



# THE CAUSAL RELATIONSHIP BETWEEN INTERNATIONAL TRADE AND ECONOMIC GROWTH; THE CASE OF 10 ECONOMICALLY STABLE AFRICAN COUNTRIES

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## ABSTRACT

*As of late, has become a need on the grounds that no single nation can be free because of various resources accessible to every country. Consequently to guarantee sustainable economic development, the components or potential indicators of trade must be of prime concern. In this paper the causal linkage between international trade indicators and economic growth using a panel data-set for 10 economically stable African countries will be analyzed. The data-set are from the period 2000 to 2018. To evaluate the hypothesis theory experimentally we utilize Granger causality tests.*

*Our findings uncover bidirectional causal effect from exports (LNEXPORTS), imports (LNIMPORTS), tax less subsidies on products (LNTAX), primary income payments (LNINC) and capital of formation (LNCAP) to economic growth (LNGNI) and the other way around. The general proof validates the hypothesis that in these 10 countries under viable consideration, international trade contributed to economic growth positively.*

*The policy implication of our study is that by improving international trade indicators and factors for example exports, capital formation, ensuring the strict adherences of tax less subsidies on products and reducing multilateral debts then just will economic growth and sustainable development would be plausible.*

**KEYWORDS:** *Granger causality test; capital formation, economic growth, panel data, international trade, export, import, African countries.*

## 1. INTRODUCTION

International trade is the trading of products and services between countries. Total trade equals exports plus imports. The word trade has been defined in the Oxford Advanced Learner dictionary as “the activity in which people are buying and selling or exchanging the goods and services” (Rai and

Purvashree, 2015). Trading internationally offers buyers and nations the chance to be presented with products and services not accessible in their own nations, or which would be increasingly costly locally. All things considered, some argue that universal exchange really can be awful for smaller nations, putting them at a putting them at a more noteworthy detriment on the world stage.



Economic growth then is a measure of an increase in proportion of real per capital income of a nation which can be sustained over a long significant stretch of time (Clunies, 2009).

Ghana's openness to foreign trade represented 71.7% of GDP in 2018 according to **Country risk Economic indicators (March, 2020)**. This is because the nation is a member of the World trade organization (WTO) and of the ECOWAS and has additionally consented to various partnership agreements. In August 2016, the nation endorsed the Economic and Partnership Agreement with Europe consequently making exports opportunities to Europe possible. Ghana's "Beyond Aid" policy program aimed at reshaping trade dynamics between the country and developed economies gained a lot of notoriety and subsequently have made the export of gold, cocoa, and oil profitable to the nation in terms of economic growth. Additionally from WTO data, Ghana exported goods estimated at a value of USD 14.86 billion while it imported goods with a total value of USD 13.08 billion. Similarly as concerning services, Ghana exported USD 7.42 billion worth of services in 2018 while it imported 9.01 billion worth of services North Africa recorded the second-best development execution in 2016 at 3.0%, floated by recuperation in Egypt of 4.3% and Algeria of 3.5%. Relentless political vulnerabilities and diminished oil creation in Libya, be that as it may, keep on hauling down development in North Africa. Southern Africa recorded the third-best execution locally with development of 1.1%, down from 1.9% in 2015. Nigeria's economy developed by 33.0% in 2018 as against 26.3% the prior year, as indicated by the World Bank. This was accomplished through businesslike policies permitting the nation to successfully export petroleum oils (82.3% of export revenues in 2018 and petroleum gas (11.1%), and imports petroleum oils (29.0%), light-vessels (9.1%), wheat and meslin (3.2%), motor vehicles (2.8%), motor-cycles (1.6%). These policies assisted with advancing and broaden its exports by strengthening national competitiveness and empowering liberalization through the decrease of endowments. Central Africa recorded the most exceedingly awful development execution at 0.8% because of the terrible performance of Equatorial Guinea (estimated at -8.2% in 2016 and -8.3% in 2015), the Republic of the Congo (which declined to 2.5% in 2016, down from 6.9% in 2015) and Chad (estimated at -3.4% in 2016, down from 1.8% in 2015). West Africa, on the other hand, was hauled somewhere by the economic recession in Nigeria, with economic growth contracting to -1.5% in 2016, down from 2.8% in 2015. However, in 2017 and 2018, the ascent in prices and the recovery of exports allowed the trade balance of Nigeria to be positive again (USD 13.15 billion and USD 22.34 billion) respectively (World Bank, 2018).

It is based on the above ideas, that this study looks to empirically inspect the causal association existing between economic growth and international trade in 10 African countries utilizing Granger causality test to proffer fitting policy suggestions based on finding from the study.

One significant commitment of this research will be will be the information overflows to the scholastic writing of other future research. The study will likewise essentially fill the gap in determining whether international trades can granger-cause economic growth in Africa with an exact consideration on the trade factors. It is important that there is anything but a solitary nation which has developed without a useful tool like trade, however the significance of international trade to economic growth relies a great deal on the conditions in which it works and the purpose it serves. The relevance of international trade starts from proof that there is no nation that can create all items as far as merchandise and enterprises which its populace requires for their use and utilization to a great extent owing it to resource contrasts and limitations. It is along these lines inferred that a trade relationship between countries is imperative since incomes created from the export of commodities can be used to import those commodities which cannot be made locally. The targets of the investigation will be to:

1. Examine the impact of international trade on economic growth of Ghana.
2. To determine the long run relationship between the components of international trade and economic growth of Ghana.
3. To identify the causal relationship between the components of international trade and economic growth Ghana.

This paper will be organized and structured as follows; broadly categorized as **Section 2** theoretical literature reviews, **Section 3** the methodologies and data type, **Section 4** the analysis and discussion of the results and **Section 5** conclusions.

## 2. THEORETICAL LITERATURE REVIEW

Many research studies and theoretical underpinnings exist regarding international trade and economic growth. Existing theoretical analysis suggest that inflow of foreign capital can boost net resources for domestic investments which in turn boosts economic growth but however studies regarding the causal relationship between international trade and economic has not been fully tapped. The theoretical linkages between my research and other advanced research of previous studies are structured into three segments below:

### 2.1 Theories of International Trade

International trade exerts considerable effect on economic growth. The classical and neo-classical



economists attached importance to the role international trade plays in a nation's development and regarded it as an "engine of economic growth". Mercantilism is the oldest theory of international trade. Mercantilism was the primary economic system of trade during the 16<sup>th</sup> to 18<sup>th</sup> century. Mercantilist theorists believed that the amount of wealth in the world was static. Mercantilism was based on the understanding that a nation's wealth and power were best served by increasing exports and collecting precious metals, such as gold and silver. Proponents of mercantilism believed that strong nation-states have the opportunity to increase wealth by using a State's military power to ensure local markets and supply sources were protected.

The concept of Absolute Cost Advantage (ACA) is attributed to **Adam Smith (1776)** for his publication "An Inquiry into the Nature and Causes of the Wealth of Nations" in which he countered mercantilism. Smith argued that it was impossible for all nations to become rich simultaneously by following mercantilism because the export of one nation is another nation's import. He stated, instead, that all nations would gain simultaneously if they practiced free trade and specialized in accordance with their absolute advantage. Smith also stated that the wealth of nations depends on the goods and services available to their citizens, rather than their gold reserves. Thus, Smith was advocating international free trade among nations. The principle of absolute advantage refers to the ability of an economic agent (individual, firm or country) to produce a greater quantity of a good or service than competitors, using the same amount of resources. According to **Barry et al. (1858)** the "theory of international trade," is to be understood as embracing the abstract speculations incidental to the subject matter; and the "practice of international trade," as embracing the practical details of business operations. The general principles of the theory and practice of international trade comprehend, therefore, the abstract reasonings of the "theorist," and the deductions and applications of the "practical" man, in the matter of the trade of the United States and England, and in the matter of the trade of the United States and Canada. Special considerations are reserved for the succeeding chapters, and nothing more is aimed at here than a few informal illustrations of principles and practice in their more general form. The theory of absolute advantage in international trade in the book of **Smith et al. 2007** appears where there is made numerous theoretical generalizations on incomes, prices and value. On the basis of Adam Smith's theories, the foundations of the classical liberal school are laid down. Although the concern of authorities to increase the national welfare seemed hard to confute, the Scottish economist, named also the father of market economy, has demonstrated that mercantilist philosophy contributes to

weakening the bases of economy development, reduces the wealth of a country even if some groups of interests have gains. In order to increase the wealth of nations, Adam Smith proposes the idea of free trade between states, free trade allowing countries to specialize in the production of goods and services which have the property of offering competitive advantages. When manufacturers bring on the market goods which have been produced at lower costs, they obtain an absolute advantage compared to the other manufacturers. **Adeleye, Adeteye and Adewuyi (2015)** in their paper seeks to viewing international trade from the perceptive of net export (ie. total export less imports) and exchange rate in Nigeria. Economic development is one of the main objectives of every society in the world and economic growth is fundamental to economic development. Export is considered as one of the very important contributors among them.

## 2.2 Relation between international trade and other macroeconomic factors

**Abubakar et al. (2019)**, in his paper shows that short run causality result shows the presence of short run causality between exports, domestic investment and exchange rate to GDP, running from the variables to GDP. According to **Adeleye et al. (2015)**, from the results obtained, international trade is playing a major role in economic growth of Nigeria but then, of all the variables applied as proxies to international trade, only Total Export remains positive and significant while others remain insignificant. This indicates a major problem in the economy of the nation examined. This is also confirmed from the fact that trade balance is insignificant. The cause of the problem therefore is the existence of monoculture where only oil acts as the sole support of the economy at large without tangible support from other sectors such as industrial, manufacturing, and agriculture. **Mogoe & Mongale (2014)** examined the relationship between foreign trade and economic growth in south Africa using co-integrated vector auto-regression approach. The Empirical investigation exposes that inflation rate, export and exchange rates have a positive relation to GDP while import is negatively related to GDP. **Azeez, Dada & Aluko (2014)** opined that international trade has a significant and positive impact on economic growth. Their result shows a positive relationship between imports, exports and openness on the economy. In his research **Abdullahi et al. (2016)** found that import has positive but insignificant impact on GDP growth. Foreign exchange has negative impact on GDP growth. Therefore, the study concluded that exports impact positively on economic growth of the West Africa and recommended that West African countries should encourage indigenous enterprise for export promotion and import substitution. **Omoju & Adesanya (2012)**



established a significant impact of trade openness on level of per capita income. They point out that trade opportunities in an economy has the ability to enhance growth through greater capital stock, stock of education and higher total factor productivity. **Ahamad et al. (2018)** found that international trade (export and import) has a significant positive impact on economic growth (GDP) in Bangladesh and international trade is strongly positively correlated with economic growth (GDP) in Bangladesh. **Ismail et al. (2010)** their results revealed that exports and investment both have a significant positive impact on economic growth. However, inflation has a significant negative impact on economic growth in the short-run. In the long-run, if there is one percent increase in the total investment, economic growth increases by almost 0.179 percent, while inflation has a negative impact on economic growth by almost 0.032 percent. This analysis demonstrates that, in the long-run, exports led growth hypothesis does not hold in Pakistan, as exports are reported as insignificant factor to advance economic growth. The study done by **Musinguzi et al. (2019)** found that FDI has a negative effect on GDP by \$ -2.46 in Uganda and he recommended that it is vital that policymakers encourage domestic companies to produce goods and services for exports in order to boost economic growth, this is in line with Keynesian theory which advocates for strong government intervention to foster the development of Uganda Foreign Direct Investment and to also ensure that the activities of these investors contribute positively towards Uganda's economic growth. **Lawal & Ezeuchenne (2017)** showed that there is a long run relationship between international trade and economic growth, import and trade openness are both insignificant in the short run but significant in the long run while export and balance of

trade are significant in both the short and long run. The granger causality test showed that economic growth is independent of imports, exports and balance of trade but economic growth is unidirectional with trade openness.

### 2.3 International trade influence on economic growth

International trade plays an important role in the economy of each individual country. It allows to satisfy the needs of the population; stimulates the internal development of the country. International trade is the exchange of goods and services between countries. The issues of international trade were considered by many economists. The representative of neo-classicism E. Heckscher is among them. According to him, foreign trade leads to an increase in the owners' incomes, relative to excess factors of production and export of the product, and stimulates economic growth. **Heckscher et al. (1919)**

## 3. DATA TYPE AND METHODOLOGY

### 3.1 Data type.

This paper will use secondary panel data of 10 African countries that has been applauded by the World Bank for enhancing their economic growth over the years. The datasets are from the period of 2000 to 2018 and were acquired from the World Bank official site. The countries sampled for the purpose of the research are; Ghana, Nigeria, Rwanda, South Africa, Kenya, Ethiopia, Algeria, Morocco, Tunisia and Egypt. The choice for the sample period and country selection is purposefully picked as a result of the immense economic impact these nations have added to the development of Africa furthermore the accessibility of dataset. The total number of observations of the panel is 190. **Table 1** shown below highlights the variables being focused on for the research.

**Table 1 Variable description**

Variable	Description	Measurement	
LNGNI	GNI (current US\$)	Economic growth	dependent variable
LNEXPORTS	Exports of goods and services (current US\$)	International trade	Independent variable
LNIMPORTS	Imports of goods and services (current US\$)	International trade	Independent variable
LNINF	Consumer price index (2010=100, average)	Inflation	control variable
LNINC	Primary income payments (BoP, current US\$)	Income from FDIs	Independent variable
LNCAP	Gross capital formation (current US\$)	trade indicator	Independent variable
LNDEBT	Multilateral debt service (TDS, current US\$)	trade indicator	Independent variable
LNTAX	Taxes less subsidies on products (current US\$)	International trade	Independent variable

### 3.2 Methodology

The research will employ the panel data analysis to examine the causal relationship between international trades of these African countries on economic growth by

using the pairwise granger causality concept. First all the variables will be tested for stationarity and in the event that presence of unit root is observed then the first difference is applied to make them stationary. It is





important to convert non-stationary factors to stationary factors before evaluating the model, in light of the fact that non-stationary variable consistently prompt spurious regression. Along these lines, we will affirm this hypothesis by using the **Levin-Lin & Chu LLC (Levin et al., 2002)**, **Im-Pesaran & Shim IPS (Im et al., 2003)** and **ADF-Fisher and PP-Fisher (Maddala & Wu, 1999)** tests to check whether there is a presence of unit root in the factors. The null hypothesis (ie. p-value > 0.05) of the unit tests assumes that there is unit root in the variables and a p-value <= 0.05 confirms the existence of no unit root. If no evidence of unit root is witnessed at that point then it clears path for the study to continue.

After testing for unit root (stationary), the panel co-integration test will be done. Co-integration implies that two or more panel variables are related to each other based on hypothetical theories called long-run equilibrium relation; although these datasets might be non-stationary, they follow each other over time so that their differences is stable. The tests that will be utilized

are **Pedroni (Engle Granger based) (1999)** and the **Kao (Engel-Granger based)** test. The null hypothesis of no cointegration is rejected if majority of the test shows a significant p-value. (I.e.P-value < = 0.05) or within the 95% confidence interval and accepted elsewhere.

To analyze the causal relationship between economic growth and international trade of these selected countries, the granger causality test which illuminates the heading of causality either bidirectional or unidirectional will be performed. This technique is utilized to unquestionably certify granger causality linkage among the factors. The null hypothesis postulates that no variable granger causes another and the Alternative hypothesis assumes otherwise. The econometric model for the study can be composed as:

Economic growth = *f* (International trade indicators, Income from FDI, inflation)

The variables are transformed into natural logarithm and the resulting models can be found as:

$$LNGNI_{it} = \beta_0 + \beta_1 LNEXPORTS_{it} + \beta_2 LNINC_{it} + \beta_3 LNCAP_{it} + \beta_4 LNDEBT_{it} + \beta_5 LNINF_{it} + \mathcal{E}_{it} \quad (1)$$

$$LNGNI_{it} = \beta_0 + \beta_1 LNIMPORTS_{it} + \beta_2 LNINC_{it} + \beta_3 LNCAP_{it} + \beta_4 LNDEBT_{it} + \beta_5 LNINF_{it} + \mathcal{E}_{it} \quad (2)$$

$$LNGNI_{it} = \beta_0 + \beta_1 LNTAX_{it} + \beta_2 LNINC_{it} + \beta_3 LNCAP_{it} + \beta_4 LNDEBT_{it} + \beta_5 LNINF_{it} + \mathcal{E}_{it} \quad (3)$$

In the equations (1), (2) and (3), LNGNI alludes to economic growth, LNEXPORTS refers to exports of goods and services, LNIMPORTS refers to imports of goods and services, LNTAX alludes taxes less subsidies on products, LNINF refers to consumer price index as measure of inflation, LNINC as primary income payments, LNCAP and LNDEBT as the trade indicators representing gross capital formation and debt service,  $\beta_0$  represents the intercept and  $\mathcal{E}_{it}$  represents the error term (stochastic error term), *i* represents the cross section of the seven countries and *t* is the time period from 2000 to 2018.

## 4. DATA ANALYSIS AND DISCUSSION OF RESULTS

### 4.1. Descriptive statistics

**Table 2** reports the summary statistics of the factors embraced for the study and it reports that the mean and the median are firmly related, the standard deviation are homogenous in nature and Jarque-Bera test affirm that greater part of the factors are not normally distributed. The Kurtosis test confirms that the variables are positive and leptokurtic whiles the Skewness test reports that the factors are negatively skewed. Economic growth over the time frame can be accounted for as 24.61% average rate annually whiles performance of the trade indicators can be presented as 22.10%, 22.31% and 21.40% with regards to exports, imports and tax less subsidy on products. Moreover, inflation recorded an average increase of 4.49% annually.



**Table 2** **DESCRIPTIVE STATISTICS**

	LNGNI	LNEXPORTS	LNIMPORTS	LNTAX	LNINC	LNDEBT	LNCAP	LNINF
Mean	24.61	22.10	22.31	21.40	19.21	18.82	21.42	4.49
Median	24.85	23.70	23.77	22.11	21.09	18.95	23.49	4.57
Maximum	27.03	25.70	25.54	24.44	24.00	21.87	25.30	5.58
Minimum	0.00	0.00	0.00	0.00	0.00	13.01	0.00	0.00
Std. Dev.	2.25	5.69	5.68	3.74	6.26	1.81	6.66	0.58
Skewness	-6.99	-3.38	-3.50	-4.92	-2.53	-0.83	-2.78	-2.51
Kurtosis	76.30	13.34	13.95	28.48	8.07	3.44	9.16	20.21
Jarque-Bera	44078.43	1208.66	1337.13	5906.72	405.26	23.30	544.49	2544.26
Probability	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Observations	190	190	190	190	190	190	190	190

#### 4.2 Panel unit root

To test the hypothesis theory of the presence of unit root in every one of factors the panel unit root test is employed. For this investigation, the **Levin-Lin & Chu LLC (Levin et al., 2002)**, **Im-Pesaran & Shim IPS (Im et al., 2003)** and **ADF-Fisher and PP-Fisher (Maddala & Wu, 1999)** test are used. As indicated by the aftereffects of unit root test introduced in **table 3** it is

observed that all the variables demonstrated the presence of unit root (non-stationary) at level with p-values > 0.05. However when the first differencing was applied it was seen that all the factors became stationary with each having a significant p-value (i.e. **P-value <= 0.05**). As such the null hypothesis indicating that all the panels contain a unit root was rejected and the alternate hypothesis of the absence of unit root was accepted.

**TABLE 3 PANEL UNIT ROOT (LLC,PP,ADF& IM,PESARAN)**

VARIABLES	ADF - Fisher Chi-square				PP - Fisher Chi-square			
	AT LEVEL		AT FIRST DIFFERENCE		AT LEVEL		AT FIRST DIFFERENCE	
	statistic	p-value	statistic	p-value	statistic	p-value	statistic	p-value
LNGNI	10.8387	0.9503	51.0158	0.0002***	3.75811	1.0000	66.9531	0.0000***
LNEXPORTS	5.15265	0.9996	65.4873	0.0000***	3.91533	1.0000	81.9986	0.0000***
LNIMPORTS	3.72190	1.0000	55.4333	0.0000***	4.06721	0.9999	88.1228	0.0000***
LNTAX	28.7947	0.0919	63.4956	0.0000***	13.1366	0.8714	76.0699	0.0000***
LNINC	19.6339	0.4810	51.8246	0.0001***	12.7217	0.8890	65.2875	0.0000***
LNDEBT	23.7421	0.2538	95.7719	0.0000***	20.3338	0.4372	107.545	0.0000***
LNCAP	8.74920	0.9856	57.3883	0.0000***	4.62682	0.9998	76.7355	0.0000***
LNINF	9.90426	0.9699	66.1638	0.0000***	13.4840	0.8557	53.9371	0.0001***

  

VARIABLES	Levin, Lin & Chu t*				Im, Pesaran and Shin W-stat			
	AT LEVEL		AT FIRST DIFFERENCE		AT LEVEL		AT FIRST DIFFERENCE	
	statistic	p-value	statistic	p-value	statistic	p-value	statistic	p-value
LNGNI	1.03332	0.8493	-3.37035	0.0004***	3.72387	0.9999	-3.84858	0.0001***
LNEXPORTS	0.01744	0.5070	-7.13779	0.0000***	2.74348	0.9970	-5.67246	0.0000***
LNIMPORTS	1.36606	0.9140	-7.23859	0.0000***	3.87271	0.9999	-4.72206	0.0000***
LNTAX	-1.3719	0.0851	-7.24958	0.0000***	-0.45208	0.3256	-5.21968	0.0000***
LNINC	-0.1568	0.4377	-5.43246	0.0000***	0.29119	0.6145	-2.81763	0.0024***
LNDEBT	0.73863	0.7699	-9.425	0.0000***	-0.00901	0.4964	-8.68131	0.0000***
LNCAP	1.84681	0.9676	-7.08917	0.0000***	2.87924	0.9980	-4.96572	0.0000***
LNINF	3.24250	0.9994	-3.01269	0.0013***	2.93763	0.9983	-4.96225	0.0000***

Note: \*\*\* indicates 1% significance, \*\* indicates 5% significance and \* indicates 10% significance. Probabilities for Fisher test are computed using an asymptotic chi-square distribution.



### 4.3 Panel cointegration test

Additionally, before evaluating the granger causality test, a co-integration relationship between the variables should be confirmed. This is to assist us investigate if there is a long –run association between the dependent and independent variables. The research employs both the Pedroni Engle-Granger based tests and the Kao Residual co-integration test for this reason. From the outcomes in **table 4** the seven test statistics grouped into two categories: the within-dimension and the between –dimension have 6 out of the 11 tests being significant showing the dismissal of the null hypothesis (H0) of no cointegration. Also the aftereffect of Kao test estimation further backings the case of the presence of cointegration and thus the presence of long-run effects since it has a p-value of 0.0003%.

**TABLE 4 PANEL PEDRONI CO-INTEGRATIONTEST**

Pedroni Residual Cointegration Test-withn-Dimension				
Series: LNGNI LNEXPORTS LNIMPORTS LNTAX				
Null Hypothesis: No cointegration				
	Statistics	P-value	Weighted Statistics	P-value
Panel v-Statistic	11.08808	0.0000***	0.383311	0.3507
Panel rho-Statistic	2.625123	0.9957	1.832211	0.9665
Panel PP-Statistic	0.484930	0.6861	-2.211979	0.0135**
Panel ADF-Statistic	-6.357915	0.0000***	-3.153635	0.0008***
Between-Dimension				
	Statistics	P-value		
Group rho-Statistic	3.176486	0.9993		
Group PP-Statistic	-4.05763	0.0000***		
Group ADF-Statistic	-3.17175	0.0008***		
Kao Residual Co-integration Test				
Null Hypothesis: No cointegration				
	t-Statistic	Prob.		
RESID(-1)	3.653946	0.0003***		

Note: The Pedroni test is asymptotically normally distributed. \*\*\* (\*\*\*) indicates rejection of the null hypothesis at 1% (5%) significance level.

### 4.4 Granger causality test

Evidence from **table 5** below reports that there is granger causality among the variables hence the null hypothesis that none of the variables granger causes the other is rejected. It is prove that there are both unidirectional and bidirectional granger causality among

the factors. The bidirectional causality linkage root from the exports (LNEXPORTS), imports (LNIMPORTS), tax less subsidies on products (LNTAX), primary income payments (LNINC) and capital of formation (LNCAP) to economic growth (LNGNI) of these 10 African countries and vice versa. The bidirectional causality insists that a



change in any of the factors influence the other variable and the other way around. However, the unidirectional granger causality can be followed from the economic growth (LNGNI) to multilateral debt service (LNDEBT) and primary income payment (LNINC) to multilateral debt service (LNDEBT). The unidirectional causality

affirms that the primary variable granger causes the last mentioned however not the other way around.

**TABLE 5**

<b>Pairwise Granger Causality Tests</b>			
<b>H0 : No Granger causality</b>	<b>F-Statistic</b>	<b>P-value</b>	<b>Decision</b>
LNEXPORTS does not Granger Cause LNGNI	0.0048	0.9952	Reject H0
LNGNI does not Granger Cause LNEXPORTS	2.0874	0.1273	Reject H0
LNIMPORTS does not Granger Cause LNGNI	0.0242	0.9761	Reject H0
LNGNI does not Granger Cause LNIMPORTS	1.8115	0.1666	Reject H0
LNTAX does not Granger Cause LNGNI	0.1081	0.8976	Reject H0
LNGNI does not Granger Cause LNTAX	1.0087	0.3669	Reject H0
LNINC does not Granger Cause LNGNI	0.0009	0.9991	Reject H0
LNGNI does not Granger Cause LNINC	1.2291	0.2952	Reject H0
LNCAP does not Granger Cause LNGNI	0.0364	0.9643	Reject H0
LNGNI does not Granger Cause LNCAP	0.3961	0.6736	Reject H0
LNDEBT does not Granger Cause LNGNI	19.2486	0.00000003***	Accept H0
LNGNI does not Granger Cause LNDEBT	1.6453	0.1961	Reject H0
LNINF does not Granger Cause LNGNI	0.4920	0.6123	Reject H0
LNGNI does not Granger Cause LNINF	0.4749	0.6228	Reject H0
LNIMPORTS does not Granger Cause LNEXPORTS	0.2218	0.8013	Reject H0
LNEXPORTS does not Granger Cause LNIMPORTS	0.1901	0.8271	Reject H0
LNTAX does not Granger Cause LNEXPORTS	0.0679	0.9344	Reject H0
LNEXPORTS does not Granger Cause LNTAX	0.1244	0.8831	Reject H0
LNINC does not Granger Cause LNEXPORTS	0.1320	0.8764	Reject H0
LNEXPORTS does not Granger Cause LNINC	0.2407	0.7863	Reject H0
LNCAP does not Granger Cause LNEXPORTS	0.0104	0.9896	Reject H0





LNEXPORTS does not Granger Cause LNCAP	1.0790	0.3423	Reject H0
LNDEBT does not Granger Cause LNEXPORTS	0.0751	0.9277	Reject H0
LNEXPORTS does not Granger Cause LNDEBT	0.2361	0.7900	Reject H0
LNINF does not Granger Cause LNEXPORTS	1.0749	0.3437	Reject H0
LNEXPORTS does not Granger Cause LNINF	0.1351	0.8738	Reject H0
LNTAX does not Granger Cause LNIMPORTS	0.0773	0.9257	Reject H0
LNIMPORTS does not Granger Cause LNTAX	0.0535	0.9479	Reject H0
LNINC does not Granger Cause LNIMPORTS	0.1194	0.8875	Reject H0
LNIMPORTS does not Granger Cause LNINC	0.1528	0.8584	Reject H0
LNCAP does not Granger Cause LNIMPORTS	0.0129	0.9872	Reject H0
LNIMPORTS does not Granger Cause LNCAP	1.1715	0.3125	Reject H0
LNDEBT does not Granger Cause LNIMPORTS	0.0473	0.9538	Reject H0
LNIMPORTS does not Granger Cause LNDEBT	0.3751	0.6878	Reject H0
LNINF does not Granger Cause LNIMPORTS	1.3326	0.2666	Reject H0
LNIMPORTS does not Granger Cause LNINF	0.1261	0.8816	Reject H0
LNINC does not Granger Cause LNTAX	0.0866	0.9171	Reject H0
LNTAX does not Granger Cause LNINC	0.0009	0.9991	Reject H0
LNCAP does not Granger Cause LNTAX	0.0248	0.9756	Reject H0
LNTAX does not Granger Cause LNCAP	0.0081	0.9919	Reject H0
LNDEBT does not Granger Cause LNTAX	0.2320	0.7932	Reject H0
LNTAX does not Granger Cause LNDEBT	0.0655	0.9366	Reject H0
LNINF does not Granger Cause LNTAX	0.2546	0.7755	Reject H0
LNTAX does not Granger Cause LNINF	0.2741	0.7606	Reject H0
LNCAP does not Granger Cause LNINC	0.0967	0.9079	Reject H0
LNINC does not Granger Cause LNCAP	0.0390	0.9617	Reject H0
LNDEBT does not Granger Cause LNINC	5.5908	0.0045***	Accept H0
LNINC does not Granger Cause LNDEBT	0.4271	0.6531	Reject H0



LNINF does not Granger Cause LNINC	0.1171	0.8896	Reject H0
LNINC does not Granger Cause LNINF	0.1800	0.8355	Reject H0
LNDEBT does not Granger Cause LNCAP	0.4983	0.6085	Reject H0
LNCAP does not Granger Cause LNDEBT	0.2002	0.8188	Reject H0
LNINF does not Granger Cause LNCAP	0.0534	0.9481	Reject H0
LNCAP does not Granger Cause LNINF	0.0117	0.9884	Reject H0
LNINF does not Granger Cause LNDEBT	2.1388	0.1211	Reject H0
LNDEBT does not Granger Cause LNINF	0.0068	0.9933	Reject H0

Note: \*\*\* indicates 1% significance, \*\* indicates 5% significance, \* indicates 10% significance

## 5. CONCLUSION

In this paper, we intend to accentuate the danger of confusing the relationship between the selected indicators of international trade and economic growth, proposing the chance to additionally investigate bilateral and unilateral causal impact. The panel data analysis and Granger causality test was utilized within this paper to test causality between the international trade, its indicators and economic growth in 10 African countries over the period 2000–2018.

The study found no unit root within the variables after first differencing but found the presence of long run association between the variables hence confirming a significant and positive effect of the international trade on economic growth. In view of our discoveries from the pairwise granger causality test, it is completely imperative for governmental agencies and institutions to design, create and execute strategies, programs, and policies structured explicitly to empower these countries thrive regarding international trade. At the point when we tested the bidirectional Granger causality between the international trade and economic growth, it affirmed that there are indeed causal linkages from the exports (LNEXPORTS), imports (LNIMPORTS), tax less subsidies on products (LNTAX), primary income payments (LNINC) and capital of formation (LNCAP) to economic growth (LNGNI) and vice versa. The general impression that one can draw from these discoveries is that international trade enhances economic growth through trade policies that are solid to reflect the significance for the economic growth of a country. As such nations which cultivate trade advancement strategies and diversification can profit more from international trade. These findings verify the proof of endogenous growth theories. In light of the finding of the investigation, some arrangement proposals that can be advanced by African countries are:

1. First, plan and execute forward-looking trade progression approaches to upgrade and sustain economic growth.

2. Secondly, these nations need to expand the export of products and services to quicken consistent economic growth. This would involve strategies that assist with improving innovation rate and diminish the importation of products and services.

3) African nations can pay off multilateral obligations gradually and rather enhance their gross formation since there was unidirectional granger causality from the economic growth (LNGNI) to multilateral debt service (LNDEBT) and primary income payment (LNINC) to multilateral debt service (LNDEBT) and not the opposite way. This means countries can only service their debts when incomes are generated and also when there is economic growth.

The study suggests further scholarly researches be conducted using non-linear regression method or the generalized linear model to find out the effect of International trade on economic growth in the East Africa sub-region and perhaps forecast the future patterns.

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