EFFECT OF EXTERNAL DEBT ON ECONOMIC GROWTH OF TANZANIA: (1990 – 2023)

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CERTIFICATION

The undersigned certifies that he has read and hereby recommends for acceptance by The Open University of Tanzania a dissertation entitled **"Effect of External Debt on Economic Growth of Tanzania:(1990 - 2023)"** in partial fulfillment of the requirements for the award of degree of Masters of Science in Economics (MSc - Econ)

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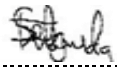
DECLARATION

I, **Seth Duguda Shaltiel**, declare that, the work presented in this dissertation is original. It has never presented to any other University or Institution. Where other people's works have been used, references have been provided. It is in this regard that I declare this work as originally mine. It is hereby presented in partial fulfilment of the requirements for the degree of Master of Science in Economics (MSc-Econ).



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Signature

10th August, 2025

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Date

DEDICATION

I dedicate my dissertation to my lovely family, thank you for being there through prayers and your tireless waiting when I was not showing up during my study. It was your humbleness and moral support that made me accomplish my studies.

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ABSTRACT

This study examined the effect of external debt on economic growth of Tanzania using Autoregressive Distributive Lag (ARDL - Model) for the time series data from 1990 to 2023 collected from the WB database, guided by the debt overhang theory and Keynesian theory of aggregate demand. Gross Domestic Product (GDP) was used as a dependent variable, while External Debt Stock (EDST), External Debt Service (EDSV) and Foreign Direct Investment Inflows (FDI) were used as independent variables. The ARDL findings revealed that in the short run, both External Debt Stock (EDST) and Foreign Direct Investment Inflows (FDI) positively but statistically insignificant affects Economic Growth (GDP). On the other hand, External Debt Service (EDSV) was found to negatively but statistically insignificant affects GDP. In addition, the bounds cointegration test found no long-term equilibrium relationships exist between external debt (ED) and economic growth of Tanzania (GDP). The study concludes that the effect of external debt (ED) on economic growth (GDP) of Tanzania is not harmful, despite the lack clear and strong evidence of its economic benefits. However, from the negative and statistically insignificant of the first lag of external debt stock (EDST) with p-value 0.105 at 95% confidence interval, the study recommends that the government of Tanzania, through its policymakers should pay close attention to the issue of excessive external debt accumulation by limiting external borrowing to avoid the economy falling into debt overhang problem.

Keywords: *Economic Growth, External Debt Stock, External Debt Service, Foreign Direct Investment inflows.*

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LIST OF ABBREVIATIONS

ARDL	Autoregressive Distributive Lag
BoT	Bank of Tanzania
ECM	Error Correlation Model
ED	External Debt
EDST	External Debt Stock
EDSV	External Debt Service
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
IMF	International Monetary Fund
OLS	Ordinary Least Square
TZS	Tanzania Shillings
USD	United States Dollar
WB	World Bank

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Economic Growth Is a quantitative increase in the total monetary value of all final goods and services produced within a country usually measured every after one year (Roser, 2021). Holding other factors constant, “the growth of any economy depends critically on its access to finance” (Haini, 2021). Many developing countries face economic growth constraint due to limited domestic financial resource including low savings, low tax and non-tax revenue collections (Sadaf, et al., 2023). Hence opt for foreign sources particularly external borrowing to finance both economic and social infrastructures such as healthcare, education and other public infrastructure projects like roads aiming at fostering economic growth (Haque, Iftikhar, & Rizvi, 2023).

In Rwanda, external debt has been among the most reliable source of fund for its Economic growth. Despite a sharp increase in external debt from USD 1.8 billion in 2012 (23.6% external debt to GDP ratio) to USD 9.6 billion in 2022 (72.one percent external debt to GDP ratio), findings show that external debt is still at moderate risk of distress and is significant and positively related to Economic growth (MINECOFIN, 2023).

Globally, External borrowing can help countries deal with economic shocks and finance exceptional large projects (Brueckner, Dahal, & Lin, 2024). But the negative effect of borrowing on economic growth is driven by political failures associated with strategic manipulation and common-pool problems which are major cause of overborrowing (Fatás, Ghosh, Panizza, & Presbitero, 2019). For instance, in 2016

the total external debt of Oman stood at 18.5 USD billions equivalent to 29% of the country's GDP, then two years later the external debt ratio to GDP increased up to 40% resulted from too much reliance on external borrowing (Kharusi, & Ada, 2018). Since independence, Tanzania like many other developing countries has been experiencing a series of external debt from foreign lenders in an effort to mitigate economic shocks and promote economic growth due to budget deficit caused by insufficient domestic revenues and low investment (International Monetary Fund, 2021).

From 1997s to December 2003 the stock of external debt hit USD 7.89 billion equivalent to 96.2% of total national debt stock, whereby Stock of Gross Domestic Product was USD 15.2 billion (Bank of Tanzania, 2021). When the national external debt stock increased from USD 6.3 billion to USD 13.2 billion equivalent to an increase of 109.5% from 2008 to 2013 respectively, the national Gross Domestic Product Stock increased from USD 27.9 billion to up to USD 45.6 billion equivalent to 63.4% increase in GDP stock (Bank of Tanzania, 2021). When the external debt stock increased from USD 13.2 billion to USD 21.1 billion equivalent to an increase of 59.8% from 2013 to 2018(five years later) the stock of Gross Domestic Product (GDP) increased up to USD 57 billion equivalent to 25%.

Finally, from December 2018 to December 2023 (five years latter) the national debt of Tanzania hit USD 41.8 billion, out of which USD 29.6 billion (70.7%) was external debt stock equivalent to an increase of 40.2% stock of external debt while the stock of Gross Domestic Product (GDP) increased to USD 79.2 billion equivalent to 38.9% increase (Bank of Tanzania, 2021). Over all these periods, the

trend of Tanzania's stock of gross domestic product (GDP) in respect to the external debt stock has been increasing positively but inelastically, making it difficult to draw its significance without further statistical testing. For instance, (Bank of Tanzania, 2021) "in 2008 to 2013 external debt stock rose by 109.5% while GDP stock increased by 63.4%" which revealed contradicting results to a number of findings and theories explaining about external debt on economic growth (Kingu, 2024).

According to (Tile, Utouh, & Sesabo, 2024) their study found a negative relationship between external debt and economic growth Tanzania. In addition, (Daba Ayana, Demissie, & Sore, 2023) in an investigated the short and long run effect of external debt on the economic growth of 39 Sub Saharan African countries. The result revealed significant negative impact. Nevertheless, (Mohsin, Ullah, Iqbal, & Taghizadeh-Hesary, 2021) reported that the economic growth was significant and negative effected by external debt in South Asian countries. On the other hand, (Nyabakora, 2023) revealed significant positive effect between external debt and GDP growth in Tanzania emphasizing more external borrowed to promote economic growth.

In addition to the above literatures; (Jumayeva, 2025) based on Keynesian theory (1930s) stated that external debt positively influences economic growth by stimulating aggregate demand highlighting that, the private sector alone cannot always maintain full employment; thus, fiscal and monetary policies should be used to regulate aggregate demand. Nevertheless, the debt overhang theory; Krugman (1988) & Sachs (1989) also suggested positive associations except only when a country's economy experience debt overhang (Karadam, & AKIN, 2021).

1.2 Statement of Problem

Tanzania's external debt constitutes 70.7% of the total national debt equivalent to 37.4% ratio to GDP is among the important streams providing funds for executing government expenditures that support economic growth (Tanzania MoF, 2023). However, the effect of external debt on economic growth (GDP) has remained a subject of debate among individuals and scholars (Kausar, Ali, & Khan, 2022; Manasseh, et al., 2022). Some urge that the efficient utilization of external debt on more productive and development expenditures can have positive and significant effects on economic growth by increasing net investment returns, suggesting that, governments have to take on more external debt due to the fact that borrowing internally can disturb private consumption leading to negative economic growth (Lelya, & Ngaruko, 2021; Nyabakora, 2023).

In addition, Keynesian theory of aggregate demand (1930s) state that external debt can positively influence economic growth (GDP) by stimulating aggregate demand through government spending (Parui, 2024). However, this theory fails to take into account the debt service obligation driven by borrowing. On the other hand, finding revealed that external debt (ED) is harmful to economic growth (GDP), expressing the significant negative effect on economic growth (Daba Ayana et al., 2023). For instance, (Tile, et al., 2024; Were, & Madete, 2022) found a significant negative relationship between external debt and economic growth of Tanzania.

In addition, (Mohsin, et al., 2021) reported a significant negative effect of external debt on economic growth (GDP) of South Asian countries. Nevertheless, Krugman (1988) and Sachs (1989) in the theory of debt overhang also suggested negative

associations when a country's economy experience excessive borrowing that discourages investment leading to crowding out effect and consequently hindering economic growth (Dawood, Feng, Ilyas, & Abbas, 2024).

Despite the number of studies examined this area, many reviewed works including (Mohsin, et al., 2021; Ndu, 2024; Nyabakora, 2023; Shangai, & Ochieng, 2019) found to employ small sample sizes for analysis, ranging from 10 to less than 20 observations which is contrary to the assumptions of the Central Limit Theorem that requires at least 30 number of observations in a model running time series data (Hoang, 2019). “The more data that is collected, the more informative the study will be with respect to its inferential goals” (Lakens, 2022). Meaning that, as the sample size increases indefinitely statistical theory shows that OLS estimators tend to be normally distributed leading to more reliable and precision results of the model (Casella, & Berger, 2024; Gujarati, & Porter, 2009). Therefore, the study found it important to examine the effect of external debt (ED) on economic growth (GDP) of Tanzania from 1990 to 2023 (34 observations) in order to address the above gap and conflicting findings.

1.3 Research Objectives

1.3.1 General Objective

The general objective of the research was to examine the effect of external debt (ED) and economic growth (GDP) of Tanzania from 1990 to 2023.

1.3.2 Specific Objectives

i. To examine the relationship between External Debt Stock (EDST) and Economic Growth (GDP) of Tanzania from 1990 to 2023.

ii. To assess the relationship between of External Debt Service (EDSV) and Economic Growth (GDP) of Tanzania from 1990 to 2023.

iii. To assess the long run relationship between external debt (ED) and Economic Growth (GDP) of Tanzania from 1990 to 2023.

1.4 Research Hypothesis

H_0: There is no significant relationship between External Debt Stock (EDST) and Economic Growth (GDP).

H_0: There is no significant relationship between External Debt Service (EDSV) and Economic Growth (GDP).

H_0: There is no significant long run relationship between External Debt (ED) and Economic Growth (GDP).

1.5 Scope of the Study

The scope of the study involved nominal Stock of Economic Growth (GDP) as a dependent variable while External Debt Stock (EDST) and External Debt Service (EDSV) as independent variables as well as Foreign Direct Investment inflows as a control variable capturing the time series data of 34 years (1990 - 2023) from World Bank database.

1.6 Significance of the Study

The study is expected to serve as bench mark to conduct further research on this area, as well as provide some insights on how policymakers should make an informed decision about external borrowing to avoid debt overhang problem. It will also provide some information of the current performance of external debt on

economic growth of Tanzania.

1.7 Limitations of the Study

The study faced a challenge of unavailability of some data from the Bank of Tanzania (BOT) database of the external debt stock (EDST) from 1990 to 2004 and external debt service (EDSV). But the same data for all years and variables were available from the World Bank database for the world development indicator. Hence the challenge solved.

CHAPTER TWO

LITERATURE REVIEW

2.1 Overview

This chapter described how some previous literatures explained the effect of external debt on economic growth by considering definitions of some key terms, theoretical review & empirical review in particular from which the knowledge gap was found. Lastly, the conceptual framework through objectives of the study was developed to show how external debt was expected to affect economic growth (GDP).

2.2 Definition of Key Terms

2.2.1 Economic Growth (GDP Growth)

Economic growth is a quantitative increase in the total monetary value of all final goods and services produced within a country usually measured every after one year (Roser, 2021). When an economy faces budget deficit during budget execution it may borrow from domestic and/or external lenders (EDST) to bridge the deficits and carry out projects (Gaiya, Akintola, Akpan, Abel, & Etudaiye, 2024). The stock of funds borrowed if properly allocated in more productive investments can statistically and significantly have positive influence on budget implementation leading to economic growth (Alabi, Atanda, Akintoye, & Kajola, 2024).

On the other hand, some studies show that, the continuous accumulation of debt stock exacerbates the crowding-out effect, impacting overall output (Bai, Xu, & Jin, 2024). Implying that, the resources being used to service the debt of the nation, crowd-out funds that could have been used to spur growth of the economy, the higher levels of debt servicing by the government increases fiscal deficits leading to

abandoning of some projects and finally slow down economic growth (Aladejare, & Musa, 2024). Moreover, the influence of foreign investors rises up capitals or funds needed to hire labors, land etc. to establish projects that add values through production of goods and services, leading to economic growth of a country (Makiela, & Ouattara, 2018).

2.2.2 External Debt Stock

External debt stock is a portion of a country's debt obligations that is borrowed from foreign lenders (non-residents) including foreign banks, governments and international financial institutions like IMF and WB (Chukwu, Kur, & Nwugo, 2023). These borrowed funds are crucial in implementing national investments or projects left from insufficient national budgets (budget deficits) and help to implement projects which could not be implemented at such current period, hence stimulate economic growth particularly when funds are channeled into productive activities (Musse, Sharofiddin, & Mohamed, 2024).

2.2.3 External Debt Service

External debt service is an external debt installment composed principal and interest payment obligations by a country to foreign lenders (Saungweme, 2020). This obligation (EDSV) reduces national budget held to implement some investments, since a certain portion of national budget is kept to pay back the debt instead of being used for running or implementing public projects like healthcare facilities, education, roads, railways and utilities leading to crowds out all these initiatives to improve the country's productive capacity through public investment associated with a certain level of unemployment (Botha, 2020).

2.2.4 Foreign Direct Investment Inflows (FDI)

Refers to the sum of cross border capital inflows, reinvestment earnings from foreign investors in a country for a specific period of time (International Monetary Fund. 2025, July 1). The inflow of capital increases funds required for accumulation of input factors (investments in capital, labor growth) to create goods and services from an increased economic activity which in turn reducing unemployment level and increase aggregate demand, hence speed up economic growth (Makiela, & Ouattara, 2018).

2.3 Theoretical Review

In an examining the effect of external debt on economic growth (GDP), the debt hypothesis and Keynesian theories were used in review of the study. To some extent the debt hypothesis reflected long term effect of debt accumulation while Keynesian theory was most based on its short-term effect of external debt on economic growth through which borrowed funds stimulate aggregate demand.

2.3.1 Debt Overhang Hypothesis

The hypothesis introduced by Krugman (1988) & Sachs (1989), suggested that when a country's debt level becomes excessive, the anticipated debt service obligations of future taxes needed to service the debt, discouraging investment and consequently leading to a decline in economic growth caused by crowding out effect (Dawood, et al., 2024). Through excessive government borrowing external debt stock (EDST) increases, leading to debt accumulation that push the government allocate a large portion of its budget to service external debt (EDSV) instead of investing that fund in more productive sectors or development projects. This anticipated debt service cause displacement of private investment due to crowding-out effect leading to

decline or stagnation of economic growth (Chudik, Mohaddes, Pesaran, & Raissi, 2017).

However, this theoretical perspective does not state the exactly amount or percentage of debt to be borrowed by a country of which its economy cannot fall into debt overhang trap (Chuku, et al., 2023). On the other hand, it only recognizes the non-linear nature of these relationships, aligning with the proposition that an optimal level of external debt exists; beyond this threshold, adverse effects like debt overhang and crowding-out may occurs (Azretbergenova, Zhetibayev, & Yessymkhanova, 2022).

2.3.2 Keynesian Theory

According to Keynesian theory, external debt stimulates economic growth through increased government spending (Kingu, 2024). The theory assumes that, AD = C + I + G + (X-M): Where AD stand for Aggregate Demand or GDP, C for consumption, I for private investment = Saving, G for government spending and (X-M) for net export (Senadza, Fiagbe, & Quartey, 2017). The theory post that, when government injects borrowed fund (EDST) in an economy it increases money supply and stimulates economic activities which increases aggregate demand (GDP) (Righteous, Erhuotor, Andrawus, & Ademu, 2024).

The theory also poses that, when a country experience foreign direct investment inflows (FDI) it may lead to merger and acquisition of existing investments and/or builds new factories or industries which lead to positive economies of scale through increased level of productions of goods and services which finally lead to Economic growth (Ha, Chu, & Nguyen, 2021). However, a certain expansion of the Keynesian equation create room for the crowding out impacts of fiscal policy, which implies

that an increase in public spending take out the private sector demand (Chien, et al., 2022). In addition, the theory does not take debt service obligation into account, for debt service burden on government reduces government budget for public spending/investments on both social and economic infrastructures which are crucial for economic growth (Akanbi, Uwaleke, & Ibrahim, 2022). It also isolates the negative effect of dollarization where the borrowed funds are denominate in foreign currency making it harder to run standard stabilisation of budget deficit for a country's growth process (Missaglia, 2021).

2.4 Empirical Review

This section, revised some previous studies and findings including articles, journals, research papers, etc., relating to the effect of external debt on economic growth by assessing each variable used in the study. The review was conducted based on considerations of the regression model used in each study, the nature of data used and number of observations or sample size for each study, as well as the location or research setting divided into three categories, that is world, Africa and Tanzania.

2.4.1 Worldwide Reviews

External Debt Stock: In an analysis of the relationship between external debt and economic growth in South Asian countries using Quantile regression for a period from 2000 to 2018. The result revealed that external debt stock is statistically significant and positively associated with GDP growth although external debt is negatively correlated to economic growth (Mohsin, et al, 2021). This study employed only 18 years of as a number of observations which is very few and not recommended by the Central Limit Theorem that require at least 30 observations for

time series data (Hoang, 2019). Sadaf, et al, (2023) in examining how Pakistan's external debt affects economic growth from 1972 to 2021 using OLS, the results showed that external debt stock is positively but insignificant related to economic growth. This study was in line with (Kausar, 2022) from Pakistan as well as (Alwi, Lee, Azman, & Lee, 2020) from Malaysia.

External Debt Servicing: Awan & Qasim, (2020) in the analysis of the impact of External Debt on Economic Growth of Pakistan for the period 1980 - 2017 using OLS the study results showed that foreign debt services had negative impact on Economic Growth. This study showed consistence result with (Kharusi, & Ada, 2018) from Oman. Mohsin, et al, (2021) specifically assessed the relationship between external debt and economic growth in South Asian countries, using Pooled OLS and fixed effect for a period from 2000 to 2018. The results revealed that external debt servicing is positively associated with economic growth. However, the number of observations or sample size used were also few to allow general conclusion.

2.4.2 African Reviews

External Debt Stock: Gizaw, (2020) in an effort to determine the effect of public external debt on economic growth in Ethiopia using an Autoregressive Distributive Lag model (ARDL modeling) for a period from 1981 to 2014 with Real GDP per capita as a function of nominal stock of public external debt as a percentage GDP, public external debt servicing as a percentage of export of goods and services, human capital, physical capital, labor force, trade openness and policy change dummy. The empirical result reveals that in the long-run high level of stock of public external debt has a significant negative effect on economic growth. Therefore, there is an

evidence for the “Debt overhang” and “Conventional view” of public debt in Ethiopia.

Despite of using enough sample size and best model for running time series data, the study used real GDP per Capita as a proxy dependent variable (GDP) and nominal independent variables as well as many nominal control variables which may lead to overfit the model, multicollinearity which was also not tested, and biased generalization of the results that may also cause misleading policy recommendations. Uchenna, Madubuike, Anaenugwu, & Chris, (2025) examined the impact of debt sustainability on economic growth in Nigeria from 1986 to 2024 using the co-integration and Pairwise Granger causality techniques.

The variables of this paper were real GDP; debt-to- GDP ratio, debt-to-service ratio, monetary policy rate, and government expenditure on the theoretical frameworks of the exogenous growth theory and the debt overhang hypothesis. The results show that both debt-to-GDP ratio and debt-to-Service ratio had a negative and insignificant relationship with economic growth. Despite of using enough sample size, running the model using Real GDP for dependent variable and Nominal ratios of independent variables creates doubts on the validity of inferential statistic. Tile, et al., (2024) investigated the influence of external debt on the economic growth of five East African countries using the ARDL model and panel data (1970 - 2020). The findings revealed that external debt have negative and statistical significance in both the short and long run on economic growth. This study found to be consistent with (Daba Ayana et al, 2023) from 39 Sub Saharan African countries using GMM estimator.

External Debt Servicing: Ndu, (2024) examine the effect of debt servicing on economic growth in Nigeria for a period from 2005 to 2021 using OLS from SPSS.

The findings revealed that Foreign Debt Servicing had negatively and significantly affected economic growth of Nigeria despite of very few numbers of observations used, which is 16 years. This study found to align with (Chanda, 2022) from Zambia. Akanbi, et al, (2022) investigated the relationship between external debt service and economic growth in Nigeria from 1981 to 2020 using the ARDL model. The study provided evidence of a negative relationship between external debt service and economic growth although it was not statistically significant. This study was in line with (Baba, 2020) from Kenya. On the other hand, (Gizaw, 2020) from Ethiopia using ARDL model for the data from 1981 to 2014 his study reported that, public external debt servicing has a negative coefficient but insignificant in affecting economic growth.

In the analysis of the impact of public debt service on economic growth in Zambia using ARDL model for the period from 1970 to 2017. Results revealed that the impact of government debt service on economic growth is time-variant, whereas the neutrality of public debt service on economic growth was confirmed in the long run, but in the short run the relationship was negative (Saungweme & Odhiambo, 2020). Omodero & Alpheaus, (2019) assessed the effect of foreign debt on the economic growth of Nigeria for a period from 1997 to 2017 using OLS. The result indicated that external debt servicing had a strong and significant positive impact on economic growth. This study was consistent with (Matandare & Tito 2018) from Zimbabwe. The above study suffered few numbers of observations with only 20 years sample size.

2.4.3 Tanzania Reviews

External Debt Stock: Nyabakora, (2023) in his study of the effect of public debt on Economic Growth in Tanzania for a period 2009 to 2019 using OLS method in the

E-Views 12 package. The results revealed that external debt stock significantly and positively affects Economic Growth. The study used very few observations, that is from 2009 to 2019 equivalent to 10 years. This sample size is very small to rely on as per Central Limit Theorem condition of minimum sample size for a model running time series data. However, this study was consistent with (Lelya & Ngaruko 2021) using ARDL model.

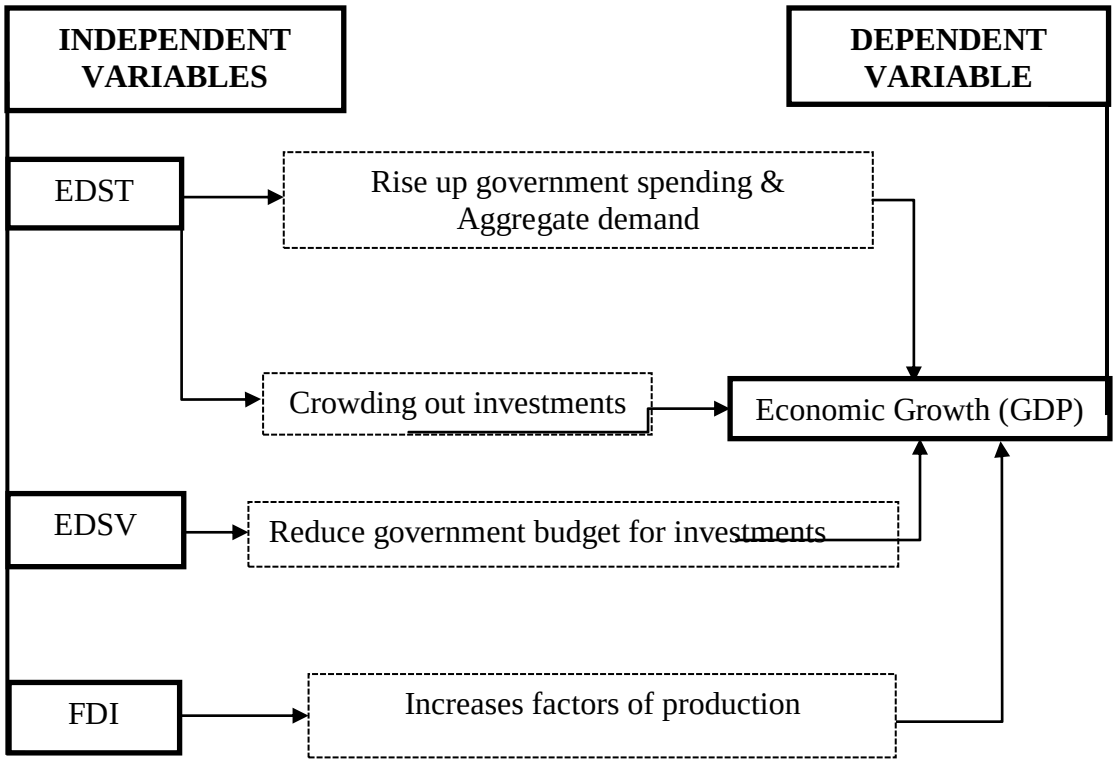
Shangai, & Ochieng, (2019) assessed the effect of external public debt financing on the economic growth of the 6 east African member states over a period 2000 to 2017 using regression analysis. The study established that overall, 64.5% change in economic growth in EAC was significantly explained by the external debt of the member states. The study established that 76.one percent change in economic growth of Tanzania was explained by the level of external debt stock. Alemu, Choramo, & Jeldu, (2023) analyzed the impact of External Debt on Economic Growth in East African Countries including Tanzania from 1998 to 2019 using ARDL model through a pooled mean group. The finding reveals a significant long-term positive relationship between the stock of external debt and economic growth. However, its square revealed a significant long-term negative relationship with Economic Growth.

External Debt Servicing: Shilla, (2023) in the analysis of the impact of public external debt services on economic growth in Tanzania from 1992 to 2021 using OLS. The results revealed that external debt service was positively but statistically insignificant related to economic growth. Were, & Madete, (2022) investigated the relationship between public debt and investment in Tanzania for the period 1976 to 2020 using an ARDL model. The results show that the lagged effect of external debt

accumulation is negative in the long run due to the cost of debt servicing that limits the net resources available for additional investment for economic growth.

2.5 Conceptual Framework

On this section the study showed how the independent variables were expected to affect dependent variable. The conceptual framework posits that, injecting external debt stock (EDST) in an economy raise up capital for implementing investments that increase aggregate demand leading to increase in Stock of GDP, but excessive borrowing increases EDST causing crowding out of private investment, hence negative economic growth.



GDP = f (EDST, EDSV, FDI).

Figure 2.1: Conceptual Framework

On the other hand, high level of external debt servicing (EDSV) reduces government budget for public investment leading to economic stagnation while Foreign Direct Investment inflows (FDI) rises up amount of gross input factors in any economy (investments in capital, labor growth) leading to positive economic growth. Therefore, the measurement of the dependent variable was in stock of nominal GDP in billions of USD as well as independent variables such as foreign debt stock (EDST), external debt service (EDSV) and Foreign Direct Investment inflows (FDI) as a control variable.

2.6 Research Gap

Some literatures show that the relationship between external debt and economic growth is positive and significant while other studies found significant negative effect on economic growth (Tile, et al., 2024). On the other hand, findings also revealed contradictory results of external debt service on GDP growth, for instance (Shilla, 2023) revealed insignificant positive relationship whereas (Ndu, 2024) found significant negative relationship between the two variables.

Moreover, many reviewed studies including (Mohsin, et al., 2021; Ndu, 2024; Nyabakora, 2023; Shangai, & Ochieng, 2019) employed small sample sizes for analysis, ranging from 10 to less than 20 observations, which is contrary to the assumptions of the Central Limit Theorem that requires at least 30 number of observations in a model running time series data (Hoang, 2019). In addition, some other literatures used many control variables which may cause model overfitting, multicollinearity, leading to misleading inferential statistic (Gizaw, 2020). On the other hand, (Uchenna, et al., 2025) used real gross domestic product (real GDP) as a

dependent variable and nominal values in the independent variables to examine the effect of external debt on economic growth.

Therefore, this study found it necessary to fill the gap of small sample sizes revealed from many previous literatures by examining the effect of external debt on economic growth using 34 observations. “The more data that is collected, the more informative the study will be with respect to its inferential goals” (Lakens, 2022). Meaning that, as the sample size increases indefinitely statistical theory shows that OLS estimators tend to be normally distributed leading to more reliable and precision results of the model (Casella, & Berger, 2024; Gujarati, & Porter, 2009). In addition, the study found again important to run the model using all nominal variables (at current prices) to both dependent and independent variables with the aim of taking into account the impact of inflation and currency exchange rate during external debt settlements due to the fact that, when domestic currency depreciate, the stock of debt denominated in foreign currency and stock of gross domestic product (nominal GDP) go high in term of domestic currency (Brandao-Marques, et al 2024; Missaglia, 2021).

CHAPTER THREE

RESEARCH DESIGNS AND METHODOLOGY

3.1 Overview

The chapter described methods, structures and techniques that was used in the study such as research design, philosophy of the study, research instruments, data collection and data analysis method.

3.2 Research Design

Research design is a conceptual blueprint within which a research is conducted or planed for data collection and data analysis (Kothari, 2004). A quantitative correlational research design was employed to examine the effect of external debt on economic growth, whereby nominal GDP was used as a proxy of dependent variable economic growth, while nominal external debt stock (EDST) and external debt service (EDSV) were used as independent variables. In addition, the study included nominal foreign direct investment inflows (FDI) as a control a variable (other variable that can affect economic growth apart from the main variable).

3.3 Sampling and Research Philosophy

The sample data covered the period of 34 years for the period from 1990 to 2023 to achieve sufficient data that provide desired level of accuracy using purposive sampling (Lakens, 2022). The study followed a positivism research philosophy based on the reality of empirical findings that used scientific methods and measurable facts (Specht, 2019). The covered period consists a major turning point in Tanzania's economic history, change in political regimes, and significant policy shifts that include strictly implementation of structural adjustment programs (SAPs)

associated with all its conditionalities such as liberalization, external borrowing from IMF and WB, etc. On the other side, it is clear known that the system of data collection, records and archives management in Tanzania was somewhat improved from manual to sophistication systems characterized by high precision, efficiency, and reliability from 1990s, unlike the period before.

3.4 Data Source and Collection Method

A freely accessible secondary data for public use were downloaded from the World Bank database (World Bank, 2024). This is because the world bank is a reputable organization with reliable and valid data for official and public use (Taherdoost, 2021). These data are also being used by government agencies & ministries, international organizations like IMF, and researchers for different purposes, including classifying the level of an economy of a country, debt sustainability level, poverty indices, as well as conducting different analysis (Azretbergenova et al., 2022).

3.5 Data Analysis

Autoregressive Distributive Lag Model from STATA was employed to analyze short run relationship of the regression model. The model was selected based on the nature of data which is time series (a set of observations on a particular variable recorded in time sequence/space) and its ability to handle and analyze variables with a mixed order of integration revealed by the unit root test results as well as its ability to run variables with different lag values at once (Kripfganz, & Schneider, 2023; Tile, et al., 2024). Therefore, the student test (t-test) and the P-Value at 95% level of confidence interval were used to draw inferential statistic about the cause and effect

relationship (Getinet, & Ersumo, 2020).

3.6 Model Specification

Econometric Model

Log linear regression model for estimating the variables was derived from the Cobb-Douglas Production Function which state that, output (Q) is the function of inputs such as Technological progress, Labor and capital (Dominick, & Derrick, 2001). Therefore, from the above study assumes that (GDP) is the function of inputs (EDST, EDSV, FDI). The Cobb-Douglas function was selected due to its ability handle non linearity functions that requires log transformation to be linear as well as its ability to make easy elasticity interpretation.

From the Cobb-Douglas Production Function

$$Q = AL^{\alpha} K^{\rho}$$

Where Q, stand for output, A L K for inputs Technological progress, Labor, & Capital respectively, and $\alpha \& \rho$ stand for output elasticities.

Then introduced the study variables in the production function;

GDP = f (ESDT, EDSV, FDI)

Log - Linear Econometric Model:

$$LnGDP_t = \beta_0 + \sum_{i=1}^{} \beta_1 LnGDP_{t-i} + \sum_{i=0}^{} \beta_2 LnEDST_{t-i} + \sum_{i=0}^{} \beta_3 LnEDSV_{t-i} + \sum_{i=1}^{} \beta_4 LnFDI_{t-i} + \varepsilon_t$$

Where:

$LnGDP_t$ – Log of Gross Domestic Product at time t

$LnEDST_t$ – Log of Foreign/External Debt Stock at time t

$LnEDSV_t$ – Log of External Debt Service at time t

$LnFDI_t$ – Log of Foreign Direct Investment at time t

β_0 - Intercept

β_1, β_2, β_3, are coefficients of the respective independent variables while $_{t-i}$ represent a time lag at specified previous year.

ε_t - Error term at time t

3.7 Diagnostic Tests

Diagnostic tests for time serious data was carried out to ensure that the model satisfies assumptions of classical linear regression model that includes constant mean, variance, covariance of the error term. The tests included but not limited to stationarity test (Unit root test), heterogeneity, multicollinearity, autocorrelation and normality. These enabled the study to ensure that the model is appropriate and reliable for analyzing the given data.

3.7.1 Test for Unit Root

The variables were tested for stationarity using Augmented Dickey-Fuller (ADF) and Phillip Perron test, the null hypothesis (H_0) was to be rejected if computed tests statistic is more extreme negative that the DF critical tau values then at 5% (Gujarati, & Porter, 2009). This helped the study to make an informed choice or determine the order of integration of each variable, the model to be used in regression as well as tools of robustness test to be used to avoid spurious results (Ajewole, Adejuwon, & Jemilohun, 2020). For instance, instead of using Johansen cointegration test, the bounds cointegration test was used to test if there is existence of long-term equilibrium relationship among the variables as well as ARDL Model for analysis was selected.

3.7.2 Testing for Multicollinearity

Multicollinearity means “existence of a perfect, or highly, linear relationship among two or more explanatory variables of a regression model” (Gujarati, & Porter, 2009). Since the study used more than one independent variable that, testing for multicollinearity was inevitable to make sure that interpretation of the finding results is determined and easier to identify the separate effects of the independent variables on dependent variable (Obite, Olewuezi, Ugwuanyim, & Bartholomew, 2020).

The test was based on the Variance Inflating Factor (VIF) results after first difference is done to make sure all variables are stationary. When it is less than 7, implied there is no multicollinearity, when VIF is between 7 and 10 meant there is multicollinearity but not serious and when the VIF equal 10 meant serious correlation among the independent variables. The null hypothesis (H_0) claimed to have no multicollinearity, meaning that the VIF is less than 10 (Gujarati, & Porter, 2009).

3.7.3 Heteroscedasticity Test

Heteroscedasticity refers to the case in which the variance of the error term is not constant for all values of the independent variable which violates the homoscedasticity assumption of the OLS regression model leading to unbiased but inefficient (i.e., larger than minimum variance) estimates of the coefficients, as well as biased estimates of the standard errors that is, incorrect statistical tests and confidence intervals (Dominick, & Derrick, 2001). The Breusch-Pagan test for heteroscedasticity was employed to assess whether the variance of residuals in the regression model for the time series data that tend to fluctuate over time and create

some outliers are constant or not constant (Raza, Ahmed, Razzaque, & Hina, 2023). The null hypothesis suggested that, the variance of the error term/ residuals is constant, therefore, the decision criteria for rejecting the null hypothesis was done by comparing the chi squared and its Prob>chi^2 against the critical value. When the Prob>chi^2 is greater that critical p-value (0.05) implied that the variable has no problem of heteroskedasticity (Đalić, & Terzić, 2021).

3.7.4 Serial Correlation Test

Serial correlation or autocorrelation refers to the problem common in time-series analysis whereby the error term in one time period is correlated with the error term in the previous time period causing biased standard errors consequently leading to incorrect statistical tests and biased confidence intervals (Dominick, & Derrick, 2001). Testing for serial correlation was done using the Breusch-Godfrey Test to make sure that the classical linear assumption of no autocorrelation is met (Farris, Deidda, Viola, & Mascaro,2021). This test was driven by the nature of data that follow natural ordering over time and exhibits lags from each successive period. The null hypothesis (H_0) suggested that, the time series data has no serial correlation implying that the Prob>chi^2 is greater than a chosen critical probability value (0.05), hence cannot be rejected. Otherwise the null hypothesis can be rejected (Chaudhary, et al 2023).

3.7.5 Testing for Normality

The Shapiro-Wilk W test, was employed to assess whether the residuals are normally distribution, for validity and reliability of the t-tests and F-tests used to assess the significant of the coefficient (Cardoso, et al., 2025). The H_0 suggested that the

residuals follow normal distribution, meaning that the Prob>Z value is greater than the critical P- Value at 5% while the H_1 claimed that, residuals do not follow normal distribution, that is Prob>Z value is less than P-value 0.05 (Orcan, 2020).

3.8 Robustness Test

3.8.1 Testing for Cointegration

As a result of running time series data that exhibit trends over time, the long-term equilibrium relationship between variables was tested using bounds cointegration test which is able to accommodate variables with of mixed orders of integrated that is order one I (1) and order zero I (0) revealed by the unit root test. The null hypothesis claimed absence of level relationship (Badshah, & Bulut, 2020). In simple language the aim of this test was to assess if an increase or decrease of a magnitude in an independent variable lead to a change in dependent variable in the same direction over time despite being individually non-stationary.

3.8.2 Causality Test

The Granger causality test, was used to assesses or test whether the external debt predict economic growth or vice versa (Guo, & Feng, 2010). The null hypothesis (H_0) suggested that neither the dependent nor independent variable granger cause another, implied that, the chosen critical probability value is less than the probability chi^2 at 95% level of significant interval.

3.9 Reliability and Validity of Data

To ensures reliability and validity, all data was collected from reputable organization that is the World Bank databases. In addition, all diagnostic and robustness tests was

done accordingly to make sure no violation of LCRM exist. Based on the nature of data and diagnostic results, the ARDL regression model from STATA was employed for analysis of data (Adeyemi, 2024; Shaheen, et al., 2023).

3.10 Ethical Considerations

All ethical consideration set by the Open University of Tanzania and research principles was adhered accordingly. This includes request for permit letter of conducting research, consent and confidentiality (Parveen & Showkat, 2017).

CHAPTER FOUR

FINDINGS

4.1 Overview

The study presented various findings observed from the analysis of effect of external debt on economic growth of Tanzania using timeseries data from 1990 to 2023. Different tools from STATA software packages were used in analysis.

4.2 Descriptive Statistics

Table 4.1: Descriptive Statistics Summary for the Variables used

Variable	Observation	Mean	Std. Dev.	Min	Max
Nominal GDP	34	30.5023	22.90391	6.182873	79.0624
Nominal FDI	34	.784567	.6115323	.00376	2.087261
Nominal EDSV	34	.4747264	.5964546	.0717062	2.242425
Nominal EDST	34	12.50852	8.345915	4.117817	34.59795

Source: Researcher Computation using STATA

From the descriptive statistics table summary, nominal external debt stock shows a means of almost a half of nominal GDP with 12.5 USD billions and 30.5 USD billions respectively, which implies its crucial contribution to the economy, despite of such high mean value of nominal EDST, the mean of nominal EDSV is very small with 0.5 USD billions. This implies that, the government of Tanzania externally borrows good types of loans from good sources with very little interest rate.

4.3 Trends of the Variables

Graph showing trend of Gross Domestic Product (GDP) of Tanzania in USD billion from 1990 to 2023.

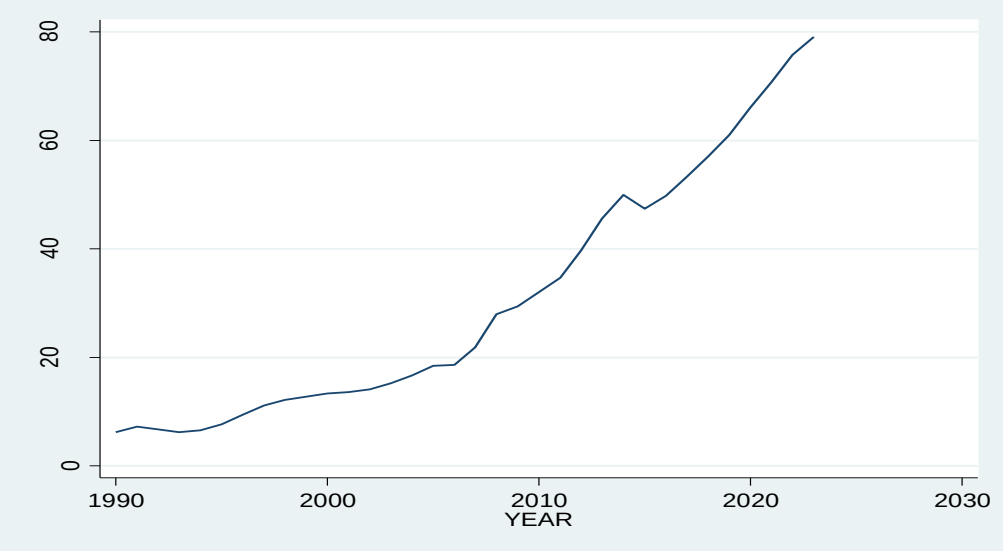


Figure 4.1: Trend of Tanzania's GDP (in USD Billion)

Despite of relative flatter growth in GDP from 1990 to 2008s with minimum fluctuations, the sharp rise in GDP was experienced from 2010 to 2023 except only in 2015 whereby a sudden decline was revealed. This implies that the economic growth of Tanzania has been growing in a rising trend with minimum fluctuations.

Graph showing trend of External Debt Stock (EDST) of Tanzania in UDS billions from1990 to 2023.

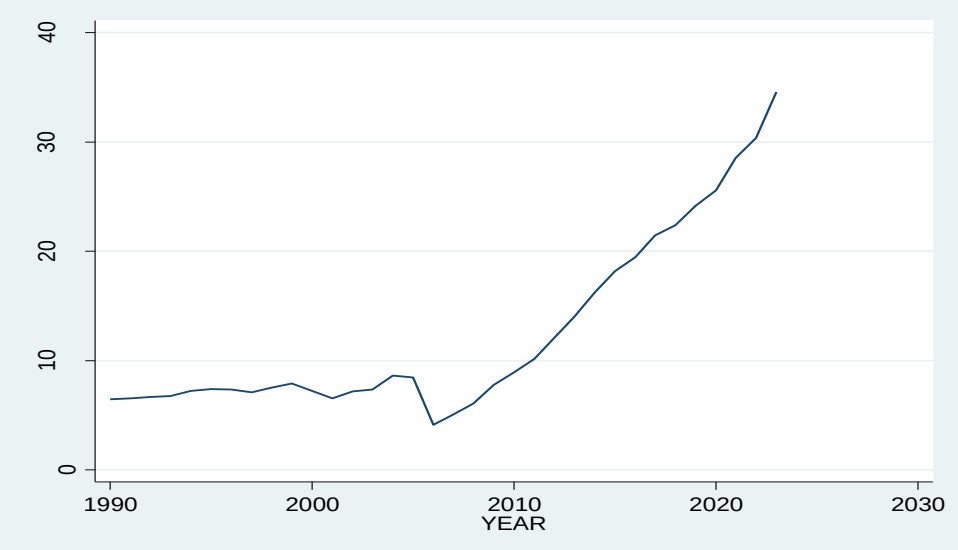


Figure 4.2: Trend of Tanzania's EDST (in USD Billion)

External debt stock showed flatter and relative fluctuations between 1990 to 2005, before a sharp decline in 2006, then a constant sharp borrowing from external lenders was experienced from 2007 to 2023. It implies that from 1990 to 2006 the government of Tanzania did not rely on external borrowing in financing its expenditures until 2007 where the trend of external borrowing started to constantly rise up.

Graph showing trend of External Debt Service (EDSV) of Tanzania in USD billions from 1990 to 2023.

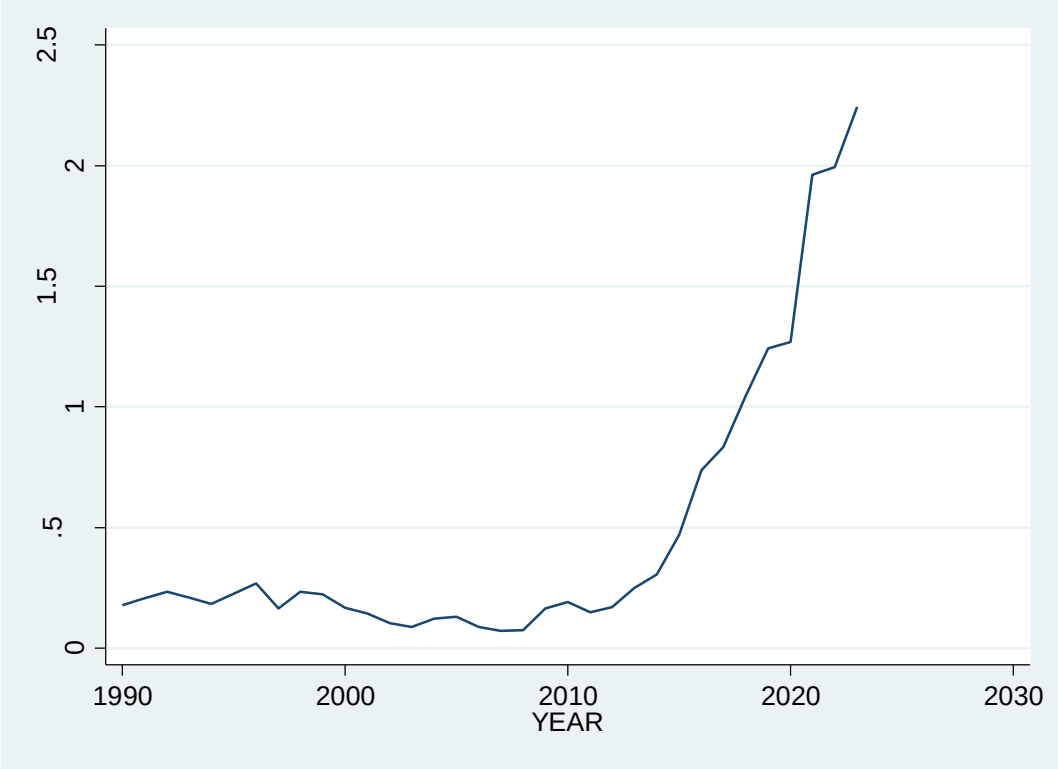
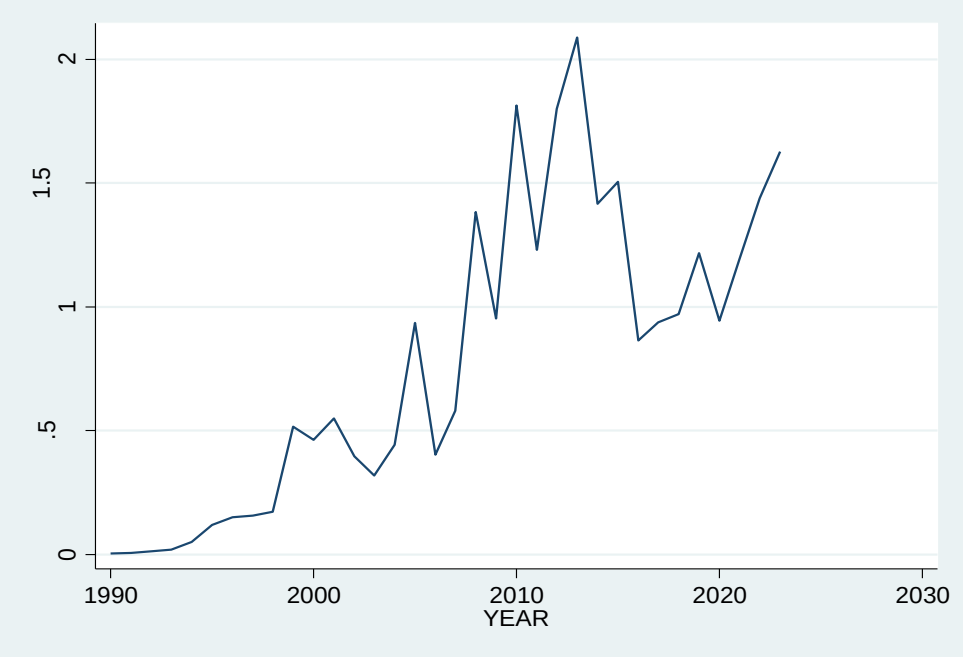


Figure 4.3: Trend of Tanzania's EDSV (in USD Billion)

From figure 4.3, the trend shows that, from 1990 to 2014 cost of servicing external debt was almost constant and minimum with some little fluctuations despite an increase in external debt stock in the same period. It implies that, the cost of

borrowing from external lenders in term of interest rate and conditionalities were very minimum compared to the period after 2014. Trend of Foreign Direct



Investment inflows(FDI) in USD billions, from 1990 to 2023

Figure 4.4: Trend of Tanzania's FDI Inflows (in USD Billion)

Figure 4.4 show major volatility fluctuations of Foreign Direct Investment Inflows from 1999s to 2023, this implies that the FDI inflows in Tanzania has been unstable for a number of years, despite continuous increase. The government of Tanzania should address these inconsistencies to make the economy stable and steady growth by enacting laws and policies that promote reinvestments and anti-profit repatriation.

4.4 Diagnostic Test

4.4.1 Unit Root Test

The study employed Augmented Dickey-Fuller to test the presence of unit root problem before and after log transformation of variables (Ajewole, 2020). Before log

transformation all variables found to be non-stationary (found to exhibit a unit root problem) but when all variables transformed into logarithmic form, all found to exhibit a unit root problem except foreign direct investment inflows. The null hypothesis (H_0) of Augmented Dickey-Fuller test for unit root claim that, the time series data or variables are not stationary, meaning that they do exhibit unit root problem, while alternative hypothesis (H_1) suggest that the data does not have a unit root problem, meaning that variables are stationary (Maitra, & Politis, 2024).

The test statistic was compared to the critical value at 5% confidence interval. When the test statistic in the Dickey-Fuller test for unit root become extreme negative such like -4.23 compare to critical -2.978, the null hypothesis ought to be rejected, otherwise the null hypothesis failed to be rejected, hence the variable termed to be integrated by number of differences to make them stationary (Liu, et al 2022).

Unit root test at I (0) at 5% critical value

Stationarity results for GDP at 95% level of confidence interval for I (0)

Table 4.2: Stationarity result of GDP at Level

Dickey-Fuller test for unit root for GDP		Number of obs = 33	
---------- Interpolated Dickey-Fuller ----------			
Test Statistic	one percent Critical value	5% Critical Value	10% Critical Value
Z(t) -0.321	-3.696	-2.978	-2.620
MacKinnon approximate p-value for Z(t) = 0.9225			

Source: Researcher estimations using Dickey-Fuller Test for unit Root in STATA

From the above test, the variable found to have unit root problem. Therefore, the study integrated the variable by first order difference and perform another test. Stationarity results for FDI after log transformation

Table 4.3: Stationarity Result of FDI at Level

Dickey-Fuller test for unit root for FDI		Number of obs =	33
----------Interpolated Dickey-Fuller ----------			
Test Statistic	one percent Critical value	5% Critical Value	10% Critical Value
Z(t) -3.590	-3.696	-2.978	-2.620
MacKinnon approximate p-value for Z(t) = 0.0060			

Source: Researcher Estimations using Dickey-Fuller test for Unit Root in STATA

From the above results the variable found to be stationary at 5% and 10% critical value, hence no unit root problem at 95% level of confidence interval.

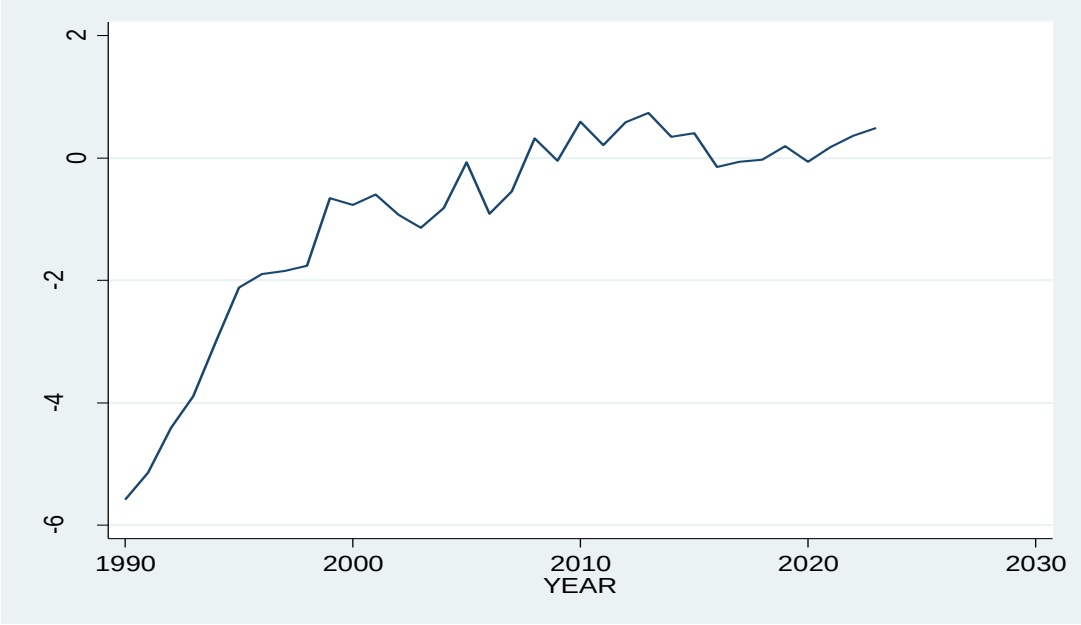


Figure 4.5: Stationarity Results for EDSV after Log Transformation

Table 4.4: Stationarity Result of EDSV at Level

Dickey-Fuller test for unit root for EDSV		Number of obs =	33
---------- Interpolated Dickey-Fuller ----------			
Test Statistic	one percent Critical value	5% Critical Value	10% Critical Value
Z(t) 0.636	-3.696	-2.978	-2.620
MacKinnon approximate p-value for Z(t) = 0.9885			

Source: Researcher Estimations using Dickey-Fuller test for Unit Root in STATA

The results in Table 4.7 revealed non stationary variable (having a unit root problem) since the test statistic was not extreme negative compared to critical values at any chosen interval, including 5% in particular.

Table 4.5: Stationarity Result of EDST at Level

Dickey-Fuller test for Unit Root for EDST		Number of obs =	33
---------- Interpolated Dickey-Fuller ----------			
Test Statistic	one percent Critical value	5% Critical Value	10% Critical Value
Z(t) 0.420	-3.696	-2.978	-2.620
MacKinnon approximate p-value for Z(t) = 0.9822			

Source: Researcher estimations using Dickey-Fuller test for unit root in STATA.

The above results revealed a unit root problem since the test statistic was not extreme negative compared to critical values at 5% confidence interval

Unit root test at I (1) at 5% critical value

Stationarity results for GDP after log transformation.

Table 4.6: Stationarity result of GDP after first-differenced

Dickey-Fuller test for unit root for GDP		Number of obs =	32
---------- Interpolated Dickey-Fuller ----------			
Test Statistic	one percent Critical value	5% Critical Value	10% Critical Value
Z(t) -3.966	-3.702	-2.980	-2.622
MacKinnon approximate p-value for Z(t) = 0.0016			

Source: Researcher estimations using Dickey-Fuller test for unit root in STATA.

The result found the variable to be stationary at 95% level of confidence interval since the test statistic value was extreme negative, that is -3.968 than all critical values including 5% with -2.980 critical value.

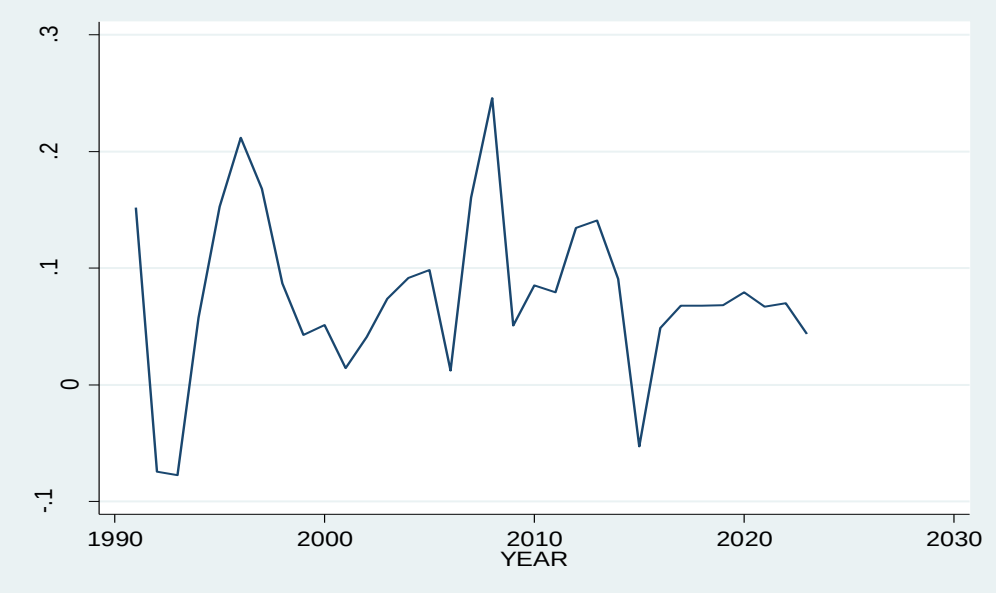


Figure 4.2: Line Graph of First-Differenced GDP

Table 4.7: Stationarity Result of FDI after First-Differenced

Dickey-Fuller test for unit root for FDI		Number of obs =	32
---------- Interpolated Dickey-Fuller ----------			
Test Statistic	one percent Critical value	5% Critical Value	10% Critical Value
Z(t) -5.894	-3.702	-2.980	-2.622
MacKinnon approximate p-value for Z(t) = 0.0000			

Source: Researcher Estimations for Unit Root in STATA

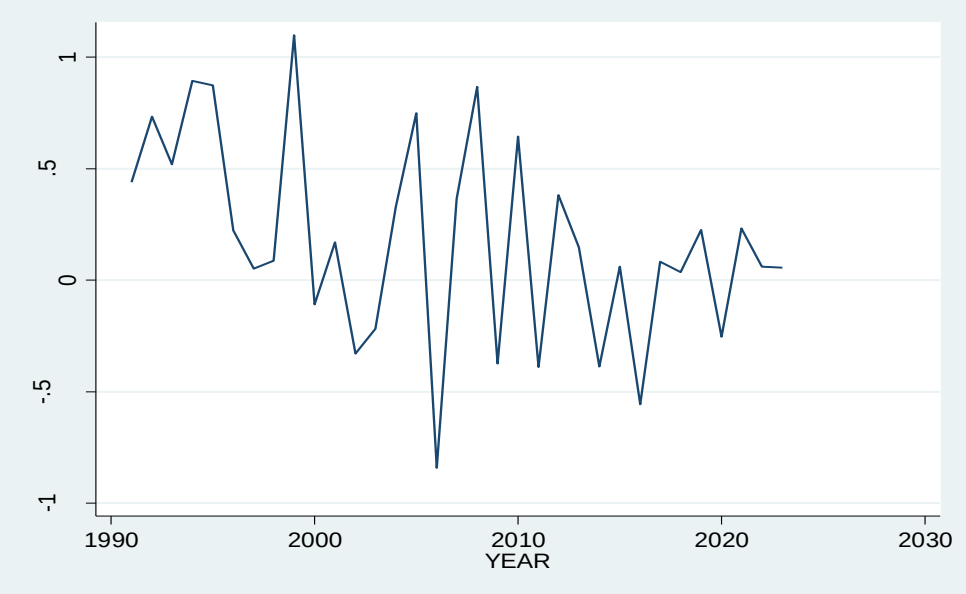


Figure 4.3: Line Graph of First-Differenced FDI Inflows

The result show that the variable FDI differenced by order one, the test statistic became more extreme negative compare to all critical values, unlike before integration where the critical value at one percent only revealed non stationary time series.

Table 4.8: Stationarity Result of EDSV after First-Differenced

Dickey-Fuller test for unit root for EDSV		Number of obs =	32
---------- Interpolated Dickey-Fuller ----------			
Test Statistic	one percent Critical value	5% Critical Value	10% Critical Value
Z(t) -4.714	-3.702	-2.980	-2.622
MacKinnon approximate p-value for Z(t) = 0.0001			

Source: Researcher Estimations using Dickey-Fuller test for Unit Root in STATA

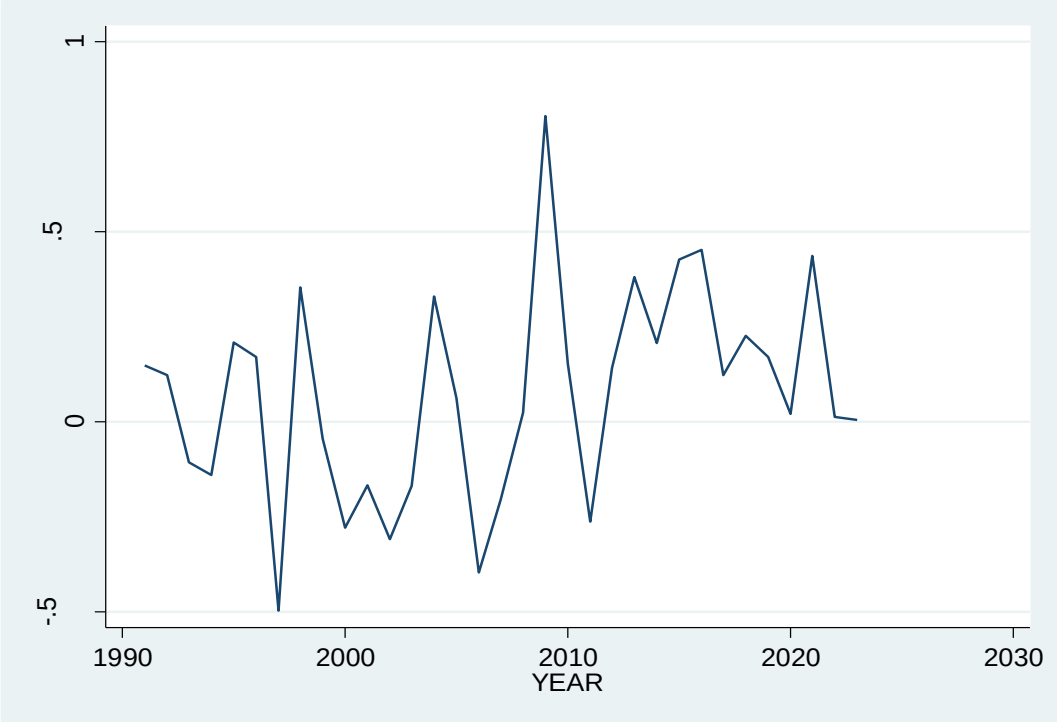


Figure 4.4: Line Graph of First-Differenced EDSV

The results revealed stationary time series data after being differenced by order one as test statistic was extreme negative than all critical values including the chosen 5% confidence interval.

Table 4.9: Stationarity Result of EDST after First-Differenced

Dickey-Fuller test for unit root			Number of obs = 32
---------- Interpolated Dickey-Fuller ----------			
Test Statistic	one percent Critical value	5% Critical Value	10% Critical Value
Z(t) -5.075	-3.702	-2.980	-2.622
MacKinnon approximate p-value for Z(t) = 0.0000			

Source: Researcher Estimations using Dickey-Fuller test for Unit Root in STATA

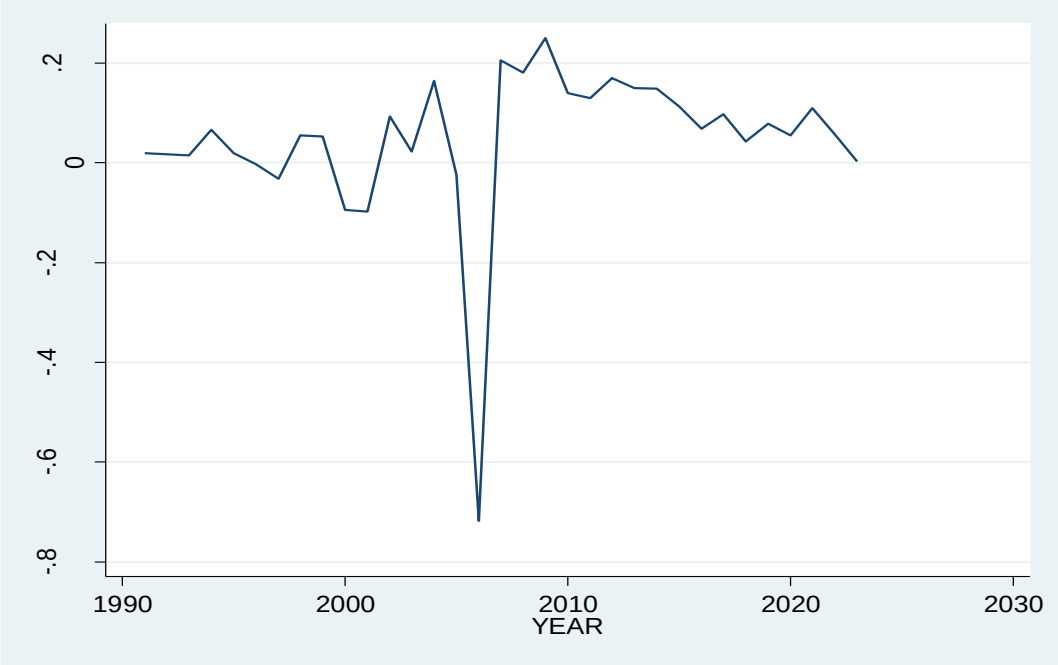


Figure 4.9: Line Graph of First-Differenced EDST.

The result revealed the variable to have no unit problem at all chosen critical values, 5% confidence interval in particular.

4.4.2 Serial Correlation Test

To test autocorrelation which is series problem among time series data, the Breusch-Godfrey LM test for autocorrelation from STATA was employed for analysis. The null hypothesis (H_0) suggested that, the time series data has no serial correlation (Farris, et al 2021).

Table 4.10: Serial Correlation Result

lags(p)	Chi^2	Df	$Prob>chi^2$
1	2.346	1	0.1256

Source: Researcher computation using Breusch-Godfrey LM test for autocorrelation

After the analysis, the result revealed no autocorrection in the time series variables since $Prob>chi^2$ with 0.1256 was greater than critical P-Value of 0.05 at 95% confidence interval. Hence the study failed to reject the null hypothesis (Chaudhary, et al 2023).

4.4.3 Heteroskedasticity Test

In assessing whether the variance of the error term is constant in the regression model, the Breusch-Pagan/Cook-Weisberg test for heteroskedasticity was employed. The null hypothesis suggested that, the variance of the error term/ residuals is constant (Raza, et al., 2023). The decision criteria for rejecting the null hypothesis was based on the chi squared statistic and its $Prob>chi^2$ against critical P-Value. When the $Prob>chi^2$ is greater that critical P-value (0.05) implies that the variable has no problem of heteroskedasticity (Đalić, et al., 2021). The result from STATA show that, there was no heteroskedasticity among the variables, since the $Prob>chi^2$ value 0.9669 found in the test was greater than critical P-value 0.05, hence the null hypothesis (H_0: Constant variance) was not rejected due to existence of homoskedasticity.

Table 4.11: Heteroskedasticity Results

Variables: fitted values of LnGDP
$chi^2(1)$ = 0.00 $Prob > chi^2$ = 0.9669

Source: Researcher computation using Breusch-Pagan test for heteroskedasticity

4.4.4 Multicollinearity Test

Multicollinearity occurs when two or more independent variables are highly or perfect correlated leading to undetermined of the effect of single independent variable (Gujarati, 2009). To ensure that, the analysis of the regression model satisfy the assumption of CLRM of no multicollinearity, the variance inflating factor (VIF) was used to test the model.

Table 4.12: Multicollinearity Results

Variable	VIF	1/VIF
dLnEDST	1.34	0.745864
dLnEDSV	1.32	0.755167
LnFDI	1.07	0.931581
Mean VIF	1.25	

Source: Researcher estimation using VIF from STATA.

From the above table, the study found no multicollinearity among the explanatory variables since the VIF was less than 10 (Obite, 2020).

4.4.5 Normality Test

To assess whether the assumption of Classical Linear Regression Model of the residuals are normally distribution, for validity and reliability of the t-tests and F-tests used to assess the significant of the coefficient (Cardoso, et al., 2025). The Shapiro-Wilk W test for normal data was employed, the null hypothesis (H_0) suggested that the residuals are normally distributed while the alternative hypothesis (H_1) claimed that, residuals do not follow normal distribution (Orcan, 2020). The Shapiro-Wilk W test revealed that, the residuals follow normal distribution since the Prob>Z 0.52754 was greater than critical P-value 0.05. Therefore, the null hypothesis (H_0) was not rejected.

Table 4.13: Normality Results

swilk e					
Shapiro-Wilk W test for normal data					
Variable	Obs	W	V	z	Prob>z
E	31	0.97031	0.967	-0.069	0.52754

Source: Researcher computation using Shapiro-Wilk W test for normal data in STATA

4.5 Robustness Test

4.5.1 Cointegration Test

To assess the long run equilibrium relationship between variables, the study employed bounds cointegration test since the variables GDP, EDSV and EDST were integrated at order one I (1) and Foreign Direct Investment inflows (FDI) at order zero I (0) (Badshah, et al 2020). The F and t statistic were used to determine the decision about reject or fail to reject the null hypothesis that suggested existence of no long-term equilibrium relationships between the variables from Pesaran, Shin, and Smith 2001 for bounds test (Bertsatos, et al., 2022).

Therefore, the Error Correction Model was not assessed since the result exposed no cointegration (long term equilibrium relationship) between dependent variable and any independent variable at 5% critical value. From the result obtained the study failed to reject the null hypothesis(H_0) which suggested that there is no significant long run equilibrium relationship between external debt stock (EDST) and economic growth (GDP) of Tanzania from 1990 to 2023 at 95% level of significant interval since both F and t were closer to zero than the critical p values for I (0) and both were not more extreme to zero for I (1).

Table 4.14: Co-integration Test

H_0: no level relationship Case 3				F = 0.536 t = -0.270			
10%		5%		one percent		P-value	
I (0)	I (1)	I (0)	I (1)	I (0)	I (1)	I (0)	I (1)
F 2.956	4.296	3.680	5.243	5.502	7.604	0.863	0.963
t -2.514	-3.428	-2.897	-3.870	-3.698	-4.792	0.861	0.943

Source: Researcher estimations using Bounds test of Cointegration in STATA

4.5.2 Causality Test

The granger causality was employed to test which variable between the independent and dependent variable grange cause other (Shojaie, et al 2022). The null hypothesis (H_0) suggested that neither the dependent nor independent variable granger cause another. The result revealed that only gross domestic product (GDP) granger cause external debt service (EDSV) by 0.005 Prob>chi^2 which is less than 0.05 probability value.

Table 4.15: Results of Granger Causality Test for GDP vs FDI

Granger causality Wald tests				
Equation	Excluded	chi^2	df	Prob > chi2
LnGDP	LnFDI	5.8951	2	0.052
LnGDP	ALL	5.8951	2	0.052

LnFDI	LnGDP	.20089	2	0.904
LnFDI	ALL	.20089	2	0.904

Source: Researcher computations using granger causality test in STATA.

Table 4.16: Results of granger causality test for GDP vs EDSV

Granger causality Wald tests				
Equation	Excluded	chi^2	df	Prob > chi2
LnGDP	LnEDSV	3.3229	2	0.190
LnGDP	ALL	3.3229	2	0.190

LnEDSV	LnGDP	10.045	2	0.005
LnEDSV	ALL	10.045	2	0.005

Source: Researcher Computations using Granger Causality Test in STATA.

Table 4.17: Results of Granger Causality Test for GDP vs EDST

Granger causality Wald tests				
Equation	Excluded	chi^2	df	Prob > chi2
LnGDP	LnEDST	5.349	2	0.069
LnGDP	ALL	5.349	2	0.069

LnEDST	LnGDP	4.9387	2	0.085
LnEDST	ALL	4.9387	2	0.085

Source: Researcher Computations using Granger Causality Test in STATA

The result shows that neither GDP, FDI nor EDST granger cause other as their probability values are greater than critical P-value of 0.05. however, FDI suggested weak evidence of granger cause GDP with a Prob>chi^2 0.052 which is very close to p-value 0.05 although the study failed to reject the null hypothesis.

4.6 The ARDL Model Analysis

Since the analysis involved time series variables with mixed orders of integration, that is I (0) and I (1) with different lag lengths. The ARDL Model with an assistance from VARSOC and matrix list e(lags) for optimal lag selection was used for data analysis due to its flexibility and ability to accommodate various lag lengths and handling time series data to avoid spurious regression and avoid biased inferential statistic (Kripfganz, et al., 2023).

Table 4.18: ARDL (3 2 1 1) Regression

Sample: 1993 - 2023					Number of obs = 31 F (10, 20) = 634.18 Prob > F = 0.0000 R-squared = 0.9969 Adj R-squared = 0.9953
Log likelihood = 53.580595					Root MSE = 0.0535
LnGDP	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]
LnGDP					
L1.	1.50149	.2013015	7.46	0.000	1.081583 1.921398
L2.	-.9191545	.263106	-3.49	0.002	-1.467984 -.3703251
L3.	.4015715	.1557358	2.58	0.018	.0767123 .7264307
LnFDI					
---	.0409506	.0302155	1.36	0.190	-.0220777 .103979
L1.	-.0252351	.0360762	-0.70	0.492	-.1004888 .0500185
L2.	.0082163	.0263644	0.31	0.759	-.0467788 .0632114
LnEDSV					
---	-.0149386	.0584873	-0.26	0.801	-.1369409 .1070637
L1.	.0538853	.044963	1.20	0.245	-.039906 .1476766
LnEDST					
---	.0709716	.0889338	0.80	0.434	-.114541 .256484
L1.	-.1632769	.0961793	-1.70	0.105	-.3639033 .0373496
_cons	.3997013	.3246669	1.23	0.233	-.277542 1.076945

4.7 Effect of External Debt on Economic Growth from 1990 to 2023

The effect of external debt (ED) on economic growth (GDP) of Tanzania from 1990 to 2023 was assessed using three core variables; the Gross Domestic Product (GDP) as a dependent variable and two independent variables such as External debt stock (EDST) and external debt service (EDSV) while the foreign direct investment inflows (FDI) was used as a control variable (other variable that may affect GDP (Dey, & Tareque, 2020). The bounds test of cointegration, revealed no long run equilibrium relationships exist among the variables, hence the study analyzed the short run relationships only.

4.7.1 Analysis of External Debt Stock on Economic Growth

The short run effect of ARDL model analysis revealed positive association but insignificant of EDST on economic growth (GDP) with a coefficient value of 0.07.

This imply that on average, a one percent increase in external debt stock (EDST) at current period positively but statistically insignificant with a p-value of 0.434 increases stock of economic growth (GDP) by 0.07% Ceteris Paribus. But when the variable EDST lag by 1, the results revealed that a one percent increase in EDST from previous year caused a decrease in GDP by 0.16% at a current period, however this effect was also weakly statistically significant with p-value 0.105 which imply that higher level of external debt accumulation could harm economic growth in the current period which aligned with the debt over hang theory (Karadam, 2021).

From the immediate short run result obtained, the study failed to reject the null hypothesis(H_0) which claimed that there is no significant relationship between external debt stock (EDST) and economic growth (GDP) of Tanzania from 1990 to 2023 at 95% level of significant interval. The positive coefficient but statistically insignificant in a current period can imply that the borrowed fund from external lenders are not efficiently channeled into growth-enhancing projects or investments.

4.7.2 Analysis of External Debt Service on Economic Growth

The short run effect of ARDL model analysis of EDSV revealed negative association but statistically insignificant on economic growth (GDP) with a coefficient value -0.014. This meant that on average, a one percent increase in EDSV at current period negatively and statistically insignificancy cause a decrease in economic growth (GDP growth) by 0.014%, holding other factors constant. From the results obtained, the study failed to reject the null hypothesis (H_0) which claimed that there is no significant relationship between external debt service (EDSV) and economic growth (GDP) of Tanzania from 1990 to. Statistical insignificance of external debt service

on economic growth (GDP) of Tanzania at current period imply that there is no clear and strong evidence that the burden of servicing borrowed fund from foreign lenders is harmful to economic growth of Tanzania despite its negative effect. Therefore, insignificancy of the EDSV can imply that, in the short run the burden of servicing external debt has no immediate significant constraint on the economic performance or gross domestic product of Tanzania.

4.7.3 Analysis of FDI inflows on Economic Growth

The short run effect of ARDL model analysis revealed positive association but insignificant of FDI on economic growth (GDP) with a coefficient value of 0.04. This meant that, a one percent increase in foreign direct investment inflows (FDI) at current period positively but insignificantly with a p-value of 0.181 increases economic growth (GDP) by 0.04 percent, holding other factors constant. The positive coefficient but statistically insignificant of FDI in a current period imply that the current foreign investment inflows in Tanzania does not have clear and strong evidence to influence GDP growth, despite its positive sign of coefficient. In other word, the study can conclude that the insignificant effect is because of long gestation period before contributing to economic output. But when FDI lag by 1, surprising results revealed that on average a one percent increase in FDI in a previous year causes a decrease in GDP by 0.02%, however this effect was not statistically insignificant.

Finally, the ARDL regression revealed that on average, when all variables are equal to zero (held constant) the economic growth of Tanzania grows by 0.39 percent despite a lack of clear evidence of its economic benefits. Furthermore, the findings

through the positive and significant lags of GDP implies that the performance of current economic growth of Tanzania is significantly influenced by the previous performance of the economy while the second lag indicating the diminishing effect overtime and third lag reflect the cyclic phenomena of economic patterns of an economy.

CHAPTER FIVE

DISCUSION OF THE FINDINGS

5.1 Overview

The ARDL Model results under the study revealed positive but statistically insignificant effect of external debt on economic growth of Tanzania. The study model, diagnostic tests, and findings found to align with (Sadaf, et al., 2023) in their analysis of external debt on economic growth in Pakistan from 1972 to 2021 whereby the ADF test and ARDL Model found the same results (Gizaw, 2020) from Ethiopia as well as (Akanbi, et al., 2022) investigated the relationship between external debt service and economic growth in Nigeria from 1981 to 2020. The study provided evidence that Foreign Debt Stock (EDST) had a positive insignificant relationship with growth (GDP). In addition, the study revealed insignificant negative relationship between external debt service (EDSV) and economic growth (GDP).

The positive insignificancy effect of external debt on economic growth among many developing countries including Tanzania must be a wake-up alert among researchers to conduct further investigation on the effectiveness of the channels in which external borrowed funds are allocated to help policymakers make informed decisions towards optimal distribution and allocation of external borrowed funds among economic sectors.

Contrary to the study findings which revealed positive but insignificant effect on economic growth of Tanzania, (Tile, et al., 2024) in examining the influence of external debt on the economic growth of Eastern African countries (Kenya, Uganda,

Rwanda, Burundi, and Tanzania) from a study “External Debt as panacea to economic growth challenges in selected eastern African countries” using the autoregressive distributive lag mode and panel data (1970 - 2020). The study findings revealed that external debt had a significant adverse effect on economic growth.

Furthermore, the study showed that, in Burundi, an increase in external debt reduces GDP by 5% in the short run, while in the long run, it reduces GDP by 19%; in Tanzania, it decreases GDP by 22%; and in Kenya, it reduces the GDP by 13%. Conversely, the findings indicated that the increased level of external debt positively influenced Uganda's GDP (0.03%) but was not statistically significant. In this case, we can conclude that the optimality usefulness of external debt in Tanzania has been improving, as the above analysis shows that from 1970 to 2020 external debt found to negatively and significantly influence economic growth while in this study for the period from 1990 to 2023 the findings found positive but statistically insignificant effect on economic growth of Tanzania.

CHAPTER SIX

CONCLUSIONS AND RECOMMENDATIONS

6.1 Overview

The study provided conclusion and recommendations based on the findings obtained as well as areas for further study.

6.2 Conclusions

Generally, the study examined the effect of external debt on economic growth of Tanzania from 1990 to 2023. The movement to the general analysis was conducted through specific variables that make up external debt which were the analysis of external debt stock (EDST) and external debt service (EDSV) on economic growth (GDP). In addition, the study included control variable foreign direct investment inflows (FDI) to assess the effect of other variable that may affect economic growth (GDP) rather than external debt (ED). Finally, the study concludes that the effect of external debt is not harmful to the economic growth of Tanzania, despite the lack of clear and strong evidence of its economic benefits. But its insignificance effect on economic growth needs further investigation to provide clear and strong evidence of its economic benefits.

6.3 Recommendations

The study recommends that the government of Tanzania through its policymakers should pay close attention to the issue of excessive external debt accumulation revealed by a negative coefficient (-0.1634) and insignificant effect of the first lag of external debt stock (EDST) by limiting external borrowing to avoid the economy falling into debt overhang problems or a debt trap.

6.4 Areas for Further Research

After an analysis of the effect of external debt on economic growth of Tanzania and found a lack of clear and strong evidence of its influence to economic growth, despite the presence of positive coefficient of EDST. The study recommends further analysis on the effect of external debt on economic sectors such as agriculture, mining, manufacturing, tourism, transportation, and so forth, by considering only the share contributions of the fund injected to a specific economic sector. The study findings will clearly show the influence of each economic sector on economic growth and help policymakers make informed decisions regarding the proper allocation of external borrowed funds to more productive sectors with positive and significant effect on economic growth.

Another area for further study is to examine the effect of external debt on recurrent and development expenditures of Tanzania separately. This will also help policymakers identify the specific source of the insignificant effect and enable them to make well-informed decisions for the optimal distributions and allocations of external borrowed funds between recurrent and development expenditure.

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APPENDICES

Stationary test for GDP at I (1)

```
. dfuller dLnGDP

Dickey-Fuller test for unit root                   Number of obs   =        32

                                 ------------ Interpolated Dickey-Fuller ------------
                 Test            1% Critical       5% Critical     10% Critical
               Statistic           Value             Value           Value
------------------------------------------------------------------------------
 Z(t)            -3.966            -3.702            -2.980           -2.622
------------------------------------------------------------------------------
MacKinnon approximate p-value for Z(t) = 0.0016
```

Stationarity test for FDI at I (0)

```
. dfuller LnFDI

Dickey-Fuller test for unit root                   Number of obs   =        33

                                 ------------ Interpolated Dickey-Fuller ------------
                 Test            1% Critical       5% Critical     10% Critical
               Statistic           Value             Value           Value
------------------------------------------------------------------------------
 Z(t)            -3.590            -3.696            -2.978           -2.620
------------------------------------------------------------------------------
MacKinnon approximate p-value for Z(t) = 0.0060
```

Stationarity test for FDI at I (1)

```
. dfuller dLnFDI

Dickey-Fuller test for unit root                   Number of obs   =        32

                                 ------------ Interpolated Dickey-Fuller ------------
                 Test            1% Critical       5% Critical     10% Critical
               Statistic           Value             Value           Value
------------------------------------------------------------------------------
 Z(t)            -5.894            -3.702            -2.980           -2.622
------------------------------------------------------------------------------
MacKinnon approximate p-value for Z(t) = 0.0000
```

Stationarity test for EDSV at I (1)

```
. dfuller dLnEDSV

Dickey-Fuller test for unit root                   Number of obs   =        32

                                 ---------- Interpolated Dickey-Fuller ---------
                 Test         1% Critical       5% Critical      10% Critical
               Statistic         Value             Value            Value
------------------------------------------------------------------------------
 Z(t)           -4.714           -3.702            -2.980           -2.622
------------------------------------------------------------------------------
MacKinnon approximate p-value for Z(t) = 0.0001
```

Stationarity test for EDST at I (1)

```
. dfuller dLnEDST

Dickey-Fuller test for unit root                   Number of obs   =        32

                                 ---------- Interpolated Dickey-Fuller ---------
                 Test         1% Critical       5% Critical      10% Critical
               Statistic         Value             Value            Value
------------------------------------------------------------------------------
 Z(t)           -5.075           -3.702            -2.980           -2.622
------------------------------------------------------------------------------
MacKinnon approximate p-value for Z(t) = 0.0000
```

Maximum lag selection criterial using VARSOC

I. For GDP

```
. varsoc LnGDP

  Selection-order criteria
  Sample:  1994 - 2023                        Number of obs      =        30
```

lag	LL	LR	df	p	FPE	AIC	HQIC	SBIC
0	-33.3044				.576434	2.28696	2.3019	2.33366
1	43.4713	153.55*	1	0.000	.003689	-2.76475	-2.73487	-2.67134
2	45.3505	3.7583	1	0.053	.003481	-2.82336	-2.77854	-2.68324*
3	47.0421	3.3832	1	0.066	.003327*	-2.86947*	-2.8097*	-2.68264
4	47.3575	.63086	1	0.427	.003487	-2.82383	-2.74912	-2.5903

```
  Endogenous:  LnGDP
   Exogenous:  _cons
```

II. For FDI

```
. varsoc LnFDI

   Selection-order criteria
   Sample:  1994 - 2023                        Number of obs      =        30
```

lag	LL	LR	df	p	FPE	AIC	HQIC	SBIC
0	-39.7995				.8888	2.71997	2.73491	2.76668
1	-13.0994	53.4*	1	0.000	.160245	1.00663	1.03651	1.10004*
2	-11.4233	3.3523	1	0.067	.153254*	.961551*	1.00638*	1.10167
3	-10.6008	1.6449	1	0.200	.155223	.973387	1.03315	1.16021
4	-10.4418	.31804	1	0.573	.164428	1.02945	1.10416	1.26299

```
   Endogenous:  LnFDI
    Exogenous:  _cons
```

III. For EDSV

```
. varsoc LnEDSV

   Selection-order criteria
   Sample:  1994 - 2023                        Number of obs      =        30
```

lag	LL	LR	df	p	FPE	AIC	HQIC	SBIC
0	-43.3272				1.12445	2.95515	2.97009	3.00185
1	-4.83005	76.994*	1	0.000	.092334*	.455337*	.485221*	.54875*
2	-4.62572	.40867	1	0.523	.09741	.508381	.553207	.648501
3	-3.85088	1.5497	1	0.213	.098975	.523392	.58316	.710218
4	-3.45867	.78443	1	0.376	.103227	.563911	.63862	.797444

```
   Endogenous:  LnEDSV
    Exogenous:  _cons
```

IV. For EDST

```
. varsoc LnEDST

   Selection-order criteria
   Sample:  1994 - 2023                        Number of obs      =        30
```

lag	LL	LR	df	p	FPE	AIC	HQIC	SBIC
0	-26.0692				.355853	1.80462	1.81956	1.85132
1	11.6928	75.524*	1	0.000	.030689*	-.646188*	-.616305*	-.552775*
2	11.7645	.14325	1	0.705	.032663	-.584297	-.539471	-.444177
3	12.001	.47301	1	0.492	.034401	-.533397	-.473629	-.346571
4	12.054	.10604	1	0.745	.036699	-.470265	-.395556	-.236732

```
   Endogenous:  LnEDST
    Exogenous:  _cons

.
```

Serial Correlation test

```
. estat bgodfrey

Breusch-Godfrey LM test for autocorrelation
```

lags(p)	chi2	df	Prob > chi2
1	2.150	1	0.1425

H0: no serial correlation

Heteroskedasticity test

```
. estat hettest

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
        Ho: Constant variance
        Variables: fitted values of LnGDP

        chi2(1)      =     0.00
        Prob > chi2  =   0.9669
```

Multicollinearity test

```
. estat vif
```

Variable	VIF	1/VIF
dLnEDST	1.34	0.745864
dLnEDSV	1.32	0.755167
LnFDI	1.07	0.931581
Mean VIF	1.25	

Normality test for residuals

```
. swilk e
```

Shapiro-Wilk W test for normal data

Variable	Obs	W	V	z	Prob>z
e	31	0.97031	0.967	-0.069	0.52754

Bounds cointegration test

```
. estat ectest

Pesaran, Shin, and Smith (2001) bounds test

H0: no level relationship                                       F =     0.536
Case 3                                                          t =    -0.270

Finite sample (3 variables, 31 observations, 6 short-run coefficients)

Kripfganz and Schneider (2020) critical values and approximate p-values
```

	10%		5%		1%		p-value	
	I(0)	I(1)	I(0)	I(1)	I(0)	I(1)	I(0)	I(1)
F	2.956	4.296	3.680	5.243	5.502	7.604	0.863	0.963
t	-2.514	-3.428	-2.897	-3.870	-3.698	-4.792	0.861	0.943

```
do not reject H0 if
    either F or t are closer to zero than critical values for I(0) variables
      (if either p-value  > desired level for I(0) variables)
reject H0 if
    both F and t are more extreme than critical values for I(1) variables
      (if both   p-values < desired level for I(1) variables)

decision: no rejection (.a), inconclusive (.), or rejection (.r) at levels:
```

	10%	5%	1%
decision	.a	.a	.a

ARDL model regression using AIC lag selection criterion

```
ARDL(3,2,1,1) regression

Sample:     1993 -     2023                 Number of obs   =         31
                                            F(  10,     20) =     634.18
                                            Prob > F        =     0.0000
                                            R-squared       =     0.9969
                                            Adj R-squared   =     0.9953
Log likelihood =  53.580595                 Root MSE        =     0.0535
```

LnGDP	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
LnGDP						
L1.	1.50149	.2013015	7.46	0.000	1.081583	1.921398
L2.	-.9191545	.263106	-3.49	0.002	-1.467984	-.3703251
L3.	.4015715	.1557358	2.58	0.018	.0767123	.7264307
LnFDI						
--.	.0409506	.0302155	1.36	0.190	-.0220777	.103979
L1.	-.0252351	.0360762	-0.70	0.492	-.1004888	.0500185
L2.	.0082163	.0263644	0.31	0.759	-.0467788	.0632114
LnEDSV						
--.	-.0149386	.0584873	-0.26	0.801	-.1369409	.1070637
L1.	.0538853	.044963	1.20	0.245	-.039906	.1476766
LnEDST						
--.	.0709716	.0889338	0.80	0.434	-.114541	.2564842
L1.	-.1632769	.0961793	-1.70	0.105	-.3639033	.0373496
_cons	.3997013	.3246669	1.23	0.233	-.277542	1.076945

Data sheet

YEAR	GDP in USD billions	FDI in USD billions	EDSV in USD billions	EDST in USD billions
1990	6.184384225	0.00376	0.179035905	6.433296457
1991	7.197768159	0.00584	0.207562458	6.559510656
1992	6.681997469	0.012169639	0.234501267	6.669441127
1993	6.182872708	0.020457764	0.21093492	6.769309416
1994	6.550480484	0.050000895	0.18346481	7.228012553
1995	7.63143184	0.119936654	0.226078842	7.370950563
1996	9.43352815	0.150066382	0.2681169	7.344102231
1997	11.15819794	0.157885064	0.163247909	7.110106282
1998	12.17279006	0.172306245	0.232708798	7.513384451
1999	12.7043342	0.516700642	0.222612629	7.917712562
2000	13.37176708	0.463400859	0.168406159	7.19969458
2001	13.56399002	0.549270351	0.142561792	6.529484896
2002	14.1296519	0.395567134	0.104741463	7.166286411
2003	15.21148771	0.318401299	0.088428239	7.331000393
2004	16.67306247	0.442539548	0.122915688	8.640785964
2005	18.39538365	0.935520592	0.130829741	8.435259794
2006	18.6198598	0.403038991	0.088006864	4.117816817
2007	21.86043482	0.581511807	0.071706185	5.057655621
2008	27.9478214	1.38326	0.073471895	6.058968074
2009	29.40057355	0.95263	0.16428396	7.774208716
2010	32.01289292	1.8132	0.191393963	8.93722766
2011	34.6571401	1.229361018	0.147292218	10.16803847
2012	39.65039436	1.799646137	0.169890405	12.05013817
2013	45.64885724	2.08726131	0.248736464	13.99826566
2014	49.98672646	1.416088065	0.306062241	16.2343418
2015	47.41391982	1.506024896	0.469107992	18.15995861
2016	49.77440937	0.86404	0.737786089	19.4530071
2017	53.27488453	0.9377	0.833762149	21.43660713
2018	57.00371289	0.971576866	1.045864091	22.37211625
2019	61.02673193	1.217235252	1.241699252	24.18430639
2020	66.06873779	0.943765262	1.268118345	25.56584812
2021	70.65562815	1.190507399	1.961640117	28.52566799
2022	75.76997451	1.437575169	1.9933042	30.37922414
2023	79.06240382	1.627034507	2.242425233	34.59795434

THE UNITED REPUBLIC OF TANZANIA

MINISTRY OF EDUCATION, SCIENCE AND TECHNOLOGY

THE OPEN UNIVERSITY OF TANZANIA

Ref. No OUT//PG202285963 **28th August, 2024**

Governor,
Bank of Tanzania (BOT),
P.O.Box 2939,
DAR ES SALAAM.

Dear Governor,

RE: RESEARCH CLEARANCE FOR MR. SETH DUGUDA SHALTIEL REG NO: PG202285963

2. The Open University of Tanzania was established by an Act of Parliament No. 17 of 1992, which became operational on the 1st March 1993 by public notice No.55 in the official Gazette. The Act was however replaced by the Open University of Tanzania Charter of 2005, which became operational on 1st January 2007.In line with the Charter, the Open University of Tanzania mission is to generate and apply knowledge through research.

3. To facilitate and to simplify research process therefore, the act empowers the Vice Chancellor of the Open University of Tanzania to issue research clearance, on behalf of the Government of Tanzania and Tanzania Commission for Science and Technology, to both its staff and students who are doing research in Tanzania. With this brief background, the purpose of this letter is to introduce to you **Mr. Seth Duguda Shaltiel, Reg.No: PG202285963),** pursuing **Masters of Science in Economics (MSc-ECONOMICS).** We here by grant this clearance to conduct a research titled **"Effect of External Debt on Economic Growth of Tanzania: (1990 - 2023)".** He will collect his data at your office from 29th August 2024 to 30th October 2024.

4. In case you need any further information, kindly do not hesitate to contact the Deputy Vice Chancellor (Academic) of the Open University of Tanzania, P.O.Box 23409, Dar es Salaam. Tel: 022-2-2668820.We lastly thank you in advance for your assumed cooperation and facilitation of this research academic activity.

Yours sincerely,
THE OPEN UNIVERSITY OF TANZANIA

Prof.Gwahula Raphael Kimamala

For: VICE CHANCELLOR