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Does Export and Import Can Accelerates the Economic Growth? The Evidence e from Tanzania Using Time Series Analysis

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Abstract

This paper was undertaken so as to investigate the link between Tanzania's export and import on economic growth and highlight ways and potential sectors to increase Tanzania i's export and reduce imports. This aim of this paper titled "Does Export and Import can accelerates the economic growth?:   The evidence e from Tanzania using Time series . Analysis was examined if the both export and import can accelerate the economic development of Tanzania.Regression analysis on data collected for Tanzania from 2002-2021. Regression tool and Granger tools were employed to analyze the data. Unit root test, cointergration test, Diagnostic test and stability test were also used to assess the validity of the model. The result revealed that shows that there was positive relationship between exports and economic growth. This meant that the export is statistically (181%) have positive relationship with economic growth. This means have direct relation with economic growth in Tanzania. Other variables LNIM and LNOF were not statistically significant to influence the economic growth in Tanzania at the 95% confidence level This means that decrease in LNIM will lead to a decrease in economic growth, Thus, when exports increase, economic growth also increases. Then paper also advocated that the country should encourage other Potential sectors to boost Tanzania's exports are Mining, Tourism, Industry and Agriculture The government should restrict imports through import tariffs and embargoes and provide subsidies and tax incentives to potential export sectors to mobilize domestic production and increase exports.
Keywords: Export, Import, Unit Root, Regression, Economic growth, Tanzania.
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Introduction

Trade represents the larger key provider to GDP of many economies of both developed and developing countries the extent to which an economy is involved in international trade measures its openness. International trading requires the countries to pay for the goods and services in the currency of the export country, that is not only exchange goods, services, and capital but also an exchange of currencies taking place between trading countries. Many African countries are characterized by dependency on one or few export commodities, exposing them to external shocks. The linkage of the extractive sector with the rest of the economy has also remained low and resource-rich countries have usually failed to diversify their economy. Thus the jobs generated by the extractive industries have been few. This is the situation for oil in Nigeria, gold in Ghana, for Zambia's copper, Democratic Republic of Congo's cobalt, Namibia's and Niger's uranium, Guinea's bauxite, and until recently Botswana's diamonds.. As part of the country's Vision 2025, the government is seeking to increase its port to 28 million tons by 2020. Berths one to seven at the port are currently being upgraded at an estimated cost of USD 596 billion, and two more (berths 13 and 14) are due to be built in 2017 (Economic outlook, 2016)

Related literature Review

Discussion of the role that international trade plays in accelerating economic growth, have been still ongoing since several years ago. Several theories have been developed concerning the relationship exists between the two economic indicators and come up with the notion that "international trade is an engine for economic growth". Among theories discussed are classic, neoclassical and modern trade theories. Classical theories recommend that countries can win economically if they all implement free trade. The most known classic theories are the absolute advantage theory developed by Adam Smith and the comparative advantage theory of David Ricardo. Neoclassical theories suggest that countries can gain through free trade by producing goods in which they specialize but with efficient use of resources. The most know Neo-classical theory is the Hecksher-Ohlin Trade Theory (Usman, 2011). In other hand we have Economic growth could be said to comprise three components; capital accumulation, growth in population, eventual growth in the labour force, and technological progress. Capital accumulation results when some proposition of personal income is saved and invested to augment future output and income. The debate on international trade and its impact on the growth of the economy has been given more attention, hence fruits of these empirical works suggest that increased opening to trade or limited trade protectionism is in one way or another connected with increase in the economic growth. Variety of studies indicated mixed results some of them shows positive effect on economic growth while others indicate negative

effect on economic growth. However, in different scenarios mixed conclusions have been drawn by different researchers. Some of these discussions were presented below. This theory focused on a country producing goods in which it has greater productivity and imports the goods with lesser productivity. Tanzania has an absolute advantage in the productions of the products earn the highest export earnings such as sugar, agricultural products and mineral resources. Keho (2017) analyzed the impact of trade openness on economic growth for Cote d''Ivoire over the period 1965 – 2014 in a multivariate framework including capital stock, labour and trade openness as regressors.the finding revealed that trade openness has positive effects on economic growth both in the short-run and long-run. Velnampy and Achchthan (2013), examined the impact of export on economic growth in Sri Lanka using time series approach found positive relationship between export and import on economic growth and were statically significant on economic growth. Mehrara (2011) investigated the causal relationship between export growth and economic growth in developing countries. The finding revealed that there was bidirectional short-run causality between export and GDP growth for non-oil developing countries, where, for oil countries, there is no short-run causality relationship between exports and economic growth. Biarara (2014), conducted a research to examine the relationship between export and economic growth in Ethiopia economy from 1976 to 2011. A bi-variate model is specified and estimated by using Cointegration tests and error correction model. From the estimation of the specified model, we reported that there is a positive relationship between export and economic growth in the long run and short run at 5 percent significance level and evidence in support of the export-led growth (ELG) hypothesis in that export growth has a causal influence on economic growth. The study by Shihab (2014), assessed the role of export in the economic growth process in Jordan using causality tests for data over the period 2000 to 2012. Granger causality was applied to test the causal relationship between export and economic growth. The results showed that there is evidence of uni-directional causality between export and economic growth in Jordan and the direction of causality runs strictly from economic growth to exports. In conclusion, this study provided support for growth-led export in case of Jordan. Abdulkadir et. Al,(2017) examined the impact of export and imports on economic growth of Somalia and employed econometric tools such as OLS and Granger causality. Their finding indicated that economic growth didn't Granger cause export but export does Granger Cause economic growth, this means that there was un-directional causality between export and economic growth, moreover, there was bidirectional causality between export and imports Granger Causality., Egbulonu and Ezeocha (2018) examined the relationship between trade openness and economic growth in Nigeria from the period 1990 – 2015 using the Granger causality tests and autoregressive distributed lag approach. The results of Granger causality test indicated unidirectional causality from GDP to FDI, trade openness to FDI, gross fixed capital formation to trade openness and exchange rate to gross fixed capital formation. The results indicated a long-run relationship between trade openness, FDI and gross fixed capital formation and economic growth. Saaed and Hussain (2015) analyzed the impact of exports on economic growth of Tunisia covering the period from 1977-2012 employing Granger causality and Johansen's Test of cointegration for the long-run association. Their result indicated that economic growth found to follow Granger causality for both export and imports, moreover, the result indicates that there is unidirectional causality among export and imports on economic growth. Sayef and Mabrouk (2017) examined the relationship between exports and import and economic growth in Panama using annual data time series over the period 1980-2015 employing VAR and Granger-Causality tests. The result indicated that there us existence of bidirectional causality from both export and imports to economic growth. Hakimi and Hamdi (2016) advocated that trade liberalization boosted the economies of Morocco and Tunisia by creating new employment opportunities, but liberalization has harmed the ecological environment. Using annual time series data for the period from 1971 to 2013, the study applied a VECM and co-integration tests for single country case study and a panel VECM and panel co-integration for both countries as a group. The result showed bidirectional causality between FDI and carbon dioxide (CO_2 Moyo (2018) examined the relationship between trade openness and economic growth for Ghana and Nigeria covering the period between 1980 and 2016 incorporating trade openness, investment, exchange rate and inflation as regressors. The outcomes suggested existence of a long-run relationship among the variables for both countries.

Methodology

The study was mostly based on n the secondary data and they were outsourced from World Bank database indicator as indicated in Table 1.1 that all data were brought from World Development Indicators 30.3.2023. Sources of these data obtained as indicated in the brackets (LNEG,LNEX, LNIM–World bank national accounts data files and LNFD from International Monetary Fund International Financial Statistics). Annual time series approach was used covering the period from 2001 to 2021in Tanzania. The data set involved four variable such as GDP growth (annual (%), export and import as percentage of GDP, and Official exchange rate. All variables were transformed into logarithm form.

Table 1. 1: World Bank database indicator

Source: Owner construction from database-World bank indicator –updated 30/3/2023

The data were firstly tested through unit root tests using ADF and PP unit root test before converted into first difference to become stationary as tabulated in table 13 and table 1.4 respectively. The data were analyzed by employing OSL method, and Granger causality approach. The model being design was used to analyze the impact of export and import of the United Republic of Tanzania on economic growth whereby GDP growth rate was used as the dependent variable while exports and imports as the independent variables and Official Exchange rate as injected as control variable. The data was presented using Tables and Figures. The common statistical package called Eviews9 was used to generate our data for estimation and analysis.

An appropriate economic model is used to establish the impact of export and import on Tanzania's economic growth. The following standard model is:

$$LNEG_t = f(LNEX_t, LNIM_t, LNFD_t,)\varepsilon \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots 1$$

The mathematical specification of the model is:

$$LNEG_t = \beta_0 + \beta_1 LNEX_t + \beta_2 LNIM_t + \beta_3 LNFD_t + \varepsilon \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots 2$$

LNEG = Economic growth as proxy for economic performance measured by real Gross
              Domestic Product Annual Growth

LNEX   = export as proxy of export of goods and service (% of GDP)

LNIM   = imports as proxy of import of goods and service (% of GDP)

LNFD   = Official exchange rate

t = time

ε = Error term   ε

β = slope coefficient

The main reasons why do we used the log –linear model was because to reduce the gap between the value of variables. The all variable values were changed into log- liner so as to become very small value. . We need to use logarithm because it is very crucial to bring all the variables at the same level.

Discussion of the Result
Unit root tests

This test is conducted so as to avoid misleading spurious regression. Testing the order of integration is a pre-requisite for nearly all time series analysis. In this paper, the study employed the Augmented Dickey-Fuller (ADF) and Philip Person (PP), the results of the unit root tests are described in Table 1.1 and table 1.2 respectively. At the 1 % significant level, the results of ADF and PP unit root test supported that all variables are integrated of order one, nevertheless, all variables are unit root at level and become non-unit root at the first difference

TABLE 1.1 AUGMENTED DICKEY-FULLER UNIT ROOT TEST

VARIABLE	T_STATITCS	P_VALUE l(O)	COMMENT	T_STATITCS	P_VALUE A l (I)	COMMENT	REMARKS
LNEG	-2.998353	0.0531	Stationary	-7.43095	0	Stationary	INTREEPT
LNEX	-1.218362	0.6439	Non-stationary	-3.1883	0.0377	Stationary	INTREEPT
LNIM	-2.217851	0.2078	Non-stationary	-5.413836	0.0006	Stationary	INTREEPT
LNFD	-1.002611	0.7303	Non-stationary	-3.543753	0.0188	Stationary	INTREEPT

Source: construction using Eviews 9

Table1.2 Philips Person unit root test

VARIABLE	T_STATITCS	P_VALUE AT L(O)	COMMENT	T_STATITCS	COMMENT	REMARKS
LNEG	-2.97299	0.0557	Stationary	-7.559959	Stationary	INTREEPT
LNEX	-1.37513	0.5721	Non-stationary	-3.146291	Stationary	INTREEPT
LNIM	-1.79208	0.3726	Non-stationary	-4.808805	Stationary	INTREEPT
LNFD	-1.00299	0.7301	Non-stationary	-3.468545	Stationary	INTREEPT

Source: construction using Eviews 9

COINTEGRATION

The Johansen's cointegration test is used to observe long-run relationship between the dependent and independent variables. The results was presented in Table 1.3. The results suggested the presence of unique co-integrating relationship among the variables under consideration at 5% level of significance. This suggests that the series under thought are determined by at most one common trend, which indicates our variables have long-run equilibrium relationships. This meant the main cointegration among export of good and services, import of goods and services, official exchange rate and economic growth that the regression is not spurious. The next step is to carry out the Granger causality test within pairwise to determine the direction of causality

TABLE 1.3 COINTEGRATION

Hypothesized No. of CE(s	Eigenvalue	Trace Statistic	0.05 Critical Value
None *	0.772641	48.82967	47.85613
At most 1	0.496441	22.16764	29.79707
At most 2	0.409281	9.818652	15.49471
At most 3	0.018886	0.343197	3.841466
None *	0.772641	48.82967	47.85613

Trace test indicates 1 cointegrating eqn(s) at the 0.05 level,
 * denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values
Source: construction using Eviews

Granger causality

Table 1.4 represents the result created from the Granger causality test. This test used to examine whether there is the short-run relationship between export and economic growth as well as remain variables. The results reveal evidence of unidirectional causality where LNEG does not Granger-causes LNEX; LNIM does not Granger-causes LNEG; LNEG does not Granger-causes LNIM; LNFD does not Granger-cause LNEG; and LNEG does not Granger-cause LNFD since their corresponding p-values are greater than the 0.05 levels of significance. The null hypotheses of non-Granger causality running from LNEG to LNEX, from LNIM to LNEG, and from LNEG to LNIM, LNFD to LNEG, and LNEG to LNFD were not rejected at 0.05 levels of significance. The results also reveal that there is no bidirectional causality between LNEX and LNEG. Generally, the Granger causality results don't support growth for Tanzania.

Table 1.4 Granger causality

Null Hypothesis	Obs	F-Statistic	Prob.
LNEX does not Granger Cause LNEG	18	1.51005	0.2572
LNEG does not Granger Cause LNEX		0.21663	0.8081
LNIM does not Granger Cause LNEG	18	0.26740	0.7695
LNEG does not Granger Cause LNIM		0.49157	0.6226
LNFD does not Granger Cause LNEG	18	2.16966	0.1538
LNEG does not Granger Cause LNFD		0.07520	0.928

Source: construction using Eviews

Estimate long run relationship regression

Table 1.5 revealed that only one variable export (LNEX) can influence the economic growth in Tanzania. This meant that the export is statistically (181%) have positive relationship with economic growth. This means have direct relation with economic growth in Tanzania. Other variables LNIM and LNFD were not statistically significant to influence the economic growth in Tanzania at the 95% confidence level This means that decrease in LNIM will lead to a decrease in economic growth (LNEG). Both LNIM and LNFD have negative relationship with economic growth but insignificantly factors to influence the economic growth in Tanzania. This result is consistent with Keho (2017), Velnampy and Achchthan (2013), Biarara (2014)

TABLE 1.5 REGRESSION

Dependent Variable: LNEG			
Method: Least Squares			
Sample: 2002 2021			
Included observations: 20			
Variable	Coefficient	Std. Error	t-Statistic
LNEX	1.819142	0.854441	2.129043
LNIM	-0.603137	0.531693	-1.13437
LNFD	-0.209574	0.150557	-1.391984

Source: construction using Eviews

Summary of the Validity of the Model

The outcomes of the Breusch-Godfrey serial Correlation LM test imply that the model is free from serial correlation problem. However, Jarque-Bera test revealed that the estimated model was not normal distribution (i.e. the residuals are not normally distributed while the blue line of CUSUM was located within two red line, meaning that the mode is stable. And the dependent variable which is economic growth has stability.

Correlation test

The Serial correlation test is very important to be performed in this study, Breusch-Godfrey LM test is used to determine whether the regression model is the best regression to explain the relationship between variables, If the probability value is less than 0.05, reject the HO, otherwise, accept H1. The result of the BGS LM test shows a probability of 0.8633 which is greater than 0.05 significance level. Based on this, we accept (*HO), this means that there is no serial correlation in the model as well as the regression model is the best regression to explain the relationship between variables. Table 1.6 displays the result of serial correlation test up to order 2 is lined out as the probability is greater than 0.05 significance level, therefore there is no serial correlation in obtainable model.

TABLE 1.6 DIAGNIOSTIC TEST: SERIAL CORRELATION

Diagnostic	Statistic	Remarks
Serial Correlation LM test:	F-statistic = 0.112024	There is no Serial Correlation
Breusch-Godfrey	Prob. F(2,15) = 0.8948	
	Obs*R-squared = 0.293963	
	Prob. Chi-square(2) = 0.8633	

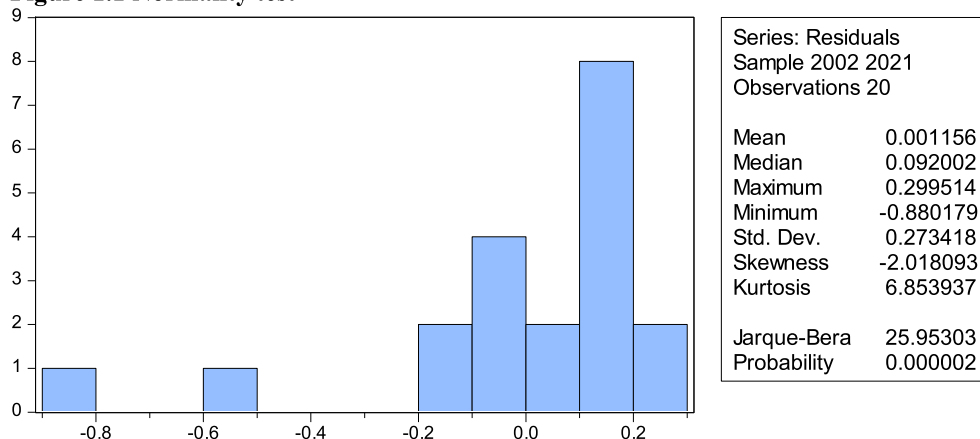**Source: construction using Eviews**

Normality test

The aim of this test is to determine whether the data sampled drawn were from the normally distributed population or not also to find out whether or not the residuals are normally distributed for each equation and for the entire model. This study used Skewness and Kurtosis test in order to test the normality of the data. Table 1.7 shows the results of the normality test indicates a probability of 0.000002 which is less than 0.05 significance level. Based on this, we don't accept H0; for that reason, the residual is not normally distributed. This means that Skewness and the Jarque-Bera is significant as indicated in Figure 1.1 and table 1.7

TABLE 1.7 NORMALITY TEST

Diagnostic	Statistic	Comment
Normality test	F-statistic = 25.95303	The Residual are not normally distributed
Jarque-Bera	Prob. = 0.000002	normally distributed

Source: construction using Eviews

Figure 1.1 Normality test

| Series: Residuals	
Sample 2002 2021	
Observations 20	
Mean	0.001156
Median	0.092002
Maximum	0.299514
Minimum	-0.880179
Std. Dev.	0.273418
Skewness	-2.018093
Kurtosis	6.853937
Jarque-Bera	25.95303
Probability	0.000002

Source: construction using Eviews

Stability Test

The figure 1.2 revealed the outcome of stability test over both CUSUM showing the recursive residual test have accepted the stability test at 5% level of significance, since the blue line of both CUSUM was located within two red line, meaning that the mode is stable. And the dependent variable which is economic growth has stability.

Figure 1.2: Stability test on CUSUM at 5% significance
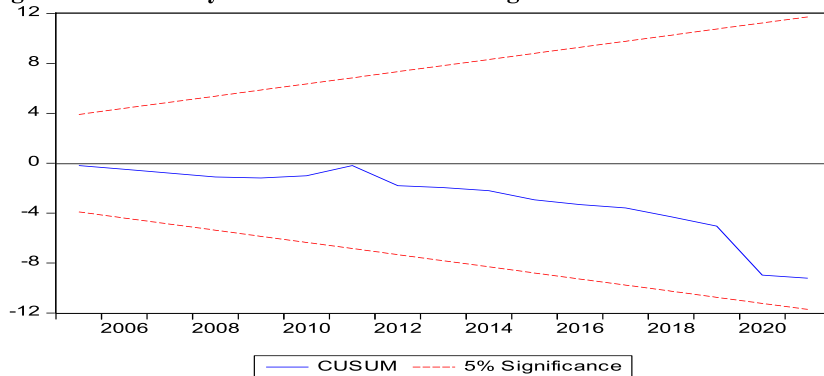
Conclusion

The main objective of this paper was to examine if both exports and imports can accelerate the economic growth in Tanzania. We used time series of annual data for Tanzania over the period of 1993-2016 employing OLS test and Granger causality approach. The findings revealed that there is presence of long-run relationship among variables in the model and that export has a positive and significant effect on economic growth. We also found that no bidirectional granger causality running from export to economic growth. As a result, exports are positively related to economic growth. From the statistical analysis, we concluded that exports has a strong positive relationship with economic growth. Therefore, increase in exports would lead to an increase in economic growth. The study suggested that export can promote economic growth of Tanzania. Moreover, both diagnostic test and stability test that the result is free of serial correlation are data were normally distributed as well as the there was presence of the validity of the model .To achieve this objective, the government should also uses trade barriers such as tariffs,/embargoes to restrict imports so that domestic production increases and more is exported. Moreover, expand the small and medium enterprises to expand the range of export commodities by Tanzania and also expand the production of the existing commodities. The policy makers in Tanzania should focus on further developing its export sectors to reap the gains of international trade and also focus on re-exports as its consists of a major component of total exports. Lastly, the government should give subsidies to the agricultural sector, dairy, ginger farming, beef, fisheries and forestry so that the production increases for export purposes, Further research can also provide a room for academic authors to prepare paper on the impact of trade nexus with foreign debt and taxation on economic growth.

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Appendix: Data Collected				
OBS	LNEG	LNEX	LNIM	LNOF
2002	1.959136	2.658631	2.581204	6.873767
2003	1.898038	2.713895	2.731144	6.945455
2004	2.015412	2.77509	2.865519	6.993322
2005	2.011741	2.832234	2.994527	7.029029
2006	1.876747	2.913165	3.192662	7.132418
2007	1.912285	2.987227	3.340306	7.126919
2008	1.73808	2.968598	3.386487	7.086998
2009	1.661861	2.901106	3.232318	7.185623
2010	1.84633	2.975914	3.333379	7.241098
2011	2.037598	3.074279	3.541882	7.350794
2012	1.504112	3.107813	3.465658	7.359912
2013	1.914211	2.945081	3.388396	7.37623
2014	1.906941	2.894209	3.306404	7.410487
2015	1.818179	2.839366	3.16348	7.596589
2016	1.926744	2.794226	2.948142	7.685743
2017	1.914815	2.717359	2.839	7.709244
2018	1.694692	2.690507	2.884994	7.724792
2019	1.757858	2.77308	2.830342	7.735524
2020	0.691317	2.659944	2.728425	7.738116
2021	1.453739	2.662416	2.836291	7.739692