the re-modified models of Ades and Glaeser (1999), Frankel and Romer (1999), Zahonogo (2017), and Abendin and Duan (2021) by disaggregating international trade into oil exports, non-oil exports, oil imports, and non-oil imports while controlling for inflation rate, capital formation, and exchange rate. The model is thus given as in equations (1) and (2):

$$\text{RGDP} = f(\text{NON_EXP, OIEXP, NON_IMP, OIMP, GFCF, INF, EXR}) \quad (1)$$

$$LRGDP = \beta_0 + \beta_1 \text{NON_EXP} + \beta_2 \text{OIEXP} + \beta_3 \text{NON_IMP} + \beta_4 \text{OIMP} + \beta_5 \text{GFCF} + \beta_7 \text{INF} + \beta_6 \text{LEXR} + e, \quad (2)$$

where:

- LRGDP = Log of Real Gross Domestic Product Growth
- NON_EXP = Non-oil Exports
- OIEXP = Oil Exports
- NON_IMP = Non-oil Imports
- OIMP = Oil Imports
- GFCF = Gross Fixed Capital Formation
- INF = Inflation Rate
- LEXR = Log of Exchange Rate
- β_o = Constant Term

- β_1 - β_7 = Parameters' Coefficient

In the model, oil exports, non-oil exports, oil imports, non-oil imports, and gross fixed capital formation were leveraged on gross domestic product to solve for the econometric problem of collinearity and ensure that the data series are at the same level.

ESTIMATION TECHNIQUES

The properties of the data were examined for unit root using the Augmented Dickey-Fuller (ADF) Unit Root approach because the study's data are time series, which may not be stationary. By doing this, dealing with false regression is avoided, and the variables are integrated at the level and first difference, which is the criterion for evaluating the link between economic growth and international trade in both the short and long terms. The ADF test of stationarity follows the model in equation (3):

$$\Delta Y_t = (p - 1) y_{t-1} + \alpha i \sum_{i=1}^{m} \Delta_{y-i} + \mu_t \tag{3}$$

The alternative hypothesis is tested against the null assumption of no unit root. If the test statistic is higher than the 5% critical value, the alternative hypothesis that a variable contains a unit root will be accepted, and the null of no unit root will be rejected. However, the results of the unit root tests indicated that the data series is a mix of the first difference (I(1)) and the level (I(0)), which is a requirement for using the dynamic Autoregressive Distributed Lag (ARDL) approach. Firstly, the ARDL Bound test for long-run relationships was initiated with model (4):

$$\begin{aligned}
\Delta \mathrm{LRGPD}_t = {} & \alpha_{01} + \beta_1 \mathrm{LRGPD}_{t-1} + \beta_2 \mathrm{NON_EXP}_{t-1} \\
& + \beta_3 \mathrm{OIEXP}_{t-1} + \beta_4 \mathrm{NON_IMP}_{t-1} + \beta_5 \mathrm{OIMP}_{t-1} \\
& + \beta_6 \mathrm{GFCF}_{t-1} + \beta_7 \mathrm{INF}_{t-1} + \beta_8 \mathrm{LEXR}_{t-1} \\
& + \sum_{i=1}^{q} \alpha_1 \mathrm{LRGPD}_{t-i} + \sum_{i=1}^{q} \alpha_2 \mathrm{NON_EXP}_{t-i} \\
& + \sum_{i=1}^{q} \alpha_3 \mathrm{OIEXP}_{t-i} + \sum_{i=1}^{q} \alpha_4 \mathrm{NON_IMP}_{t-i} + \sum_{i=1}^{q} \alpha_5 \mathrm{OIMP}_{t-i} \\
& + \sum_{i=1}^{q} \alpha_6 \mathrm{GFCF}_{t-i} + \sum_{i=1}^{q} \alpha_7 \mathrm{INF}_{t-i} + \sum_{i=1}^{q} \alpha_8 \mathrm{LEXR}_{t-i}
\end{aligned} \tag{4}$$

After the ARDL Bound Test was estimated, the coefficients for short- and long-run relationship are implemented as in equations (5) and (6), as follows:

$$\begin{aligned}\text{LRGPD}_t = {} & \alpha_0 + \sum_{i=1}^{p} \lambda_1 \Delta \text{LRGDP}_{t-i} + \sum_{i=1}^{p} \lambda_2 \Delta \text{NON_EXP}_{t-i} \\ & + \sum_{i=1}^{p} \lambda_3 \Delta \text{OIEXP}_{t-i} + \sum_{i=1}^{p} \lambda 4 \Delta \text{NON_IMP}_{t-i} + \sum_{i=1}^{p} \lambda_5 \Delta \text{OIMP}_{t-i} \\ & + \sum_{i=1}^{p} \lambda_6 \Delta \text{GFCF}_{t-i} + \sum_{i=1}^{p} \lambda_7 \Delta \text{INF}_{t-i} + \sum_{i=1}^{p} \lambda_8 \Delta \text{LEXR}_{t-i} \\ & + \Phi \text{ECT}_{t-1} + \mu_t \end{aligned} \tag{5}$$

where: Δ = difference, *Θ, α, λ and β* = confidents of the parameters. ECT = Error Correction Term.

This study employed the Toda-Yamamoto procedure developed by Toda and Yamamoto (1995) to estimate the direction of causality between international trade and economic growth alongside the control variable initiated in equation (7) as:

$$\begin{aligned}\text{LRGPD}_t = {} & \alpha_{01} + \sum_{i=1}^{p} \Theta_1 \text{NON_EXP}_{t-i} + \sum_{i=1}^{p} \Theta_2 \text{OIEXP}_{t-i} \\ & + \sum_{i=1}^{p} \Theta_3 \text{NON_IMP}_{t-i} + \sum_{i=1}^{p} \Theta_4 \text{OIMP}_{t-i} + \sum_{i=1}^{p} \Theta_5 \text{GFCF}_{t-i} \\ & + \sum_{i=1}^{p} \Theta_6 \text{INF}_{t-i} + \sum_{i=1}^{p} \Theta_7 \text{LEXR}_{t-i} + \varepsilon_t \end{aligned} \tag{6}$$

Results and Discussion

Table 2 displays the correlation matrix result among the data series. The data series of the dependent variables have a low correlation with the dependent variable, real gross domestic product growth. The result further indicates that non-oil exports and oil imports have a positive correlation with real gross domestic product while oil exports, non-oil imports, inflation rate, exchange rate, and gross fixed capital formation have a negative correlation with real gross domestic product.

In the study, a stationarity test was conducted to ensure that data series do not contain unit roots and to establish levels at which the variables are integrated. The adoption of non-stationary variables in regression estimation may yield spurious and misleading results. The unit root results

TABLE 2 Correlation Matrix

	LRGDP	NON_EXP _GDP	OIEXP _GDP	NON_IMP _GDP	OIMP _GDP	GFCF _GDP	INF	LEXR
LRGDP	1.00							
NON_EXP_GDP	0.62	1.00						
OIEXP_GDP	−0.12	−0.14	1.00					
NON_IMP_GDP	−0.049	0.098	0.62	1.00				
OIMP_GDP	0.20	0.168	0.62	0.68	1.00			
GFCF_GDP	−0.49	−0.49	−0.05	−0.06	−0.37	1.00		
INF	−0.44	−0.28	−0.13	0.04	−0.05	0.42	1.00	
LEXR	−0.04	−0.07	−0.23	−0.19	−0.29	0.16	0.59	1.00

TABLE 3 Summary of Unit Root Tests

Data Series	Unit Root at Level		Unit Root at First Difference		
	t-Statistic	Prob.	t-Statistic	Prob.	Level of Integration
LRGDP	−0.789370	0.8086	−3.140876	0.0334	I(1)
NON_EXP_GDP	−1.383937	0.5781	−4.879605	0.0004	I(1)
OIEXP_GDP	−3.034342	0.0420	-	-	I(0)
NON_IMP_GDP	−2.929312	0.0531	−9.958605	0.0000	I(1)
OIMP_GDP	−3.106430	0.0358	-	-	I(0)
GFCF_GDP	−1.896290	0.3299	−4.661226	0.0007	I(1)
INF	−2.733470	0.0796	−20.42867	0.0001	I(1)
LEXR	−2.568922	0.1094	−4.847964	0.0005	I(1)

NOTES 1(0) = Stationary at Level; 1(1) = Stationary at First Difference

at the level and first difference are reported in table 3. The unit of the data series is determined using the Augmented Dickey-Fuller (ADF) unit root technique. The ADF unit root results show that oil exports and oil imports do not contain unit roots when tested at level, while real gross domestic product, non-oil exports, oil imports, gross fixed capital formation, exchange rate, and inflation rate contain unit roots at level.

However, when tested at I(1) it is discovered that real gross domestic product is stationary. This implies that oil exports and oil imports are stationary at level I(0), while real gross domestic product, non-oil exports, oil imports, gross fixed capital formation, exchange rate, and inflation rate are stationary at first difference, I(1) as indicated by the results reported in table 3. Thus, the appropriate estimation technique to employ, as suggested by Pesaran and Shin (1999) and Pesaran and Pesaran (1997), is the Autoregressive Distributed Lag-Bound Co-integration approach to short and long-run relationships.

TABLE 4 ARDL Bound Co-integration Test

Test Statistic	Value	k
F-statistic	16.38940	7
Critical Value Bounds		
Significance	Io Bound	I1 Bound
5%	2.69	3.83

Selected Lag According to Akaike Information Criteria = 2 (20.80922*)

TABLE 5 Short-Run Co-integrating Coefficients

Dependent Variable: LRGDP			
Selected Model: ARDL(1, 2, 0, 2, 2, 2, 2, 1)			
Variable	Coefficient	t-Statistic	Prob.
D(NON_OEXP_GDP)	0.029995	4.553624	0.0008
D(NON_EXP_GDP(-1))	−0.050724	−5.566477	0.0002
D(OIEXP_GDP)	0.000458	1.289225	0.2238
D(NON_IMP_GDP)	0.000834	0.896505	0.3892
D(NON_IMP_GDP(-1))	0.004274	4.089120	0.0018
D(OIMP_GDP)	−0.009134	−2.527335	0.0281
D(OIMP_GDP(-1))	0.010939	4.005151	0.0021
D(GFCF_GDP)	−0.005437	−8.989572	0.0000
D(GFCF_GDP(-1))	0.004560	4.904666	0.0005
D(INF)	−0.001489	−6.111468	0.0001
D(INF)	−0.000388	−2.570508	0.0260
D(LEXR)	0.042686	4.509634	0.0009
CointEq(-1)	−0.715362	−13.122342	0.0000

The determination of the co-integration relationship between international trade and the economic performance of Nigeria is ascertained using the ARDL Bound test approach. The test is conducted at lag two as suggested by the Akaike Information Criterion and displayed in table 4. The co-integration relationship shows that international trade has a long-term association with economic performance in Nigeria. According to table 3, the calculated F-statistic is given as 16.38940 which is greater than the lower critical bound value of 2.69 at a 5% significance level. This suggests that international trade in the long run would serve as a tool for enhancing economic growth and performance.

The ARDL short- and long-run coefficients on the effects of disaggregated international trade on economic growth are shown in tables 5 and 6. The short-run coefficient results presented in table 5 show that the coefficient of non-oil exports is positive and significant at the current period but becomes negative and significant at lag one. However, in the short

TABLE 6 Long-Run Coefficients

Variable	Coefficient	t-Statistic	Prob.
NON_EXP_GDP	0.161522	13.790582	0.0000
OIEXP_GDP	0.000640	1.255744	0.2352
NON_IMP_GDP	−0.008037	−4.045180	0.0019
OIMP_GDP	−0.039725	−5.303816	0.0003
GFCF_GDP	−0.022415	−18.462270	0.0000
INF	−0.001906	−5.702849	0.0001
LEXR	0.104781	12.114930	0.0000

run, oil exports is discovered to have a positive and non-significant effect on economic growth. It is found that the coefficient of non-oil imports is positive in the current period (insignificant) and at lag one (insignificant). The short-run result further reveals that gross capital formation is negative and significant during the current period but positive and significant at first period lag. However, inflation shows a negative and significant sign at the current and first period lag while the exchange rate exerted a positive and significant effect on real gross domestic product during the current period in the short run. Overall, the result implies that disaggregated international trade has mixed in predicting economic performance in the short run.

The long-run result presented in table 6 reveals that the relationship 'non-oil exports and real gross domestic product' is positive and significant in the long run. This implies that the concentration of productive capacity in the production and exportation of non-oil products would enhance the economic performance of Nigeria. Also, the result shows that oil exports, although positive, is insignificant in impacting real gross domestic product. However, the insignificance of the result is an indication of the dwindling oil fortune of the nation, especially in terms of a fall in oil prices, low demand for crude oil, and other structural problems.

It is discovered that the relationship between non-oil imports and real gross domestic product is negative and significant in the long run. This indicates the overreliance of Nigeria on importation of goods and services, which is undesirable for the growth of the economy. Most of these goods are mainly consumable goods which have continued to deplete the reserves of the nation and causing the outflow of capital which could have been invested in the country. Similarly, it is established that oil imports negatively and significantly impact gross domestic product. The long-run coefficient results reported in table 6 show that the control variables of fixed gross capital formation and inflation rate have negative

TABLE 7 Diagnostics Results

Diagnostics test	Observed value	P-value (Chi-square)
Normality Test (Jarque-Bera)	2.222171	0.8949
Breusch-Godfrey LM test for serial correlation	0.403726	0.5252
Heteroscedasticity Test: Breusch-Pagan-Godfrey	21.08251	0.3923
Ramsey RESET Test	0.464747	0.5109

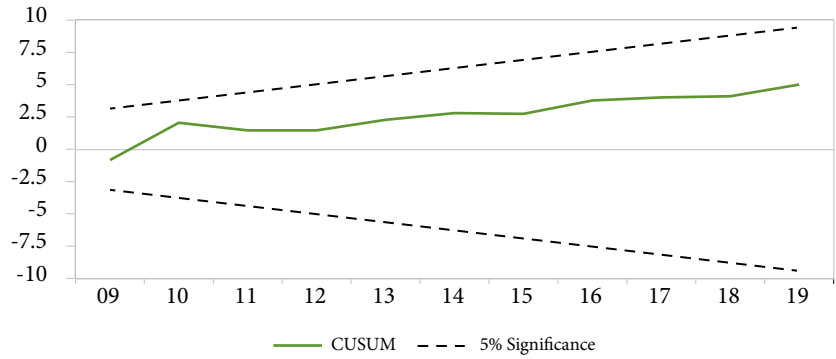


FIGURE 2 Cusu"m Stability Test Result

and significant effects on real gross domestic product. Finally, the result reveals that the exchange rate has a positive and significant effect on real gross domestic product in Nigeria.

The robustness tests for the estimated regression model are represented in table 7 and it is concluded that the regression passed the robustness tests. The result shows that the residual is normally distributed and has no serial correlation. Also, it is concluded that the result is free from heteroscedasticity, and the model is best fitted and rightly developed.

The stability test is conducted based on the method proposed by Brown et al. (1975). The result of the Cusum test presented in figure 2 reveals that the stability line falls in the acceptance region of 5%, indicating the stability of the regression estimate.

The direction of causality between international trade and economic performance is determined using the Toda-Yamamoto test presented in table 8. The result of the Toda-Yamamoto test presented in table 8 shows that oil exports, non-oil exports, non-oil imports, exchange rate, and inflation rate have a causal relationship with real gross domestic product, while oil imports and gross fixed capital formation do not have a causal

TABLE 8 Toda-Yamamoto Result

Variables	Lag (k)	Lag (k+dmax)	Chi-sq	Prob.	Direction of causality
NON_EXP_GDP does not Granger cause RGDP	2	2+1	14.68257	0.0021	Causal Relationship Exists
OIEXP_GDP does not Granger cause RGDP	2	2+1	9.222076	0.0265	Causal Relationship Exists
NON_IMP_GDP does not Granger cause RGDP	2	2+1	27.68165	0.0000	Causal Relationship Exists
OIMP_GDP does not Granger cause RGDP	2	2+1	4.266963	0.2340	No Causality
GFCF_GDP does not Granger cause RGDP	2	2+1	3.342150	0.3418	No Causality
INF does not Granger cause RGDP	2	2+1	37.56279	0.0000	Causal Relationship Exists
LEXR does not Granger cause RGDP	2	2+1	14.06371	0.0028	Causal Relationship Exists
Overall	2	2+1	131.8512	0.0000	Causal Relationship Exists

relationship with real gross domestic product. Overall, it is found that international trade has a causal relationship with economic performance.

Discussion

Findings in this paper showed that international trade has the potential to significantly enhance the economic growth of Nigeria. It was discovered in the short run that the components of international trade had mixed effects on the economic growth of Nigeria. For instance, it was found that both non-oil exports and non-oil imports significantly enhanced the economic growth of Nigeria, while oil exports insignificantly impacted economic growth. This is supported by the study of Sujová et al. (2021), which revealed that international trade provides an effective mechanism for facilitating economic performance. Moreover, it was reported in the study that oil imports adversely impacted the economic performance of Nigeria in the short run. Adeleye et al. (2015) findings showed that the overreliance of Nigeria on importation harms the economy through the loss of foreign reserves, which contributed to economic destabilisation. These short-run results indicate the structure of Nigeria's economy with reliance on crude oil. Notably, the policy of the government to promote non-oil export and import trade played a significant role in improving the country's economic performance. Moreover, the irrelevant nature of the oil export shows that despite the overreliance on

oil exports, the country has not been able to achieve noteworthy growth in the economy. This could probably result from the continuous depreciation of the Nigerian currency, with implications for the depletion of foreign earnings. Likewise, the negative impact of oil imports points to the excess importation of refined oil products despite Nigeria being a major oil-producing country.

In the long run, it was reported that non-oil exports significantly improved the economic growth of Nigeria. This result demonstrates the significant shift towards the diversification of the economy to non-oil exports. These findings conform with the empirical results of Abendin and Duan (2021), Yameogo and Omojolaibi (2020), Kumar (2012), Manwa and Wijeweera (2016), Yakubu and Akanegbu (2018), Zahonogo (2017), Le (2020), and Celik et al. (2024), who found a positive effect of trade, especially through export on growth. Over the years, reliance on the exportation of oil has been a bane to the progress of the country, with exposure to external shocks; nevertheless, the growth of non-oil sectors such as agriculture, manufacturing, and service sectors underscores the efforts of the government to ensure a balance between oil and non-oil exports. An increase in non-oil exports can help reduce dependence on oil revenue and promote economic stabilisation (Abendin and Duan 2021). This has implications for diversifying the source of foreign earnings. However, it was noted that oil exports insignificantly predict the economic performance of Nigeria in the long run. Remarkably, while oil exports remain an important source of foreign earnings in Nigeria, oil revenue has continued be affected by diverse factors such as overreliance on oil, volatility of price, and challenges within the oil sector.

Although Nigeria has previously experienced an oil boom, the recent fluctuation in oil prices and external shocks have caused major instability in oil revenue. Historically, Nigeria has not been able to adapt to these downturns, with undesirable effects on economic growth. The insignificance of oil exports both in the short run and long run indicates the problems of resource curse for Nigeria, with the country unable to achieve sustainable growth despite its abundance of crude oil. High reliance on oil exports could lead to crowding out investment in other major sectors such as agriculture and manufacturing.

Furthermore, the negative effect of non-oil and oil imports on the economic growth of Nigeria reflects the challenges related to the country's overdependence on foreign goods and services. The negative linkage between import trade (oil and non-oil imports) conformed to the findings

of Makhmutova and Mustafin (2017), Adeleye et al. (2015), and Mogoe and Mongale (2014). For instance, the limited and non-functioning refineries of Nigeria force the country to depend heavily on the importation of refined petroleum products from other countries. This has implications such as the draining of foreign reserves, worsening inflation, and unbalanced trade, which impede the progress of the economy. In addition, the negative effect of non-oil imports reported in this study indicates the high importation of technologies, machinery, and consumer goods. These reflect the underdeveloped nature of Nigeria in terms of industrialisation, innovation, and non-competitiveness of domestic manufacturing and production. This impedes the performance of Nigeria's economy by increasing international borrowings, depreciation of the naira, and exposure of the country to external shocks such as global price volatility, imported inflation, and disruption of the value chain.

Conclusion, Policy Implication and Recommendations

Based on the result of the study, it was concluded that Nigeria is yet to fully actualise the gain from international trade. This is evident, as the country's oil and non-oil imports exceed the value of exports. This disparity has significantly contributed to economic challenges, as the negative impacts of imports on economic growth surpass any benefits realised from exports. For example, the high influx of imports weakens domestic industries and can lead to a fall in domestic production capacity, despite the country's richness in natural resources, including oil, which is the major contributor to earnings from exports. This not only affects the balance of trade but also suppresses economic stability, investment, and economic diversification. Also, as evident in the findings, the high rate of inflation worsens this situation by accelerating the cost of imported goods, with a negative effect on local investors and consumers. In the same vein, exports are cheaper due to high inflation, which further skewed the benefits of trade in favour of imported commodities. With dwindling investment opportunities because of uncertainty and economic inability, the potential for economic growth is further hampered. This leads to a cycle where low levels of domestic investment contribute to sustained economic stagnation, with ultimate adverse effects of the current trade position on the economic growth trajectory of Nigeria.

This study has major implications for the government of Nigeria and other developing countries alike. From a policy perspective, the study

revealed a significant trade imbalance in Nigeria, resulting from the nation's overwhelming reliance on the oil sector for both imports and exports. Notwithstanding oil being Nigeria's largest export commodity, the high focus on bolstering this sector has unconsciously led to the neglect of other vital sectors such as agriculture and manufacturing. This policy misalignment hinders the diversification of the country's export capabilities and impedes potential economic stability and growth. Moreover, poor performance of macroeconomic variables such as inflation rate due to the monetary policies that have not stabilised the economy raises a major concern. The implications of this high inflation include increasing import costs, consequently causing economic instability for consumers and businesses with the creation of a challenging environment to enhance economic activities and growth.

Theoretically, this paper contributed to the empirical study by uncovering the effect of disaggregated international trade on economic performance in a developing country. The study supports other studies that revealed that developing countries that are import- and oil-dependent do not reap benefits from trade. From a theoretical perspective, while this study supports the theory that exports positively impact economic performance, importation was found to hurt economic performance. This indicates the need for more studies on how disaggregated components of international trade impact the economic performance of developing countries. This can lead to the investigation of a more complex relationship between international trade and economic performance as well as the discovery of more insightful results. Moreover, studies should be conducted on how international trade components impact macroeconomic variables such as nflation and unemployment rates.

Findings from this paper underscore the need for a comprehensive economic policies reassessment, aimed at promoting a more balanced and inclusive approach to trade that develops multiple economic resources and sectors for enhancing overall economic growth and stability. First, it is paramount to focus on economic diversification to establish the country as a viable exporter in the international market. It is crucial for government policies to be directed at revitalising the non-oil sector of the economy, with particular emphasis on agriculture. This can be achieved through investment in agricultural innovation and supply chain innovation following the endogenous growth theory that emphasises the role of technological innovation in the trade-growth relationship.

Moreover, there is a need for policies targeted at cutting reliance on imports. This can be realised by promoting domestic production through increasing incentives for local manufacturers, improving infrastructures such as transportation, and boosting domestic productive capacity. The government should prioritise import substitution strategy, foster industrialisation, and support small and medium-scale enterprises. In addition, other untapped resources and special sectors apart from crude oil should be fully explored and harnessed into production capacity to reduce the reliance of the country on importation, and also boost exports. This involves the identification and prioritising of investment in areas such as renewable energy, tourism, and technology, which can bolster production and export capabilities and reduce the country's reliance on oil, as supported by the Heckscher-Ohlin theorem developed by Heckscher (1919) and Ohlin (1933). Considerable efforts and investments should be made to revamp the nation's existing refineries and build more refineries to reduce the importation of petroleum products. Through the replacement of outdated facilities and the construction of new refineries, the nation can reduce its reliance on imported petroleum commodities. Notwithstanding the current involvement of private sectors such as the Dangote Group, in building a refinery in the country, the government should support more private involvement to protect monopolistic tendencies.

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