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TRADE FLOWS AND ECONOMIC GROWTH NEXUS IN NIGERIA

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A R T I C L E I N F O.	Abstract
Keywords: Trade Flows, Trade Openness, Import Tariffs, Import Quotas, Export Taxes, Export Subsidies Economic Growth	This study investigates the nexus between trade flows and economic growth in Nigeria, utilizing time series data from 1999 to 2023. Employing a Least Squares regression model, the research examines the impact of trade openness, import tariffs, import quotas, export taxes, and export subsidies on Nigeria's GDP growth rate. The findings reveal a statistically significant positive relationship between trade openness and economic growth, with a coefficient of 3.103851 (p < 0.001). Conversely, import tariffs (-0.016923, p < 0.001), import quotas (-0.102660, p < 0.001), and export taxes (-0.303048, p < 0.001) are found to have a statistically significant negative impact on economic growth. Export subsidies, while positive (0.302470), show a weaker statistical significance (p < 0.05). The model demonstrates a good fit, with an R-squared of 0.737018 and a statistically significant F-statistic (p < 0.001). The Durbin-Watson statistic of 1.893361 suggests the absence of significant autocorrelation. These results indicate that while greater trade openness is beneficial for Nigeria's economic growth, protectionist measures through tariffs and quotas, as well as disincentives for exports via taxes, hinder this growth. Based on these findings, the study recommends policies aimed at further liberalizing trade, reducing import tariffs and quotas, and eliminating or significantly lowering export taxes to foster a more conducive environment for economic expansion in Nigeria. Continued strategic use of export subsidies may also be beneficial, provided their effectiveness is regularly evaluated.

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INTRODUCTION

The intricate relationship between international trade and economic prosperity has long been a central theme in economic discourse (Agbasi, Edoko & Ezeanolue, 2018), dating back to the mercantilist era and further formalized by classical economists like Adam Smith and David Ricardo with their theories of absolute and comparative advantage. These foundational concepts posited that countries specializing in the production of goods and services where they possess a relative efficiency advantage and engaging in trade could lead to increased overall output, consumption, and ultimately, economic growth for all participating nations (Smith, 1776; Ricardo, 1817). The post-World War II era saw a renewed emphasis on trade liberalization as a catalyst for development, culminating in the establishment of institutions like the General Agreement on Tariffs and Trade (GATT) and its successor, the World Trade Organization (WTO), aimed at reducing trade barriers and promoting a multilateral trading system. For developing nations, particularly those in Africa like Nigeria, integrating into the global economy through increased trade has been widely advocated as a pathway to industrialization, technological diffusion, and sustainable development (World Bank, 2020). The historical trajectory of Nigeria's engagement with international trade has evolved from a predominantly agrarian export economy during the colonial period to one heavily reliant on oil exports, with varying degrees of openness and protectionist policies implemented over time in response to economic fluctuations and policy priorities (Oyejide, 2000; Nwakoby, Dibua & Ezeanolue, 2019). Nigeria, as Africa's most populous nation and largest economy, presents a compelling case study for examining the trade-growth nexus. Its vast resources, large domestic market, and strategic location position it as a significant player in regional and global trade. However, despite its potential, Nigeria has historically faced challenges in translating its trade activities into sustained and inclusive economic growth. These challenges include over-reliance on a single commodity (oil), weak infrastructure, institutional bottlenecks, and the implementation of inconsistent trade policies (African Development Bank, 2021). The basic characteristics of Nigeria's trade profile are marked by a high concentration of exports in crude oil and a diversified but often import-dependent structure for manufactured goods and consumer products (National Bureau of Statistics, 2023). Understanding how the volume and composition of trade, coupled with specific trade policy instruments, influence Nigeria's economic trajectory is crucial for formulating effective development strategies. This study, therefore, focuses on analyzing the impact of trade flows, proxied by trade openness, and key trade policy variables - import tariffs, import quotas, export taxes, and export subsidies - on Nigeria's economic growth rate.

The latent problem that informed this study stems from the persistent challenge of achieving robust and sustainable economic growth in Nigeria despite its significant participation in international trade. While theoretical arguments and empirical evidence from other contexts often highlight the growth-enhancing effects of trade, Nigeria has experienced periods of sluggish growth, high poverty rates, and limited structural transformation, even during periods of relatively high trade volumes (World Bank, 2022). This suggests that simply engaging in trade is not a guaranteed pathway to prosperity; the nature of trade, the policies governing it, and the domestic economic environment all play critical roles. The specific problem is the need for a clearer understanding of how different facets of trade flows and specific trade policy instruments individually and collectively impact Nigeria's economic growth rate, particularly in the context of its unique economic structure and policy history. Without this granular understanding, policymakers may implement trade policies that are not optimally designed to foster growth, potentially leading to unintended negative consequences. Trade flows are theorized to impact economic growth through several interconnected channels. Increased trade openness can lead to greater specialization based on comparative advantage, allowing resources to be allocated more efficiently and boosting productivity (Grossman & Helpman, 1991; Ofodeme, Ezeanolue & Nwakoby, 2019). Participation in international markets can provide access to larger markets for domestic producers, enabling them to achieve economies of scale and invest in research and development (Aghion et al., 2005; Okpala, Ezeanolue & Edoko, 2018). Furthermore, trade facilitates the diffusion of technology,

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knowledge, and best practices from more advanced economies, which can spur innovation and productivity gains in the importing country (Coe & Helpman, 1995). Imports of intermediate goods and capital equipment can enhance domestic production capabilities and reduce costs (Amiti & Konings, 2007; Edoko, Agbasi & Ezeanolue, 2018). However, the impact of trade is not uniformly positive and can depend on a country's preparedness, including its institutional quality, infrastructure, and human capital development (Rodríguez & Rodrik, 2000). The latent gap that this study seeks to fill is the need for up-to-date empirical evidence specifically for Nigeria that disentangles the effects of different trade policy instruments on economic growth, considering the dynamic nature of its economy and recent policy shifts. While previous studies have examined aspects of the trade-growth relationship in Nigeria, there is a need for a focused analysis that incorporates key policy variables and provides a current assessment of their impact.

Various stakeholders in Nigeria have made efforts to address the challenges related to trade and economic growth, but these efforts have often failed to yield the required results. Successive governments have implemented trade policies aimed at promoting non-oil exports, diversifying the economy, and attracting foreign direct investment (Central Bank of Nigeria, 2022). Initiatives such as export promotion schemes, trade facilitation reforms, and participation in regional trade blocs like the Economic Community of West African States (ECOWAS) have been pursued (ECOWAS Secretariat, 2023). However, the impact of these efforts has been mixed. Challenges such as inconsistent policy implementation, bureaucratic hurdles, inadequate infrastructure, and a challenging business environment have often undermined the effectiveness of these initiatives (Nigerian Economic Summit Group, 2021). Furthermore, the persistent reliance on oil revenues has sometimes led to a neglect of the non-oil sectors and a vulnerability to global commodity price fluctuations, hindering the realization of sustained, broad-based growth through trade. The failure to fully capitalize on trade opportunities and overcome structural impediments highlights the need for a more nuanced understanding of how specific trade policies interact with the Nigerian economic context. Addressing the latent problem of understanding the precise impact of trade flows and policies on Nigeria's economic growth is of paramount importance. The need stems from the fact that trade is a powerful engine for development, and getting trade policy right is crucial for unlocking Nigeria's economic potential. A clear understanding of which trade policies are growth-enhancing and which are detrimental is essential for formulating effective strategies to diversify the economy, create jobs, reduce poverty, and improve living standards (United Nations Development Programme, 2023). The benefits of addressing this problem are manifold. By identifying the specific trade policy levers that have the most significant positive impact on growth, policymakers can prioritize and implement targeted reforms. This can lead to increased export earnings, greater foreign exchange reserves, enhanced competitiveness of Nigerian industries, and improved access to essential goods and services for consumers. Furthermore, a robust understanding of the trade-growth nexus can help in navigating the complexities of international trade negotiations and designing policies that are aligned with Nigeria's long-term development objectives. Ultimately, this study is necessary to provide empirical evidence that can inform evidence-based policymaking in Nigeria. By rigorously examining the impact of trade openness, import tariffs, import quotas, export taxes, and export subsidies on GDP growth, this research aims to provide policymakers with concrete insights into the effectiveness of different trade policy instruments. The findings will contribute to the existing literature on the trade-growth nexus in developing countries, specifically within the Nigerian context. This will enable policymakers to make more informed decisions about trade liberalization, protectionist measures, and export support programs, ultimately contributing to a more stable, diversified, and prosperous Nigerian economy. The study aims to fill a gap by providing a current and focused analysis that can guide the implementation of trade policies that are truly conducive to sustainable economic development in Nigeria.



Statement of the problem

Despite Nigeria's significant engagement in international trade and its status as Africa's largest economy, the country continues to grapple with the persistent challenge of achieving sustained and inclusive economic growth. While theoretical frameworks and global empirical evidence often highlight the positive relationship between trade openness and economic prosperity, Nigeria's growth trajectory has been characterized by volatility, periods of stagnation, and limited structural transformation (World Bank, 2022). This presents an immediate problem: the lack of a clear and current understanding of how specific dimensions of trade flows, particularly the influence of various trade policy instruments, precisely impact Nigeria's economic growth rate. Without this detailed insight, policymakers face difficulties in designing and implementing effective trade strategies that can reliably contribute to diversifying the economy, creating employment, and lifting citizens out of poverty.

This problem is highly topical and warrants urgent empirical investigation due to several factors. The global economic landscape is constantly evolving, with shifts in trade patterns, the rise of protectionist tendencies in some economics, and the increasing importance of regional trade agreements (WTO, 2023). Nigeria's own economic context is also dynamic, influenced by fluctuating oil prices, demographic changes, and ongoing efforts to diversify the economy away from oil dependence (African Development Bank, 2021). Existing studies on the trade-growth nexus in Nigeria, while valuable, may not fully capture the nuances of the current economic climate and the impact of recent policy shifts. Therefore, a fresh empirical investigation is needed to provide up-to-date evidence that can inform policy decisions in this rapidly changing environment.

The theoretical impact of trade flows on economic growth is well-established. Increased trade can facilitate specialization, leading to greater efficiency and productivity gains (Grossman & Helpman, 1991; Edoko, Agbasi & Ezeanolue, 2018; Agbasi, Edoko & Ezeanolue, 2018). It provides access to larger markets, enabling economies of scale and encouraging investment in innovation (Aghion et al., 2005). Trade also serves as a conduit for the transfer of technology, knowledge, and capital, which can enhance domestic productive capacity (Coe & Helpman, 1995). However, the actual impact in a specific country like Nigeria is contingent on numerous factors, including the composition of trade, the effectiveness of institutions, and the specific trade policies implemented. The problem lies in the uncertainty surrounding how Nigeria's particular trade structure and policy choices translate these theoretical benefits into tangible economic growth outcomes.

Previous research has attempted to address aspects of the trade-growth relationship in Nigeria. Studies have examined the impact of trade openness, export diversification, and the role of specific sectors in driving growth through trade (Oyejide, 2000; Otugo, Edoko & Ezeanolue, 2018). While these studies have provided valuable insights, they have often not focused specifically on the disaggregated impact of various trade policy instruments – such as tariffs, quotas, export taxes, and subsidies – on economic growth within a unified framework using recent data. This gap in the literature means that policymakers lack a comprehensive understanding of the relative effectiveness and potential unintended consequences of these specific policy tools. If this research is not carried out, Nigeria risks continuing to implement trade policies based on outdated or incomplete information, potentially hindering its ability to achieve sustainable economic growth, deepen its integration into the global economy, and effectively respond to future economic shocks. Therefore, this research is essential to provide the empirical evidence needed to guide more effective trade policy formulation and implementation in Nigeria.

Objectives of the study

The broad objective of the study is to examine the impact of trade flows on Nigerian economic growth. Specifically, the study seeks:

1. To examine the impact of trade openness on economic growth in Nigeria.

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- 2. To examine the impact of import tariffs on economic growth in Nigeria.
- 3. To examine the impact of import quotas on economic growth in Nigeria.
- 4. To examine the impact of export taxes on economic growth in Nigeria.
- 5. To examine the impact of export subsidies on economic growth in Nigeria.

Statement of hypotheses

Ho1: Trade openness has no significant impact on Nigeria economic growth.

Ho2: Import tariffs have no significant impact on Nigeria economic growth.

Ho3: Import quotas have no significant impact on Nigeria economic growth.

Ho4: Export taxes have no significant impact on Nigeria economic growth.

Hos: Export subsidies have no significant impact on Nigeria economic growth

METHODOLOGY

Model specification

The model for this study is stated as followed:

The structural form of the model is:

GDP = f(TRAL, TARF, QUO, TAXE, SUB)	•••	•••	•••	(1)
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The mathematical form of the model is:

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GDP = \beta_0 + \beta_1 TRAL + \beta_2 TARF + \beta_3 QUO + \beta_4 TAXE + \beta_5 SUB \qquad \dots \qquad (2)
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The econometric form of the model is:

 $GDP = \beta_0 + \beta_1 TRAL + \beta_2 TARF + \beta_3 QUO + \beta_4 TAXE + \beta_5 SUB + \mu_i$ (3)

Where; GDP = Gross Domestic Product proxied by GDP growth rate

TRAL = Trade flows proxied by trade openness

TARF = Import tariffs

QUO = Import quotas

TAXE = Export taxes

- SUB = Export subsidies
- f = Functional relationship
- $\beta_0 =$ intercept of the model
- $\beta_1 \beta_5 =$ parameters of the regression coefficients

 $\mu_i = Stochastic error term$

Explanation of variables

- a) **Gross Domestic Product (GDP)**: GDP is commonly used as an indicator of the economic health of a country, as well as to gauge a country's standard of living. GDP is also the total value of the goods and services produced by the people of a nation during a year not including the value of income earned in foreign countries. In this study GDP will be proxied by GDP growth rate.
- b) **Trade flows (TRAL)**: TRAL is the removal or reduction of restrictions or barriers on the free exchange of goods between nations. This includes the removal or reduction of both tariff (duties and surcharges) and non-tariff obstacles (like licensing rules, quotas and other requirements). The easing

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or eradication of these restrictions is often referred to as promoting "free trade." Trade liberalization will be proxied by trade openness.

- c) **Import Tariffs (TARF)**: An import tariff is a tax placed by governments on commodities that are shipped into a country from a foreign country. These taxes are often a way to discourage a country's consumers from buying products from another country and to support domestic products and services. Governments generally have the right to determine what products will have a tariff and how much that tax will be. Tariffs are used to restrict trade, as they increase the price of imported goods and services, making them more expensive to consumers. They are one of several tools available to shape trade policy. TARF will be proxied by prices of imported goods.
- d) **Import Quotas (QUO)**: An import quota is a limit on the quantity of a good that can be produced abroad and sold domestically. It is a type of protectionist trade restriction that sets a physical limit on the quantity of a good that can be imported into a country in a given period of time. It is also a governmental restriction on the quantities of a particular commodity that may be imported within a specific period of time, usually with the goal of protecting domestic producers of that commodity from foreign competition. Import quotas are foreign trade policies undertaken by domestic governments that are intended to "protect" domestic production by restricting foreign competition. In general, a quota is simply a quantity restriction placed on a good, service, or activity. QUO will be proxied by import fees.
- e) **Export taxes (TAXE)**: Taxes on exports are all levies on goods being transported out of the country or services being delivered to nonresidents by residents. Rebates on exported goods that are repayments of previously paid general consumption taxes, excise taxes, or import duties are deducted from the gross amounts receivable from these taxes, not from amounts receivable from export taxes. Tax exporting occurs when a country (or other jurisdiction) shifts its tax burden (partially) abroad. Tax exporting does not necessarily involve direct taxation of foreign residents. It can also work through other economic channels, such as price changes. Export taxes were measured by levies on goods being transported out of the country or services being delivered to nonresidents by residents
- f) Export subsidies (SUB): Export subsidy is a government policy to encourage export of goods and discourage sale of goods on the domestic market through direct payments, low-cost loans, tax relief for exporters, or government-financed international advertising. An export subsidy reduces the price paid by foreign importers, which means domestic consumers pay more than foreign consumers. Governments also regulate trade by providing various kinds of support for export producers. Export subsidies come in a variety of forms, but they share the trait in benefitting from government funds. These funds enable them to offer their products or services to other countries at lower prices. The objective of this support is to enable domestic producers to "win" sales by undercutting the prices charged by producers in foreign countries. In this study, export subsidy was proxied by export expansion grant.

Method of data analysis

The economic technique employed in the study is the ordinary least square (OLS). This is because the OLS computational procedure is fairly simple a best linear estimator among all unbiased estimation, efficient and shown to have the smallest (minimum variance) thus, it become the best linear unbiased estimator (BLUE) in the classical linear regression (CLR) model. Basic assumptions of the OLS are related to the forms of the relationship among the distribution of the random variance (μ_i).

OLS is a very popular method and in fact, one of the most powerful methods of regression analysis. It is used exclusively to estimate the unknown parameters of a linear regression model. The Economic views (E-views) software will be adopted for regression analysis.

Stationarity (unit root) test:

The importance of this test cannot be overemphasized since the data to be used in the estimation are

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time-series data. In order not to run a spurious regression, it is worthwhile to carry out a stationary test to make sure that all the variables are mean reverting that is, they have constant mean, constant variance and constant covariance. In other words, that they are stationary. The Augmented Dickey-Fuller (ADF) test would be used for this analysis since it adjusts for serial correlation.

Decision rule: If the ADF test statistic is greater than the MacKinnon critical value at 5% (all in absolute term), the variable is said to be stationary. Otherwise it is non stationary.

Cointegration test:

Econometrically speaking, two variables will be cointegrated if they have a long-term, or equilibrium relationship between them. Cointegration can be thought of as a pre-test to avoid spurious regressions situations (Granger, 1986). As recommended by Gujarati (2004), the ADF test statistic will be employed on the residual.

Decision Rule: if the ADF test statistic is greater than the critical value at 5%, then the variables are cointegrated (values are checked in absolute term)

Evaluation of parameter estimates

The estimates obtained from the model shall be evaluated using three (3) criteria. The three (3) criteria include:

- 1. The economic a priori criteria.
- 2. The statistical criteria: First Order Test
- 3. The econometric criteria: Second Order Test

Evaluation based on economic a priori criteria

This could be carried out to show whether each regressor in the model is comparable with the postulations of economic theory; i.e., if the sign and size of the parameters of the economic relationships follow with the expectation of the economic theory. The a priori expectations, in tandem with the manufacturing sector growth and its determinants are presented in Table 1 below, thus:

Donomotors	Varia	Expected	
I al ameters	Regressand	Regressor	Relationships
β_0	GDP	Intercept	+/-
β_1	GDP	TRAL	+
β_2	GDP	TARF	-
β ₃	GDP	QUO	-
β4	GDP	TAXE	-
β5	GDP	SUB	+

Table 1: Economic a priori expectation

Source: Researchers compilation

A positive '+' sign indicate that the relationship between the regressor and regressand is direct and move in the same direction i.e. increase or decrease together. On the other hand, a '-' shows that there is an indirect (inverse) relationship between the regressor and regressand i.e. they move in opposite or different direction.

Evaluation based on statistical criteria: First Order Test

This aims at the evaluation of the statistical reliability of the estimated parameters of the model. In this case, the F-statistic, standard error, t-statistic, Co-efficient of determination (R^2) and the Adjusted R^2 are used.



The Coefficient of Determination (R²)/Adjusted R²

The square of the coefficient of determination R^2 or the measure of goodness of fit is used to judge the explanatory power of the explanatory variables on the dependent variables. The R^2 denotes the percentage of variations in the dependent variable accounted for by the variations in the independent variables. Thus, the higher the R^2 , the more the model is able to explain the changes in the dependent variable. Hence, the better the regression based on OLS technique, and this is why the R^2 is called the co-efficient of determination as it shows the amount of variation in the dependent variable explained by explanatory variables.

However, if R^2 equals one, it implies that there is 100% explanation of the variation in the dependent variable by the independent variable and this indicates a perfect fit of regression line. While where R^2 equals zero. It indicates that the explanatory variables could not explain any of the changes in the dependent variable. Therefore, the higher and closer the R^2 is to 1, the better the model fits the data. Note that the above explanation goes for the adjusted R^2 .

The F-test: The F-statistics is used to test whether or not, there is a significant impact between the dependent and the independent variables. In the regression equation, if calculated F is greater than the table F table value at the chosen level of significance, then there is a significant impact between the dependent and the independent variables in the regression equation.

Econometric criteria: Second Order Test

This aims at investigating whether the assumption of the econometric method employed are satisfied or not. It determines the reliability of the statistical criteria and establishes whether the estimates have the desirable properties of unbiasedness and consistency. It also tests the validity of non-autocorrelation disturbances. In the model, autocorrelation, multicolinearity and heteroskedasticity test are used to test for the reliability of the data for predication.

Test for Autocorrelation

The Durbin-Watson (DW) test is appropriate for the test of Second-order autocorrelation and it has the following criteria.

- 1. If d^* is approximately equal to 2 ($d^* = 2$), we accept that there is no autocorrelation in the function.
- 2. If $d^*= 0$, there exist perfect positive auto-correlation. In this case, if $0 < d^* < 2$, i.e. if d^* is less than two but greater than zero, it denotes that there is some degree of positive autocorrelation, which is stronger the closer d^* is to zero.
- 3. If d* is equal to 4 (d*=4), there exist a perfect negative autocorrelation, while if d* is less than four but greater than two (2<d*< 4), it means that there exist some degree of negative autocorrelation, which is stronger the higher the value of d*.

Test for multicolinearity

This means the existence of an exact linear relationship among the explanatory variable of a regression model. It is use to determine whether there is a correlation among variables.

Decision Rule: From the rule of Thumb, if correlation coefficient is greater than 0.8, we conclude that there is multicolinearity but if the coefficient is less than 0.8 there is no multicolinearity.

Test for heteroscedasticity

The essence of this test is to see whether the error variance of each observation is constant or not. Nonconstant variance can cause the estimated model to yield a biased result. White's General Heteroscedasticity test would be adopted for this purpose.

Decision rule: We reject H₀ if $F_{cal} > F_{tab}$ at 5% critical value. Or alternatively, we reject H₀ if $\chi^2_{cal} >$

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 $\chi^2_{0.05}$ and accept if otherwise at 5% critical value.

Test for research hypotheses

This study will test the research hypothesis using t-test. The t-statistics test tells us if there is an existence of any significance relationship between the dependent variable and the explanatory variables. The t-test will be conducted at 0.05 or 5% level of significance.

Decision rule: Reject H₀ if $t_{cal} > t_{\alpha/2}$, (n-k). Otherwise, we accept.

Nature and source of data

All data used in this research are secondary time series data which are sourced from the Central Bank of Nigeria (CBN) annual statistical bulletin.

DATA PRESENTATION AND DATA ANALYSIS

Summary of Stationary Unit Root Test

Establishing stationarity is essential because if there is no stationarity, the processing of the data may produce biased result. The consequences are unreliable interpretation and conclusions. We test for stationarity using Augmented Dickey-Fuller (ADF) tests on the data. The ADF tests are done on level series, first and second order differenced series. The result of regression is presented in table 2 below.

Variables	ADF	Lagged	1% Critical	5% Critical	10% Critical	Order of
v al lables	Statistics	Difference	Value	Value	Value	Integration
GDP	-5.896859	1	-3.653730	-2.957110	-2.617434	<i>I</i> (1)
TRAL	-6.659575	1	-3.653730	-2.957110	-2.617434	<i>I</i> (1)
TARF	-7.309947	1	-3.653730	-2.957110	-2.617434	<i>I</i> (1)
QUO	-4.791580	1	-3.653730	-2.957110	-2.617434	<i>I</i> (1)
TAXE	-8.050680	1	-3.653730	-2.957110	-2.617434	<i>I</i> (1)
SUB	-5.656894	1	-3.653730	-2.957110	-2.617434	<i>I</i> (1)

Table 2: Summary of ADF test results

Source: Researchers computation

Evidence from unit root table above shows that none of the variables are stationary at level difference, that is, I(0). All the variables are stationary at their first difference, that is I(1). Since the ADF absolute value of each of these variables is greater than the 5% critical value, they are all stationary at their different integrated differences. They are also significant at 1% and 10% respectively. Since one of the variables is integrated at level form and some at first difference, we go further to carry out the cointegration test. The essence is to show that although all the variables are stationary, whether the variables have a long term relationship or equilibrium among them. That is, the variables are cointegrated and will not produce a spurious regression.

Summary of Cointegration Test

Cointegration means that there is a correlationship among the variables. Cointegration test is done on the residual of the model. Since the unit root test shows that none of the variable is stationary at level I(0) rather all the variables are at first difference I(1), we therefore test for cointegration among these variables. The result is presented in tables 3 below for Trace and Maximum Eigenvalue cointegration rank test respectively.



Unrestri					
Hypothesi zed	(Trace	0.05		
No. of CE(s)	Eigenval ue	Statistic	Critical Value	Prob.**	
None *	0.86387 1	149.593 9	95.7536 6	0.0000	
At most 1 *	0.77620 3	83.7869 3	69.8188 9	0.0026	
At most 2 *	0.40534 8	50.3853 6	47.8561 3	0.0009	
At most 3 *	0.26507 1	37.2326 7	29.7970 7	0.0028	
At most 4	0.13754 1	7.06928 4	15.4947 1	0.5696	
At most 5	0.06410 6	2.18634 5	3.84146 6	0.1392	
Unrestricted Cointegration Rank Test (Maximum					
	E	igenvalue)			
Hypothesi zed		Max- Eigen	0.05		
No. of CE(s)	Eigenval ue	Statistic	Critical Value	Prob.**	
None *	0.86387 1	65.8069 5	40.0775 7	0.0000	
At most 1 *	0.77620 3	49.4015 8	33.8768 7	0.0004	
At most 2	0.40534 8	17.1526 9	27.5843 4	0.5669	
At most 3	0.26507 1	10.1633 8	21.1316 2	0.7292	
At most 4	0.13754 1	4.88293 9	14.2646 0	0.7566	
At most 5	0.06410 6	2.18634 5	3.84146 6	0.1392	

 Table 3: Summary of Johansen Cointegration Test

Source: Researchers computation

Table 3 indicates that trace have only 4 cointegrating variables in the model while Maximum Eigenvalue indicated only 2 cointegrating variables (*see also* appendix 8). Both the trace statistics and Eigen value statistics reveal that there is a long run relationship between the variables. That is, the linear combination of these variables cancels out the stochastic trend in the series. This will prevent the generation of spurious regression results. Hence, the implication of this result is a long run relationship between economic growth and other variables used in the model.

Regression Results

The results of the regression test is presented in table 4 below.

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Dependent				
Method: Least Squares				
Sample:	1999 2023			
Included of	oservations: 2	25		
Variable	Coefficie nt	Std. Error	t-Statistic	Prob.
С	13.65292	1.586529	8.605529	0.0000
TRAL	3.103851	0.001931	5.993892	0.0001
TARF	- 0.016923	0.048691	-3.195943	0.0005
QUO	- 0.102660	0.002789	-4.539390	0.0002
TAXE	- 0.303048	0.041463	-4.797047	0.0003
SUB	0.302470	0.006804	1.363060	0.0200
R-squared	0.737018	F-statistic		12.3311 8
Adjusted R-squared	0.677249	Prob(F-statistic)		0.00000 9
S.E. of regression	1.473944	Durbin-Watson stat		1.89336 1

Table 4: Summary of regression results

Source: Researchers computation

Evaluation of estimates

Focusing on the individual coefficients, the intercept (C) is 13.65292 and is highly statistically significant (Prob. = 0.0000). This suggests that even when all the trade-related variables are zero, the predicted GDP growth rate is approximately 13.65%. The coefficient for Trade Openness (TRAL) is positive (3.103851) and highly statistically significant (Prob. = 0.0001). This indicates that a one-unit increase in trade openness is associated with a 3.103851 unit increase in GDP growth rate, holding other factors constant. This finding supports the notion that increased trade openness is beneficial for economic growth in Nigeria.

Conversely, the coefficients for Import Tariffs (TARF), Import Quotas (QUO), and Export Taxes (TAXE) are all negative and statistically significant. Specifically, the coefficient for TARF is -0.016923 (Prob. = 0.0005), suggesting that higher import tariffs are associated with lower GDP growth. The coefficient for QUO is -0.102660 (Prob. = 0.0002), indicating that the implementation of import quotas is negatively related to economic growth. Similarly, the coefficient for TAXE is -0.303048 (Prob. = 0.0003), implying that increased export taxes are detrimental to GDP growth. These results align with economic theory that trade barriers can hinder economic expansion.

The coefficient for Export Subsidies (SUB) is positive (0.302470) and statistically significant (Prob. = 0.0200). This suggests that an increase in export subsidies is associated with a positive impact on GDP growth, albeit the significance level is slightly lower compared to the other variables. This finding might indicate that government support for exports through subsidies can contribute to economic expansion in Nigeria. Overall, the regression results highlight the complex relationship between trade policies and economic growth in Nigeria, emphasizing the positive role of trade openness and export subsidies, while indicating the negative consequences of import tariffs, import quotas, and export taxes.

From the regression analysis, it is observed that all the variables conform to the a priori expectation of the study. Thus, table 5 summarises the a priori test of this study.



Danamatana	Variables		Expected	Observed	Conclusion
rarameters	Regressand	Regressor	Relationships	Relationships	Conclusion
β_0	GDP	Intercept	+/-	+	Conform
β_1	GDP	TRAL	+	+	Conform
β_2	GDP	TARF	-	-	Conform
β3	GDP	QUO	-	-	Conform
β_4	GDP	TAXE	-	-	Conform
β_5	GDP	SUB	+	+	Conform

Table 5: Summary of economic a priori test

Source: Researchers compilation

Evaluation based on statistical criteria

The regression analysis examines the relationship between trade flows and economic growth in Nigeria, using GDP growth rate as the dependent variable and trade openness, import tariffs, import quotas, export taxes, and export subsidies as independent variables. The R-squared value of 0.737018 implies that approximately 73.7% of the variation in GDP growth rate can be explained by the variations in the included trade-related variables. The adjusted R-squared of 0.677249 accounts for the number of predictors and is still reasonably high, suggesting a good fit of the model to the data. The Durbin-Watson statistic of 1.893361 is close to 2, indicating that there is likely no significant positive or negative autocorrelation in the residuals. The results indicate a statistically significant model, as evidenced by the F-statistic of 12.33118 with a probability of 0.000009, which is well below the conventional significance level of 0.05. This suggests that the independent variables as a group have a significant impact on Nigeria's GDP growth rate. The F-test is applied to check the overall significance of the model. The F-statistic is instrumental in verifying the overall significance of an estimated model. The hypothesis tested is:

H₀: The model has no goodness of fit

H₁: The model has a goodness of fit

Decision rule: Reject H₀ if $F_{cal} > F_{\alpha}$ (k-1, n-k) at $\alpha = 5\%$, accept if otherwise.

Where

 V_1 / V_2 Degree of freedom (d.f)

 $V_1 = n-k, V_2 = k-1:$

Where; n (number of observation); k (number of parameters)

Where k-1 = 6-1 = 5

Thus, n-k = 35-6 = 29

Therefore, $F_{0.05(5,29)} = 2.21$ (From the F table) ... F-table

F-statistic = 12.33118 (From regression result) ... F-calculated

Since the F-calculated > F-table, we reject H_0 and accept H_1 that the model has goodness of fit and is statistically different from zero. In other words, there is significant impact between the dependent and independent variables in the model.

Evaluation based on econometric criteria

In this subsection, the following econometric tests are used to evaluate the result obtained from our model: autocorrelation, heteroscedasticity and multicolinearity.



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Test for Autocorrelation

Using Durbin-Watson (DW) statistics which we obtain from our regression result in table 4, it is observed that DW statistic is 1.893361 or approximately 2. This implies that there is no autocorrelation since d* is approximately equal to two. 1.893361 tends towards two more than it tends towards zero. Therefore, the variables in the model are not autocorrelated and that the model is reliable for predications.

Test for Heteroscedasticity

This test is conducted using the white's general heteroscedascity test. The hypothesis testing is thus:

H₀: There is a heteroscedasticity in the residuals

H₁: There is no heteroscedasticity in the residuals

Decision rule: Reject H_0 if the computed f-statistics is significant. Otherwise, accept at 5% level of significance. Since the F-calculated > F-table, computed f-statistics is significant. Hence, since the F-calculated is significant, we reject H_0 and accept H_1 that the model has no heteroscedasticity in the residuals and therefore, reliable for predication.

Test for Multicolinearity

This means the existence of an exact linear relationship among the explanatory variable of a regression model. This means the existence of an exact linear relationship among the explanatory variable of a regression model. This will be used to check if collinearity exists among the explanatory variables. The basis for this test is the correlation matrix obtained using the series. The result is presented in table 6 below.

Variables	Correlation Coefficients	Conclusion
TRAL and TARF	0.409527	No multicollinearity
TRAL and QUO	0.150126	No multicollinearity
TRAL and TAXE	0.639668	No multicollinearity
TRAL and SUB	0.149280	No multicollinearity
TARF and QUO	0.451401	No multicollinearity
TARF and TAXE	0.721823	No multicollinearity
TARF and SUB	-0.065427	No multicollinearity
QUO and TAXE	0.516913	No multicollinearity
QUO and SUB	-0.009027	No multicollinearity
TAXE and SUB	0.103633	No multicollinearity

Table 6: Summary of Multicollinearity test

Source: Researchers computation

Decision Rule: From the rule of Thumb, if correlation coefficient is greater than 0.8, we conclude that there is multicolinearity but if the coefficient is less than 0.8 there is no multicolinearity. We therefore, conclude that the explanatory variables are not perfectly linearly correlated.

Test of research hypotheses

The t-test is used to know the statistical significance of the individual parameters. Two-tailed tests at 5% significance level are conducted. The Result is shown on table 7 below. Here, we compare the estimated or calculated t-statistic with the tabulated t-statistic at $t_{\alpha/2} = t_{0.05} = t_{0.025}$ (two-tailed test).

Degree of freedom (df) = n-k = 35-6 = 29

So, we have: $T_{0.025(29)} = 2.045 \dots$ Tabulated t-statistic

In testing the working hypotheses, which partly satisfies the objectives of this study, we employ a 0.05

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level of significance. In so doing, we are to reject the null hypothesis if the t-value is significant at the chosen level of significance; otherwise, the null hypothesis will be accepted. This is summarized in table 7 below.

Variable	t-tabulated (t _{a/2})	t-calculated (t _{cal})	Conclusion
Constant	±2.045	8.605529	Statistically Significance
TRAL	±2.045	5.993892	Statistically Significance
TARF	±2.045	-3.195943	Statistically Significance
QUO	±2.045	-4.539390	Statistically Significance
TAXE	±2.045	-4.797047	Statistically Significance
SUB	±2.045	1.363060	Statistically Insignificance

Source: Researchers computation

We begin by bringing our working hypothesis to focus in considering the individual hypothesis. From table 4.6, the **t-test** result is interpreted below;

For TRAL, $t_{\alpha/2} < t_{cal}$, therefore we reject the null hypothesis and accept the alternative hypothesis. This means that TRAL have a significant impact on GDP.

For TARF, $t_{\alpha/2} < t_{cal}$, therefore we reject the null hypothesis and accept the alternative hypothesis. Thus, TARF do have a significant impact on GDP.

For QUO, $t_{\alpha/2} < t_{cal}$, therefore we accept the null hypothesis and reject the alternative hypothesis. This means that QUO do has a significant effect on GDP.

For TAXE, $t_{\alpha/2} < t_{cal}$, therefore we accept the null hypothesis and reject the alternative hypothesis. This means that TAXE do has a significant effect on GDP.

For SUB, $t_{\alpha/2} > t_{cal}$, therefore we accept the null hypothesis and reject the alternative hypothesis. Thus, SUB has no significant impact on GDP.

CONCLUSION AND RECOMMENDATIONS

The analysis reveals several key findings regarding the impact of trade-related variables on Nigeria's GDP growth rate. Firstly, the intercept term, while not representing a direct trade impact, is highly significant, suggesting that even in the absence of the included trade policy variables, other underlying factors contribute to a baseline level of economic growth. More importantly, the coefficient for Trade Openness is strongly positive and statistically significant, indicating a robust and positive relationship between the degree to which Nigeria is open to international trade and its economic growth rate. This suggests that policies promoting greater trade openness are associated with improved economic performance.

Secondly, the findings concerning import protection measures are consistent and significant. The coefficients for both Import Tariffs and Import Quotas are negative and statistically significant. This implies that policies that restrict imports, whether through price-based measures like tariffs or quantity-based measures like quotas, are associated with a reduction in Nigeria's GDP growth rate. These results support the conventional economic view that protectionist import policies can hinder economic expansion by limiting competition, increasing costs, and potentially reducing access to necessary inputs.

Thirdly, the impact of export-related policies shows a mixed picture. The coefficient for Export Taxes is negative and statistically significant, indicating that imposing taxes on exports is detrimental to economic growth. This is likely because export taxes reduce the profitability of exporting, discouraging production and potentially leading to a decline in export volumes and associated economic benefits. In

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contrast, the coefficient for Export Subsidies is positive and statistically significant, suggesting that government support for exports through subsidies is associated with an increase in GDP growth. This could be due to subsidies making Nigerian exports more competitive in international markets, leading to increased export volumes and economic activity.

Finally, beyond the individual coefficients, the overall model demonstrates a strong explanatory power, with a high R-squared value, indicating that the included trade variables collectively account for a substantial portion of the variation in Nigeria's GDP growth. The model's overall statistical significance, as indicated by the F-statistic, further validates the importance of these trade-related factors in influencing Nigeria's economic performance over the studied period. The absence of significant autocorrelation in the residuals also strengthens the reliability of the findings.

The study provides compelling evidence that trade flows and related policies have a significant impact on economic growth in Nigeria. The findings strongly suggest that greater trade openness is beneficial for the Nigerian economy, contributing positively to GDP growth. Conversely, protectionist measures such as import tariffs and quotas are found to be detrimental to economic expansion. While export taxes also appear to hinder growth, export subsidies are associated with a positive impact. Therefore, policies aimed at promoting trade openness and strategically utilizing export support, while reducing barriers to imports and avoiding export taxation, are likely to be conducive to fostering sustainable economic growth in Nigeria.

Based on these findings, several policy recommendations can be made. The Nigerian government should prioritize policies that promote greater trade openness, including simplifying trade procedures, reducing non-tariff barriers, and actively participating in international trade agreements. Furthermore, a critical review of existing import tariffs and quotas is recommended, with a view to gradually reducing or eliminating those that are found to be significantly hindering economic growth. While export subsidies appear to have a positive impact, their implementation should be carefully considered to ensure they are cost-effective and do not lead to market distortions or retaliatory measures from trading partners. Finally, the imposition of export taxes should be avoided or minimized, as they are shown to have a negative impact on economic growth.

The implications of this study for the Nigerian economy are substantial. The findings underscore the importance of trade as a key driver of economic growth. By adopting policies that facilitate trade and reduce barriers, Nigeria can potentially unlock greater economic potential, attract foreign investment, and create employment opportunities. The negative association between import protection and growth suggests that moving towards a more liberalized trade regime could lead to increased efficiency, lower consumer prices, and greater access to essential goods and services. Conversely, maintaining or increasing trade barriers could stifle economic activity and limit Nigeria's integration into the global economy. The study provides empirical support for policymakers to make informed decisions regarding trade policy, aiming to leverage the benefits of international trade for sustainable and inclusive economic development.

REFERENCE

- 1. African Development Bank. (2021). African Economic Outlook 2021.
- 2. Agbasi, O. E., Edoko, T. D. & Ezeanolue, U. S. (2018). Economic Growth and Poverty Reduction in Nigeria. *Sumerianz Journal of Business Management and Marketing*, 1(1), 31-36.
- 3. Aghion, P., Bloom, N., Blundell, R., Griffith, R., & Howitt, P. (2005). Competition and Innovation: An Inverted-U Relationship. *The Quarterly Journal of Economics*, *120*(2), 701-728.
- 4. Amiti, M., & Konings, J. (2007). Trade, Technology, and Productivity: Evidence from Firm-Level Data. *The Review of Economic Studies*, 74(1), 361-398.
- 5. Central Bank of Nigeria. (2022). Annual Economic Report 2022.

Kielce: Laboratorium Wiedzy Artur Borcuch



- 6. Coe, D. T., & Helpman, E. (1995). International R&D Spillovers. *European Economic Review*, 39(5), 859-887.
- 7. ECOWAS Secretariat. (2023). ECOWAS Trade Liberalisation Scheme.
- 8. Edoko, T. D., Agbasi, O. E. & Ezeanolue, U. S. (2018). Effect of Small and Medium Enterprises on Employment Generation in Nigeria. *International Journal of Trend in Scientific Research and Development* (IJTSRD), 2(4), 1544-1553.
- 9. Edoko, T. D., Agbasi, O. E. & Ezeanolue, U. S. (2018). Government Intermediation and Small and Medium Enterprises Performance in Nigeria. International Journal for Innovative Research in Multidisciplinary, 4(5), 248-252.
- 10. Grossman, G. M., & Helpman, E. (1991). Innovation and Growth in the Global Economy. MIT Press.
- 11. National Bureau of Statistics. (2023). Foreign Trade Statistics.
- 12. Nigerian Economic Summit Group. (2021). NESG Economic Outlook 2021.
- 13. Nwakoby, N. P., Dibua, E. C. & Ezeanolue, U. S. (2019). Determinants of Business Performance in the Nigerian Manufacturing Sector. *International Journal of Trend in Scientific Research and Development (IJTSRD)*. 3(3), 760-766.
- Ofodeme, E. A., Ezeanolue, U. S. & Nwakoby, N. P. (2019). Effect of Human Resource Development on Organization Productivity: A Study of Selected Manufacturing Firms in Anambra State, Nigeria. *International Journal of Trend in Scientific Research and Development (IJTSRD)*. 3(3), 607-613.
- 15. Okpala, N. E., Ezeanolue, U. S., Edoko, T. D. (2018). Commercial Banking and Economic Growth in Nigeria. Open Journal of Economics and Commerce, 1(1), 68-75.
- Otugo, N. E., Edoko, T. D. & Ezeanolue, U. S. (2018). Effect of Small and Medium Enterprises on Economic Growth in Nigeria. *Sumerianz Journal of Business Management and Marketing*, 1(2), 73-78.
- 17. Oyejide, T. A. (2000). *Trade Policy and Regional Integration in Africa*. African Economic Research Consortium.
- 18. Ricardo, D. (1817). On the Principles of Political Economy and Taxation. John Murray.
- 19. Rodríguez, F., & Rodrik, D. (2000). Trade Policy and Economic Growth: A Skeptic's Guide to the Cross-National Evidence. *NBER Macroeconomics Annual 2000*, *15*, 261-324.
- 20. Smith, A. (1776). The Wealth of Nations. W. Strahan and T. Cadell.
- 21. United Nations Development Programme. (2023). Human Development Report 2023/2024.
- 22. World Bank. (2020). Trade and Development Report 2020.
- 23. World Bank. (2022). Nigeria Economic
- 24. TO. (2023). World Trade Report 2023.

