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## **Impact of Zanzibar Investment Promotion Authority Approved Projects on Gross Domestic Product of Zanzibar**

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### **Abstract**

The aim of this paper was to examine the impact of Zanzibar Investment Promotion Authority (ZIPA) approved projects on Zanzibar Gross Domestic Product (GDP). The study applied the Ordinary Least Square (OLS) method to estimate the results on yearly secondary data from 1990 to 2019. The estimated results showed that one percent increase in number of projects, capital approved and government expenditure will lead the GDP to increase by 17.7%, 27.3% and 32.5% respectively at 5% level of significant. Unfortunately, net export (EXP) shown to be significant but negatively related with GDP of Zanzibar. A one percent increase in EXP will lead to decrease in GDP by 26.8%. Therefore, it is concluded that ZIPA approved projects have positive significant impacts to Zanzibar GDP. The study then recommends for ZIPA to function in accordance with its role as elaborated in act No. 14 of 2018 since the better performance of this institution will leads to more invested projects with huge amount of capital resulting into more employment creation, rising of household expenditure and the national GDP.

**Keywords:** Ordinary Least Square; GDP and ZIPA.

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## **1. Introduction**

Investment and the GDP Growth in African economy are not homogeneous. Sub-Saharan Africa GDP growth during the 2000-2014 periods was 4.7 percent. Some of East African countries, for instance Tanzania grew at an average rate of 6.6 percent during the last 15 years. This growth is above sub-Saharan Africa and World average growth rates of 4.7 percent and 2.7 percent, respectively, during the same period. According to World Bank (1989), GDP growth is higher for those countries, which have relatively higher investment to GDP ratio. In Tanzania, the economy recorded a growth rate of 7.3 percent in 2013, from 6.9 percent in 2012, as a result of improvement in information and communications, construction, manufacturing and other services [1]. Indeed, high rate of economic growth in Tanzania is being supported by public investments in infrastructure, particularly in the transport and energy sectors [2]. This study assumed that investment made in Zanzibar has a positive correlation with the GDP. This is due to that there are numbers of studies that have shown a relationship between investment and economic growth. However, they get different results depending on a sample, and method used. For instance [3] develops a simple analytical model embodying the distinction between public and private investment and implements it using aggregate public and private gross capital formation data for Bangladesh over the 1972-73 to 2010-11 period. The author uses a co-integration approach. The key findings of the paper suggest that public and private investments have positive effects on economic growth in short-run and long run. Similarly [4] find out that public investment, domestic private investment and foreign direct investment have significant and positive impact on the economic growth in Pakistan. Until recently, there has also been no reliable evidence that addresses the contribution of investment projects done by the Zanzibar Investment Promotion Authority (ZIPA) on the raise of Zanzibar GDP. This indicates a need to understand such relationship if any. The layout of the rest of the paper is as follows: Section 2 provides a brief review of the existing literature on the linkage between ZIPA approved projects and GDP of Zanzibar. Section 3 introduces the methodology and estimation techniques employed in this paper. Section 4 presents the findings and its discussions and finally in section 5 the authors present the conclusion and recommendations with respect to findings.

## **2. Literature Review**

There is a general agreement that the process of economic growth and investment is closely correlated. Both Neo-classical and Marxist as economist emphasis on capital accumulation as a means of raising the level of investment as well as economic growth. By the term economic growth, we really mean the raise of GDP. According to the [5], GDP growth is higher for those countries, which have higher investments. In lower developed countries, investing in infrastructure development is very important in order to open up the economy for producers to produce different commodities using technology. Investment in human capital provides a country with competence workers who will produce in more efficient manner. The paper published by [6] investigates the relationship between domestic investment and economic growth in Malaysia. In order to achieve this purpose, annual data for the periods between 1960 and 2015 was tested by using Correlation analysis, Johansen co-integration analysis of Vector Error Correction Model and the Granger-Causality tests. According to the result of the analysis, it was determined that there is a positive effect of domestic investment, exports and labors on economic growth in the long run term, however, there is no relationship between

domestic investment and economic growth in the short term. These results provide an evidence that domestic investment, exports and labors are seen as a source of economic growth in Malaysia. Reference [7] conducting a study using a unit root and cointegration techniques to determine the long run relationship between GDP and investment for 90 countries using data from World Bank for the period 1960-1992. In the first step of our analysis we found GDP and investment integrated of different orders for 33 countries. The analysis shows no cointegration between GDP and investment for 25 countries and cointegration for 25 countries with both variables of order I (1). The other 7 countries with both variables of order I (0) are in long run relation and do not need cointegration test. To determine the direction of causal effect between GDP and investment we used Granger causality test as the third step of analysis. We found causality in the short run for 15 countries and in the long run for 23 countries. Bi-directional causality is found for 10, unidirectional causality from GDP to investment for 18 and from investment to GDP for 10 countries. The causality from GDP to investment is positive for 11 countries and from investment to GDP for 6 countries. Bi-directional causality is mostly positive between the two variables. Reference [8] investigate the relationship between public investment and private investment using a sample size of 116 countries during the 1980-2006 period. The results suggest that on average public investment has a negative impact on private investment. In addition, they find that the crowding-out effect of public investment through weak public institutions on average outweighs the crowding in effect coming through the channel of increasing in the marginal productivity of private investment. Also [9] examines the interaction between public and private investment by using Granger-causality and cointegration tests and probity analysis using a sample of 25 developing countries. The results obtained shows that the higher the share of Government involvement in an economy, the lower the trade openness, the more restrictions there are on the use of foreign currencies and more stable and developed macro and monetary environment. It is obviously that public investments may crowd out private investments. Reference [10] conducted a study on the relationship between public and private investment as a tool of GDP rise from several developing nations and they find evidence of a negative correlation between public and private investment. However, the correlation appears to be positive for the countries with better institutional set up. Reference [11] investigates the role of investment in economic growth and realizes that investment plays a great role in the country's growth if it is efficiently handled. The study conducted by [12] reveals that economic growth has more causal effect on capital formulation and finally to investment. Moreover, the empirical results show that the domestic private investment and foreign direct investment play an important role in economic growth in Tanzania. Besides, a revealed negative, albeit weak, association between public and private investment suggests that the positive effect of domestic private investment on economic growth becomes smaller when public investment-to-GDP ratio exceeds 8-10 percent. Similarly, foreign direct investment tends to marginally reduce the impact of domestic private investment on growth. These results suggest that public investment and foreign direct investment need to be considered carefully in order to avoid a reduced positive impact of domestic private investment on growth. Domestic saving may be promoted to encourage domestic investment for economic growth.

### **3. Methodology**

#### **3.1. Model Specification**

To achieve the main objective, the study designed the basic model as follows: -

$$\text{Zanzibar GDP} = f(\text{ZIPA approved projects}) \quad (1)$$

Then the model transformed into the regression as:

$$\text{GDPzanz}_t = \beta_0 + \beta_1 \text{ZP}_t + \varepsilon_t \quad (2)$$

Where GDPzanz represents the Zanzibar GDP and ZP as ZIPA approved projects in which two variables will be used namely number of projects (NP) and capital approved (CA). Hence, the linear regression model will be represented as follows:

$$\text{GDPzanz}_t = \beta_0 + \beta_1 \text{NP}_t + \beta_2 \text{CA}_t + \varepsilon_t \quad (3)$$

Assuming that there are other variables than NP and CA which can affects Zanzibar GDP, therefore, the study included Government expenditure (GE) and net export (EXP) as control variables in the regression model (3). Hence, the general estimated model will be transformed as follows:

$$\text{GDPzanz}_t = \beta_0 + \beta_1 \text{NP}_t + \beta_2 \text{CA}_t + \beta_3 \text{GE}_t + \beta_4 \text{EXP}_t + \varepsilon_t \quad (4)$$

Whereby,

$\beta_0$  is the constant term,  $\beta_1 \dots \beta_4$  are the parameters estimated,  $t = 1, 2, \dots$  is the time index for the time from 1990 to 2019 yearly basis and  $\varepsilon$  is the stochastic error term.

### 3.2. Variables and their Measures

**Table 1:** Variables Description and their Measures

Variable	Measure	Expected sign
<b>GDP</b>	Gross Domestic product of Zanzibar	
<b>NP</b>	Number of projects approved by ZIPA	+ve
<b>CA</b>	Amount of capital approved to particular projects	+ve
<b>GE</b>	Amount spend by Government	+ve
<b>EXP</b>	Net Export	+ve

**Source:** Constructed by Authors (2021)

Data of all variables in Table 1 extracted from the Office of Chief Government Statistician and several

statistical abstracts, all dependent variables (NP, CA, GE and EXP) are expected to have positive signs implying the positive influence of these variables on GDP of Zanzibar.

### 3.3. Estimation Techniques

To avoid spurious results, normality and stationarity tests will be conducted due to macroeconomic data to have the feature of random walk [13]. The ADF test developed by [14] was used with the assumption (null hypothesis) that each individual series has unit root problem, whereby it will be rejected when p-value is less than a significance level of 5%. Multicollinearity test was done to test whether there is high correlation between predictor variables. The study also employed the autocorrelation test by using Durbin-Watson test to check whether the error term in one-time period is correlated with the error term in any other time period. The impacts of approved ZIPA projects to Gross Domestic Product of Zanzibar was estimated by using the equation (4) and Ordinary Least Square (OLS) technique was used. This is because under the Gauss-Markov theorem, OLS is the Best Linear Unbiased Estimator (BLUE).

## 4. Findings and Discussions

### 4.1. Descriptive Statistics

Usually, before estimating any regression model, it has to check whether the series of variables used has followed the normal distribution curve. Therefore, the traditional way to confirm the normality is to conduct the descriptive analysis for variables used.

**Table 2:** Descriptive Statistics of Variables

	<b>GDP</b>	<b>CA</b>	<b>NP</b>	<b>GE</b>	<b>EXP</b>
<b>Mean</b>	1.765011	11.29505	2.910469	4.27406	2.901447
<b>Median</b>	1.832549	11.26057	2.967447	5.25872	2.944764
<b>Maximum</b>	2.778819	14.05724	4.204693	4.05724	4.204356
<b>Minimum</b>	0.336472	8.640119	1.386294	3.78227	1.375560
<b>Std. Dev.</b>	0.399895	1.569668	0.819132	0.68970	0.716630
<b>Skewness</b>	-1.099712	0.003330	-0.334666	0.148311	-0.738460
<b>Kurtosis</b>	2.618299	2.242320	2.344720	2.243101	2.447580
<b>Jarque-Bera</b>	5.170769	1.398415	1.952027	1.398415	1.578840
<b>Probability</b>	0.006255	0.496979	0.376810	0.496979	0.367820
<b>Sum</b>	52.95032	284.8516	87.31406	251.8516	94.31406
<b>Sum Sq. Dev.</b>	4.637565	71.45190	19.45832	15.145000	8.958320
<b>Observations</b>	30	30	30	30	30

**Source:** Author's computation using Eviews 11

The Table 2 provides the estimation of mean, median, skewness, kurtosis and probability values. Since, mean over median ratio for each series is seen to be approximately one, the Jarque-Bera test statistics fails to reject the null hypothesis of normal distribution of each variable ( $P > 0.05$ ) and the numeric of kurtosis for each variable found to be close to 3, these results indicate the series had the feature of normal distribution. Therefore, the study has been confirmed the normality of distribution.

#### 4.2. Correlation Analysis

Multicollinearity test is used to test whether perfect or exact relationship between the predictor variables exists. However, the result displayed in the table does not indicate the existence of multicollinearity between predictor variables because the correlation value that exists between all predictor variables is below 20% and they were all not significant. Correlation of all independent variables is less than correlation standard of 0.70 [15]. Therefore, all variables can be used in the model.

**Table 3:** Correlation Matrix

Variables	GDP	NP	CA	GE	EXP
<b>GDP</b>	1.0000				
<b>NP</b>	0.0100(0.7079)	1.000			
<b>CA</b>	0.0817(0.6044)	0.1349(0.6700)	1.0000		
<b>GE</b>	-	0.1836(0.9008)	0.1233(0.7026)	1.0000	
	0.1618(0.5548)				
<b>EXP</b>	-	0.1867(0.9511)	0.1344(0.6017)	0.1532(0.7896)	1.0000
	0.1734(0.6877)				

**Source:** Author's computation using Eviews 11

**Note:** Value in bracket is p-value

#### 4.3. Unit Root Test

ADF was done by comparing the t-statistics calculated and Mackinnon critical values at the 5% level of significance. With the 3 lag interval, the results in Table 4 show that all series were non-stationary at level but become stationary at 5% level of significant when the first difference is taken.

**Table 4:** Results for ADF Unit Root Tests

Variables	At Level			At First Difference		
	T-Statistics	P-Value	Result	T-Statistics	P-Value	Result
<b>GDP</b>	-2.537898	0.1177	Non stationary	-4.130048	0.0000	Stationary
<b>NP</b>	-1.233884	0.6458	Non stationary	-3.826469	0.0006	Stationary
<b>CA</b>	-0.977759	0.7476	Non stationary	-3.464822	0.0015	Stationary
<b>EXP</b>	0.779157	0.9911	Non stationary	-2.173203	0.0356	Stationary
<b>GE</b>	-2.227799	0.2013	Non stationary	-2.201123	0.0422	Stationary

*Source: Author's computation using Eviews 11*

#### 4.4. Ordinary Least Square Method

The results from the estimated equation (4) showed that, the coefficient of the constant term is 0.14 implying that at zero performance of the various explanatory variables used, investment decision stands at 0.14 units. According to regression findings as presented in Table 5, the adjusted R squared from the estimated equation (4) is 0.75, indicating a model is a good and can explain the explanatory variables by 75%. Moreover, the result indicates a Durbin Watson of 1.837 that meet requirement of Rule of thumb. A rule of thumb shows that normal value should range from 1.5 to 2.5. Therefore, since in our case the value of Durbin Watson is 1.837, serial correlation is not of our concern. Below are the detailed elaborations of the ZIPA approved projects factors that affect the GDP of Zanzibar as estimated regression result has revealed.

**Table 5:** Results of Regression Analysis

Variable	Coefficients	Std. errors	T-Statistic	P  t
C	0.141213	0.002210	3.630407	0.0453
Capital Approved	0.273050	0.155825	2.166931	0.0370*
Number of projects	0.177380	0.056267	2.735993	0.0323*
Government Expenditure	0.324590	0.079070	3.412172	0.0132*
Net Export	-0.267720	0.066975	3.710165	0.0500*
R-squared	0.891435	F-statistic)	7.004826	
Adjusted R-squared	0.750032	Prob (F-statistic)	0.000202	
S.E. of regression	0.014213	Durbin-Watson stat.	1.837344	
Sum Squared Residuals	0.005360			

*Source: Author's computation using Eviews 11*

*Note: \* means significant at 5%*

Moreover, the results from Table 5 show that all variables NP, CA and GE have significant positive relationship on GDP of Zanzibar except EXP was significant but had a negative relationship. The estimated regression results indicate that when other things remain constant a one percent increase in CA will lead to 27.3 percent increase in GDP of Zanzibar. That means as capital approved by ZIPA increases it makes the GDP of Zanzibar to increase too. This is very good for ZIPA as the degree of risk involved in the allocation of the funds is minima and that the management is keen into making decisions on who's to be given the funds based on CAMPARI. This result complies with [6] who investigates the relationship between domestic investment and economic growth in Malaysia, and argued that for the GDP growth to happen the government of any country has to invest. The result also shown that when Number of Projects approved by ZIPA increased by one percent leads to increase Zanzibar GDP by 17.7 percent. Generally, Number of Projects approved indicates the government is ready to support new ideas to be generated and operated, so as to maintain and to help the people and eventually the growth of the economy. This result agreed by [16] who found the GDP growth is higher for those countries which have higher investments. The government expenditure seen to have high impacts to Zanzibar GDP comparing to those variables used. When all other things remain constants, it affects the GDP by 32.5 percent when it increased by only one percent. That means government expenditure can influence the GDP of Zanzibar. The same result based on GE is explained by [17] who suggest that government spending on infrastructure and human resources are positive and significant impact on economic growth if they are implicitly financed from taxes and insignificant if they are financed by foreign loans. While this can only be obtained when the government invests in the viable projects. At 5% level of significant, one percent increasing in net export leads to the decrease of the GDP by 26.8 percent. The EXP shown to have a negative relationship with GDP of Zanzibar. This outcome is likely due to low productivity and competitiveness of Zanzibar export in global markets, while in other countries there is active modern management, technology, industrial R&D, training and skills in the industrial companies. This finding is in line with [18] who investigates the impact of exports on economic growth in Gabon using annual time series data for the period 1980 – 2015 and found the negative results between the two nexus.

## **5. Conclusions and Recommendations**

This paper examines the impact of ZIPA approved projects on GDP of Zanzibar for the period 1990 to 2019. The study used descriptive research design, where the secondary data were used for the variables to be analyzed in which the researcher extracted from the Office of Chief Government Statistician through several statistical abstracts and the data of Investment obtained from ZIPA.

The result show that shows that the projects approved by ZIPA they perform well from year to year. A notable result achieved which shows that the number of projects, capital approved and government expenditure has significant impact on GDP of Zanzibar at 5% level of significant. The study then recommends among others, for Zanzibar Investment Promotion Authority (ZIPA) to function in accordance with its role as elaborated in Act No. 14 of 2018 since the better performance of this institution will leads to more invested projects with huge amount of capital resulting into more employment creation, rising of household expenditure and the national GDP.

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