# Analysis of the Impact of Foreign Direct Investment on Tanzania's Economic Growth (1987 – 2024)

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## Abstract

FDI is a fundamental key driver for economic development in developing countries especially through technology transfer. The main objective of this study was to examine the impact of FDI inflow on economic growth in Tanzania. Specifically, the study focused on examining the contribution of FDI on Tanzania's economic growth, examining the contribution of trade openness on Tanzania's economic growth and examining the contribution of interest rate on Tanzania's economic growth. The study employed secondary time series data covering the period of 1987 to 2024, and the data were sourced from Bank of Tanzania, IMF and UNCTAD.

In analyzing the causal relationship between FDI and economic growth, Auto-Regressive Distributed Lags (ARDL) estimation technique and Wald test granger causality was employed to identify the direction of causality between the two. The findings from ARDL estimation revealed that FDI, exchange rates and trade openness have a significant positive impact on the economic growth in the long run. It was also revealed that interest rates have a significant negative impact on economic growth in the long run.

The study recommends that the government of Tanzania should improve FDI enhancing policies so as to attract more FDI inflows and increase economic growth. It is also recommended that the government should improve its international trade policies so as to promote more international trade and facilitate economic growth. Lastly, the study recommends that the government should strengthen the monetary policies so as to control the interest rates and boost country's economic growth.

**Keywords:** Economic growth, Foreign Direct Investment (FDI), Gross Domestic Product (GDP), Harrod-Domar growth model, Solow growth model, Trade openness.

## 1. Introduction

The relationships between foreign direct investment (FDI), trade openness, and economic growth have long been central topics in theoretical and empirical economic research. Foreign Direct Investment (FDI) is a vital feature which contributes to economic growth through technology transfer especially in host developing countries (Koojaroenprasit, 2012). FDI by multinational companies have become a crucial source for financing developing countries. The mechanism through which host economies benefit from FDI include through adoption of technology and know-how which can happen through, for example, licensing, employees training and introduction of new products and processes by foreign firms. The major sources of FDIs are the high-income developed nations. These countries accounted for over ninety

percent of outflowing FDI in the years 1987-1992 and for more than eighty-five percent in the period 1993-1998 (Hu, (2017). This trend implies that over time the share of FDI outflow from the developed countries has declined. Nevertheless, major recipients of the FDI inflows are the developed nations as well whereby during 1988 to 1998 they received seventy percent of the FDI inflows (Hu, 2017). This situation explains that growth of the economies of these countries relies as well on FDI inflows among other things.

Foreign direct investment is one among several alternative elements that contribute to Tanzania's economic growth. Foreign Direct Investment continues to be in its relative infancy stage in Tanzania (Moshi, 2025). In 1963, just after independence in 1961, the government set out to attract FDIs by enacting the Foreign Investment Act which was meant to inspire FDIs in the newly independent Tanganyika. However, these efforts were hampered by the Arusha Declaration in 1967, which ushered in the era of socialism and self-reliance. According to the World Bank (2017), during the era of the Arusha Declaration the majority of investments in Tanzania were created by the state directly or indirectly. By 1980 there were about four hundred state owned enterprises. With the structural Adjustments Programme as propagated by the International Monetary Fund (IMF) the government established the Investment Promotion Center (IPC) in 1990. The aim of the IPC was to coordinate and promote FDIs into Tanzania. The initiatives were not very successful (UNIDO, 2014) and thus, a new strategy was initiated with the establishment of the Tanzania Investment Center (TIC) in 1997. The TIC was established by the Tanzania Investment Act No.26 of 1997 and was meant to be the first agency of Government to coordinate, encourage, promote and facilitate investments and to advise the government on the investment sector (TIC, 2013; Senkuku and Gharleghi, 2025). The Tanzania Investment Center is the initial point to acquire potential investors, it's a helpful center for all investors partaking in business of the government in all investment matters. The priority sectors for investment, as set by the TIC (2013), are tourism, infrastructure development, aviation, agriculture, construction, production and financial services.

Various scholars have associated economic growth with numerous factors one amongst them being Foreign Direct Investment. For example, Selaya and Sunesen (2012) have argued that FDI is mostly thought of by several international establishments, politicians and economists, as an element which reinforces host country economic growth. In the same vein, Iamsiraroj (2016) as well as Yu and Walsh (2010) argue that FDIs have got vital positive effects on host country's development effort because they can be a source valuable technology and power while fostering linkages with local companies, which might increase momentum to the economy.

Tanzania remains one of the top destinations for FDI in Africa, and inflows have increased dramatically in the past 14 years. From a low level of USD 1.8 billion in 2010, FDI inflows reached USD 2.04 billion in 2024, marking a 13% rise (EY, 2025). These sharp rises have been contributed to by, among other things, the discoveries of the natural gas in the southern part of the country (TIC, 2013). However, the country experienced a sharp decline in FDI inflows in 2015 by 34%, reaching to USD 1.5 billion. Nevertheless, the GDP for 2015 remained at 7% which was also the case for 2014 (Bank of Tanzania, 2016). The effect of decline in FDI inflows in the country may not be observed during the same year, as it needs time for the effects to be manifested on the economy. Due to increase in the FDI inflows in the country over the past decade, concerns are on its contribution to the country's economic growth. Therefore, this study sought to examine the impact of FDI on economic growth in Tanzania using the time series data covering the period of 1987 – 2024.

## 2 Statement of the problem

Evidence from various empirical literature globally show that FDI and economic growth are positively related (Bouchoucha and Ali, 2019; Hussain and Haque, 2016; Javaid, 2016). However, other literature stipulate that FDI can have negative impact on domestic economies (Al-Mihyawi, 2019; Owolabi-Merus, 2015). With respect to Tanzania, evidence from empirical literature also reveals mixed results. While some studies reveal a negative relationship between economic growth and FD (Uswege, 2014) others show a significant positive relationship between FDI and economic growth (Adewumi, 2006; Christopher, 2014). Yet still there are studies that contend that there is bi-directional causality between the two (Christopher, 2014). All these studies, however, not only relied on data of up until 2013 which is now outdated because, as the saying goes, so much water has passed under the bridge since then, but also they used either the OLS approach, Engle granger technique and granger causality test during the analysis. The shortcoming with these analytical approaches is the failure to incorporate the variables that are integrated of different orders. Due to persistent increase in FDI inflows in the country, there is a need to examine its contribution on economic growth.

Tanzania is one of the rapidly growing economies in Africa, South of the Sahara, making it an interesting case for studying the relationships between FDI and economic growth. In the past three decades, Tanzania has attracted more FDI, opened its trade policies, and made progress in its financial sector. These changes have contributed to Tanzania's economic growth. However, how these factors work together to influence economic growth in Tanzania is not yet fully understood. Therefore, the study focused on examining the impact of FDI on economic growth in Tanzania covering the period of 1987 to 2024 using the Auto-Regressive Distributed Lags (ARDL) approach. While the study focuses on broader trends, the findings can inform the understanding of FDI's role in Tanzania's economic development. Analyzing the context surrounding FDI investments is crucial for understanding their potential impact on the country's economic growth.

## 3 Literature Review

**Theoretical literature**

Theoretically, there are different theories that provide useful insights regarding the relationship between FDI inflows and economic growth. This study was informed by two of the major theories: the Harrod-Domar growth model and Solow growth model.

**The Harrod-Domar Growth Model**

Harrod-Domar growth model can best be used to explain the relationship between economic growth and foreign direct investments (FDI) inflows. The model was developed by neoclassical economists Roy F. Harrod and Evsey Domar in the 1940's (Boianovsky and Hoover, 2009). The Harrod-Domar growth model can be used to elucidate how FDI can be an important determinant for a country's economic growth. The model explains that output depends on the investment rate and the productivity of that investment. Economic growth in this model is being explained in terms of savings ratio and capital-output coefficient (Abdillahi, 2017). In an open economy, investment is being financed by savings which is the sum of domestic and foreign savings. Therefore, in this case, FDI also plays a significant role in financing investments in the country.

This study adopted the Harrod-Domar growth model (1946) to explain the relationship between FDI inflows and economic growth in Tanzania. Its implications were that growth depends on the quantity of labor and capital; more investments lead to capital formation which generates economic growth. The

model carries implications for less economically developed countries where labor is in plentiful supply but lack of physical capital is not slowing down economic progress (Hu, (2017). Less developed countries do not have sufficiently high income to enable sufficient rates of savings. Therefore, accumulation of physical-capital stock through investment is low. The Harrod-Domar growth model implies that Economic Growth depends on policies to increase investments by increasing saving, and using that investment more efficiently through technological advances (Li, and Liu, 2016; Fernandes, 2024). This study assumes that having FDI financed investments in a country leads to improvement in economic growth. Thus, FDI becomes relevant to this study in explaining economic growth. The Harrod-Domar growth model examines the productivity of FDI inflows by looking at total amount of foreign direct investments per year as the percentage of gross domestic product (GDP). The Harrod-Domar growth model, therefore, was used to focus on how FDI as a percentage of GDP is significant in the economic growth process. According to the Harrod-Domar growth model a lower capital output ratio is preferred to a higher capital output ratio due to production costs.

According to Harrod (1939), the Harrod-Domar growth model explains that higher economic growth rate depends significantly on the higher savings rate which will be used to finance investments. It is therefore argued that developing countries low rates of economic growth are linked to low savings rate. Thus, developing countries remain in the vicious cycle of low savings, low investments, and low economic growth (Rodrik, 2007; Fernandes, 2024). To attain higher growth rates of economy, developing countries need to increase their savings both domestically and from abroad. Among other things, savings from abroad include Foreign Direct Investments (FDI) and foreign aids. These will help to increase a country's savings and higher savings will lead to higher investments, and then higher economic growth. Therefore, the Harrod-Domar growth model becomes of great relevance to this study.

**Solow Growth Model**

The Solow growth model is a simple neoclassical model that is transparent and has been critical to empirical work. It was advocated by an economist Robert Solow in 1956 (Koutun, 2013). The main theme of the model is that savings determines economic growth in the short run, thus increasing savings will result to increasing growth although the increase in growth is temporary. Therefore, Solow (1956) suggested that in the long-run, growth is determined by the level of technological progress as the key driver of economic growth (Barossi-Filho, *et al*, 2005; Borensztein, *et. al,.* 2018). Some of the basic assumptions of the Solow growth model are:

a)    Constant returns to scale
b)    Diminishing marginal production of capital
c)    Technical progress is exogenously determined
d)    Perfect competition

The model projects on conditional convergence in the rate of economic growth that is poor economies will grow to a faster rate than the rich economy and converge at the same rate in the long run. This is also known as convergence hypothesis and it has been used for countries with same characteristic to converge at the same steady state. The Solow (1956) growth model has been useful as it enables to estimate the impact of capital accumulation and technology on income growth. The model does also provide a benchmark for other growth theories to be developed. The Model does also provide a clear space discussion for convergence issues (Solow, 1956). On the other hand, however, Aghion and Howitt (1992) contend that accumulation of physical capital does not sufficiently explain economic growth arguing that economic growth could be driven by human capital on learning or investment on

infrastructure (Borensztein, et, al,. 2018). At the same time, the assumption of perfect competition is also criticized for being unrealistic (Romer, 1990). The convergence hypothesis of Solow growth model is also criticized as there exists increasing returns to scale under which the hypothesis will not apply as suggested in the assumption of constant returns to scale (Temple, 1999).

According to Alfaro (2003), Findlay (1978) expanded Solow's model and assumed that the growth rate of technology diffusion is an increasing function of FDI. By distinguishing between inputs into foreign capital (a developed country) and domestic capital (a developing country), he argues that an increase in foreign capital increases domestic capital. Mankiw, Romer and Weil (1992) also modified the Solow's (1956) model and argued that omitting capital accumulation in the model would cause biased estimation of the coefficient on saving and population growth. They argued that cross-country variations in income per capita are a function of variations in the rate of saving, the rate of population growth and the level of labor productivity (Borensztein, *et, al*, 2018); Ali, and Nieuwoudt, 2017). As such, the Solow (1956) growth model postulates that economic growth is a function of population growth rate, savings rate and the rate of technological progress and FDI inflow is therefore brought into this equation through technological progress.

## Empirical literature

Recent publications suggest a generally positive but nuanced relationship between FDI and economic growth, with the impact varying depending on factors like country income levels, institutional strength, and the specific sector receiving the investment. Some studies highlight a positive correlation between FDI and economic growth, particularly in countries with well-developed financial sectors and high levels of human capital. However, other researches point out that FDI's impact can be influenced by its sectoral composition, with manufacturing and mining FDI often showing a positive effect and tertiary sector FDI sometimes having a negative effect.

The empirical literature is filled with many studies covering different aspects of the FDI-Growth nexus including the nature of the relationship (i.e. whether negative or positive, long run and short run dynamics) while other studies have focused on addressing the methodology gaps. Kingu (2016) used time series data spanning from 1970 to 2012 to examine the impact of FDI and exports on economic growth in Tanzania. Kingu (2016) applied both Engle Granger and Johansen Cointegration test to check for the existence of long run relationship between dependent and independent variables. The study not only found that there is a long run association between FDI, exports and economic growth but also that the variables adjust 23 percent back to equilibrium annually implying that this economy requires more than one year to reach equilibrium. Moreover, Kingu (2016) found that FDI has negative impact on economic growth in Tanzania including negative impacts of balance of payments by the increase of imports while exports have a positive impact. In that vein, Kingu (2026) advocates for the government to properly select strategic areas for FDI in order to boost the economy. Similarly, Christopher (2014) employed time series data covering the period 1970 to 2007 to examine the causal linkage between FDI and economic growth in Tanzania. The study used the Granger causality test to assess the direction of causality and the results showed that there is bi-directional causality between FDI inflows and economic growth in Tanzania implying that both FDI led growth and growth driven FDI are valid notions.

In another study Epaphra and Massawe (2016) assessed the causal effect between domestic private investment, public investment, FDI and economic growth in Tanzania using time series data covering the period between 1970 and 2014. Using a modified neo-classical growth framework to model the relationship between the variables (Engel-Granger and Johansen methods to test for cointegration and

granger causality test to assess the causality dynamics of the variables) the results showed that, both FDI and domestic private investment have a positive impact on FDI. However, while the causality between domestic private investment and growth was uni-directional (running from domestic private investment to growth) the causality between FDI and growth wad bi-directional. In addition, FDI was less effective than domestic private investment in affecting growth.

Kabigiza (2014) used time series data for the period between 1980 and 2012 to analyze the relationship between inflation, FDI and economic growth in Tanzania. The study used a simple linear framework to model the relationship between the variables and subsequently used a simple Ordinary Least Square Estimator (Engel and Granger technique) to estimate the model. The results that while inflation had a negative effect on economic growth, the FDI's relationship with economic growth was positive. Kabigiza (2014) recommended that the government should focus on improving infrastructure and further developing local capacity to improve competitiveness as these will help attract FDI while keeping inflation rate low on single digits in order to improve economy wide stability. In an attempt to estimate the extent to which FDI inflows into the mining and quarrying sector, the manufacturing sector and the agriculture and livestock sector influence economic growth in Tanzania Moshi (2015), like Kabigiza (2014) before him, used the simple OLS method of estimation to analyze data covering the period 1988-2013. It was found that, FDI into the manufacturing and agriculture sector have a positive but insignificant impact on economic growth while the impact of FDI in the mining and quarrying sector was positive and significant. Although the study advices policy makers to provide various incentives such as tax breaks on imported factor inputs and improving country infrastructure to attract more FDI, it also advocates for a close monitoring of the FDIs in order to avoid the unintended impacts such as loss of local authorities' autonomy.

Asghar *et al*, (2011) used a panel data set for Pakistan, India, Sri Lanka, Bangladesh, Malaysia, Indonesia, Thailand, the Philippines, Nepal, Japan, China, Singapore, Democratic Republic of Korea, and Maldives to assess the relationship between FDI and economic growth for the period 1983 to 2008. Using Likelihood-based panel cointegration test the study found that FDI and economic growth have a long run relationship while at individual level, the Johansen cointegration test found evidence of long run relationship only for India, Sri Lanka, Maldives, Thailand, China and the Philippines. In another panel data study, Abbes *et al*, (2014) used data covering 65 countries around the world between 1980 and 2010. The study used the Pedroni (1997) test for cointegration; Fully Modified Ordinary Least Square (FMOLS) and Dynamic Ordinary Least Square (DOLS) methods to estimate the long run relationship and used the Granger causality test to assess causality dynamics. The study found significant evidence of long run relationship between FDI and growth and both FMOLS and DOLS indicated that there is a statistically significant positive long run relationship between FDI and growth for all countries in the panel. From the Abbes *et al*, (2014) findings we see evidence of the existence of bi-directional causality between FDI and growth for only Latin American countries while for the other countries in Europe, America, Oceania, Asia and Africa there exists a uni-directional causality running from FDI to growth.

In an attempt to fill the gap in literature, Carbonell and Werner (2018) conducted a study to assess the relationship between FDI and growth in Spain. The study used quarterly data for Spain covering the period from 1984 to 2010 and subsequently used an Auto-Regressive Distributed Lags (ARDL) model to establish the relationship between the variables. Using simple OLS for estimation, the study found no evidence of the relationship between growth and FDI but rather that Spain's growth depends on such

aspects as education, foreign demand of goods and services and employment. Koojaroeprasit (2012), in the same vein like Carbonell and Werner (2018), conducted a study in South Korea to evaluate the impact of FDI on economic growth using secondary time series data from 1980 to 2009. Using the multiple regression approach the study revealed that FDI has strong and significant positive impact on South Korea's economic growth. Further, the study found that, employment, export and human capital are also positively related to economic growth in South Korea.

Shuaib et al, (2015) used time series data from 1981 to 2013 to examine the impact of FDI on economic growth in Nigeria. The study followed the Shuaib (2011) framework to model the relationship between FDI, gross capital formation, external debt, openness of the economy, total saving and nominal exchange rate and economic growth and used system three stage least square for estimation of the model. The results showed that there is a significant positive relationship between FDI, trade and growth. Using a panel data set for 70 countries for 1996 to 2015 and utilizing the Wang (2015) method for estimation of threshold regression of panel data, Kahilk and Hayat (2017) studied the country specific factors that affect FDI and growth relationship specifically focusing on the abundance of natural resources. The study findings revealed that for countries whose natural resource sector was above threshold, FDI did not have a significant impact on growth while for countries whose natural resource sector was below threshold, FDI had a positive impact on growth.

From the review of literature, it can be deduced that, there is no common consensus regarding the nature of relationship between FDI and growth. Some studies have shown that there is a negative relationship (Kingu, 2016) while others have concluded that the relationship is positive (Kabigiza, 2014; Abbes *et al*, 2014) and still there are studies that have found no evidence of any significant relationship (Kahilk and Hayat, 2017; Husain, 2024). It is assumed that using the ARDL to establish the relationship between the variables might give different results from the ones obtained by using other methods. There is, however, only one study by Carbonell and Werner (2018). This study, therefore, set out to address the two identified gaps by first rigorously attempting to assess the nature of the relationship between FDI and growth in Tanzania and secondly using the ARDL method in the estimation.

## 4. Research Methodology

Secondary annual time series data were used to analyze the impact of FDI on the economic growth in Tanzania. The time series data covered 38 years ranging from 1987-2024. This time period is thought to be long enough to justify the results obtained for policy recommendation (Saunders *et al*, 2009). Following a detailed review of the King and Levine (1993) model, in order to suit the Tanzanian environment, the estimation model that was used in the analysis was:

$$G_t = f\{X_t; Z_t\}$$

where, $G_t$ is the growth rate of real GDP, $X_t$ represent volume of FDI inflows, $Z_t$ is the vector of other important determinants of economic growth including inflation rate, interest rate, trade openness and exchange rate.

Specifically, the equation above can be expressed in the log linear form as follows:

$\ln GDP_t = \alpha_0 + \alpha_1 FDI_t + \alpha_2 OPENNESS_t + \alpha_3 \Pi_t + \alpha_4 \ln EXR_t + \alpha_5 IR_t + \varepsilon_t$

Where:

$GDP_t$ = economic growth defined as the log of real GDP

$FDI_t$ = Foreign Direct Investment

$OPENNESS_t$ = ratio of total sum of export and imports over GDP

$\Pi_t$ = Inflation rate

$EXR_t$ = Exchange rate

$IR_t$ = Interest rate

$\alpha$'s = parameters to be estimated

$\varepsilon t$ = stochastic error term

t = time

**Measurement of the study variables**

**(a)     Dependent variable**

**GDP** was measured as total market value of goods and services produced in a country within a given time period (Wolla, 2013; Mashrur, 2025). GDP growth rate measures the growth rate of a country output within a given period of time or a change in output from one period to another**.** It is the average annual growth rate of real gross domestic product in percentage. It stands for the country's economic growth. In this study, we used real GDP, it is a continuous variable and it is measured in 2001 constant prices in Tanzanian million shillings.

**(b)     Independent variables**

**FDI** refers to the total foreign direct investments in the country. In this study, FDI was measured as a total foreign direct investment as a percentage of the country's total GDP (Chen and Lin, 2018). Therefore, it was measured in percentage, and it is a continuous variable. FDI is expected to have a positive relationship with economic growth, since a country will have gained more investments from rest of the world (Fernandes, and Tang (2021).

**Trade openness** refers to the ratio of total trade to the country's GDP. In this study, trade openness was assumed to be a continuous variable that is measured as a ratio of exports plus imports divided by GDP (Borensztein, et, al, 2018); Mashrur, 2025). It is expected that trade openness has a positive relationship with economic growth.

**Exchange rate** refers to the rate at which one currency is being traded for other currencies (Aliber, 2018; Mashrur, 2025). In this study we were looking at the Tanzanian shilling's currency in relation to the United States Dollar (USD/TZS). It is a continuous variable that was measured in Tanzanian shillings and refers to the amount of Tanzanian shillings that can be bought using a single US dollar. The study's expectation was that there is a negative relationship between exchange rate and economic growth, since increase in exchange rate in this regard means more Tanzanian shillings are needed for buying US dollars.

**Inflation rate** refers to the overall increase in the Consumer Prices Index (CPI), which is a weighted average of prices for goods (Bhat and Laskar, 2016). The consistent increase in prices of goods and services, lead to a decline in purchasing power and value of the currency. In this study, inflation rate was recorded in percentage and it is a continuous variable. The study expected the inflation rate to have a negative relationship with economic growth (Husain. (2024).

**Interest rate** refers to annual percentage rate of the principal which is charged to the borrower by the lender for the use of the assets (Bhat and Laskar, 2016; Adeniran, Ogunniyi, 2019; and Fernandes, 2024). The rate is set by the Central Bank. In this study, interest rate was expected to have an inverse relationship with the economic growth.

## Data types and sources

This study employed secondary annual time series data for a period of 38 years from 1987 to 2024 collected from different sources. The information collected include data for economic growth (GDP), FDI, exchange rate, inflation rate and trade openness. The sources for these data included the Bank of Tanzania (BoT) Annual Reports, National Bureau of Statistics (NBS) and Ministry of Finance and Economic Affairs (MoF).

**Table 1: Data and their sources**

| Variable | Description | Source |
|---|---|---|
| Real GDP | Gross Domestic Product measured in real constant prices of 2001 | Bank of Tanzania, 2024 |
| Interest rate | Annual percentage rate of the principal which is charged to the borrower by the lender for the use of the assets | Bank of Tanzania, 2024 |
| Exchange rate | Value of one currency being traded for another currency (USD/TZS) | Bank of Tanzania, 2024 |
| Inflation rate | Increase in the consumer prices of goods and services | Bank of Tanzania, 2024 |
| FDI | Foreign Direct Investment measure as a ration of GPD | IMF's World Economic Outlook Database |
| Trade openness | Expressed as the percentage of the total value of exports and imports as a share of GDP | United Nations Conference on Trade and Development (UNCTAD) statistics Database, 2024 |

## 5. Data analysis

This study employed the Autoregressive Distributive lag (ARDL) estimation technique to examine the effect of FDI on economic growth in Tanzania using time series data covering the period between 1987 and 2024. During this time, Tanzania has implemented different policies and strategies including privatization from state owned companies to the private sector in order to attract FDI in the country. The ARDL technique was pioneered by Pesaran (1996) and has been widely applied in time series analysis as it is highly reliable and robust with small sample sizes and can produce both short-run and long-run results (allow for dynamic analysis). Furthermore, ARDL is the most widely used method for testing cointegration as it can be applied irrespective of the stationary properties of the variables in the samples and permits for inferences on long-run estimates, which is not the case under the alternative cointegration procedures. That means ARDL can be applied regardless of whether the series are I (0), I (1), or slightly integrated (Bahmani-Oskooee and Faridivana, 2016; Pesaran et al, 1997; Adeniran, and Ogunniyi, (2019). Thus, it evades the problems associated with non-stationary time series data (Laurenceson and Chai, 2003). Additionally, the ARDL approach delivers robust results for a smaller sample size of cointegration analysis and allows for sufficient number of lags to capture the data generating process in a general to specific modelling framework (Laurenceson and Chai, 2003; Mashrur, 2025).

The ARDL approach includes four main stages, along with tests that must be performed. The first stage is to safeguard that all-time series data are purely stationary. For this resolution, unit root tests are conducted that examine the time series characteristics of the selected variables to overcome the problems of spurious correlation often caused by non-stationary time series data. The Augmented Dickey-Fuller test (ADF) was employed to check for unit root problem in the data. After the data are defined as stationary, the second stage is to test for cointegration among the variables in accordance with the ARDL approach. The third stage is to test for the existence of long-run relationships among the variables; and the fourth and final stage is to test for short-run relationships among the variables.

## 6. Findings

**Descriptive Statistics Analysis**

Table 2 shows that inflation rate on average was recorded at 17.63 percent during the 1987 – 2024 period with the minimum of 3.24 percent and the maximum of 36.1 percent. The double digits average inflation rate (17.63) observed provides an implication that general prices of goods and services were high, which in turn results to decline in people's purchasing power and thus decline in living standard. High inflation rate will result into decline of country's economic growth. The standard deviation for inflation rate is 11.49 which is lower than the average inflation rate implying that there was no much deviation from the average values of the inflation variable. It is further revealed that interest rate stood at an average of 18.8 percent with the minimum of 8.8 percent and a maximum of 36 percent during the period. The standard deviation for interest rate is 7.19 percent which is lower than the average interest rate implying that there is no much deviation from the average values of interest variable. The average interest rate of 18 percent indicates that the costs of using or borrowing the assets were very high during the period, thus, likely discouraging borrowing resulting to decline in investment activities and low economic growth supporting Salami (2018) and Mashrur (2025) assertion that high interest rate affects the country's economic growth negatively.

**Table 2: Summary statistics**

| Variable | Observations | Mean | Std. Dev. | Min | Max | Skewness | kurtosis |
|---|---|---|---|---|---|---|---|
| Real GDP | 38 | 16,500 | 14,500 | 4,799 | 505,000 | 1 | 2.5 |
| Inflation rate | 38 | 17.63 | 11.49 | 3.24 | 36.1 | 0.25 | 1.43 |
| Trade openness | 38 | 30.75 | 8.2 | 17.22 | 46.12 | 0.13 | 2.02 |
| Exchange rate | 38 | 812.42 | 675.6 | 665.01 | 2,614.1 | 0.47 | 2.21 |
| Interest rate | 38 | 18.85 | 7.19 | 8.8 | 36 | 0.87 | 2.97 |
| FDI | 38 | 1.88 | 1.76 | 0.01 | 5.69 | 0.49 | 2.04 |

The exchange rate stood at an average of 812 Tanzanian shillings (TZS) against 1 United States Dollar (USD) with minimum and maximum values of 8.33 and 2230.1 TZS per single US dollar respectively during the same period. The standard deviation for exchange rate was 675.6 which is lower than the average exchange rate implying that there wasn't much deviation from the average values of exchange rate variable. This indicates that the purchasing power of the Tanzanian currency in comparison to the US dollar has been declining overtime from 665.01 TZS per one US dollar in 1987 to 2,614.1 TZS per one dollar in 2024. The depreciation of the TZS currency over time results into decline of country's

economic growth (Rodrik, 2009; Mashrur, 2025). Trade openness was observed to have an average of 30.75 as a percent of GDP with minimum and maximum values of 17.22 and 46.12 percent respectively. The standard deviation for trade openness is 8.2 which is lower than the average trade openness implying that there is no much deviation from the average values of trade openness variable. This implies that the country has been opening up its borders for trade with the rest of the world (Musila and Yiheyis, 2015). The FDI was recorded at an average of 1.8 percent as a percent of GDP with minimum and maximum values of 0.01 and 5.69 percent respectively. The standard deviation for FDI is 1.76 which is lower than the average FDI implying that there was no much deviation from the average values of FDI variable. This implies that FDI still accounts for a small portion of the country's GDP as is seen to account for almost 2 percent on average as a percent of GDP.

**The Correlation matrix**

Table 3 provides the correlation matrix indices. The decision criterion is that there exists multicollinearity problem when the obtained indices are above 75 percent in absolute terms. The correlation among the variables indicate that there is no multicollinearity amongst: real GDP and inflation rate (0.6304), real GDP and trade openness (0.3211), inflation and trade openness (0.0292), real GDP and interest rate (-0.2594), trade openness and exchange rate (0.2867), interest rate and inflation rate (0.1956), interest rate and trade openness (0.4432), interest rate and exchange rate (-0.1104). On the other hand, there is a presence of the multicollinearity problem amongst: exchange rate and GDP (0.9210), exchange rate and inflation rate (-0.826), FDI and inflation rate (-0.7998), FDI and exchange rate (0.8294). Although the presence of multicollinearity among study variable results in imprecise estimates (Corbett and Findlay, 2010) we adopted the Auto-Regressive Distributed Lags model in order to addresses this problem (Menegaki, 2019).

**Table 3: Correlation estimates between variables used in the study**

| Variable | Real GDP | Inflation | Trade openness | Exchange rate | Interest rate | FDI |
|---|---|---|---|---|---|---|
| Real GDP | 1 | | | | | |
| Inflation | -0.6304 | 1 | | | | |
| Trade openness | 0.3211 | 0.0292 | 1 | | | |
| Exchange rate | 0.9210 | -0.826 | 0.2867 | 1 | | |
| Interest rate | -0.2594 | 0.1956 | 0.4432 | -0.1104 | 1 | |
| FDI | 0.7395 | -0.7998 | 0.2015 | 0.8294 | -0.1581 | 1 |

**Unit root analysis**

A time series regression that uses non-stationary variables produces spurious results which is why stationarity tests are important (Bilgili, 1998). A non-stationary variable, however, can be made stationary by means of fist level differencing (Laurenceson, 2003; Aldan, and Chen, 2017). We used the Augmented Dickey Fuller test to test for each variable stationarity because not only can ADF handle more complex models but it can also be used with serial correlation, and its more powerful than the Dickey Fuller test (Nielsen, 2005). If a variable is not stationary, it was then converted to its first difference and tested for stationarity again. Table 4 shows the results before conversion while table 5 shows the unit root results after conversion (to first difference).

**Table 4: Unit root test for variables (before first difference conversion)**

| Variable | ADF statistic | 5% test CV | Decision |
|---|---|---|---|
| Real GDP | 0.69 | -2.969 | Non stationary |
| Inflation rate | -0.942 | -2.969 | Non stationary |
| Exchange rate | -2.338 | -2.969 | Non stationary |
| Trade openness | -2.352 | -2.969 | Non stationary |
| Interest rate | -2.05 | -2.972 | Non stationary |
| FDI | -1.02 | ;-2.978 | Non stationary |

Table 4 shows the Unit root test results for all variables (before conversion to first difference). By comparing the ADF statistic estimates to the respective 5% CV (Critical Value) for each variable it can be observed that (in absolute terms) ADF estimates are smaller than 5% critical value for each variable. This means that all variables are non-stationary and in order to avoid spurious regression results these variables need to be made stationary (Laurenceson and Chai, 2003; Alfaro, 2019). Thus, we proceeded with conversion of study variables to their first difference and again tested for stationarity.

**Table 5: Unit root test for variables (after first difference conversion)**

| Variable | ADF statistic | 5% test CV | Decision |
|---|---|---|---|
| Real GDP | -5.606 | -2.969 | Stationary |
| Inflation rate | -6.381 | -2.969 | Stationary |
| Exchange rate | -3.293 | -2.972 | Stationary |
| Trade openness | -5.112 | -2.969 | Stationary |
| Interest rate | -4.559 | -2.969 | Stationary |
| FDI | -4.208 | -2.978 | Stationary |

Table 5 shows the unit root test results for all variables (after conversion to first difference). In this case, ADF estimates are observed to be larger (in absolute terms) than 5% critical value estimates. This implies that study variables are stationary at first difference (in other words all variables are integrated of order 1[1]) (So, 2011). Subsequently the analysis proceeded to estimating the relationship between the study variables using Auto-Regressive Distributed Lags (ARDL model).

**ARDL Regression results**

In examining the contribution of FDI on Tanzania's economic growth, we employed the ARDL model. The dependent variable was economic growth and the independent variable was FDI. Other explanatory variables included interest rate, inflation rate, exchange rate and trade openness. Table 6 presents the estimation results of ARDL with both short run and long run relationship among variables and the speed of adjustment towards long run equilibrium. The R square obtained is 0.9225, implying that the model is well explained at 92 percent by the independent variables suggesting that the FDI and the moderating variables explain the impact on the economic growth by 92 percent. The error correction term of -0.54 indicates that about 54 percent of the disequilibrium is being corrected within the first year.

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[1] A variable is called Integrated of order n that is 1(n) if the variable becomes stationary after differencing it for n times (Wei, 2006).

In the long run FDI, exchange rate and trade openness have significant positive impacts on economic growth while interest rate has a negative significant impact. An increase in FDI by 1 percent results into increase in economic growth by around 11.5 percent in the long run indicating that more inflows of FDI in the long run will impact the economy positively. This is because more FDI inflows will increase the country savings which will facilitate more investment activities that in turn will lead to economic growth and improvement in the peoples' living standard. The same findings were obtained by Kabigiza (2014) and Shuaib *et al* (2015). It was further revealed that increase in exchange rate by 1 percent results into increase in economic growth by around 2 percent in the long run which implies that Tanzania's economic growth and exchange rate go in the same direction.

Trade openness has a positive significant impact on economic growth. An increase in trade openness by 1 percent is associated with increase in economic growth by around 2.3 percent in the long run. This indicates that opening up for more trade with the rest of the world provides more opportunities for Tanzania to benefit from the trade, and the benefits may be in form of new technology and the products that the country does not have a comparative advantage. These findings concur with those of Shuaib *et al*, (2015), Alfaro, *et al*., (2019) and Mashrur, (2025).

Interest rate was observed to have a negative significant impact on economic growth in the long run. An increase in interest rate by 1 percent is associated with a decline in the economic growth by around 9.4 percent in the long run. This is associated with the fact that higher interest rates reduce the ability of the public to use/borrow public assets for investments hence discouraging investment resulting into economic growth decline. The decline in economic growth in turn results into decline in the living standard of people which is consistent with Mutinda (2014), Asiedu (2020) and Nwakeze *et. al*,. (2023). Increasing interest rate charged on lending incentivizes banks to supply more loanable funds and a high demand for loans may lead to increased investments, which increases real GDP in the short run (as reported in table 6, a one percent increase in interest rate increases Real GDP by 8.2%). However, the danger for this is that in the long run investors may find loans more expensive which would deter Real GDP growth through reduced investment and this may explain the negative relationship between Real GDP and interest rate in the long run. Generally, these results differ from those obtained by Khobai and Dingela (2017) who found evidence of a negative relationship between interest rate and economic growth in the short run while no evidence was found in the long run.

**Table 6: ARDL estimation results for the determinants of economic growth**

| Economic growth | Coefficient | Std. Err. | T | P>t |
|---|---|---|---|---|
| ECT | -0.544*** | 0.078 | -7.010 | 0.000 |
| **LONG RUN** | | | | |
| Exchange rate | -0.0236** | 0.090 | 2.610 | 0.023 |
| FDI | 0.115** | 0.048 | 2.410 | 0.33 |
| Interest rate | -0.094*** | 0.009 | -10.300 | 0.000 |
| Inflation rate | -0.008 | 0.011 | -0.730 | 0.479 |
| Trade Openness | 0.023*** | 0.006 | 3.900 | 0.002 |
| **SHORT RUN** | | | | |
| Lagged economic growth | 0.399*** | 0.119 | 3.370 | 0.006 |
| D1. Exchange rate | -0.599*** | 0.096 | -6.220 | 0.000 |
| D1. FDI | 0.068*** | 0.020 | 3.490 | 0.004 |

| | | | | |
|---|---|---|---|---|
| LD. FDI | 0.035** | 0.014 | 2.410 | 0.033 |
| D1. Interest rate | 0.082*** | 0.010 | 7.980 | 0.000 |
| LD. Interest rate | 0.037*** | 0.006 | 6.250 | 0.000 |
| L2D. Interest rate | 0.038*** | 0.006 | 6.250 | 0.000 |
| L3D. Interest rate | 0.040*** | 0.009 | 4.460 | 0.001 |
| D1. Inflation rate | -0.011** | 0.004 | -2.540 | 0.026 |
| LD. Inflation rate | -0.027*** | 0.005 | -5.690 | 0.000 |
| L2D. Inflation rate | -0.018*** | 0.005 | -3.610 | 0.004 |
| D1. Trade openness | -0.030*** | 0.004 | -7.130 | 0.000 |
| LD. Trade openness | -0.003 | 0.003 | -0.780 | 0.451 |
| L2D. Trade openness | -0.014*** | 0.003 | 4.210 | 0.001 |
| Constant | 8.674*** | 1.154 | 7.520 | 0.000 |
| R-squared | | | | 0.9225 |

A one percent increase in FDI increases economic growth by around 6.8% in the short run while in the long run the former has a significant positive impact on Real GDP. This highlights the importance of FDI in the country as a channel for creating employment, increasing exports, promoting industrialization and subsequently bringing growth in Real GDP (Balchin, 2016). These results resemble those of Abbes et al, (2014) who found a positive relationship between FDI and Economic growth.

A one percent increase in inflation reduces economic growth by 1.1% in the short run where a general rise in prices translates to higher costs of production which eventually reduces production. In the long run the impact of inflation on Real GDP is insignificant. This is consistent with Kabigiza (2014) and Nwakeze, *et. al.*, (2023) who found a negative relationship between Real GDP and inflation. Lagged values of GDP (previous year GDP) have an insignificant effect on Real GDP in the short run. Furthermore, Table 6 shows that, trade openness has a negative effect on economic growth. A 1% increase in Trade Openness reduces economic growth by around 3% in the short run. This result supports the argument that trade openness maybe detrimental to a country through rising inflation and undervalued exchange rate (Cooke, 2010; Mashrur, (2025). In addition, countries exporting mainly primary products (like Tanzania) would likely be vulnerable to shocks in terms of trade and this may deter growth of Real GDP (Hausmann et al, 2007; Nwakeze, *et. al.,* 2023).

**Diagnostic test**

A multicollinearity test was conducted to determine if two or more predictor (independent) variables in the multiple regression models are highly correlated. We used tolerance and variance inflation factor (VIF) values for the predictors as a check for multicollinearity. As a rule of thumb, a variable whose VIF values are greater than 10 may merit further investigation. Table 7 presents the VIF multicollinearity results. It is observed that there was no multicollinearity in the model because the mean VIF is 5.43 which is below the benchmark of 10 as shown in the table 7 below.

**Table 7: Variance Inflation Factor (VIF) Results**

| Variable | VIF | 1/VIF |
|---|---|---|
| Exchange rate | 10.450 | 0.096 |
| Inflation rate | 7.610 | 0.131 |

| | | |
|---|---|---|
| FDI | 4.080 | 0.245 |
| Interest rate | 3.260 | 0.307 |
| Trade openness | 1.770 | 0.563 |
| Mean VIF | 5.430 | |

**Trend of economic growth and FDI**

Figure 1 depicts the economic growth trend for Tanzania covering the period of 1987 to 2024. It is observed that economic growth has an upward trend throughout the study period. Furthermore, the figure shows that during 2011 and 2012 there was a sharp positive trend for economic growth in Tanzania which implies that there was improvement in the economic conditions of the country that must have been stimulated by improvement in various country macroeconomic variables.

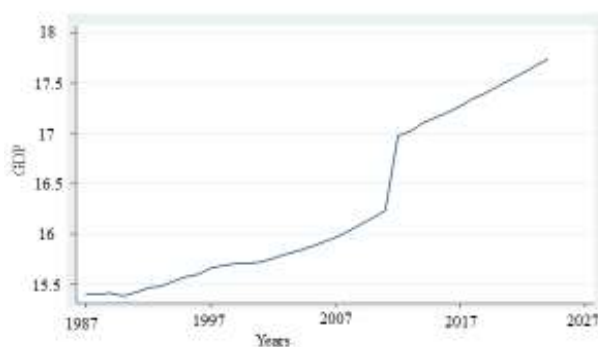**Figure 1: Trend of Tanzania's economic growth (1987 – 2024)**



Figure 2 presents the trend for FDI for Tanzania for the period 1987 to 2024. The figure reveals that up to the mid-1990s' the FDI inflows in Tanzania was very low with a flat trend, and it stood below 1 percent as a share of GDP. Around 2000, the FDI rose sharply to around 2 percent as a share of GDP and since then it has been fluctuating over time with its peak around 2014 at around 5.7 percent. The increase in FDI inflow in the country was after the structural adjustment programs and reforms that took place in late 1980's in the country. These reforms opened up the country for more connection with the rest of the world. In comparison to the trend of economic growth, although FDI has been fluctuating over time, economic growth is observed to pursue positive upward trend throughout the entire study period. This reveals that, despite FDI having positive significant impact on economic growth, still there are drivers for economic growth which help to sustain positive trend for economic growth.

**Figure 2: Trend of FDI in Tanzania (1987 – 2024)**
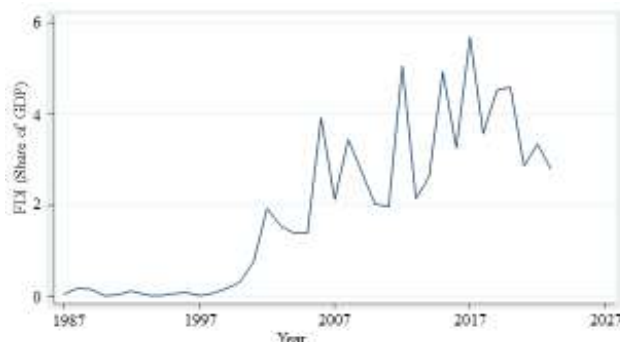


**Granger causality**

The Granger causality Wald test was used to examine the causality effect between economic growth and FDI as shown in Table 8. The null hypothesis for the first scenario is that the FDI does not granger cause economic growth in Tanzania. The p-value obtained is 0.734 which is greater than the threshold of 0.05, therefore it is not significant. Thus, the study fails to reject the null hypothesis and concludes that FDI does not granger cause economic growth in Tanzania during the study period. The second scenario null hypothesis states that economic growth does not granger cause FDI. The obtained p-value is 0.199 which is not significant as it is greater the benchmark of 0.05 significance level. Therefore, the study fails to reject the null hypothesis and concludes that economic growth does not granger cause FDI. The findings from the Granger causality Wald test reveals that there is no granger causality that exists between economic growth and FDI in Tanzania.

**Table 8: Granger causality Wald tests**

| Equation | Excluded | $chi^2$ | Df | Prob >$Chi^2$ |
|---|---|---|---|---|
| Economic growth | FDI | 0.116 | 1 | 0.734 |
| Economic growth | ALL | 0.116 | 1 | 0.734 |
| FDI | Economic growth | 1.648 | 1 | 0.199 |
| FDI | ALL | 1.648 | 1 | 0.199 |

**7. Conclusion and Recommendations**

The main objective of the study was to analyze the impact of FDI on economic growth in Tanzania. The study was motivated by the fact that Tanzania has been among the developing countries that has been receiving increasing FDI inflows but its contribution to the economic growth has not been clear. Specifically, the study focused on examining the contribution of FDI on Tanzania's economic growth, examining the contribution of trade openness and interest rates on economic growth. The study employed secondary time series annual data covering the period of 1987 to 2024. The data was sourced from Bank of Tanzania (BOT), IMF and UNCTAD publications. The Harrod-Domar growth model and Solow growth model theories have been widely applied in the theoretical review to provide deep insights concerning the relationship between FDI and economic growth in Tanzania, and to identify other determinants for economic growth. A number of empirical studies were also reviewed so as to provide insights on the variables to include in the regression and the estimation technique to adopt. The study employed Auto-Regressive Distributed Lag (ARDL) estimation model to examine the causal relationship between FDI and economic growth, while granger causality test was employed to check for

the direction of causality between the two variables. The ARDL model was chosen because it produces robust results even with small sample size, it produces estimates for both short run and long run and it has advantage for using the variables that are integrated of different orders. For this study, the approach provides more advantage regarding producing estimates for both short run and long run. The Augmented Dickey Fuller test was employed to check for the stationarity of the study variables as this is one of the crucial requirements when dealing with time series analysis so as to avoid spurious regression.

The results from the ADF test for stationarity revealed that all study variables were non-stationary and therefore, they had to be differenced at first level. The stationary variables were then used in the regression model (ARDL) to analyze the causal relationship between the FDI and economic growth. The findings from ADRL model revealed that in both short and long run, FDI has positive significant impact on Tanzania's economic growth. It has been established that economic growth in Tanzania had an upward trend throughout the entire study period. The study further revealed that during the 2011 and 2012 economic growth rose sharply, this was largely attributed to the growth of mining, and quarrying that was recorded at 20 percent in 2011.

It has been revealed that FDI inflow into Tanzania had a flat lower trend from 1987 to around 2001, and in 2002, there was a sharp upward trend of FDI inflows as a share of GDP. From 2002 to 2024 FDI inflows in Tanzania as a share of GDP has been fluctuating, peaking in 2017at around 5.7% as a share of economic growth. The Granger causality Wald test was employed despite the positive correlation existing between FDI and economic growth but there is no causality between two variables. As in Epaphra and Massawe (2016) as well as Kabigiza (2014) and Nwakeze, *at al,.* 2023) it has been concluded that FDI has positive impact on economic growth.

Examining the contribution of trade openness on Tanzania's economic growth, the ARDL model established that trade openness has a positive impact on Tanzania's economic growth in the long run while in short run it has negative impact on Tanzania 'economic growth. In line with Shuaib *et al* (2015) it is concluded that trade openness has positive impact on economic growth but in short run it has negative impact. Furthermore, the ARDL model revealed that interest rates have a negative contribution on economic growth in the long run. This compares with Mokolu (2013) who also used the ARDL model to analyse the impact of FDI and interest rate on Nigeria's economic growth and found that there was negative contribution of interest rate on economic growth.

The study has revealed a positive significant impact of FDI on economic growth in Tanzania in both short run and long run. This implies that increase in FDI inflows in the country stimulates the growth of the country's economy be it in the short or long run. Increase in economic growth leads to increase in employment opportunities and peoples' income, which in turn will eventually result into improving the living standards of the people. It is, therefore, recommended that the government should improve FDI enhancing policies that align with the country's specific characteristic and development strategies. The increase in FDI inflows will facilitate a number of spill-over benefits to Tanzania that include technology transfer, finance access and skills set which in turn will contribute to country's economic growth.

Interest rate has been observed to have a negative significant impact on economic growth in the long run. This implies that an increase in interest rate stifles economic growth because interest rates increase the cost of borrowing and reduce disposable incomes and ultimately, less savings which in turn lead to less investments. It is recommended that the government strengthens its monetary policies so as to control the country's interest and inflation rates to boost economic growth.

Trade openness has been observed to have a positive significant impact on economic growth in the long run. This means that opening the country's boundaries with the rest of the world increases the chances for the country's economy to flourish as this increases employment opportunities and benefits the people's welfare. It is, therefore, recommended that the government should improve its international trade policies with consideration to the country's comparative advantages so as to benefit more without harming local industrial sector.

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