Journal of Economics and Sustainable Development
ISSN 2222-1700 (Paper) ISSN 2222-2855 (Online)
Vol.15, No.3, 2024

Do Investment and export affect Economic Growth? A case of Zanzibar

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Abstract

This paper investigated the effect of investment and exports on economic growth in Zanzibar. The study used secondary data obtained Zanzibar statistical abstracts downloaded from website of the Office of Chief Government Statistician and other resources from different websites, the data covered the period from 2006 to 2020.The data was tested for unit root, cointegration and causality and was found to stationary at the first deference, variables have long run relationship and no bidirectional granger causality running from investment and export to economic. The regression revealed that investment and export have positive and significant effect on economic growth, hence investments and exports have a strong positive relationship with economic growth, the study suggested that the increase in both investments and exports would lead to an increase in economic growth, the regression was also tested for diagnostic and stability tests the results revealed that the there is no serial correlation and the data was normally distributed.

Keywords: investment, exports, economic growth, regression, Zanzibar

DOI: 10.7176/JESD/15-3-01
Publication date: February 28th 2024

1. Introduction

In 2021, the global foreign direct investment FDI flows reached US $1.58 trillion, it increased by 64 percent from 2020, the increase was contributed by recovery momentum with booming merger and acquisition markets, growth in international project finance due to loose financing conditions and major infrastructure stimulus packages. It was observed that three quarters of the FDI increase by the improvement of inflows in developed countries which reached $746 billion; more than double the 2020 (UNCTAD, 2021).

Zanzibar is working hard to build its economy by altering its business environment to attract investments and expand export growth (RGoZ, 2020). Through this spirit Zanzibar has identified its investment opportunity areas to include blue economy, tourism, islets, manufacturing, energy, agriculture, livestock and husbandry, real estate development and infrastructure (ZIPA, 2024)

This paper intends to firstly describe annual characteristic investment export and economic growth for Zanzibar and secondly, to find if the investment, export and economic growth of Zanzibar have same behavior (trends). Lastly establishes linear relationship between gross domestic products (GDP), investment and export.

2. Literature Review

Ijirshar et al 2019 employed Pooled Mean Group and Mean Group estimators to assess the growth-differential effects of Foreign Direct Investment and Domestic Investment of 41 selected countries in Africa from 1970 to 2017 and revealed that the joint effects of foreign direct investment and domestic investment on growth of African countries was found to be statistically significant, foreign direct investment was found to have negative influence on growth of 24 countries in the short run, further more they found that the estimated influence of domestic investment on growth of most African countries was positive and they concluded that foreign direct investment in Africa has negative effects on growth of host economies in the short-run.

The analysis on the effect of export, import, and investment on economic growth at Riau Islands Indonesia, using data obtained from 2009-2016 revealed that export had an insignificant negative effect on economic growth, while import had a significant negative impact and investment had a significant positive impact (Kartikasari,2017).

Nguyen K, And Nguyen H T (2021), assessed the impact of subcategories of investment sources such as public investment, private investment, and foreign direct investment on economic growth in Vietnam using the data obtained from 63 Vietnamese between 2000 and 2020, the result revealed that in the long run, public investment has a negative effect on economic growth, while domestic private investment, foreign direct investment have

positive influence on economic growth.

Sayef, B (2022) investigated the relationship among domestic investment, exports and economic growth in Greece, used annual data over the period 1970 to 2020 and Vector Error Correction Model. the Empirical results revealed that in the long run there was no causality relationship between exports, domestic investment, and economic growth, while in the short run, it showed that only exports cause domestic investment

Abduvaliev, M (2023), the assessment of the impact of investment on economic growth in Tajikistan using annual time series data for 2005 to 2021, found a long term relationship between investment and per capita GDP growth in Tajikistan.The analysis of the relation between foreign direct investment, economic growth and export in Slovakia for the period 2001-2010 revealed a positive impact of foreign direct investment and positive impact of export on gross domestic product Szkorupová, Z.,(2014).

Rambeli et al (2016) examined the influence of economic growth on foreign direct investment, exports and employment in Malaysia, using ordinary least squares (OLS) method, it was revealed that, exports and employment have influence on economic growth in the long term.

3. Data and Methodology

This study examines the relationship between investment and export on economic growth of Zanzibar. The data were collected from the Zanzibar Statistical abstracts of 20120,2017,2018,2021 and Zanzibar economic survey of 2013 downloaded from the website Office of Chief Government Statistic (OCGS) of Zanzibar and other websites. Some of data were presented in United States Dollar and other were presented using Tanzanian Shillings, the study converted the data to Tanzanian Shillings using the exchange rates provided in the abstracts. The data used in analysis covered the period of 2006 to 2020.The data was tested for the unit roots using the Augmented Dickey-Fuller test, Johansen's integration test, causality, the long run relationship was tested using regression analysis, correlation test, the normality using normality test and stability of the model was tested using the CUSUM. The data involved three variables; growth domestic product (GDP); investments (INVEST) and export (EXPORT), all three variables are measured in Billions Tanzanian Shillings, also all variables were transformed to logarithm. This study wanted to have improved result but failed to collect the data for the year 2021 to 2023

The specification for the regression model used is shown below

$$LN\_GDP = \alpha + \beta_1 LN\_INVEST + \beta_2 LN\_EXPORT + \mu$$

Where:

GDP is gross domestic product a dependent variable

α is a regression constant

INVEST is investment, an independent variable

EXPORT is exports, an independent variable

β_1 and β_2 are the slopes of the equation for the LN_INVEST and LN_EXPORT respectively

μ is the standard error (residue) of the estimate

4. Results

4.1 Descriptive Statistics of Zanzibar's GDP, INVESTMENT and EXPORT

The table 1 below shows descriptive statistics for the GDP, INVESTMENT and EXPORT. These variables are mean, maximum, minimum, and standard deviations. The averages for GDP, INVESTMENT and EXPORT are TZS 2069.367 Billion, TZS 681.0673 Billion and TZS 61.94232 Billion respectively. The GDP of Zanzibar ranges from TZS 510 Billion to TZS 4209 Billion. The INVEST of Zanzibar ranges from TZS 92.85713 Billion to TZS 1698.0 Billion. The EXPORT of Zanzibar ranges from TZS 15.42430 Billion to TZS 145.2297 Billion. The standard deviation for GDP, INVEST and EXPORT are 1291.141, 502.1017 and 40.061705 respectively, the result revealed that GDP, INVESTMENT and EXPORT are increasing from year to year.

Table 1 Descriptive statistics

	GDP	INVEST	EXPORT
Mean	2069.367	681.0673	61.94232
Median	1840.000	692.4630	58.18700
Maximum	4209.000	1698.000	145.2297
Minimum	510.0000	92.85713	15.42430
Std. Dev.	1291.141	502.1017	40.06170

Source: Construction using Eviews

4.2 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 2 and table 3 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, LN EXPORT has unit root at level and all variables were non-unit root at the first difference.

Table 2 ADF Unit Root

Variable	T Statistic	Pvalue At I(0)	Comment	T Statistic	Pvalue At I(I)	Comment	Remark
LN_GDP	-1.840845	0.3475	Stationary	-3.346100	0.0341	Stationary	Regress
LN_INVEST	-3.575362	0.0216	Stationary	-4.879844	0.0025	Stationary	Regress
LN_EXPORT	-2.324030	0.1783	Non-Stationary	-4.612904	0.0039	Stationary	Regress

Source: Construction using Eviews

Table 3: PP Unit Root

Variable	T Statistic	Pvalue At I(0)	Comment	T Statistic	Pvalue At I(I)	Comment	Remark
LN_GDP	-4.803433	0.0025	Stationary	-3.344760	0.0342	Stationary	Regress
LN_INVEST	-3.575362	0.0216	Stationary	-7.528423	0.0000	Stationary	Regress
LN_EXPORT	-2.296215	0.1859	Non-Stationary	-6.270001	0.0003	Stationary	Regress

Source: Construction using Eviews

4.3 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 4. 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 has at most one common trend, which indicates that the variables have long-run equilibrium relationships. This meant the main cointegration among export, investment 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 4:Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.765963	31.11226	29.79707	0.0351
At most 1	0.429335	12.23267	15.49471	0.1461
At most 2 *	0.316154	4.940291	3.841466	0.0262

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

4.4 Granger causality test

Table 5 represents the result created from the Granger causality test. This test used to examine whether there is the short-run relationship between investments and economic growth as well as remain variables. The results reveal evidence of unidirectional causality where LN_ INVEST does not Granger-causes LN_GDP; LN_GDP does not Granger-causes LN_INVEST and LN_EXPORT does not Granger-cause LN_GDP since their corresponding p-

values are greater than 5%; LN_GDP does not Granger-causes LN_EXPORT; LN_EXPORT does not Granger-cause LN_INVEST and LN_INVEST does not Granger-cause LN_EXPORT at the 0.05 levels of significance. The null hypotheses of non-Granger causality running from LN_GDP to LN_INVEST, from LN_INVEST to LN_GDP, and from LN_GDP to LN_EXPORT, LN_EXPORT to LN_GDP, and from LN_EXPORT to LN_INVEST and from LN_ INVEST to LN_ EXPORT were not rejected at 0.05 levels of significance. The results also reveal that there is no bidirectional causality between to LN_GDP, and from LN_EXPORT. Generally, the Granger causality results do not support economic growth for Zanzibar. This results resemble Sayef, B (2022), who found no causality relationship between exports, investment on economic growth, also Sayef, B (2022), found exports cause investment while this study found no causality between exports and investment.

Table 5: Granger causality

Lags: 2			
Null Hypothesis:	Obs	F-Statistic	Prob.
LN_INVEST does not Granger Cause LN_GDP	13	1.85905	0.2172
LN_GDP does not Granger Cause LN_INVEST		1.47654	0.2846
LN_EXPORT does not Granger Cause LN_GDP	13	0.04035	0.9607
LN_GDP does not Granger Cause LN_EXPORT		0.53698	0.6042
LN_EXPORT does not Granger Cause LN_INVEST	13	0.86224	0.4580
LN_INVEST does not Granger Cause LN_EXPORT		2.59224	0.1356

Source: Construction using Eviews

4.5 Estimate long run relationship regression

Table 6 shows that both variables investment (LN_INVEST) and export (LN_EXPORT) can influence the economic growth in Zanzibar. The investment is statistically (6.5%) and the export is statistically (72.5%) at the 95% confidence level, both variables have positive relationship with economic growth. This means that the natural logarithms of both export and investments have direct relation with economic growth in Zanzibar. This results resembles with the results obtained by Szkorupová, Z,(2014) who found positive impact of investment and export on gross domestic product.

Table 6: Regression

Dependent Variable: LN_GDP				
Included observations: 15				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4.180349	1.068498	3.91236	0.0021
LN_INVEST	0.065014	0.158925	0.409087	0.6897
LN_EXPORT	0.724879	0.206955	3.502594	0.0044
R-squared	0.552302	Mean dependent var		7.420612

Source: Construction using Eviews

4.6 Summary of the Validity, Normality and Stability 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

4.6.1 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 or equal 0.05, reject the H_0, otherwise, accept H_1. The result of the BGS LM test shows a probability of 0.0825 which is greater than 0.05 significance level. Based on this, we accept (H0), 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 7 reveals the result of serial correlation test up to order 2 is lined out as the probability is greater than 0.05 significance level, therefore the model has no serial correlation

Table 6: Breusch-Godfrey LM Test (Serial Correlation LM Test)

Diagonistic	Statistic	Remark
Obs*R-squared=4.989874	F-statistic=2.492413	No Serial Correlation
Prob. Chi-Square(2)= 0.0825	Prob. F(2,10)= 0.1324	

Source: Construction using Eviews

4.6.2 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.

Figure 1 shows the results of the normality test indicates a probability of 0.410017 which is more than 0.05 significance level. Based on this, we do not reject H_0: the residual are normally distributed for that reason, the residual are normally distributed. This means that Skewness and the Jarque-Bera is significant as indicated in Figure 1.

Table 7: Normality Test

Diagnostic	Statistic	Comment
Normality test	F-statistic = 1.783114	The Residual are not normally distributed
Jarque-Bera	Prob. = 0.410017	Not normally distributed

Source: Construction using Eviews

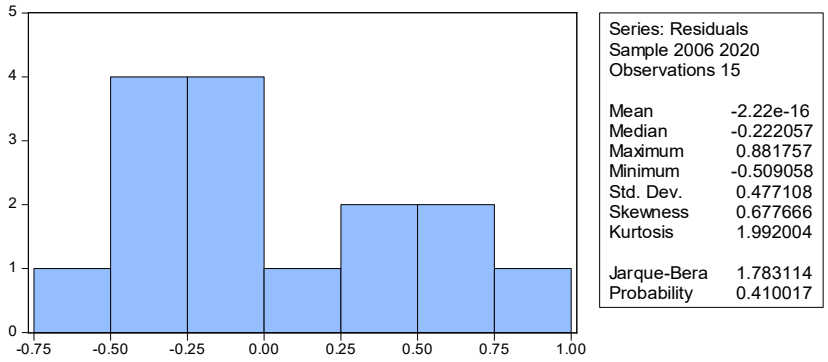

Figure 1: Normality

Source: Construction using Eviews

4.6.3 Stability Test

The figure 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.

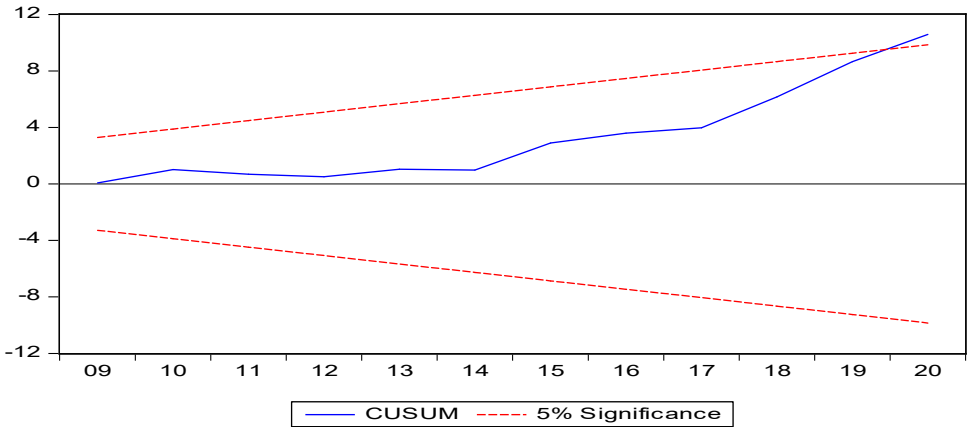

Figure 2: CUSUM Test

Source: Construction using Eviews

5. Conclusion

The main objective of this paper was to examine if both investment and exports can influence the economic growth in Zanzibar. The study used time series of annual data for Zanzibar over the period of 2006-2020 using Regression test and Granger causality approach. The result revealed that there is long-run relationship among variables in the model and that investment and export have positive and significant effect on economic growth. The study also found that there is no bidirectional granger causality running from investment and export to economic growth. More over the result, revealed that investment and exports are positively related to economic growth.

From the statistical analysis, we concluded that investments and exports have a strong positive relationship with economic growth. Therefore, increase in both investments and exports would lead to an increase in economic growth. The study suggested that both investments and export can promote economic growth of Zanzibar positively.

The study also conducted both diagnostic test and stability tests revealed that the there is no serial correlation and the data was normally distributed. To achieve this objective, the government should promote quality production and promote entrepreneurial skill in order to produce for more exported product and promote new areas for sustainable investments.

Acknowledgement

First of all, we would like to express our sincere appreciation and gratitude to our publication to all members of academic staff of School of Business for their valuable contribution and allowing us to continue with this paper by providing us with valuable feedback in every stage when we asked them for proof reading. Lastly, we would like to thanks our lovely families for their moral support.

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Appendix

YEAR	GDP	INVES T	EXPORT	LN GDP	LNINVEST	LNEXPORT
2006	510.00	131.55	15.42	6.234411	4.87941	2.735944
2007	587.30	809.54	21.18	6.375536	6.696468	3.052949
2008	748.10	1517.77	30.19	6.617537	7.324999	3.407484
2009	878.40	354.09	29.74	6.778102	5.869564	3.392644
2010	948.70	154.03	17.91	6.855093	5.037168	2.885175
2011	1367.00	251.56	62.57	7.220374	5.527665	4.136268
2012	1599.00	92.86	74.44	7.377134	4.531062	4.310038
2013	1840.00	1698.00	87.80	7.517521	7.437206	4.475057
2014	2144.00	870.66	133.59	7.670429	6.769248	4.894758
2015	2357.00	692.46	42.41	7.765145	6.540255	3.747313
2016	2749.00	277.48	96.23	7.918992	5.625745	4.566792
2017	3234.00	1105.99	145.23	8.081475	7.0085	4.978317
2018	3733.00	786.92	58.19	8.224967	6.668124	4.063662
2019	4136.00	1023.56	48.57	8.327484	6.931046	3.883074
2020	4209.00	449.53	65.66	8.34498	6.108196	4.184505