

# Do Foreign Direct Investment Inflows Cause Economic Growth in Tanzania?

## The Granger Causality Test Approach

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### Abstract

This study assesses whether FDI inflows cause economic growth in Tanzania, it uses time series data covering a period (1970-2014). The study also tests for the co integration between FDI inflows and economic growth. Data pertaining FDI inflows and Gross Domestic Product (GDP) which is used as a measure of economic growth were obtained from International Monetary Fund (IMF) statistics. The Granger causality test was used to test for the causality between FDI inflows and GDP and co integration was tested using Johansen Co integration test. But the major prerequisite for conducting these two (2) tests is that the time series data must not have a unit root i.e. stationary, so the Augmented Dickey Fuller (ADF) test was carried out to check for the unit root. The results from ADF test showed that the time series data for both FDI inflows and GDP did not have a unit root hence making them appropriate for running the econometric tests needed. The results from Granger Causality Test concluded that FDI inflows do cause economic growth in Tanzania and not vice versa. Lastly, the Johansen Co integration Test results show that there is co integration or long term association between FDI inflows and economic growth measured by GDP. So it is recommended that Tanzania and other emerging economies should devise appropriate strategies such as efficient tax benefits to foreign investors, improve infrastructure and improve the skills of human capital to attract FDI.

**Keywords:** FDI inflows, Economic Growth, GDP

### 1. Introduction

Global FDI's have increased tremendously in the past three (3) decades as a result of globalization (UNCTAD, 2006). During this time, many countries liberalized their economies in order to be integrated to the global economy by devising appropriate strategies to attract FDI inflows. World Bank (1997) narrate that in developing countries, the significant decrease in the amount commercial bank lending in 1980s pushed these countries to relax FDI restrictions by offering tax incentives and subsidies in order to entice the inflow of foreign capital.

There are numerous ways by which FDI inflows result into economic growth of the host country especially developing ones. De Mello (1997) depict that economies with very little domestic savings that result into shortage of finances to achieve of economic expansion may utilize FDI inflows as a supply of external finance.

FDI inflows to a developing country are generally linked to the spillover effect or positive externalities. These externalities include transfer of superior foreign technology to the host country, promote international business, foster competition and improve the skills of host country labour (Todo, 2003).

OECD (1999) also depict that FDI helps to assist human capital development, improves international trade integration, creates a more competitive trade environment and boosts development.

Carkovic and Levine (2002) portray that if FDI results into the economic growth of a host country, then initiatives should be taken to attract FDI inflows by offering tax incentives such as tax holidays and improve infrastructure. However if FDI inflows negatively affect economic growth then the host country is advised to discourage FDI by taking appropriate protective actions (Rivoli and Salorio, 1996).

Findings from empirical studies have provided contrasting views of the contribution of FDI inflows towards economic development of the host country. A study by (Saltz, 1992) that evaluated the impact of FDI on economic growth in third world economies in the period (1970-1980) found a negative correlation between FDI inflows and economic growth.

Zhang (2001) assessed the causality between FDI and economic growth of 11 developing countries in East Asia and Latin America. The study found out that FDI enhanced economic growth in five (5) of the covered countries.

Tanzania FDI inflows have been stagnant from 1970s to 1995, after this period FDI inflows increased

significantly and kept on fluctuating up to 2014. This study assesses whether FDI inflows cause economic growth in Tanzania using time series data in the period (1970-2014).

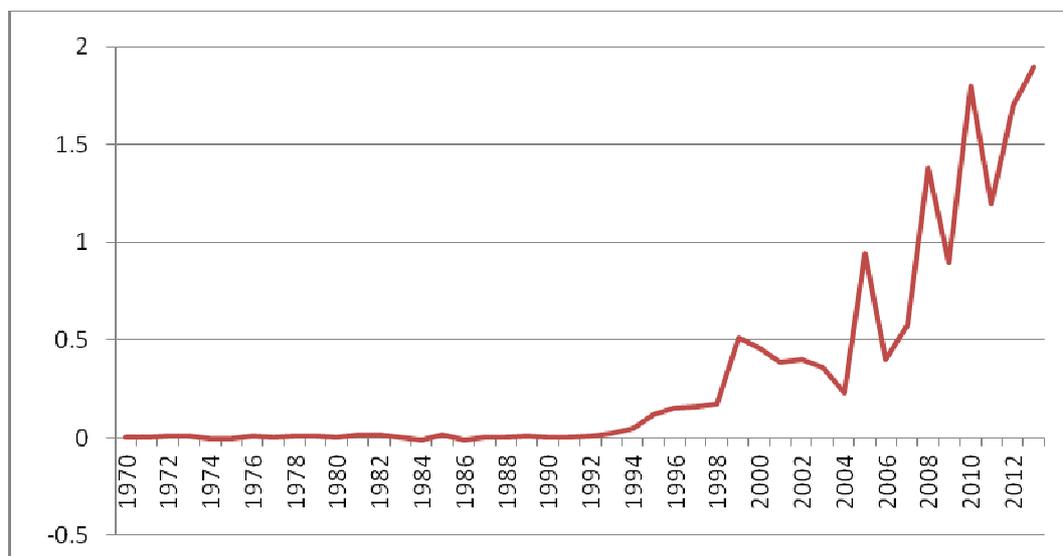
## 2. Overview of Foreign Direct Investment in Tanzania

Since the economic liberalization of Tanzania, the inflow of FDI increased significantly, Tanzania has experienced an increase in FDI inflows from US\$ 12 million in 1992 to US\$ 1095 million in 2011 (TIC, 2012).

The World Investment Report (2012) reveals that Tanzania took the leading spot in attracting FDI in the entire East African region during 2011 with the record of US\$1.1 billion. It has been estimated that in the period between June 2011 and June 2012, Tanzania overtook Kenya; the region's biggest economy in attracting FDI. Furthermore in the years 2008, 2009 and 2010, Tanzania attracted about 47% of all FDI flows in the entire East African region.

Most of the FDI inflows in Tanzania originate from the United Kingdom due to the historical background. Tanzania was a British colony that is why it is well known by investors from UK than other parts of the World. So it is estimated that 23% of registered FDIs originate from UK, 15% from India, another 15% from Kenya, Netherlands 10%, China 10%, USA 10%, South Africa 7%, Canada 5%, Germany 3%, and Oman 2%. Table 1 below shows the trend of FDI inflows in Tanzania from 1970 to 2014;

### The Trend of FDI Inflows (US\$ Billions) in Tanzania in the Period (1970-2014)



Source: IMF statistics

The results from table 1 above show that from 1970 to 1994, FDI inflows were very low and showed a stagnant trend over this period. This was attributed by lack of economic integration between Tanzania and other countries which was a problem in many emerging economies. FDI started to gain momentum in 1995 when it increased significantly for the first time and continued to increase up to 1998, and in 1999 the FDI inflows increased significantly then kept on dropping until 2004. FDI inflows kept on increasing further even though it has been fluctuating since 2004 but regardless of that Tanzania has been doing better as compared to Kenya and Uganda especially in 2003.

## 3. Objectives of the Study

The main objective of this study is to examine the causality between FDI inflows and economic growth in Tanzania. In order to improve the quality of conclusions, the study also assessed the co integration or long term association between FDI inflows and economic growth.

## 4. Literature Review

Numerous studies have been conducted worldwide concerning FDI and economic growth and these studies have come up with contrasting results as some of them found out that FDI causes economic growth while some of them did not have similar results.

Chowdhury & Mavrotas (2003) evaluated the causality between FDI and economic growth of Thailand, Chile

and Malaysia in the period (1969-2000). Using causality econometrics, they found out that GDP causes FDI in Chile and not the other way around while FDI caused economic growth in the other two (2) countries of Malaysia and Thailand.

Carkovic and Levine (2002) assessed the relationship between FDI inflows and economic growth of 72 developed and developing economies using panel data. The study used Ordinary Least Squares Regression analysis and reached a conclusion that there is relationship between FDI inflows and the economic growth of the host country. These results resembled those of (Olofsdotter, 1998) that FDI impacts economic growth of the host country through technology spillover. These findings also are highly synonymous to those of (Farkas, 2012) who concluded that FDI has positive relationship with GDP depending upon the absorptive capacity of the host country, level of human capital and development of the financial markets.

Choe (2003) investigated the causality between FDI and economic growth in the period (1971-1975) using causality and co integration econometrics in 80 developed and developing countries; the study discovered that FDI does not causes economic growth of the host country instead economic growth was observed to cause FDI flows in the host country. These findings were in contrast with those of (Zhang, 2001) who used a similar methodology and found out that FDI caused economic growth in five (5) out of eleven (11) East Asia and Latin America countries covered.

Bengoa and Sanchez-Robles (2003) examined the relationship between FDI and economic growth of Latin American countries in the period (1970-1999). Using fixed and random effect regression on a panel data set they discovered that FDI has a significant positive impact on the economic growth of the host country.

Frimpong and Abayie (2006) evaluated the causality between FDI inflows and GDP growth in Ghana in the period (1970-2005). They used time series data for the period before and after Structural Adjustment Programme (SAP) and using causality econometrics they discovered no causality link exists between FDI inflows and economic growth for the entire period covered however the causality existed only in the post SAP period.

Makki and Somwaru (2004) assessed the impact of FDI on trade and economic growth in 66 developing countries using cross sectional data. Their findings reached a conclusion that FDI is positively related to growth of domestic trade and investment and FDI promotes domestic investment. These findings are similar to those of (Onakoya, 2012) who used the three (3) -stage least square technique to assess the relationship between FDI and economic growth of three (3) prominent economic sectors in Nigeria.

## **5. Research Methodology**

This section presents different tools used in conducting this study and the reason behind using these tools of analysis.

### **5.1 Types and Sources of Data**

This study used secondary data in order to reach the appropriate conclusions. These data were obtained from the country statistics obtained from different sources. FDI statistics were obtained from IMF and UNCTAD statistics.

### **5.2 Nature of Data**

The data used in conducting this study was time series in nature, this is due to the fact that they covered only one country i.e. Tanzania across different years.

### **5.3 The Study Period**

Data that were used were those pertaining to Tanzania only and covered a period from 1970 to 2014. This makes the number of observations to be 44 which is considered appropriate for further econometric analysis.

### **5.4 The study Variables**

This study used FDI inflows and GDP as the main variables that enabled appropriate conclusions to be reached. GDP is used as the measure economic growth; this is somehow similar to the studies by (Frimpong and Abayie, 2006) and (Choe, 2003) who also used GDP as the measure of economic growth. Analyses were conducted after using FDI inflows and GDP data that have been adjusted for the natural logarithm.

## **5.5 Data Analysis**

### **5.5.1 Unit Root Tests**

This study assesses causality between FDI inflows and economic growth together with co integration between

the two (2) macro-economic variables. The evaluation of causality and co integration of variables using time series data requires the data used to be stationary or must not have a unit root. To test whether the time series data are stationary or not, it was necessary to conduct the “*Augmented Dickey-Fuller (ADF) Unit Root Test*” for both variables. The following hypothesis was developed regarding unit root tests;

*Ho: The time series data have a unit root (not stationary)*

*H1: The time series data do not have a unit root (stationary)*

### 5.5.2 Causality Test

The causality test for the time series data used in this study was conducted using “*Granger Causality Test*”. This test is appropriate the direction of the causality relationship between two (2) variables in this case FDI inflows and economic growth. This test enabled the study to clearly articulate the direction of the causality (Granger, 1986). This tool is more appropriate compared to those researchers that used OLS regression because the latter shows only the linear relationship between independent and dependent variables but it does not show the direction of the relationship which can result into wrong conclusions. The following hypothesis was developed with respect to this test;

*Ho: FDI inflows do not cause economic growth*

*H1: FDI inflows cause economic growth*

### 5.5.3 Co integration Test

This study also assessed the co integration (long term association) between FDI inflows and economic growth; this has not been done by many studies even though it is an important aspect to cover in this study. This phenomenon was assessed using the “*Johansen Test of Co-integration*” which is the most appropriate tool used to assess long term association between two (2) variables (Johansen, 1988).

The following hypothesis was developed in relation to co integration test between FDI inflows and economic growth;

*Ho: There is no co integration between FDI inflows and economic growth.*

*H1: There is co integration between FDI inflows and economic growth.*

## 6.0 Analysis of Findings

### 6.0.1 Descriptive statistics

The descriptive statistics for the variables used in this study are presented in table 2 below;

**Table 2: Descriptive Statistics for FDI inflows and GDP in Tanzania for the period (1970-2014)**

Details	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
GDP (Billion US\$)	2.4000	44.7000	12.6909	9.6530949	1.688	.357	1.880	.702
FDI Inflows (Billion US\$)	-0.0084	1.9000	0.31651	0.5267456	1.914	.357	1.950	.702

The results from table 2 show that over the (1970-2014) study period, Tanzania experienced a minimum GDP of US\$ 2.4 billion and the maximum amount achieved was US\$ 44.70 billion. This shows a large difference which has been attributed to the effects of economic liberalization. The mean GDP reported was USD 12.6909 billion over the entire period. The standard deviation was US\$ 9.65 billion which is tremendous and portrays significant differences in GDP in different years. The kurtosis and skewness values are within the range of (-2 to +2), which show a normal univariate distribution.

The other variable which is FDI inflows, the minimum amount of FDI inflows in Tanzania for the period under evaluation was US\$ -0.0084 billion which was actually worse, the maximum amount of FDI inflows was US\$ 1.9 billion which shows a tremendous improvement over the year. The mean FDI inflows were US\$ 0.31651 billion and the standard deviation was US\$ 0.5267 billion. The Kurtosis and skewness values are also within a range of (-2 to +2) which portray a normal univariate distribution.

### 6.0.2 The Unit Root Test Results

The results from the Augmented Dick Fuller (ADF) Tests for the unit root of the time series data used in this

study are presented in table 3 and table 4 below;

**Table 3: Augmented Dickey-Fuller (ADF) test results for the unit root of FDI inflows time series data**

	Test Statistic	Interpolated Dickey-Fuller		
		1% Critical Value	5% Critical Value	10% Critical Value
Z (t)	4.442	-3.628	-2.950	-2.608

MacKinnon approximate p-value for Z (t) = 0.9029

The results from ADF test from table 3 above show that the test statistic value of 4.442 is greater than 5% critical value of -2.950, so the null hypothesis is rejected which indicates that the time series data for FDI inflows are stationary or do not have a unit root. This makes these data appropriate for conducting further causality and co integration tests.

**Table 4: Augmented Dickey-Fuller (ADF) test results for the unit root of GDP inflows time series data**

	Test Statistic	Interpolated Dickey-Fuller		
		1% Critical Value	5% Critical Value	10% Critical Value
Z (t)	5.297	-2.324	-3.380	-3.203

The ADF results for the GDP inflows time series data presented in table 4 above show that the test statistic value of 5.297 is greater than the 5% critical value of -3.380, so the null hypothesis is rejected which indicates that the time series data do not have a unit root i.e. stationary which makes them appropriate for further econometric tests.

### 6.0.3 The Granger Causality Test Results

The Granger Causality test results for the causality link between FDI inflows and GDP are presented in table 5 below;

**Table 5: Granger Causality Wald Test Results for the Causality between FDI inflows and GDP**

Equation	Excluded	Chi 2	df	Prob > Chi 2
GDP billion US\$	FDI inflows billion US\$	7.2155	2	0.027
GDP billion US\$	ALL	7.2155	2	0.027
FDI inflows billion US\$	GDP billion US\$	13.839	2	0.061
FDI inflows billion US\$	ALL	13.839	2	0.061

The results from table 5 above show in the first case that the probability value of 0.027 is less than the critical value of 0.05, hence the null hypothesis is rejected and the alternative hypothesis is accepted which means that FDI inflows in Tanzania do cause economic growth through GDP. This is a very important finding because it is the main objective of this study to establish the causality relationship. In the second case, the probability value of 0.061 is greater than the critical value of 0.05 which indicates that GDP does not cause FDI.

### 6.0.4 The Co Integration Test Results

The Johansen co integration test results for the long term association between FDI inflows and GDP are presented in table 6 below;

**Table 6: The Johansen Co integration results for the long term association between FDI inflows and GDP**

Maximum Rank	Parms	LL	Eigen Value	Trace statistic	5% Critical Value
0	6	-61.37003	-	21.7232	15.41
1	9	-54.687508	0.27255	8.3582	3.76
2	10	-50.508426	0.18045	-	-

The results from table 6 above show the trace statistic value of 21.7232, this is greater as compared to the 5% critical value of 15.41 as a result the null hypothesis is rejected. This indicates that there is co integration or long term association between FDI inflows and economic growth measured by GDP in Tanzania. These results show

that FDI inflows and economic growth are two (2) phenomena whose relationship can be built in a long period of time hence it's not just a short term association.

## 7. Conclusions and Recommendations

FDI inflows play a major role in the economic growth of developing countries like Tanzania. This is through transfer of technology, enhancement of labour skills and the flow of much needed foreign capital needed to initiate different projects. For a country like Tanzania, FDI also help to change the way domestic firms operate by improving the quality of goods and services so as to compete with those of foreign firms operating in Tanzania. For instance FDIs in the banking sector has forced domestic banks to find better ways to improve their services to as to cope with superior services offered by foreign banks.

So it is recommended that developing countries like Tanzania should devise appropriate strategies to attract more FDI inflows including properly designed tax incentives, improving infrastructure, maintaining political stability and improving the skills of human capital. However caution should be exercised in provision of incentives such as tax holidays because experience has shown that foreign companies usually take advantage of loop holes in the tax laws related to the tax incentives e.g. selling the foreign company to another foreign investor after the end of the tax holiday period granted.

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### APPENDIX 1 Vector Auto Regression

Sample: 1972 - 2013	No. of obs	=	42
Log likelihood = -50.50843	AIC	=	2.881354
FPE = .0612904	HQIC	=	3.033002
Det(Sigma_ml) = .037984	SBIC	=	3.295084

Equation	Parms	RMSE	R-sq	F	P > F
gdpbillionus	5	1.30248	0.9834	549.1537	0.0000
fdiinflowsbill~s	5	.183758	0.8935	77.56697	0.0000

	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
<b>gdpbillionus  </b>						
<b>gdpbillionus  </b>						
L1.	1.428126	.1735519	8.23	0.000	1.076477	1.779776
L2.	-.466343	.1810145	-2.58	0.014	-.8331133	-.0995727
<b>fdiinflows~s  </b>						
<b>L1.</b>						
L1.	-.1288753	1.143843	-0.11	0.911	-2.446521	2.18877
L2.	2.795824	1.110979	2.52	0.016	.5447657	5.046881
<b>_cons  </b>						
_cons	.4218131	.6577775	0.64	0.525	-.9109707	1.754597
<b>fdiinflows~s  </b>						
<b>gdpbillionus  </b>						
L1.	.0621995	.0244853	2.54	0.015	.0125876	.1118113
L2.	-.0280866	.0255381	-1.10	0.279	-.0798317	.0236586
<b>fdiinflows~s  </b>						
L1.	-.0396905	.1613771	-0.25	0.807	-.3666715	.2872905
L2.	.5310608	.1567406	3.39	0.002	.2134742	.8486473
<b>_cons  </b>						
_cons	-.2269036	.0928014	-2.45	0.019	-.4149371	-.0388701