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## **Analysis of the Impact of Tariffs on Economic Growth in Nigeria**

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### **ABSTRACT**

*This study looked at the impact of tariff on the economic growth of Nigeria. It examines the extent to which tariff has brought about economic growth in Nigeria between the period of 1980-2013. Tariff which is a form of tax or trade restriction levied on imported goods, in order to encourage the infant industries from international competitions, can boost economic growth. The Ordinary Least Square method of regression was used to analysis the relationship between tariff and economic growth. The T-test was used to determine the individual parameter estimate. The F-test was used to determine significance of the entire regression. Econometric analysis also was used to determine the impact of the tariff and other variables like real gross domestic product as a proxy to economic growth, export, exchange rate and trade openness on economic growth in Nigeria. The findings from the regression result showed that tariff has a positive statistical significant impact on economic growth in Nigeria. In conclusion, tariff including the other variables all work together to stimulate economic growth. It was recommended that policy on trade should be made to improve tariff imposition in Nigeria.*

*Keywords: Economic growth, Nigeria, Tariff and Econometric analysis.*

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## INTRODUCTION

Protection in form of tariff and free trade has long been argued in economic theory and economic history. However, it is possible to say that the precise relationship between trade barriers in form of tariff or free trade in the long run economic growth remains a difficult theoretical issue that is being explored in a variety of ways.

Smithian and Ricardian, reinforced by [1] recommend free trade as the best commercial partners. This doctrine that is focused on improvement in the level of income is based on static framework that may limit the interpretation of the long run effect.

Relationship between economic growth and tariffs depends mostly on the characteristics of a country. Tariff can benefit a country depending on whether it is developed or developing (a developed one seems to lose) either big or small country or whether it has comparative advantage in sector receiving protection. Tariffs are imposed on imported goods and are used to refer to schedule of duties applicable to a list of commodities as the commodities imported or exported. These taxes could be assessed either as a percentage of volume of the commodity concerned (*ad valorem*), or on the basis of some physical features as: weight, length, and specific gravity [2].

Tariffs rate vary according to the type of goods imported. Import tariffs will increase the cost of importers and increase the price of imported goods in the local markets, thus lowering the quantity of goods imported. Tariffs may be imposed on export, and in an economy with floating exchange rates, export tariffs have similar effect as import tariffs. However, since exports are often perceived as “hurting” local industries while import tariffs are perceived as helping local industries, export tariffs are seldom implemented [3].

Protectionists believe that infant industries must be protected in order to allow them grow to a point where they can fairly compete with the larger mature industries established in foreign countries. They believe that without tariffs, infant industries will die before they reach a size of economies of scale, industrial infrastructure, and skills in manufacturing have progressed sufficiently to allow the industry to compete in the global market. They argue that governments have a responsibility to protect their corporations through tariffs as well as putting their

companies at a competitive disadvantage by enacting laws for social goods. They believe that these laws end up destroying domestic companies and ultimately hurting the citizens, even when these laws were designed to protect.

Tariffs are always seen as a redress to social and economic costs of trade or as a way of enhancing economic advantages. However, in most cases, economists argue that erecting barriers on trade impose costs in the economy that exceeds the benefit obtained. These costs can rise from insufficient resource allocation, intractable implementation and foreign retaliation. The precise relationship between tariffs and economic growth has long remained a difficult theoretical issue that is being explored in variety of ways. The question often asked by international and development economists, as well as their supporters is: which one leads to a faster economic growth? Is it free trade or protected trade? Economists are still in search for the acceptable answer to this question.

### **STATEMENT OF THE PROBLEM**

Tariffs can be used to protect infant industries and this tariff has its problem it creates. High tariff and other forms of trade barriers have been regarded as impediments to economic growth. The use of tariffs to protect and to stimulate the production of the import substitution in Nigeria has obvious problem. By protecting these industries, inefficiency may be encouraged.

High tariffs and other forms have burdened consumers with high price and have shielded producers from international competition. However there is a safe-guard against frequent tariff changes and high tariff rates between 1995 and 2005. Nigeria's tariffs policy has faced great challenges of cumbersome and lengthy imports procedures, frequent change in tariff. High duties on consumer goods widen the gap between applied and bound rate with their associated negative impact on the economy.

The Nigeria government can make adequate and reliable tariff policies, and also encourage these infant industries to produce those goods that tariff has been imposed on; the quality of this goods should match those formally imported. This study should be able to expose how the tariff imposed and the structure of this

tariff can make an impact on the economic growth of Nigeria and how this can improve the economy as a whole.

### **RESEARCH QUESTIONS**

- What is the nature of the relationship between tariffs and economic growth in Nigeria?
- Does tariff actually lead to economic growth in Nigeria?
- In what ways has tariff contributed to economic growth in Nigeria?

### **OBJECTIVES OF THE STUDY**

The overall objective of the study is to analyse the impact of tariffs on economic growth in Nigeria and the specific objectives are as follows:

- To determine the nature of the relationship that exists between tariffs and economic growth in Nigeria.
- To examine if tariff actually leads to economic growth in Nigeria.
- To ascertain the contribution of tariff to economic growth in Nigeria.

### **STATEMENT OF HYPOTHESES**

The working hypotheses for this study are as follows:

1. There is no significant relationship between tariffs and growth, thus it has not caused any economic growth in Nigeria.
2. Tariff has no influence and impact on economic growth of Nigeria.
3. Tariff has not contributed to economic growth in Nigeria.

### **TARIFF**

Many scholars have given exposition of what constitutes tariff, According to [4], tariff is a fixed percentage tax on value of an imported good levied at the point of entry into the importing country. [5], agreed with Todaro, viewing tariff as a strategy of taxing imported or exported goods and service from one country to another. [6], views tariff from its real locative power and concluded that it help to reallocate resources within the imposing country's economy. [7], agrees that tariff reduces inflow of foreign investment into the imposing country. [8], considered tariff as an instrument of Policy used to alleviate unemployment problem in the

imposing country. The increasing prominence of tariff in the development of nations had led to a lot of debates over its desirability. A number of complementary and competing theories have been proposed to explain the nature, possible social and economic consequences of tariff to some extent. Some see it as having a positive impact on the nation's development while others see it as a harbinger of evil. Thus a brief review of some related literature will be of immense importance to this research work.

### **THEORETICAL LITERATURE**

Basically, international trade has been regarded as an engine of growth in any economy either less developed or advanced economy. Trade is widely regarded as a catalyst for growth both on the demand and supply side of the economy. But the critical question that had been asked and vigorously debated in the history of economic thought has been: Does trade restriction such as tariff encourage growth? The answer to the above question has been found in the plethora of literature and such answer has appeared to be diverse in nature.

The neo-classical model of growth argued that trade barrier such as tariff has no effect on the long run rate of growth of output regardless of the existence of market imperfections.

[9], Neo-classical theorists analysis finds that tariffs tend to benefit domestic producers and government at the expense of consumers and those net welfare effects of tariff on the importing country are negative [10], asserts that in the presence of certain market failure, such as positive production externalities in import-competing sector, the long run levels of GDP can be higher with trade restriction than without. In such case, data sets covering relatively short time will show a positive association between tariff and economic growth of output. According to [11], if domestic economy is imperfect tariff maybe used as the second best policy instrument to correct the imperfections, Venable sees tariff as a corrective policy. [12], noted that the recent disequilibrium on balance of payment can be achieved through high tariff policies; this will eliminate wastage of foreign exchange on importation with the result that the growing deficit, thereby imposing and strengthening the balance of payment account. The neo-classical theorists see tariff as increasing the price of goods. In this view, imposition of tariffs may lead

to a deficit in the balance of payment of the imposing country of surplus. Traditional trade theorists, in their view suggest that developing countries impose welfare loss on themselves by hindering international price with tariffs. [13], in this connection said that if the positive effect of tariffs on terms of trade is largest than the negative effect, then protection will bring gain. [14], tagged an “optimum tariff”. This Optimum tariff has shown that the large country can improve its own based on the fact that its optimal tariff rate is greater than zero.

[15], viewed that all forms of barriers such as tariffs impede the full advantages of international specialization that are to be gained from unrestricted trade. This protective device according to them causes a shift of resources from more efficient to less efficient uses, and restricts consumer freedom of choice. [16], states that the imposition of trade barriers hurt rather than helped growth in the long run, and for many countries the large degree of protection bears a good part of the balance for their appointing macro-economic performance.

The review of literature based on Adam Smith and David Ricardo, reinforced by the [17], theorem recommends free trade as commercial policy because of its positive effects on growth and welfare of both commercial partners. [18], argues that it is possible that many countries trade policy depended much more on personal performance and ideas of politicians, because history has recorded that, the countries constituents had strong preference about trade policy. [19], put it that trade plays crucial role in the economic development. According to him, in 1950's and 1960's the idea of import substitution policy was wide spread through tariff, was believed to be a vehicle for economic development in the LDCs. It was tough that infant industries should be protected in their early stage. He maintains that some countries created state owned enterprises in the new industries and provided direct investment for them. In some period, some countries adopted another protectionist measures sustaining a fixed nominal exchange rate. Thus, it was considered that by having such policy the import of capital goods would be cheaper and this would attract investment. This is important when the country is large and has monopoly power in the markets, they can gain from the terms of trade effect when impose tariffs. The tariffs reduce the amount the country wants to import, so foreign exporters lower their prices. Other researchers like [19] and [20] put the development ahead of trade regime policy. Country has to identify its

own model of development then what institutional reforms have to be adopted, where trade liberalization is a part of such reforms. According to the [21] policies towards foreign trade are among the more important factors promoting economic growth and convergence in developing countries. [22], in his own view, said that all the forms of barriers tend to impede international specialisation. He also said that tariffs and free trade have long been debated, and it is impossible to say that there is a relationship between them and economic growth. However, this remains a difficult theoretical issue that still being explored in variety of ways.

### **EMPIRICAL LITERATURE**

The empirical literature on the impact of tariff on the one hand and trade liberalization on the other hand on economic growth has resurfaced over the past two decades. [18], used economic history approach to study the effects of protection on economic growth from 1860-1950. They employed a sample of 35 countries using cross-sectional analysis; their findings showed that tariff favoured growth before the Second World War. Study after study has shown that tariffs cause reduced economic growth of the country imposing them.

Nigeria's import bans and high tariffs is costing the country the efficiency of its custom duties and not helping the manufacturing sector for which it is designed to protect. There are basically the findings of a report by [11], of the World Bank's transport unit. In their investigations of Nigeria's economy, they reveal that the impact on the Nigerian economy has been largely negative while, it has also impacted negatively on the efficiency of Nigeria's custom. The high number of tariff restriction also facilitates corruption, as it is seen as an avenue to extort money from those bringing in banned goods illegally into the country. [5], on his study "tariff and growth" also agreed with [8], that European protectionist countries grew faster in the 19th century. [10], conducted a study on the impact of tariff on productivity growth; he used Korean industry data to estimate the impact of nominal tariff and non tariff barriers on growth productivity. This result shows that the barriers are negatively related to growth and it was also significant.

[13], on the study of trade policy and economic growth according to them there is a little evidence that lower tariffs and non tariff barriers to trade have strong correlation with economic growth. [17], in his work examines the responsiveness of domestic prices to tariff levies and to what extent the pace of industrialisation has

quicken in response to tariff protection in Nigeria. He emphasizes that an import restricting measure usually has two aspects; a demand diverting aspect and a supply constraining aspect. He points out that major tariff changes occurred in 1959-1960, 1961-1963, 1963-1964, 1965-1966 and 1968 with corresponding significant increases in domestic price levels during those periods. He said that the extent to which industrialisation has quickened in response to which tariff protection has been demonstrated by the manufacturing sector between 1970 and 1980, manufacturing industry output rose on the average by more than 100% during this period. Major increase was recorded that industries produced non-durable consumer goods which were originally almost wholly imported. He summarizes that tariff increases domestic productivity, and also in order to better appreciate the extent to which tariffs must have stimulated industrial growth in Nigeria.

[19], conducted a study on the impact of trade openness on growth performance, poverty and inequality in 73 developing countries. They use two criteria for identifying the developing countries that have globalised the fastest; by how fast the share of trade in GDP has risen and second, by cuts in tariff. By these criteria the top 3 of the 73 developing countries in the sample that liberalised the most doubled their share of trade to from 16% to 33% and cut tariff by 22% from 57% to 35%. [9], in one of his works evaluated the impact of tariff protection on the direction of resources in manufacturing industries. He found out that tariffs influenced foreign private industrial investment positively, thereby enhancing economic growth. [7], on the study of trade liberalisation policies used 10 developing countries, his study shows that non-tariff and barriers to import, reduction in tariffs were most significant factors in those countries development. The results show that trade liberalisation on those countries impacted on economic growth; the conclusion was that the elimination of export tariffs and total removal of protective tariff should be the priority of those countries. [7], carried out a study on international trade and productivity growth. The results show that tariffs are negatively related to growth productivity and also that increase international trade has little effect on productivity growth.

[15], used data of 87 countries to assess the impact of trade liberalisation. Their result shows that free trade indeed serves as an important way for the



international technology transfer, thus enhancing economic growth. [22], examined the growth effect on 108 economies of a large number of measures on trade openness using econometric models and regressions, the results show that on the basis of trade volumes, there is a positive and significant association between trade openness and growth. Likewise, the findings also showed that there was positive and significant relationship between trade barriers and growth. He concluded that trade barriers in form of tariffs can actually be that there is no necessary relationship between an economy's protectionist or liberal in its trade policies and economic growth. Economic growth is the result of several factors:

- Accumulation of resources
- Improvements in technologies for converting those resources into goods
- Investment inefficient public infrastructure.
- Innovation of new goods and services.

The neo-classical growth models trade barriers have no impact on the long run growth rate of an economy, although they can be shown to reduce the level of income available for reasons like dead weight losses or tariffs. Thus, for economist to claim that open economies tend to grow faster than closed economies it must be because reducing trade barriers raises the other factors that produce growth.

### EVOLUTION OF TARIFF POLICY

There have been four fairly recognisable stages in the Nigeria tariff structure.

- ***Pre-Independence Tariff Structure:*** During this periods Nigeria kept her economy largely open. The main statutory trade barriers that existed were in form of modest tariff schedule. Tariff rates during this period were generally low for capital goods, such as machinery and metal products through 10% -15% for international goods to 25% - 30% and 30% - 33% for consumer goods and durable goods respectively. [17], and national bureau of statistics (1984).
- ***Tariff Structure in the 1960's:*** This period, it became important for the nation to take steps to tackle her balance of payment deficit that started accumulating from 1955 and to encourage and protect its local industries. In 1965 the duties on imports of most consumer goods had risen to 33 and quarter percent, and that of goods rose to 10% while the rates on durable consumer goods and luxuries went up to 40% and 100.

- **Tariff Structure in the 1970's:** The period 1971 to 1972 witnessed substantial reduction in the existing tariff rates of abolition of existing duties and creation of duty free concessions. This period was the era of import liberalisation in Nigeria. In 1974, there were substantial reductions in tariff ratio for industrial raw material food another consumer goods transport vehicle and building material.
- **Tariff Structure in 1980's:** The downward trend in the tariff in the 1970's tariff structure had its effect in 1980's. the country's exchange rate situation worsened, the foreign exchange rate that stood at 3112.5 million naira fell to 781.7 million naira by the 1980's. In 1982 the tariff was revised and those goods or item with 100% duty or more were reduced to 45%. (Central Bank of Nigeria Annual Report, 1988).

### METHODOLOGY

This study will adopt applied econometric approach, which is concerned with the estimation parameter of economic relationship and with the prediction by means of this parameter of the valuable of economic variables. The relationship of economic theory which can measure with one or another econometrics test which means there is relationship in which some variables we postulated as causes of variation of other variable [11].

The method to be employed in this research work is the simple equation techniques of economic simulation for its analysis adopted. The advantage of using Ordinary Least Square test is based on the best linear unbiased estimation [10].

### METHODOLOGICAL FRAMEWORK

The methodological framework appropriate for this study is the log-linear gravity model. Gravity models have been extensively used to model aggregative trade flow at the country successfully to model trade flows at a more disaggregated level. It takes the mathematical form thus

$$F = \frac{gm(m)}{D}$$

$$F_{ij} = \frac{g_{mi}(mi)}{D_{ij}}$$

Where:

F= trade flow.

M= the economic mass of each country

D= the distance

G= constant

I and j= time or period

### MODEL SPECIFICATION

Applied econometrics is concerned with the estimation of the parameter of economic relationships and with the prediction (by means of these parameters or the value of economic variables). The relationships of economic theory which can be measured with one or another econometric technique are such that there is a relationship in which some variables are independent or dependent between each other in the relationship. In consequence, this research work makes use of analytical tools which consist of the ordinary least square (OLS). The research adopts the linear regression technique to analyse the data.

Specification of a model is based on available economic theory relating to the phenomenon being studied. Here, the dependent and independent variables, the sign of the parameter of the function are determined, and the determination of the mathematical form of the model is formed.

In carrying out this study on the relationship between tariff and economic growth, we developed a model as follows;

$$RGDP = F(TAR, TOP, EXR, EXP) \dots \dots \dots 1$$

The model above simply states that the real gross domestic products are a function of tariff, trade openness, exchange rate and export. Equation (1) above is transformed into econometric linear regression model for it to be amendable, the linear form of equation (1) becomes:

$$RGDP = \beta_0 + \beta_1 TAR + \beta_2 TOP + \beta_3 EXR + \beta_4 EXP + \mu \dots \dots \dots 2$$

Adopting a log-linear specification, taking the natural logarithm both sides of the equation and assuming linearity among the variables give.

$$LRGDP = \beta_0 + \beta_1 TAR + \beta_2 TOP + \beta_3 EXR + \beta_4 EXP + \mu \dots \dots \dots 3$$

Where; RGDP=Real gross domestic product as a proxy for economic growth

LTAR= Tariff

TOP= Trade openness

EXR= Exchange rate

LEXP= Export

Bs= Coefficient ( $\beta_0$ ..... $\beta_4$ )

$\mu$ = Error term or dummy variable.

### DATA

The purpose of this session is to present, evaluate and analyze the regression results of the models postulated as well as verification of the various working hypothesis of this research which are drawn from the objectives of the study. The results of the OLS regressions of the model are presented below. The parameter estimates are also subjected to various economic, statistical and econometric tests. Finally, we analyze our results in order to verify whether they conform to the working hypothesis of this study.

### PRESENTATION OF REGRESSION RESULT

*Table 1: The Ordinary Least Square (OLS)*

Variable	Coefficient	Std. Error	t-statistic	Prob.
C	0.093689	0.470091	0.199299	0.8434
LTAR	0.411364	0.065127	6.316379	0.0000
TOP	0.006438	0.002757	2.335376	0.0266
EXR	0.002598	0.000926	2.805802	0.0089
LEXP	0.458033	0.046429	9.865150	0.0000
R-Squared: 0.996189; F-statistic: 1895.023; Prob(F-statistic): 0.000000; Adjusted R-squared: 0.995663; Durbin-Watson Stat: 1.808638				

*Source: Author's Computation*

### RESULT INTERPRETATION

From the above, the interpretation of the result as regards the coefficient of various regressors is stated as follows:

The value of the intercept which is 0.093689 shows that the Nigerian economy will experience a 0.093689 increase when all other variables are held constant.

The estimate coefficients which are 0.411364 (L TAR) show that a unit changes in tariff will cause a 41.1364% increase in LR GDP, 0.006438(TOP) shows that a unit changes in trade openness will cause a 0.6438% increase in LR GDP, 0.002598

{EXR} shows that a unit change in exchange rate will cause a 0.2598% increase in LR GDP. 0.458033{LEXP} shows that a unit changes in export will cause a 45.8033% increase in LR GDP.

### EVALUATION BASED ON ECONOMIC APRIORI CRITERIA

The test is aimed at determining whether the signs and sizes of the results are in line with what economic theory postulates. Thus, economic theory tells us that the coefficients are positively related to the dependent variable, if an increase in any of the explanatory variables leads to a decrease in the dependent variable.

Therefore, the variables under consideration, their parameter and priori signs have been summarized in the table below.

This table will be guarded by these criteria

When  $\beta > 0$  = conform.

When  $\beta < 0$  = not conform.

*Table 2*

Variables	Expected signs	Estimate	Remark
LR GDP	Positive (+)	$\beta > 0$	Conform
LTAR	Positive (+)	$\beta > 0$	Conform
TOP	Positive (+)	$\beta > 0$	Conform
EXR	Positive (+)	$\beta > 0$	Conform
LEXP	Positive (+)	$\beta > 0$	Conform

*Source: Author's Computation*

From the above table, it is observed that all actually conforms to the economic theories.

A positive relationship which exists between LR GDP, LTAR, TOP EXR and LEXP indicates that an increase in LTAR and LEXP will result in a positive change in the

Growth Real Gross Domestic Product. This conforms to the priori criteria because an increase or high LTAR and LEXP over the years will increase Real Gross Domestic Product in the economy.

### EVALUATION BASED ON STATISTICAL CRITERIA

#### a. Co-efficient of Multiple Determinants ( $R^2$ ):

The  $R^2$  (R-Squared) which measures the overall goodness of fit of the entire regression, shows the value of  $0.996189 = 99.6\%$  approximately 100%. This indicates that the independent variables account for about 100% of the variation in the dependent variable.

#### b. The Student's T-test:

H0: The individual parameters are not significant.

H1: The individual parameters are significant.

#### Decision Rule:

If  $t\text{-calculated} > t\text{-tabulated}$ , we reject the null hypothesis {H0} and accept the alternative hypothesis {H1}, and if otherwise, we select the null hypothesis {H0} and reject the alternative hypothesis {H1}.

Level of significance = at 5% = 0.025

Degree of freedom:  $n-k$

Where  $n$ : sample size,  $K$ : Number of parameter.

**Table 3a: The t-test is summarised**

Variables	t-value	t-tab	Remark
LRGDP	0.199299	$\pm 2.04$	Insignificant
LTAR	6.316379	$\pm 2.04$	Significant
TOP	2.335376	$\pm 2.04$	Significant
EXR	2.805802	$\pm 2.04$	Significant
LEXP	9.865150	$\pm 2.04$	Significant

*Source: Author's Computation*

The t-statistics is used to test for individual significance of the estimated parameters  $\{\beta_1, \beta_2, \beta_3 \text{ and } \beta_4\}$ .

From the table above, we can deduce that LTAR (6.316379), TOP (2.335376), EXR (2.805802) and LEXP (9.865150) are greater than  $\pm 2.04$  {going by absolute values} which represent the t-tabulated implying that LTAR, TOP, EXR and LEXP are statistically significant.

On the other hand, the intercept (0.199299) is less than the t-tabulated ( $\pm 2.04$ ) signifying that the intercept is statistically insignificant.

### c. F-Statistic:

The F-statistic is used to test for simultaneous significance of all the estimated parameters. The hypothesis is stated;

$$H_0: \beta_1 = \beta_2 = \beta_3 = \beta_4$$

$$H_1: \beta_1 \neq \beta_2 \neq \beta_3 \neq \beta_4$$

Level of significance:  $\alpha$  at 5%

Degree of freedom:  $\frac{k-1}{n-K}$

From the result, f-calculated {1895.023} is greater than the f-tabulated {2.69}, that is,  $f_{cal} > f_{tab}$ . Hence, we reject the null hypothesis  $\{H_0\}$  that the overall estimate has a good fit which implies that our independent variables are simultaneously significant.

### TEST FOR STATIONARITY

An attempt was made to investigate the time series characteristics of the variables (LRGDP, LTAR, TOP, EXR, and LEXP) of the model in this study. A variable is stationary when it has no unit root which is denoted in literature as  $I(0)$ . A non-stationary variable can have more unit roots and denoted as  $I(d)$ ,  $d$  is the number of unit roots that the variables must be differenced in order to make it stationary. Similarly, if a time series has to be differenced twice (that is, take the first difference of the first difference) to make it stationary, we call such a time series integrated of order 2. At normal level, none of the variable is stationary, so we test at the first differential.

**Table 3b: Results of Augmented Dickey Fuller (ADF) Stationarity test**

Variables	ADF-Statistic	Critical value	Order of Integration
<b>LRGDP</b>	-5.010772	-3.653730	1
	(0.0003)	-2.957110	
		-2.617434	
<b>LTAR</b>	-5.160248	-3.653730	1
	(0.0002)	-2.957110	
		-2.617434	
<b>TOP</b>	-5.470044	-3.653730	1
	(0.0001)	-2.957110	
		-2.617434	
<b>EXR</b>	-5.388626	-3.653730	1
	(0.0001)	-2.957110	
		-2.617434	
<b>LEXP</b>	-5.456710	-2.650145	2
	(0.0000)	-1.953381	
		-1.609798	

*Source: Author's Computation*

As can be deduced from the table above, the entire variables are stationary at the first difference for each of the forms of estimated. This implies that log of real domestic product (RGDP), log of tariff (TAR), trade openness (TOP), exchange rate (EXR) are integrated at first order one while log of export (EXPT) is integrated at second order two. So we suspect co-integration between the dependent and independent variables. This result is expected, since most macro- economics' time series data are known to be non- stationary at level form but at the first difference, we carry out co-integration test to ensure that, though most of our variables are non-stationary series expect at the first difference, thus the variables have long term equilibrium between them.

### **JOHANSEN CO-INTEGRATION TEST**

A necessary but not sufficient condition for co-integrating test is that each of the variables be integrated of the same order. The Johnsen co-integration test uses two statistics tests namely; the trace test and the likelihood eigen value test. The first row in each of the table test the hypotheses of no co-integrating relation, the



second row test the hypothesis of one co-integrating relation and so on, against the alternative of full rank of co-integration. The results are presented in table 4 and 5 below.

**Table 4: Co-integration for Trace Statistic test**

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	Critical Value 0.05	Prob.**
None*	0.952684	185.6205	69.81889	0.0000
At most 1*	0.769571	97.14406	47.85613	0.0000
At most 2*	0.672242	54.57755	29.79707	0.0000
At most 3*	0.501332	22.22864	15.49471	0.0042
At most 4	0.068249	2.050004	3.841466	0.1522

**Source:** Author's Computation

Trace test indicates 4 co-integrating equations at the 0.05 level

\*denotes rejection of the hypothesis at the 0.05 level

\*\*Mackinnon-Haug-Michelis (1999) p-values

**Table 5: Unrestricted Co-integration Rank Test (Maximum Eigen value)**

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	Critical Value 0.05	Prob.**
None*	0.952684	88.47642	33.87687	0.0000
At most 1*	0.769571	42.56651	27.58434	0.0003
At most 2*	0.672242	32.34891	21.13162	0.0009
At most 3*	0.501332	20.17864	14.26460	0.0052
At most 4	0.068249	2.050004	3.841466	0.1522

**Source:** Author's Computation

Max-eigenvalue test indicates 4 co-integrating equations at the 0.05 level

\*denotes rejection of the hypothesis at the 0.05 level

\*\*Mackinnon-Haug-Michelis (1999) p-values.

The results of the co-integration test are reported here. The trace-statistic value is shown to be greater than the critical values at both 1% and 5% levels, thus indicating 4 co-integrating equation at both 1% and 5% levels. However, the Max-Eigen Statistic indicates 4 co-integrating equation at 5% level, while it shows no co-integration at 1% level.

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### EVALUATION BASED ON ECONOMETRIC CRITERIA

One of the underlying assumptions of the ordinary least square regression is that the succession values of the random variables are temporarily independent. In the context of the series analysis, this means that an error term  $\{U_t\}$  is not correlated with one or more of previous errors  $\{U_{t-1}\}$ . The problem is usually dictated with Durbin-Watson  $\{DW\}$  statistics.

The Durbin-Watson's test compares the empirical  $d^*$  and  $d_u$  in  $d-u$  tables to their transforms  $\{4-dL\}$  and  $\{4-dU\}$ .

#### Decision Rule:

- If  $d^* < DL$ , then we reject the null hypothesis of no correlation and accept that there is positive autocorrelation of first order.
- If  $d^* > \{4-dL\}$ , we reject the null hypothesis and accept that there is negative autocorrelation of the first order.
- If  $dU < d^* < \{4-dU\}$ , we accept the null hypothesis of no autocorrelation.
- If  $dL < d^* < dU$  or if  $\{4-dU\} < \{4-dL\}$ , that test is inconclusive.

Where:  $dL$  = Lower limit

$dU$  = Upper limit

$d^*$  = Durbin Watson.

From our regression result, we have;

$$d^* = 1.808638$$

$$DL = 1.14$$

$$dU = 1.74$$

$$4-dL = 2.86$$

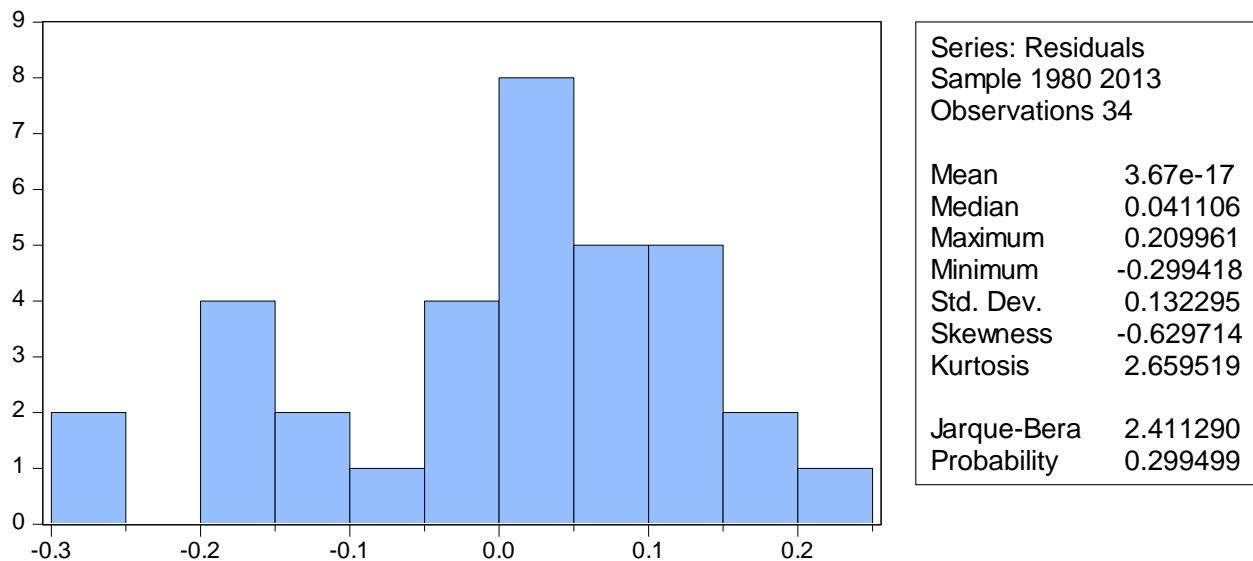
$$4-dU = 2.26$$

Since  $d^*\{1.808638\} < DL, \{1.14\}$  then we reject the null hypothesis of no correlation and accept that there is positive autocorrelation of first order.

#### b. Normality Test for Residual:

The Jarque-Bera test for normality is an asymptotic, or large-sample, test. It is also based on the ordinary least square residuals.

**Table 6: Test of Normality**



*Source: Researchers E-view 8.0 output Result*

The result of the Normality test shows that Jarque-Bera value is 2.411290 with a probability of 0.299499, this probability value, however is more than 0.05 meaning that we cannot reject the null hypothesis; instead we reject the alternative hypothesis and accept the null hypothesis which states that the residual is normally distributed. Based on this however we conclude that the residual is normally distributed. This result is in line with what was desired.

### *c. Test For Heterosedaticity*

**Table 7: Heteroskedasticity Test: Breusch-Pagan-Godfrey**

<b>F-statistic</b>	<b>1.156278</b>	<b>Probability</b>	<b>0.3503</b>
<b>Obs*R-squared</b>	<b>4.676679</b>	<b>Probability</b>	<b>0.3221</b>

*Source: Researchers output Result*

The result of the Heteroskedasticity Test: Breusch-Pagan-Godfrey shows that the prob(F-stat) is 0.3503 while the prob (Obs\* R<sup>2</sup>) is 0.3221, these are greater than 0.05 implying that we cannot reject the null hypothesis instead we reject the alternative hypothesis and accept the null hypothesis which states that there is no Heteroskedasticity or there is a Heteroskedasticity in the model. Based on this, we conclude that the model is Heteroskedasticity which is very much desirable. This however can be said to improve as a result of the introduction of log in the model.

#### d. Test for Multicollinearity:

The term Multicollinearity is due to Ragnar Frisch. Originally it meant the existence of a “perfect” or exact, linear relationship among some or all explanatory variables of a regression model. The problem of multi-collinearity arises when the explanatory variables in a model are correlated such that it becomes difficult to disentangle the separate influence. To know if multi-collinearity is a problem we will use the rule of thumb suggested by Gujarati and Sangeetha (2007:367). The rule states that if the zero-order correlation co-efficient between two independent variables is high. According to Barry and Feldman {1985} criteria; “Multicollinearity is not a problem if no correlation exceeds 0.80”, then multi-collinearity is a serious problem.

**Table 8: Test for Multicollinearity**

	LRGDP	LTAR	TOP	EXR	LEXP	REMARK
<b>LRGDP</b>	0.220986					-
<b>LTAR</b>	-0.030098	0.004241				Nm
<b>TOP</b>	-0.000171	2.49E-05	7.60E-06			Nm, Nm
<b>EXR</b>	0.000121	-9.56E-06	-4.87E-07	8.57E-07		Nm, Nm,Nm
<b>LEXP</b>	0.017463	-0.002695	-1.58E-05	-1.10E-05	0.002156	Nm,Nm,Nm,Nm

*Source: Researchers output Result*

Where M = Presence of multicollinearity

Nm = No multicollinearity.

From the above table, we can conclude that No multicollinearity exists in all the variables, which means that there are no perfect or exact linear relationship among all the explanatory variables of the regression variables.

#### e. Tests for Granger Causality

The granger causality test result between economic growth (RGDP) and inflation in Nigeria (INF) is presented in table 4.9 below.

**Table 9: Granger Causality between LRGDP and INF**

Null Hypothesis	F-Statistics	Prob.
D(LTAR,2) does not Granger Cause D(LRGDP,2)	0.00767	0.9924
D(LRGDP,2) does not Granger Cause D(TOP,2)	0.47005	0.6304

*Source: Researchers E-view Result*

The result in table 9 above reveals that LTAR granger cause economic growth in Nigeria. This means that economic growth can be predicted with great accuracy by using past values of LTAR, all other thing remaining unchanged or held constant. On the other hand, economic growth does not granger cause LTAR. This reveals a unidirectional causal relationship between LTAR and economic growth in Nigeria. From the results above it can be seen that the regression is a best regression model. This is because it met the four conditions required in determining the best regression: the result of  $R^2$  is very high (100%), the model is normally distributed, there is no serial autocorrelation in the model, and there is heteroscedasticity in the model. Based on this, we rely on this model as the best regression model to explain the relationship between the dependent and independent variables.

### SUMMARY OF FINDINGS

In accordance with economic theory this study under the time frame of 1980-2013 (34years), found that tariff, trade openness, exchange rate and export have a positive impact on economic growth in Nigeria. This implies that an increase in any of these variables will cause the Nigeria economy to grow. In addition, tariff, exchange rate and export were not only found to contribute positively to economic in Nigeria, but also were found to be indispensable (statistically significant), in the achievement of economic growth in Nigeria within the period under study. Also, it was found out that tariff does not cause economic, neither does economic growth cause tariff imposition in Nigeria. That is, there is no causality existing between tariff and economic growth in Nigeria.

### CONCLUSION

In conclusion, this study has found out that tariff (LTAR), trade openness (TOP), exchange rate (EXR) and export (LEXP) have positive impact on the economic growth in Nigeria. That is, tariff, trade openness, exchange rate and export are all

economic growth drivers in Nigeria from the research work. Therefore special attention should be paid to their sustenance and development. Also, the importance of trade of trade openness as economic driver should be emphasized as this will go a long way further in growing the Nigeria economy along other variables in this study. Trade barriers in form of tariff should be encouraged in order to boost export of locally produced products in Nigeria, which help boost the domestic economy. Policy makers should pursue trade policies that accommodate tariff.

### **POLICY RECOMMENDATIONS**

Based on the research findings of this study, the following policy measures are hereby proffered for long-term sustenance of economic growth in Nigeria.

- The nature of the relationship that exists between tariff and economic growth as well as the other variables likes trade openness, exchange rate and export in Nigeria all accounted to be positive in this study. Since tariff, trade openness, exchange rate and export had a positive impact on economic growth in Nigeria. Therefore tariff and export are seen as source of income to the government and should be encouraged in large amount in order to help sustain economic growth. Trade openness is another important growth driver and should be given a prime place in our international trade policy. The exchange rate is important in export and in the value of our naira. A favourable exchange rate will increase and encourage export, which in turn increase the per capita income (GDP) and stimulate economic growth in Nigeria.
- It has been found that tariff, trade openness, exchange rate and export actually all help determine economic growth in Nigeria to a large extent and cannot be ignored or over-looked upon. Since they all contribute to economic growth, policy makers should include them in the trade policy and also measures should be made to improve and increase tariff, trade openness, export and exchange rate in order to stimulate growth in Nigeria. Where export will discourage import, tariff will protect infant industries so they can develop. Also a favourable exchange stimulates export in Nigeria. Thus all the variables in this research work, all work together to contribute economic growth.
- In this research study, tariff, trade openness, exchange rate, exports have all improved Nigeria's economy for the period 1980-2013 under study. This can be

seen in the positive relationship they all have with economic growth. These variables also depend on each other to stimulate economic growth in Nigeria. Tariff imposition on import will protect infant industries, thus enhancing export for the new developing industries products. On the other hand, when the exchange rate is high it will encourage export and discourage import; trade openness also depends on export to function well. Therefore, government should rationally maintain a high level of exchange rate as this will encourage export. They should also impose high tariff for newly developing industries to maintain their existence, growth and encourage the export of their products.

- Tariffs impediments in Nigeria have retarded the proper imposition of tariff in Nigeria. This research study has shown tariff to have a positive relationship as well as other variables like trade openness, exchange rate and export with economic growth. To reduce this impediment the government should ensure policy measures and some checks on the activities of the customs authorities that are in charge of the tariffs, to ensure they properly implement the tariff. These tariff impediments can affect the other variables that also help in the economy growth under this research work. This impediment can cause the newly developing industries to be unprotected from foreign competitors and over importations that retard the export of locally produce goods. Thus lowers export and encourages import which in turn, affects our foreign reserve negatively. Also on the other hand a low exchange rate (an overvalued naira) can also discourage export that would have stimulated economic growth.

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