

**THE IMPACT OF PUBLIC DEBT ON ECONOMIC GROWTH OF
TANZANIA 1990-2017**

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**A DESSERTATION SUBMITTED IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE DEGREE OF MASTER OF SCIENCE IN
ECONOMICS OF THE OPEN UNIVERSITY OF TANZANIA**

2019

CERTIFICATION

The undersigned certifies that he has read and hereby recommends for acceptance by The Open University of Tanzania a dissertation entitled, “The Impact of Public Debt on Economic Growth of Tanzania” in partial fulfilment requirements for the degree of Master of Science (Economics) at the Open University of Tanzania.

.....
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DECLARATION

I, Frank Elikana, do hereby declare that this dissertation is my own original work and that it has not been presented and will not be presented to any other university for similar or any other degree award.

.....

Signature

.....

Date

DEDICATION

I would like to dedicate this study to my father Mr. Elisha Elikana Nkoliala for his tremendous encouragement and support, for my late beloved mother Ms. Elizabeth Zakayo Kiula for her love, care, belief and faith on me throughout my study life when she was alive. My gratitude goes to my brothers Christopher and Godlove Elikana and my sister Beatrice Elikana for their persistence encouragement and assistance during the course of study. With special respect I would like dedicate this study to Mr & Mrs. Vivian Mganga Mnyanya for their invaluable support and love throughout all these years when I was pursuing my Msc Economics. For sure you have inspired my academic path.

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Lastly those mentioned above are not responsible for any error on this dissertation. I am solely responsible.

ABSTRACT

This study examined the Impact of Public Debts on Economic growth of Tanzania 1990 – 2017. Tanzania has used the debt in financing its budget and development projects. The public debt has been grown year in year out raising some eyebrows and hot debate on whether this growing debt helps in Economic growth or not. The study employed Descriptive Statistics, Error correction model and Johansen cointegration test to examine properties of variables. It was observed that all variables were stationary at first difference. It was also observed that all variables are integrated at order one that is to say I (1). Through OLS the variables in the model explain the economic growth by about 97%, the findings show that, the coefficient of logEDS is positive and statistically significant at 1% while the coefficient of logDSP is negative and statistically insignificant. The results show that 10% increase in debt service slow down the economy by 10.3%. Moreover, the results from the Cointegration test reveals the existence of long run relationship between economic growth and external debt. These findings align with the results from the Error Correction Model which show that the coefficient of external debt is positive and statistically significant while the coefficient of debt service payment is also positive but not statistically significant. These findings may indicate that Public debt contribute positively to Economic growth while its servicing is impacting negatively the Economic Growth of Tanzania. Hence it is very important for government to reduce the amount of funds obtained through debts in order to reduce the burden of servicing it.

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LIST OF ABBREVIATIONS

AFDB	African Development Bank
AFRODAD	African Forum and Network on Debt and Development
BOT	Bank of Tanzania
DSA	Debt Sustainability Analysis
GDP	Gross Domestic Product
HIPC's	Heavily Indebted Poor Countries
IDA	International Development Association
IMF	International Monetary Fund
INTOSAI	International Organization of supreme Audit Institutions
LDC's	Least Developed Countries
MDRI	Multilateral Debt Relief Initiative
MOF	Ministry of Finance
OLS	Ordinary Least Square
PV	Present Value
RGDP	Real Gross Domestic Product
ROI	Return on Investment
TZS	Tanzanian Shilling
UNCTAD	United Nations Conference on Trade and development
USD	United State Dollar
WB	World Bank

CHAPTER ONE

INTRODUCTION

1.1 Background Information to the Problem

Analysis of public debt in developing countries has traditionally focused on external debt only. Evidence shows that most of the developing countries depend on debt to finance budget deficit (Yusuf. S, 2018). This can either be external debt or domestic debt. The first option for countries facing budget constraints is to borrow from domestic sources, however due to lack of well-established financial institutions, the internal debts are usually insufficient to finance the entire budget deficit. Tanzania being one of the developing countries has no exception when it comes the need of financing budget deficit through external debt regardless of its impact on the economy.

The impact of external debt on economic growth is a debatable issue among scholars since the onset of debt crisis in 1980's such as Sachs (1989) and Krugman (1988). According to World Bank external debt means debt owed to nonresidents, repayable in foreign currency goods or services. Many countries borrow funds abroad in order to cover domestic deficit of funds and if tax revenue is limited and the government does not want to compromise macroeconomic stability by printing more money thus debt becomes the only viable option to take in order to provide service to the citizens. Government normally borrows in principal to finance public goods that increase welfare and promote economic growth (Balago, 2014).

Ezeabasili, Isu and Mojekwu (2011) recommended that a country can also borrow from external sources in short term to finance current account deficit arising from

external disturbances so as to store up external reserves position and strengthen external liquidity in the future. In addition, Gana (2002) comment that if external loan can be channeled to the areas that will increase productive capacity of the economy and promote economic growth and sustainability therefore the loan will be desirable and necessary to accelerate economic growth.

Shabbir (2013) argued that inflows from external debt provides some ease at fiscal front and help the economy to grow at only the initial level, further says that higher fiscal imbalances, inadequate use of those resources and rescheduling of external debt leads to higher level of external debt stock and growing debt servicing afterwards. First sign of debt crises started when Mexico announced that, they are unable to repay the debt of 80 billion US dollar owed by the International banks in 1982. In October 1983, 26 countries which of them 16 came from Latin America such as Argentina and Brazil reschedule their debt and many underdeveloped countries also announce their inability to repay the debt (Ejigayehu, 2013).

After independence in 1961, economy remains fairly open and was highly dependent on revenue from commodity exports, the economic policies used was the same used by colonial power. There was a concern that external dependence was too high thus was necessary to create internally supportive economy, that's why in 1967 Tanzania adopt the policy of socialism and self-reliance under the umbrella of Arusha declaration. In 1974 the government began to implement Basic Industries Strategy (BIS) of import substituting industrialization but soon post pone it due to Balance of Payments crisis that accompanied by first oil shock of 1973/1978 (Bigsten and Danielson, 1999).

Due to world oil crisis of 1970's and the decline of world commodity prices of late 1970's, Tanzania experienced external debt crisis and economic shock that were beyond its control such as drought and declining Terms of Trade. There was also the emerge of large imbalances in the country fiscal and external accounts, fall of gross official reserve and debt repayment problem as stated in the report conducted by African forum and network on debt and development (AFRODAD). As the result starting 1979 to early 1980's the average Gross Domestic Product growth rate dropped to less than 1 percent per annum, this has been argued in (IMF&IDA, 2000) that Socialism and self-reliance policy initially resulted in improved social indicators but in the long run proved unsustainable.

In response, Tanzania adopted structural adjustment programs which were meant to focus on "getting prices right" with a view to achieving efficiency gains and growth acceleration. When these growth-oriented policies were found to be inadequate in terms of poverty reduction; Tanzania changed course and adopted policies, which sought to combine growth and social policy concerns (Wangwe&Charle, 2005). The government implemented its own "National Economic Survival Programme" in 1981-1982 and a second domestic effort, the "Structural Adjustment Programme" in 1984/1985, but reforms were limited and unsuccessful (Bigsten & Danielsson, 1999).

According to AFRODAD; Tanzania found itself forced to implement the bank and the funds structural adjustment programs so as to readdress the compounding economic problems. In 1986 Tanzania entered into agreement with the World Bank, International Monetary Fund and bilateral donor to adopt Structural Adjustment

program (IMF & IDA, 2000). The data from African Economic Outlook Country Note (2018) shows that Tanzania total public debt has increased by about 51.4% over the past five years, growing from USD 17.7 billion in December 2013 to USD 26.8 billion in December 2017, about 38% of GDP. External debt stock was estimated at USD 19.4 billion as of December 2017.

The data show that external debt has risen by about 47% in the last five years and accounts for about 72% of all public debt. The Debt Sustainability Analysis (2017) by the Government and IMF and World Bank (2016/17) indicated that Tanzania's public debt remain sustainable in both short term and medium term. The reports show that the risk of debt distress remains low due to the structure of its debt, which is largely concessional, and the country's high output growth forecasts and ambitious revenue collection targets. There are different and mixed results; where by the effect of external debt on economic growth depends on country uniqueness, methods used and data. This has also been noticed by Were (2001) who argued that high debt has different effects on countries, related to their macro-economic performance, political and institutional aspects.

Also, Balago (2014) found different conclusion from various empirical researches conducted using individual country data, cross sectional data and panel techniques. Some of the researchers found negative effect such as Ezeabasili et al. (2011) while others found positive result such as Erhieyovwe and Onovwoakpoma (2013). That's why the concern of this paper is to look on the impact of public debt on economic growth of Tanzania through empirical analysis

1.2 Statement of the Problem

Public debts are one of the main problems facing many countries globally. Many developing countries depend on debts to finance their budget deficit, these may be domestic or external debts (UNACTAD, 2018). Many nations borrow money with intention of improving economy by providing employment and creating opportunities for making revenue. The first option for countries that face deficit is to borrow domestically from financial institutions, however due to lack of well-established banking systems the internal debts are usually insufficient to finance the entire budget deficit (Agenor & Montel, 1996). So, countries have to borrow from external sources that include developed countries and International organizations especially IMF and World Bank. External debts can have either positive or negative effects on the economic growth of country's economy (Krugman, 2006).

If external debts are used for development expenditure, then the country may benefit because development expenditure like infrastructure may have a multiplier effect on boosting economic growth. However, if external debt can be used for consumption expenditure; it will cause adverse effects on the economy, firstly, in some instances the amount of the external debt might be large compared with the economy size of the borrower which can lead to a possible capital flight which may most likely discourage private investment (Ajayi, 1991).

Secondly, servicing the external debt by export earnings may affect economic growth by depleting available income from social service activities (UNCTAD, 2002) Being a developing country, Tanzania also is no exception when it comes to the use of external borrowings due to budget deficit. For instance, as the result of

budget deficits; public debt and external debt has increased from 26 and 29 percent of GDP respectively after debt relief in 2006 to both 43 percent of GDP in 2013 (Business Times, 2014).

The external debt in Tanzania averaged USD 14,818 million from 2011 to USD 21,587 Million in April 2019 (Trading Economics, July, 2019). The data show that Tanzania total external debt have constantly been growing from USD 4,696 million in 1986 to USD 8,017 in 1995 and start a slightly decline. Between 2000 and 2001 there was a decline in the country external debt from USD 7.9 billion to USD 6.9 billion respectively due to debt cancellation under Paris Club VII arrangements. The trend continues to grow but in 2006 there was a further decline of country external debt stock due to cancellation of debt under Multilateral Debt Relief Initiatives of approximately USD 3 billion.

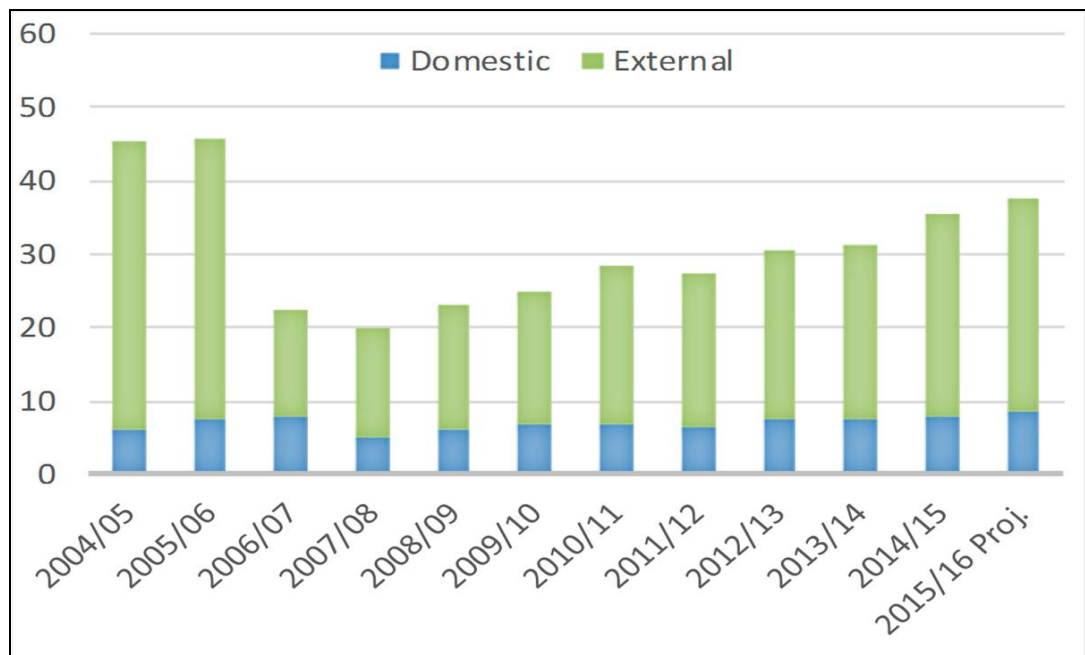


Figure 1.1: Tanzania's Public Debt

Source: IMF Report (2016)

However external debt stock has continuously on the rise since 2007 reaching USD 13,281.4 million in June, 2013 (MOF, 2013) representing 75 percent of the National Debt Stock of USD 17,690.5 million. The data show that since 1990 to 2006 the external debt was declining due to several initiatives. However, the trend shows that since 2013 the debt keeps on increasing from USD 13,281.4 million to USD 21,587 Million in July 2019 (Trading Economics, 2019). This trend indicates an urgency measures to the situation.

The evidence from figure 1.1 shows that despite the government conscious efforts in managing the public debt, the external debt is still a burden to the Tanzanian economy. This study examines the impact of public debt on economic growth in Tanzania from 1990 to 2017 with specific focus on external debt which accounts more than 75% of total public debt. Analysis of public debt in developing countries has traditionally focused on external debt only. This study will also capture the impacts of domestic debt on economic growth. Therefore, the study will fill the gap of analyzing the public debt by assessing the impact of both external and domestic debt.

1.3 Objectives of the Study

The main objective of this study is to investigate the impact of public debt on economic growth of Tanzania.

1.3.1 Specific Objectives

- i. To establish the relationship between external debt, Domestic debt and economic growth of Tanzania.

- ii. To assess the impact of debt servicing on economic growth
- iii. To investigate the long-term association between external debt and economic growth

1.4 Research Hypothesis

- i. External debt has no significant impact on Tanzania economic growth
- ii. Debt servicing payment has no significant impact on Tanzania economic growth
- iii. There is no significant long run relationship between external debt and economic growth

1.5 Significance of the Study

External debt is acquired to finance budget deficit in many developing countries including Tanzania. Due to lack of strong private sectors and well-established banking system; external debt has become the main part of public debt structure. This study investigates the impact of external debt on economic growth in Tanzania, the findings will indicate whether external debts have helped to boost economic growth or not. The government will be able to understand how to use external debts to boost economic growth otherwise if the debts are not utilized efficiently the country will remain in poverty because the repayment of the loans plus the interest may adversely affect the country. This study also helps to add more knowledge to the existing literature related to external debts and economic growth. The conclusions from this study were reached through the use of various econometric models which make them justifiable, most of them covered in the methodology chapter.

1.5 Scope of the Study

This study analyzed the impact of public debt on economic growth of Tanzania; to make this analysis; the study used Tanzania's data from 1990 to 2017. Hence the scope of this study was confined in Tanzania for a period of 28 years. The data show that this period experienced a decline in GDP growth rate and donor support. According to Muganda, (2004) one of the reasons for the decline of GDP growth rate was due to the temporary collapse of economic reforms which caused the reduction of donor support.

1.6 Limitations of the Study

The study was mainly limited by time, financial resources and variation of data from different sources. The researcher used most of time to search data and information from different websites such as World Bank, IMF, UNACTAD, Bank of Tanzania, Ministry of Finance and Planning and National Bureau of Statistics.

1.7 Organization of Study

This study is divided into five chapters: Chapter one provides the introductory part of the Study which provides the background to the study, statement of the problem, objectives of the study, significance of the study, scope of the Study as well as limitations of the study. Chapter two reviews various literature, both theoretical and empirical, on the impact of public debt on economic growth in Tanzania. Chapter three describes the methodology employed in this study. Chapter four presents and discusses the findings from the empirical analysis and finally chapter five provides the conclusion and policy implication

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter presents the Literature review which covers four parts; the origin of external debt, theoretical literature review, empirical literature review and conceptual framework.

2.2 Definition of Terms

2.2.1 External Debt

External debt refers to the portion of country debt borrowed from foreign lender including commercial banks, governments or international financial institution.

Countries borrow in order to finance budget deficit and speed up economic activities.

The external debts may have either positive or negative impact on the economy. This depends on the usage of such external debt.

2.2.2 Debt service Payment

Debt service refers to the total cash that is required for a particular time period to cover the repayment of interest and principal on debt. Debts service may have a negative on economic growth.

2.3 Origin of Debt Crisis

External debt is owed to nonresident government, businesses, and institutions and repayable in foreign currency. Generally, debt crisis reduces growth in economic welfare. According to the World Bank definition: "Total external debt is a debt owed to nonresidents repayable in foreign currency, goods or services" When we trace

back countries' debt crisis history, we found Mexico as a pioneering country.

In 1982 the Mexican government announced its inability to service its forthcoming debt from the total 80 billion US dollar owed to international lenders. This taken as the first debt crisis in history; and many scholars regarded it as the first sign of the international debt crisis.

In October 1983; 26 countries, 16 from Latin America including Brazil, Mexico, Argentina and Venezuela rescheduled their debt. Subsequently many less developed countries (LDC's) announced their inability to fulfill their debt obligation. This created major loan defaults and failure on the world largest banks. The origin of this debt crisis can be attributed to different factors, and can be seen best by categorizing and studying in a chronological order with the following time periods.

- i. First period, 1973 -1978 and
- ii. Second period 1979 -1982

2.3.1 First Period (1973 -1978)

The quadrupling of crude-oil price following the Egypt -Israel war of the October 1973, created many disorders in the international market. To absorb the effect, producers in the industrialized world increased market price both in the domestic and international market. This created inflationary pressure around the industrialized world; and leaves many of the developing countries on a serious balance of payment problem. (As they were not in a position to withstand the increase in crude oil price and imported goods). Current account deficit in LDC's increased from 8.7 billion US\$ in 1973 to US\$ 42.9billion in 1974 and US\$ 51.3 billion in 1975.

As a result, many of them started to borrow from banks on the international capital market. This produced a room for major banks to re-channel the fund that they collected from a dollar-based oil exporting country to budget deficit oil importing countries. Indebtedness rose significantly from US\$ 130 billion in 1973 to US\$ 336 billion in 1978. Even in that condition, most countries experienced healthy economic growth and didn't face difficulties in servicing their debt.

2.3.2 Second Period (1979 -1982)

The major event on this period was the decision made by the Organization of Petroleum Exporting Countries (OPEC), which made a more than double rise in the price of crude oil. From US\$ 13 per barrel to US\$ 32 per barrel, this termed as the second oil shock. The response from the industrial world for the second oil shock was much more similar; at the end of 1979 a tight monetary policy adopted by US is followed by other industrialized countries: UK, Germany, France, Italy and Japan. This further worsens the condition of LDC's that continued on their intense borrowing from the developed world at a higher interest rate. For instance, London Inter Bank Offered Rate (LIBOR) rose from 9.5 in the mid 1978 to 16.6 in mid-1981. The corresponding outstanding debt increased from 336 billion US\$ in 1978 to 662 billion US dollar in 1982.

The increase in an interest rate along with other factors contributed to the severe world recession of the 1981 to 1983. This posed another problem for LDC's as the price and volume of their export fall and reduced their export earnings. Furthermore, the recession forced the industrialized world to adopt a more protectionist approach on imported goods which reduced LDC's export earnings. Due to a high US interest

Rate and borrowing, bankers are more willing to lend money to US than LDC's and more a rapid appreciation of US Dollar also make the situation worse for LDC's as their real debt- service repayment increase because of this. When we see the fraction of GNP dedicated to interest payment on loans: we found sub-Saharan African countries next to Latin America. i.e. 3.5 in 1980 to 5.6 in 1983 on Latin America countries followed by sub-Saharan African countries as this fraction increased from 1.7 to 2.2 between 1980 and 1983.

In general, the debt crisis is highly related with the inability of most developing countries, to service their debt. For instance, in this period (1979-1982) Latin America countries debt increased more than double from \$159billions to \$327billions. This makes Latin American countries the most affected by the crisis. Francisco L. Rivera-Batiz and Luis A. Rivera-Batiz, mentioned three possible reasons why Latin America countries are seriously affected by the debt crisis. First, loan to Latin America countries was mostly offered by private creditors, as those countries are high income countries relative to other developing countries. Due to this, Latin America countries were more affected by the increase in market interest rate in the late 1970's and early 1980's. As a result, compared with other developing countries that took loan from official lenders, Latin America countries faced a higher interest payment.

The second reason mentioned by Francisco L. Rivera-Batiz and Luis A. Rivera-Batiz was countries policy towards international trade. Many developing countries mostly follow either one or more of the following three trade policies: Inward-oriented (Import substitution), natural resource oriented and industrial export-oriented.

Inward –oriented or import substitution trade regimes are countries that encouraged production of goods and services that can compete and substitute imported goods with the aim of discouraging import.

The ultimate objective of this trade policy is to stabilize the current account balance (CAB) by reducing import expenditure. But with the aim of discouraging imports and encouraging import substitute goods domestically produced, countries that follow this trade policy mostly weaken the export side. In the other hand Natural – resource export-oriented countries tried to increase the export side of the countries by exploiting natural resource like Gold, copper, natural gas and crude oil. But this can't guarantee the increase in overall export as in many of the cases the export of manufactured goods is discouraged in this kind of trade regimes. The third, manufactured (industrialized); export-oriented countries adopt trade policy that promote the production of export centered manufactured goods by liberalizing the manufacturing sector. From the aforementioned trade policies; manufactured –export oriented are able to create source of income which helps heavily indebted countries to service their interest burden payment.

Scope of Tanzania External Debt and Domestic Debt

In the history of Tanzania economy during the year 1970's and mid 1980's the country experienced macroeconomic imbalances which led to slow down of economic growth and accumulation of debt burden. Some of reasons are oil price shock of 1973-1978 and 1978-1982, extensive drought of 1974/1975 and Kagera war of 1978/79. Due to low production and export of goods and services as well as high government expenditure of about 30% of GDP during 1975 and 1985 contributed to

fiscal deficits which also trigger increase of external debt (BOT, 2011). Due to high debt burden, high dependence on donor funds and high social and development need in Tanzania then IMF and World Bank consider Tanzania eligible for the Highly Indebted Poor Countries (HIPC) initiative.

Tanzania total external debts has consistently been growing from USD 4,696 million in 1986 to the peak level of USD 8,017 million in 1995 and start a slight dropping.

Between 2000 and 2001 there was a decline in the country external debt from USD 7.9 billion to USD 6.9 billion respectively due to debt cancellation under Paris club VII arrangements. The trend continued to grow but in 2006 there was a further decline of country external debt stock this was due to cancellation of debt under the Multilateral Debt Relief Initiative of approximately USD 3 billion. However external debt stock has continuously on the rise since 2007 reaching USD 21,587 Million in April 2019 (Trading Economics, July, 2019).

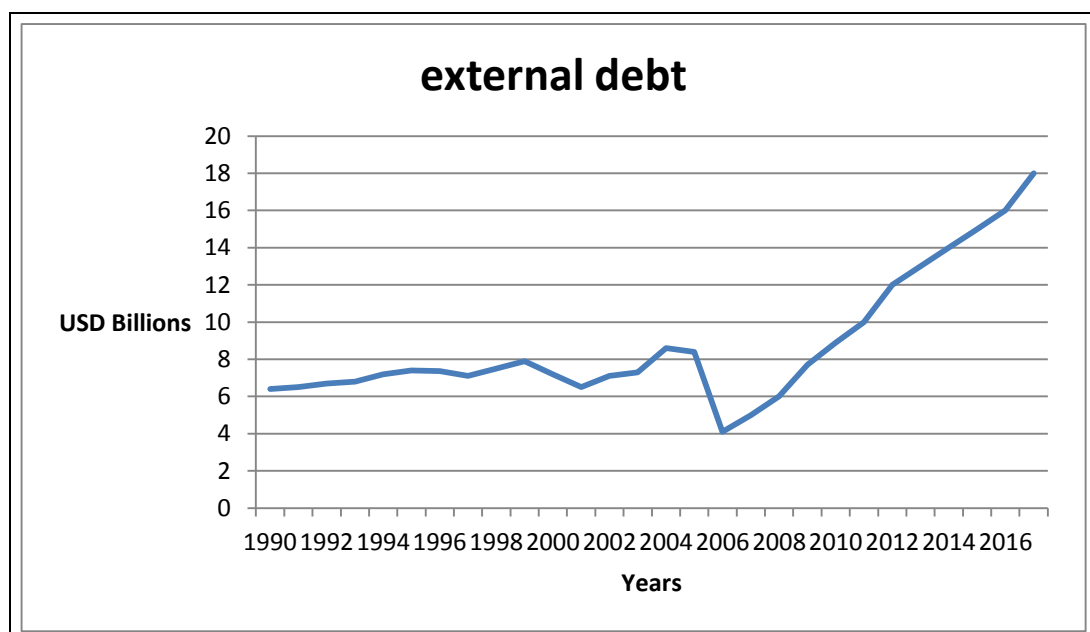


Figure 2.1: Tanzania's external debt 1990 – 2017 (USD Billions)

Source: World Bank Database

Domestic Debt: According to DSA report (2018), the stock of domestic debt reached TZS 15,546.16 Billion equivalent to 11.84 percent of GDP. This was an increase of 9.34 Billion from 14,217.83 in 2017. The increase was mainly on account of government borrowing to refinance matured securities and developing projects.

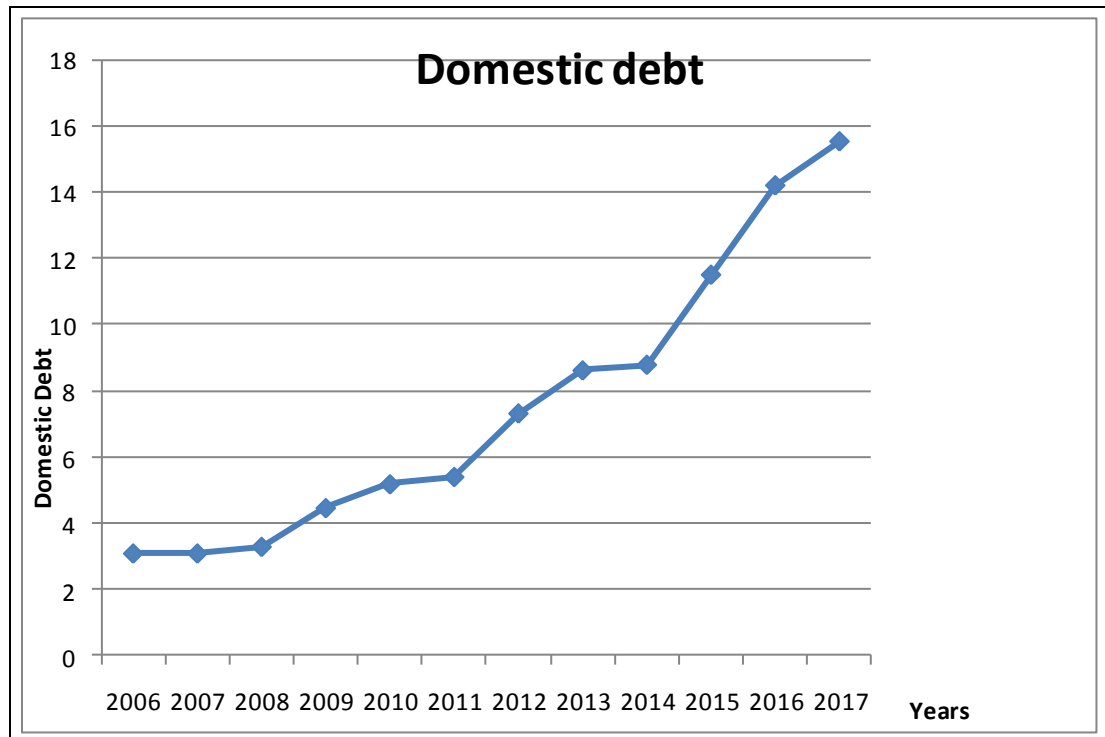


Figure 2.2: Trend of Tanzania's Domestic Debt

Source: Bank of Tanzania

Overview of Tanzania Economic Growth and Debt Service

Tanzania GDP growth rate reached an upward trend of 7% in 1990 and drop to 2.1% in 1991, the trend continues to drop until 1995 where GDP growth rate experience as light increase. Figure 2 depicts the trend of GDP since 1990. According to Muganda, (2004) one of the reasons for the decline of GDP rate was due to the temporarily collapse of economic reforms in early 1990 which cause the reduction of donor support.

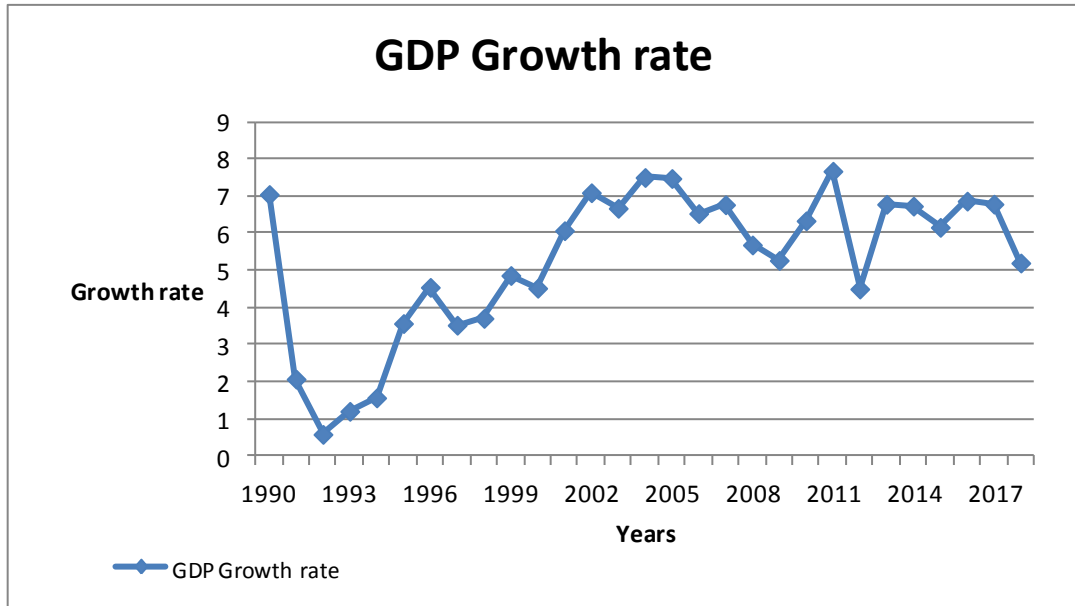


Figure 2.3: GDP Growth Rate from 1990 to 2018

Source: World Bank Database

Trend of Debt Service

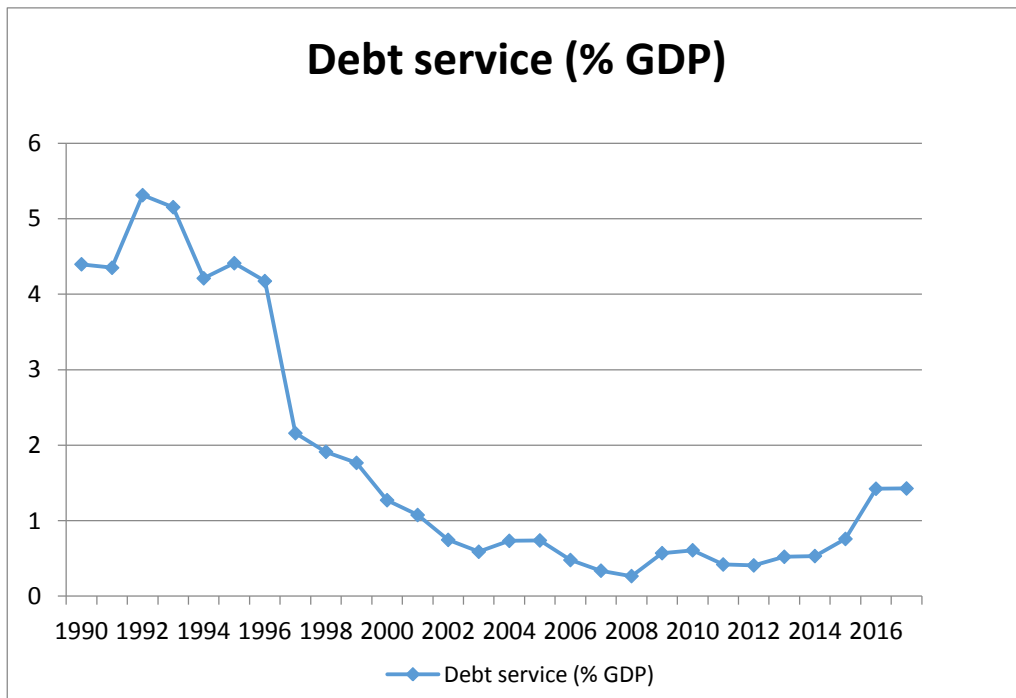


Figure 2.4: Tanzania Debt Servicing Trend

Source: World Bank Database

Figure 2.4 shows that since early 1990s there has been a decline in debt servicing payment. The decline of debt service payment can be explained by the existence of debt relief under HIPC initiatives whereby according to Nord et al., (2009) external debt service payments were cut off significantly by an average of nearly 50 percent over time, averaging about USD 65 million annually for the year 2000/2001-2005/2006 (about 0.5 percent of GDP).

Debt Sustainability: Sustainable debt is the level of debt which allows debtor countries to meet in full its current and future debt service obligation without recourse to further rescheduling or debt relief also avoiding accumulation of arrears at the same time allowing an acceptable level of economic growth. Generally external debt sustainability analysis is conducted in the context of scenarios. The scenarios involve numerical evaluation that takes into account the expectation of the behaviors of economic variables and other factors so as to determine the condition under which debt and other indicators would stabilize under reasonable levels, to determine the major risks of the economy and also to determine the need and scope of policy adjustments.

According to Loan, Guarantees and Grant Act of 1974 as amended in 2004, regulation 38(d) the government of the United Republic of Tanzania is required to conduct annual Debt Sustainability Analysis (DSA) which will indicate the trend of various debt sustainability indicators including narration of economic situation indifferent scenarios for debt sustainability and recommended measure for maintaining sustainable level of debt.

Indicators of External Debt Sustainability: There are various indicators which are primary in the nature of ratio where each of them has its own advantage and peculiarity to deal with the particular situation. Some of those indicators are:

- i. Debt to GDP ratio
- ii. Foreign debt to export ratio
- iii. Government debt to current fiscal revenue ratio

Table 2.1: International Indicative External Debt Burden Thresholds

	PV of external debt in the percent of		External debt service in the percent of		PV of total public debt in percent of
	GDP	EXPORT	EXPOR T	Revenue	GDP
Weak	30	140	10	14	35
Medium	40	180	15	18	55
Strong	55	240	21	23	70

Source: International Monetary Fund (2018)

According to report from African Development Bank (2018), Tanzania's public debt estimated at 38% of GDP and, based on the recent debt sustainability analysis, the risk of debt distress remains low. The findings of the Debt Sustainability Analysis (DSA, 2018) show that Tanzania remains at a low risk of debt distress, with all relevant debt ratios below their thresholds throughout the projection. The DSA results for total Public (External and Domestic) debt shows that all debt indicators remain below the threshold throughout the projection period. From table 1 the limit for PV of External debt to GDP is 55 while PV of total public debt to GDP is 70. According to the report of Bank of Tanzania Mid-Year Review of 2018/19 released February 2019, The World Bank's Country Policy and Institutional Assessment (CPIA) conducted in 2018 placed Tanzania in a group of countries with strong

policy, institutions and economic growth: Strong Performers. As a result, debt sustainability thresholds for Tanzania were elevated.

The results of the Debt Sustainability Analysis (DSA) conducted in December 2018 using debt stock at the end of June 2018 and CPIA for 2018 indicate that external debt was sustainable. The stock of public sector debt of the United Republic of Tanzania was USD 22,530.5 million at the end of December 2018, from USD 22,760.4 million at the end of June 2018, due to higher redemption relative to new borrowing by the Government. Out of the total public debt, external debt accounted for 71.7 percent and the balance which is 28.3 percent was domestic debt. Furthermore, according to IMF staff report for the 2016 article IV consultation, and fourth review under the policy support instrument—debt sustainability analysis indicates that Tanzania’s risk of debt distress is low. The report reveals that under the baseline scenario, which assumes a scaling up of infrastructure investment, all external debt burden indicators are projected to remain below the policy-dependent thresholds. The public debt outlook also remains favorable.

However, stress tests highlight vulnerabilities to exchange rate depreciation and lack of fiscal consolidation. These results highlight the need for Tanzania to continue implementing a prudent fiscal policy, with an overall deficit of about 3 percent of GDP remaining a good long-term fiscal anchor. An appropriate financing mix is also required. The increasing recourse to non-concessional borrowing needs to be gradual and accompanied by strengthened debt management capacity and sustained reforms to public financial and investment management to preserve debt sustainability.

2.4 Theoretical Framework

In attempt to explain the subject of Public debt various theories have been propounded by scholars, these theories are of relevance to the study because they serve as building block of the work.

2.4.1 The Dual Gap Analysis

The theory explains that development is the function of investment. Such investment which requires domestic savings is not sufficient to ensure development to take place. There must be the possibility of obtaining from abroad the amount that can be invested to fill the gap. In national income accounting, an excess of investment over domestic saving is equivalent to excess surplus of import over export.

$$Income = Consumption + Import + Saving$$

$$Output = Consumption + Export + Investment$$

$$Output = Income, \text{ then}$$

$$Investment - Saving = Import - Export$$

This shows that a country can make investment from savings. But also, the returns from export can be used to finance import of goods and services. Therefore, if the available domestic saving falls short of the level necessary for the targeted rate of growth it leads to the existence of savings investment gap. Similarly, if the maximum possible level of import requirement needed to achieve the growth target are greater than the maximum possible level of export then an export-import of origin exchange gap exist (Balago, 2014). This is also known as the two-gap analysis.

2.3.2 Debt Overhang Theory

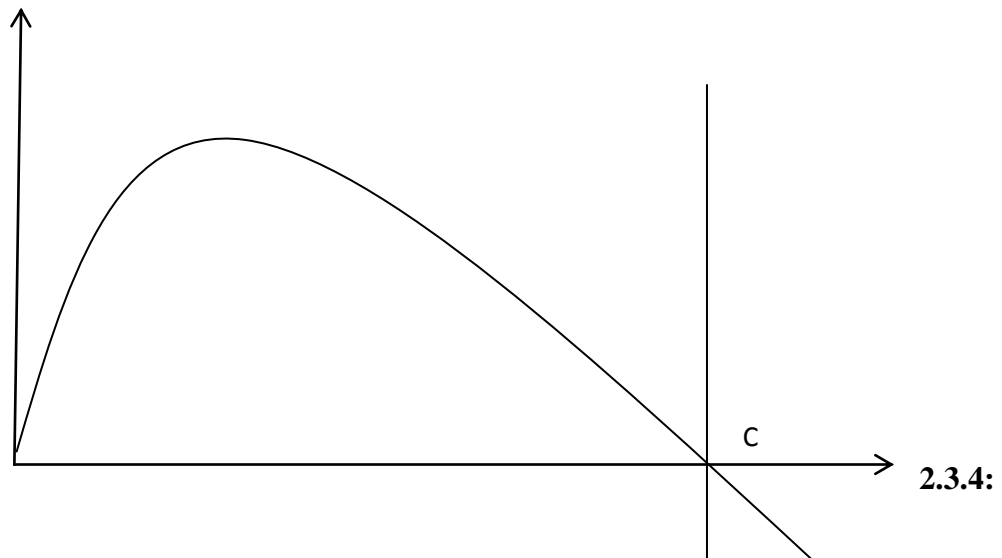
This theory explains the situation where the debt stocks exceed the country repayment ability. Some of the returns from domestic economy are effectively taxed away by existing foreign creditors and investment by domestic and foreign investors will be discouraged and further deteriorate the level of economic growth (Claessens et al 1996). Therefore, according to Were, (2001) the debtor country shares only partially in any increase in output and exports because a fraction of that increase will be used to service the external debt.

Accumulated debt stock reduces economic performance through debt overhang effect that means tax disincentive and macroeconomic instability. Tax disincentive means that a large debt stock discourages investment because potential investors assume that there would be taxes on future income in order to make debt repayment. While the macro economic instability relates to increase in fiscal deficit, possible monetary expansion and anticipated inflation (Claessens et al 1996).

2.3.3 Debt Laffer Curve Theory

The theory introduced by Sachs in 1989. It explains the concept of debt Laffer curve through the theory of debt overhang and the logic behind it was perfected by Krugman (1989), according to these theory external debt could have positive impact on investment and growth (upward sloping) but if a country borrow too much and surpass a certain endogenous threshold of the level of debt then it may result to negative impact on economic growth (downward sloping). According to Elbadawi et al., (1996) debt Laffer curve also implies that there is a limit at which debt

accumulation stimulates growth. Pattillo et al., (2002) argued that when a country opens up to foreign capital and start borrowing; the impact of that debt on growth will likely to be positive that means moving from zero indebtedness to point B as shown in the chart. But as debt increase beyond point B any additional debt will eventually slow down growth even though overall debt level continues to make positive contribution to growth and when the debt reaches point C the whole contribution of debt turns negative.



The Liquidity Constraint Hypothesis

The theory explains the situation where by an increase in external debt servicing reduce funds available for investment and growth, as the fact that will low the possibility of a country to service their debt and that will affect their ability to borrow further from external sources, putting pressure on domestic borrowing and lead to crowding out. Crowding out effect refers to a situation where by a nation's revenue which is obtained from foreign exchange arnings is used to pay up debt Service Payments.

This limits the resources available for use for the domestic economy as most of it is soaked up by external debt service burden which reduces the level of investment (Utomi, 2014). Also Were, (1996) comment that if greater portion of export revenue is used to service external debt, very little is available for investment and growth. According to Cohen, 1993 a reduction in the current debt service should lead to an increase in current investment for any given level of future indebtedness.

2.5 Empirical Literature Review

Ajayi and Oke (2012) investigate the effect of external debt burden on economic growth and development of Nigeria they adopted the regression analysis of Ordinary Least Square (O.L.S), their finding indicates that external debt burden has an adverse effect on national income and per capital income of the Nigerian nation. They argue that high level of external debt led to the devaluation of national currency, increase in retrenchment of workers, continuous industrial strike and poor education system. They further went on suggesting that it all led to the depression of Nigeria economic growth, besides their finding they also suggest that debt service obligation should not be allowed to rise more than foreign exchange earnings and also the debt contracted should be invested in profitable venture which will generate the reasonable amount of money for debt repayment. Also, a study by (Ndung'u, 1998) concluded that the external debt problem in Africa has led to an investment pause and has reduced growth performance.

Obademi (2013) empirically examines the impact of external debt on economic growth of Nigeria by using ordinary least square method. The empirical result showed that external debt has a negative effect on Nigeria economic growth while

debt service has a positive significant influence on economic growth. Balago (2014) conducted a study to examine whether or not relationships exist between external debt and economic growth in Nigeria. The result of ordinary least square model showed that external debt has fairly significant positive relationship with economic growth. A study by (Deshpande, 1997) assessing the impact of external debt on economic growth of 13 severely indebted countries for the period (1971 – 1991), showed a strong negative impact of external debt on investment although during the first half of the period (1975 – 1983), there were some favorable time factors that showed a strong positive effect of external debt on investment during the period in question.

Clements, Bhattacharya and Nguyen (2003) examine the channel through which external debt affect growth in low income countries. Their results suggest that the substantial reduction in the stock of external debt projected for highly indebted poor countries (HIPC's) would directly increase per capita income growth by about one percentage point per annum. They also suggest that reduction in external debt service could provide an indirect boost to growth through their effect on public investment; they further comment that if half of all debt service relief were channeled for that purpose without increasing the budget deficit will lead to the acceleration of some HIPC's growth by an addition of 0.5 percentage point per annum.

Savvides et al. (1996) also studied the impact of external debt on economic growth had a negative but insignificant coefficient, indicating that the hypothesis of debt overhang effects could not be rejected. A study conducted in Jordan for the period 1990-2011 by Abdelhadi (2013) found that there is positive and significant effect

between external debt and economic growth. Debt servicing has negative and significant effect on economic growth of Jordan. The same result has also been found in Tanzania in the study conducted by Kasidi and Said (2013) for the period of 1990-2010 but there was no long run relationship between external debt and economic growth.

Nawaz, Qureshi and Awan (2012) conducted a study which attempted to examine the long run and short run dynamics of external debt and economic growth in Pakistan, they employed Johansen Cointegration and granger causality test. The results revealed that; there is a long run relationship between external debt and economic growth. Ajao and Ogiemudia (2012) also conducted a research specific for Nigeria over the period of 1979-2009 to review the effect of foreign debt management on sustainable economic development. During their conduct; the data analysis showed that access to external finances is strongly influence the economic development process of Nigeria and other nations as well. They use ordinary least square multiple method and error correction model (ECM) to examine the relationship between external debt management and economic development, determine the long run and short run dynamics among the relevant variables respectively.

Their empirical results showed that there is significant relationship between external debt and economic development in Nigeria also external debt stock contributed significantly to Nigeria GDP while debt servicing has a negative significant impact on Nigeria's GDP. Their result also went further to reveal that external debt and debt servicing had a mix delay effect on Nigeria economy. They comment that debt can

only be productive if and only if is well managed in an environment with sound macroeconomic policies which is an important prerequisite for development of an economy. Also, in a study by (Audu, 2004), it was discovered that debt servicing has had significant adverse effect on the growth process in Nigeria.

Gana (2002) used empirical models to evaluate the impact of external debt and debt servicing on the country's economic growth. The study found out that economic growth is negatively affected by the accumulation and servicing of external debt. This is centered on the fact that the accumulation of foreign debt puts pressure on economic growth through withdrawal of foreign exchange earnings required for investment. The empirical study by (Green & Villaneva, 1991) covering twenty (20) developing countries in the period between 1975 and 1987 also found out that the ratio of debt to GDP and debt service ratio significantly and negatively affects private investment.

Were (2001) using time series data the empirical results show that Kenya external debt accumulation has negative impact on economic growth and private investment, this confirm the existence of debt overhang problem in Kenya. The result also indicate that current debt inflow stimulates private investment and the study did not find any adverse impact of debt servicing on economic growth but have some crowding out effect on private investment. Also, Shabbir (2009) taking data set from 24 developing countries from the period of 1976-2003 focusing on whether external debt stock and debt serving lead to crowding out effect. The result was consistent with both debt overhang theory and liquidity constraint hypothesis, suggesting that external debt stock adversely affect economic growth and higher-level external debt

stock leads to crowding out. However, Ejigayehu (2013) found that external debt affects economic growth of selected heavily indebted poor African countries by debt crowding out effect rather than debt overhang.

According to IMF Report (2016), Tanzania Domestic public debt reached 8 percent of GDP. The report shows that the Domestic debt dominated by medium and long-term instruments, with Treasury bonds accounting for over 50 percent of total domestic debt and an average maturity of 7 years. Commercial banks continued to hold the largest share of government domestic debt. The findings indicate that local government debt and public enterprise debt were not captured due to lack of reliable and timely data. However, since these entities are often unable to borrow externally without a guarantee from the central government, public debt data captures partially their debt exposure. To get a comprehensive picture of government domestic debt, several outstanding government liabilities and other contingent liabilities must be included in the debt stock.

Makame K (2013), investigated the impact of external debt on economic growth of Tanzania for the period of 1990-2010. The study used time series data on external debt and economic performance. The study revealed that there is significant impact of the external debt and debt service on GDP growth. The findings showed that total external debt stock has a positive effect of about 0.36939 and debt service payment has a negative effect of about 28.517. The results also showed that there is no long run relationship of the external debt and GDP. Salama Yusuf (2018), conducted a study on the impact of Public Debt on Economic Growth using time series data from 1970 to 2015. The findings revealed that external debts can have either positive or

negative effects on the economic growth of country's economy. The results indicated that if external debts are used for development expenditure then the country may benefit because development expenditure like infrastructure may have a multiplier effect on boosting economic growth. Moreover, the result showed that the variables were co-integrated.

However, the VECM estimate showed that there is a negative relationship between public debt and economic growth in Tanzania over the study period. In addition, granger causality test revealed that there is no causal relationship between public debt and economic growth. Based on the findings the study recommended Government and policy makers to stop the accumulation of external debt stock overtime and prevent concealing of the motive behind external debt; external debts should be used only for productive investment of highest priorities that would help in yielding returns for economic reasons(productive purposes) and not for social or political reasons. Theoretical and empirical literature shows that external debt has effect on economic growth, but the findings have mixed results. Therefore, it is difficult to conclude whether public debt has either positive or negative effect on economic growth. This gap forms a basis for this study.

2.6 Research Gap

Given the review of the literature above, some research gaps are identified. One of the limitations is the issue of methodology employed in the studies. In most cases, the methodology employed were OLS, 2SLS. These approaches have their own weakness especially when data used are from cross Countries. Furthermore, the literature available in the markets of highly sophisticated and controlled nature

which is utterly different from that of Tanzania and some factors deem irrelevant in application to the Tanzanian environment. This study applies both OLS and Time series estimation methods. Moreover, the study analyzed the impact of both external and domestic debt since most of the studies rely on external debt.

2.7 Conceptual Framework

According to Young (2009), conceptual framework is a dramatic representation that shows the relations between the dependent variable and independent variables. In this study the conceptual framework depicts the impact of public debt on economic growth. The dependent variable is economic growth and the independent variables are external debt, domestic debt and debt servicing

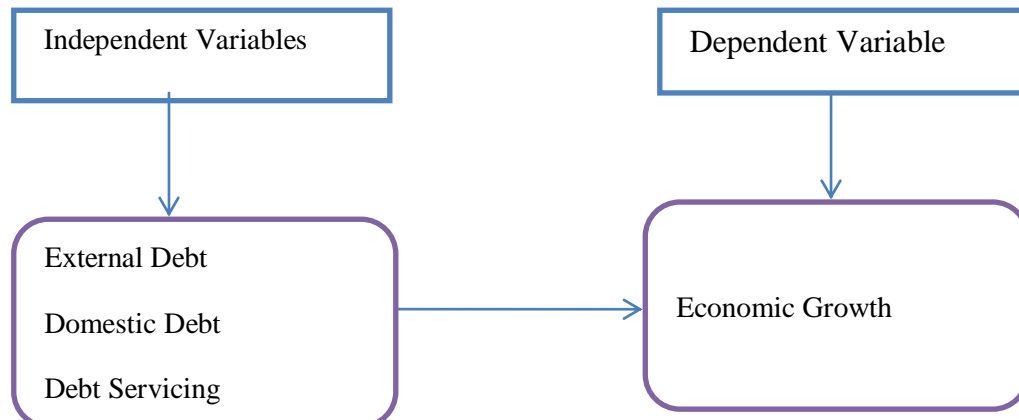


Figure 2.5: Conceptual Framework

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents the theoretical and methodological framework that will be used to estimate the effect of external public debt on economic growth. It sets out the empirical models used and various tests that were conducted to ascertain the validity of the data and effectiveness of the model.

3.2 Theoretical Framework

According to Sala-i-Martin (1997), economic theories do not identify the exact factors or variables that determine economic growth. In response to this challenge, he proposes a cross-sectional model of the form:

$$Y = \alpha + \beta_1 x_1 + \beta_2 x_2 + \dots + \beta_n x_n + \varepsilon \dots \dots \dots (1)$$

Where Y is the vector of economic growth rate and $x_1 \dots \dots x_n$ are vectors of potential explanatory variables that vary from study to study. In this regard, researchers often use a variety of variables, which they believe best explain economic growth based on theoretical literature and the unique economic situation of each country. For instance, Hassan and Mamman (2013) modeled real gross domestic product (GDP) as a function of external debt, debts service payment, export, inflation, and exchange rate. Uma, Eboh and Obidike (2013) noted that real gross domestic product is determined by total domestic product, total external debt, and interest rate on total external debt. In addition to these variables, Ajayi and Oke (2012) added exchange rate as a factor that determine GDP growth in an open economy. Theoretical

literature indicates that capital and labor affect productivity, which in turn determines GDP. This can be expressed as:

$$Y = f(K, L) \dots\dots\dots(2)$$

Where Y is GDP; K and L are capital stock and labor force respectively.

Following Sala-i-Martin et al. (1997), this paper used panel regression techniques to determine the effect of public debt on economic growth of Tanzania. The estimation was based on the growth model 2, which was augmented to include public debt indicators and control variables.

3.3 Model Specification

The major aim of this study is to assess the impact of public debt on economic growth. Therefore, the model applied in this study is adopted from a simple open macroeconomic debt growth model employed by Baboye and Ojo (2012). The model is specified in the functional form:

$$RGDP = f(EDS, DSP, DD) \dots\dots\dots(3)$$

Where

RGDP = Real Gross Domestic Product

EDS = External Debt Stock

DSP = External Debt Service Payment and

DD = Domestic Debt

The model is specified of its stochastic form:

$$RGDP = \alpha_0 + \alpha_1 EDS + \alpha_2 DSP + \alpha_3 DD + \mu_t \dots\dots\dots(4)$$

Where;

μ_t = Error term

The model is specified of its double log form:

$$\log GDP = \alpha_0 + \alpha_1 \log EDS + \alpha_2 \log DSP + \alpha_3 \log DD + \mu_t \dots\dots\dots (5)$$

Based on economic theory, this study modeled GDP growth as a function of external debt, domestic debt, and debt servicing.

GDP is Gross Domestic Product per capita in current U.S dollars. It is used as proxy for economic growth. GDP per capita is gross domestic product divided by midyear population. It includes sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products.

EDS is Total external debt stocks to gross national income. It refers to the debt owed to nonresidents repayable in currency, goods, or services. It is the sum of public, publicly guaranteed, and private nonguaranteed long-term debt, use of IMF credit, and short-term debt.

DSP is Debt service payment; this is the sum of principal repayments and interest actually paid in currency, goods, or services on long term debt, interest paid on short term debt and repayments (repurchases and charges).

DD is total Domestic Debt.

LN is logarithm of

Table 3.1: Summary of the Variables

Variable	Measurement	Expected sign
GDP	Annual percentage change	Positive
External debt	Total external debt of a country (in USD)	Positive
Debt Servicing	Amount of money estimated to be used on debt payment	Negative
Domestic Debt	Total domestic debt	Negative

Source: researcher, 2019

3.4 Data Sources

The study used data for the period of 1990 to 2017. Data for GDP growth, and external debt was obtained from World Bank's website. Data for Domestic Debt were obtained from a central bank (BOT).

3.5 Estimation Procedure

Estimation of the model using non-stationary variables may lead to spurious regression results for which the interpretation of the results does not yield any economic meaning (confusing inferences). According to Granger and Newbold (1974) when there are spurious regressions results are characterized by a high and a low Durbin-Watson (d.w) statistic, t and F-test on the regression parameters may be very misleading. Therefore, because Time series data are usually non-stationary before the model is estimated, a number of tests are carried out. These are testing for stationary, order of integration and co integration analysis.

3.5.1 Testing for Stationary (Unit Root Test)

A time series variable is said to be stationary if its mean, variance and auto covariance are finite (constant) and independent of time. Since, the data have shown some signs of trend and drift after plotting; there is need to formally test for stationary. There are various methods of testing for unit root such as Dickey-Fuller, Augmented Dickey-Fuller and the Phillip-Perron tests. In this study the Augmented Dickey-Fuller (ADF) test is used since it allows addition of more lags to achieve white noise error term, which is required for the distributional results to be valid (no autocorrelation). The null hypothesis tested under the ADF, is rejected when the absolute value of the computed t-static is greater than the absolute of the critical

value. The unit root results have been reported in chapter four. The Augmented Dickey Fuller (ADF) Test takes the following formulation; with a drift and trend model specification representation;

$$\Delta P_t = \alpha_0 + \alpha_1 P_{t-1} + \alpha_2 t + \sum_{i=1}^n B_i \Delta P_{t-i} + \varepsilon_t \dots \dots \dots (6)$$

Where

α_0 is a drift Component and α_2 is trend component

B_1 is a measure of Lag length and y is a measure of unit root

The null hypothesis:

Ho: $\gamma = 0$ for existence of unit root while

H1: $\gamma < 0$ for no unit root.

Here the test is done by “augmenting” the DF equations by adding the lagged values of the dependent variable. The lag length is chosen to make sure that any autocorrelation in ΔP_t is taken away. The optimal lag length is identified so as ensure the error term is white noise. If we cannot reject the null hypothesis we conclude that the series under consideration has a unit root and therefore non-stationary. $\alpha_2 t$, the trend component takes to account the possibility of autocorrelation in residual and ΔP_{t-1} is the lagged difference to accommodate serial correlation in the error, ε .

3.5.2 Johansen and Juselius Co-Integration Analysis

Co-integration has been developed as a technique for determining whether there is long run relationship among a set of non-stationary variables. The analysis of a

differenced time series data yields short-run relationship among the variables with no information about the long run. Co integration implies that in the long-run series that data are non-stationary and move together. When variables are co-integrated, regression is carried out in levels using non-stationary variables in which there is no problem of spurious regression and the coefficients are estimated as long-run coefficients. Co-integration test involves estimating the following equation.

$$LR_{max}(r/n+1) = -T * \log(1 - \lambda) \dots \dots \dots (7)$$

Whereby;

λ is the Maximum Eigenvalue and

T is the sample size.

Trace statistics investigate the null hypothesis of r co-integrating relations against the alternative of n co-integrating relations, where n is the number of variables in the system for $r = 0, 1, 2 \dots n-1$. Its equation is computed according to the following formula:

$$LR_{tr}(r/n) = -T * \sum_{i=r+1}^n \log(1 - \lambda_i) \dots \dots \dots (8)$$

There are two main methods of testing co-integration which include; Engle-Granger (EG) Approach for Univariate Models and Johansen Approach for the Multivariate Models. However, for the purpose of this study the Engle-Granger approach is utilized which is simple in implementation and interpretation of the test, and also the approach is suitable for small sample size. Nevertheless, there are some problems with this Engle-Granger approach (Verbeek, 2008) among others include; the

residual based test tends to lack power because it does not exploit all the available information about the dynamic interactions of the variables, the results of the tests are sensitive to the left-hand side variable of the regression, and it is only possible to test for one co-integrating vector as it does not provide a sufficient framework for more than two variables.

The Johansen's approach overcomes the drawbacks of the Engle-Granger approach, the approach is used in testing for number of co-integrating vectors that is being able to detect multiple co integrating vectors in avoiding the problem of having to select one variable as dependent variable in avoiding carrying errors from one step to another, and lastly the approach provides joint procedure; testing and maximum likelihood estimation of the vector error correction model and long-run equilibrium relations.

Though, the Johansen's approach has the following shortcoming; the method cannot be accepted as an appropriate one since the point estimates obtained for co-integrating vector may not be particularly meaningful when given the small sample size. The problem of multiple long-run relationships is presumably being seen as an identification problem (Granger, 1986). Also, its procedure is very sensitive to the misspecification of the lag length of the VAR model we start with. Engle-Granger representation theorem, explain that when the variables are co-integrated, there is a long-term, or equilibrium, relationship among the variables.

3.5.3. Error Correction Model

In order to capture short-term and long-term dynamic the study applied Error

Correction Model (ECM). Error correction terms, is obtained by regressing dependent variable on independent variables and then produce residual series from the estimated ordinary square. It measures the speed of adjustment of the dependent variable as the independent variable(s) changes. If the variables are co-integrated then an error correction model is used to estimate a single logarithm line with single equation error correction model (ECM) by ordinary least squares (OLS) method. The choice of this technique is due to its convenience and it has been used successfully in other studies in Tanzania, for instance, Mushi (1998) and Bashagi (2003).

3.6. Other Diagnostic Tests

3.6.1. Autocorrelation Test

Autocorrelation refers to the correlation of a time series with its own past and future values. Breusch-Godfrey LM test is used with H_0 : no serial correlation, if p-value is less than 5% we reject null but we accept null if p-value is greater than 5%.

3.6.2: Heteroskedasticity

Heteroskedasticity refers to the dispersion of the variance, which is caused by statistical models that allows random variables to differ in variance. It is very important to conduct the test since presence of Heteroskedasticity can leads into biased estimators of standard errors. The Null Hypothesis is that the error terms are normally distributed.

3.6.3: Multicollinearity Test

Multicollinearity problem exists when two or more independent variables have a perfect or approximate linear relationship. Therefore, it is important to test for

multicollinearity before conducting further econometric analysis. The procedures to test for multicollinearity include first to run the full regression and then run an auxiliary regression and compare the two R^2 values. Using Klein's Rule of Thumb, if the R^2 for the auxiliary regression is higher than for the original regression, you probably have multicollinearity.

3.6.4. Test of Significance

Inferential statistics such as non-parametric test which include analysis of variance (ANOVA) was used to test the significance of the overall model at 95% level of significance. Coefficient of correlation (r) was used to determine the magnitude of the relationship between the dependent and the independent variables. Coefficient of determination (r^2) was also used to show the percentage for which each independent variable and all independent variables combined would be explaining the change in the dependent variable.

3.7. Data Analysis

The data was analyzed using STATA computer software because of its ability to help researchers to analyze research easily and efficiently (Baum, 2006). The method of analysis of the study will be Ordinary Least Squares method (OLS) in order to capture the impact of external debt on economic growth, where by multiple regressions includes GDP growth rate as the dependent variable, external debt, domestic debt and debt service as the independent variables.

CHAPTER FOUR

STUDY FINDINGS AND DISCUSSION

4.1 Introduction

In this chapter the empirical finding of the model is presented. The study analyses the impact of external debt on economic growth of Tanzania. This chapter consists two sections. Section 4.1 presents reliability tests which include Basic Descriptive statistics, correlation analysis and Stationery Test. Section 4.2 presents the study findings.

4.2: Data Reliability

This sub section explores the properties of each variable by descriptive statistics and correlation between the variables.

4.2.1: Basic Descriptive Statistics

Before conducting further data analysis, it is crucial to understand the properties of each variable by generating descriptive statistics. Table 4.1 presents the descriptive statistics of the variables included in the model.

Table 4.1: Descriptive Statistics

	Min	Max	mean	variance	Sd	skewness	Kurtosis
GDP	155.598 3	985.228 1	506.518 4	77714.1 4	278.772 6	0.359596 1	1.82479 6
EDS	22.0467 8	165.871	72.3940 5	2448.14 4	49.4787 2	0.757868 4	2.15002 3
DSP	.265812 1	5.31229 3	1.81227 9	2.90739 2	1.70510 8	.9757676	2.31537 7
DDS	3.1	15.55	7.55166 7	18.5754 7	4.30992 7	.6740407	2.17754 7

Source: Study Findings

Table 4.1 shows that the variable GDP has large standard deviation among all the variables, which suggests that GDP has increased at a significant amount during this period compared to other variables meaning GDP is more volatile. The results show that all variables start from positive. The statistics show that all variables are positively skewed. Table 4.1 shows that the variable Debt Service has the minimum value while the variable GDP per capita has the maximum value. The data shows that on average the GDP per capita from 1990 to 2017 is USD 507 while external debt as a share of GNI is USD 72.4.

4.2.2: Correlation Analysis

Correlation analysis among the variables shows the strength and direction of relationship among the two variables. It can be used as an indicator for testing the presence of multicollinearity among the variables. A negative sign implies inverse relationship whereas a positive sign means a direct relationship. Table 4.2 presents the correlation matrix of the variables

Table 4.2: Correlation Matrix of Variables of the Model

	GDP percapita	ED (%GNI)	Debt service	Domestic Debt
GDP Percapita	1			
EDS (%GNI)	-0.5757	1		
DSP	-0.8565	0.2295	1	
DDS	-0.8059	0.1323	0.9918	1

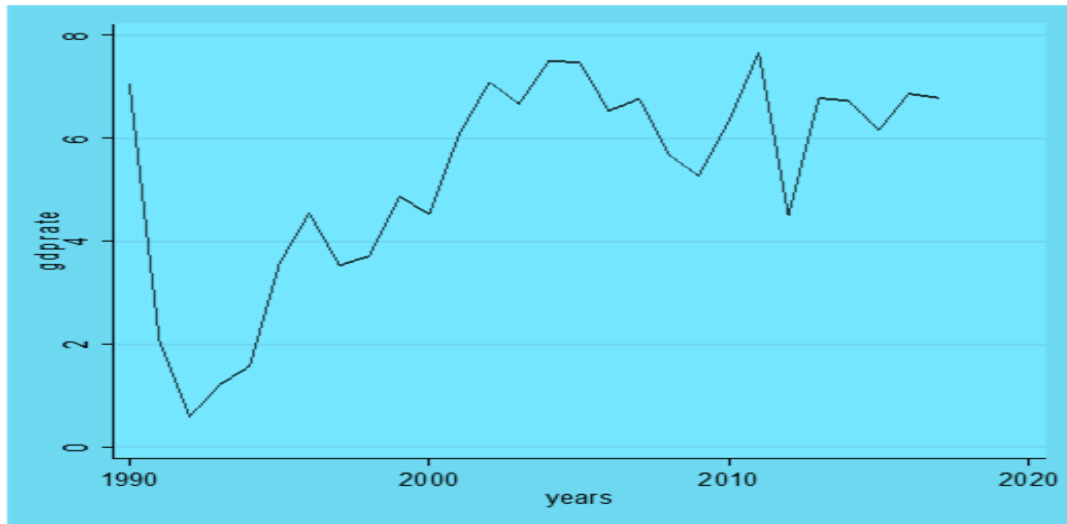
Source: Study Findings

Table 4.2 shows the correlation between the variables. The table shows that there is negative correlation between GDP per capita and External Debt. The table also shows that there is negative correlation between GDP per capita and Debt Service. The correlation between GDP per capital and Domestic debt is also negative. The

correlation between other variables is positive.

4.3: Unit Root Tests

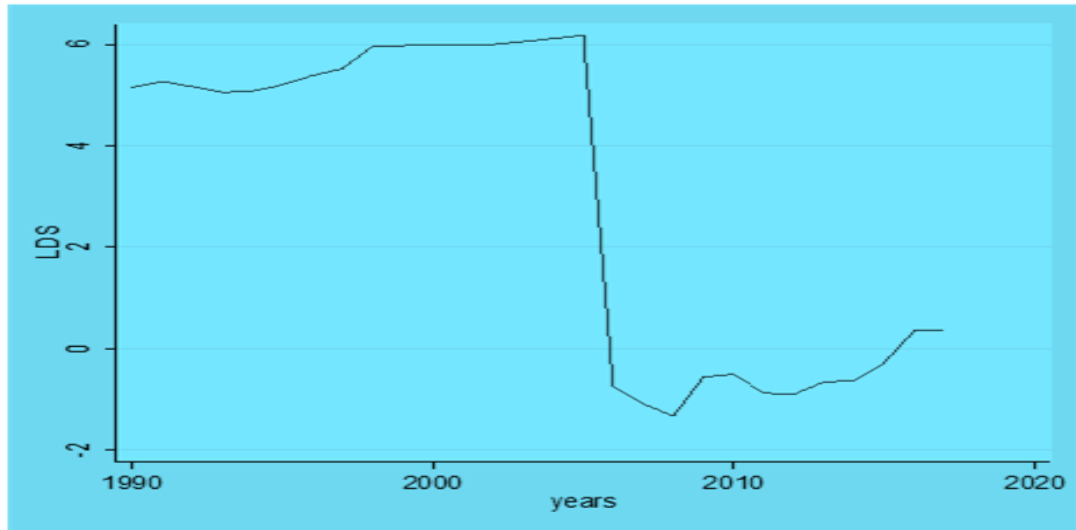
(a) GDP Growth Rate



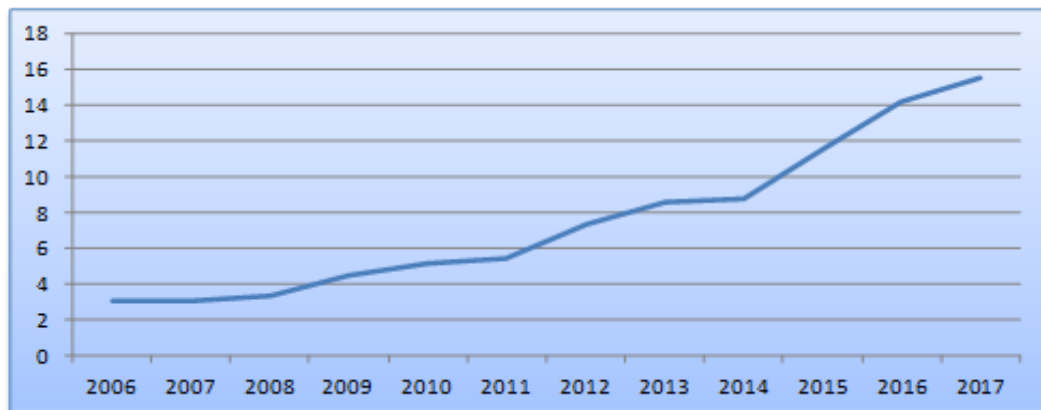
(b) External Debt



(c) Debt Service Payment



(d) Domestic Debt

**Figure 4.1 Graphical Analyses of Data**

Source: Study Findings

The figures above show the trend of economic growth (GDP percapita), external debt, debt service payment and domestic debt. Figure 4.2 (a) up to 4.2 (d) show the stochastic trend for the period under study.

4.3.2 The ADF Results

This study uses Augmented Dickey-Fuller Test to investigate the null hypothesis that all variables have unit roots, against the alternative hypothesis that there is no unit

root, in the level of variables as well as the first difference. The Augmented Dickey – Fuller (ADF) unit root test is carried out in this study. Table 4.3 presents the unit root test results for each variable.

Table 4.3: ADF Unit Root Test Results

TEST RESULT OF VARIABLES AT LEVEL			TEST RESULTS AFTER FIRST DIFFERENCE	
Variable	Test Statistics Z(t)	5% Critical Value	Test Statistics Z(t)	5% Critical Value
logGDP	-0.676	-2.994	-5.295*	-2.997
LogEDS	-1.487	-2.994	-4.402*	-2.997
logDSP	-1.053	-2.994	-4.771*	-2.997
LogDDS	-0.926	-2.994	-5.067*	-2.997

Source: Study Findings

* 1 Percent level of significance

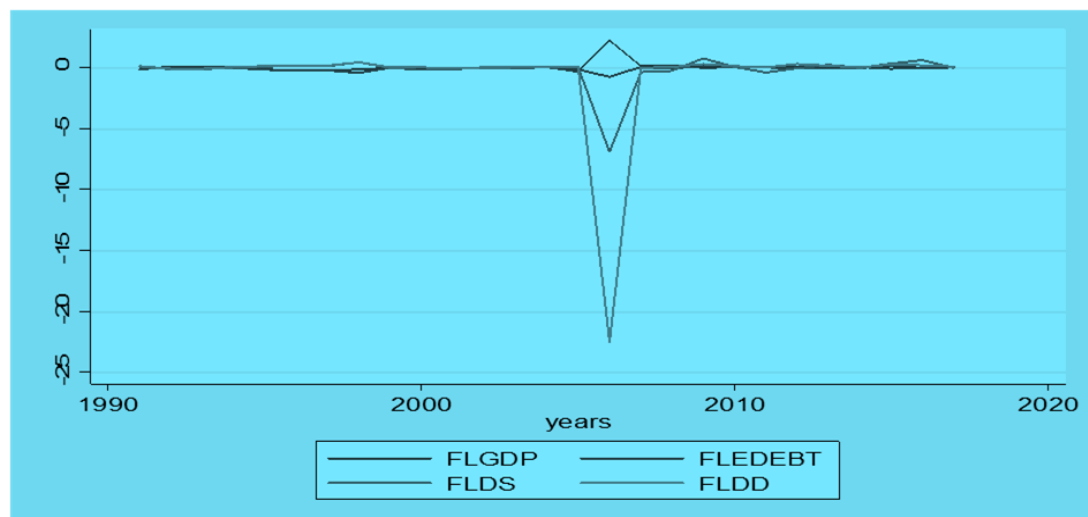


Figure 4.2: Trends of Variables after First Difference

Source: Study Findings

Table 4.2 shows the results for the test of Stationary for all variables at level form and First difference. The study failed to reject the null hypothesis of Non-Stationary

at level form for all variables. The results for Stationary tests at 1st difference level shows that all variables are stationary after differencing. Thus, concluding all variables are Non-stationary but after differencing, that is to say I (1) they are all stationary. After first difference all variables tends to fluctuate with time. This is to say; these variables do not have constant trend or pattern. The graph shows that all other variables on Economic growth are highly affected by time.

4.4. Ordinary Least Square Results

4.4.1 Public Debt and Economic Growth

The study applied the Ordinary Least Square estimation method in order to explore the relationship between External Debt, Debt Service, Domestic Debt and Economic Growth.

Table 4.4: OLS Results for Public Debt and Economic Growth

Source	SS	df	MS		Number of obs 12	
					F(3, 8) 116.12	
Model	0.60878906	3	.202929688		Prob > F 0.000	
Residual	0.01398128	8	.00174766		R-squared 0.9775	
Total	0.62277034	11	.056615486		Adj R-squared 0.9691	
					Root MSE 0.04181	
logGDP	Coef.	Std. Err.	t	P>t	[95% Conf. Interval]	
logEDS	0.5843192	.1340982	4.36	0.002	0.2750882	0.8935503
logDSP	-0.1037827	.0579232	-1.79	0.111	-0.2373538	0.0297885
logDDS	-0.0294145	.1426134	-0.21	0.842	-0.3582815	0.2994525
_cons	-6.817193	2.808583	-2.43	0.041	-13.2938	-0.3405886

Source: Study Findings

Table 4.4 shows that overall the model is significant at 1 percent level. Also, the model has good for fit as indicated by the coefficients of determination (R- squared). The variables in the model explain the economic growth by about 96 percent. The findings show that, the coefficient of logEDS is positive and statistically significant at one percent level. This result suggests that the increase in external debt can stimulate economic growth. The results show that 10% increases in External debt stimulate the economy by 5.8%.

The results also show that the coefficient of logDSP is negative and statistically insignificant at 1% level of significance. The results show that 10% increase in debt service slow down the economy by 1.03%. These findings may indicate the debt service burden if the country continue increasing reliance on foreign funds. Service of debt has direct negative impact on economic growth since funds that can be used to finance development projects are used to payback debt. According to Edelman (1983), the critical factors affecting debt service capacity are returns on investment, cost of borrowing and the rate of savings.

These findings align with Makame K (2013), on the impact of external debt on economic growth of Tanzania for the period of 1990-2010. The study used time series data on external debt and economic performance. The study revealed that there is significant impact of the external debt and debt service on GDP growth. The findings showed that total external debt stock has a positive effect of about 0.36939 and debt service payment has a negative effect of about 28.517. The results indicate that if external debts are used for development expenditure then the country may benefit because development expenditure like infrastructure may have a multiplier

effect on boosting economic growth.

Although the findings show that External Debts stimulates economic growth, initiatives must be taken to ensure that the debt is sustainable. The findings of the Debt Sustainability Analysis (DSA, 2018) show that Tanzania remains at a low risk of debt distress, with all relevant debt ratios below the thresholds. The DSA results for total Public debt show that all debt indicators remain below the threshold. According to IMF standards the limit for PV of External debt to GDP is 55 while PV of total public debt to GDP is 70. The findings of this study are consistent with the study conducted by Kasidi and Said (2013). Muhtar (2004) argued that the service of external debt has direct negative effect on economic development. According to Edelman (1983) the critical factors affecting debt service capacity are returns on investment, cost of borrowing and the rate of saving.

Table 4.4 also shows that, the coefficient of Domestic debt (logDDS) is negative and statistically insignificant. This result suggests that the increase in domestic debt can inversely affect economic growth. This finding aligns with the findings from the study conducted by Josephat Lotto and Catherine Mmasi on the impact of domestic debt on economic growth in Tanzania using OLS approach from 1990 to 2015. The findings revealed that there is inverse relationship between economic growth and Domestic Debt. Some of the reasons may be increased trend of domestic borrowing for funding budget deficits. This can affect the economy since the loans to private sector will be taken by the government. Figure 4.3 shows the relationship between the variables

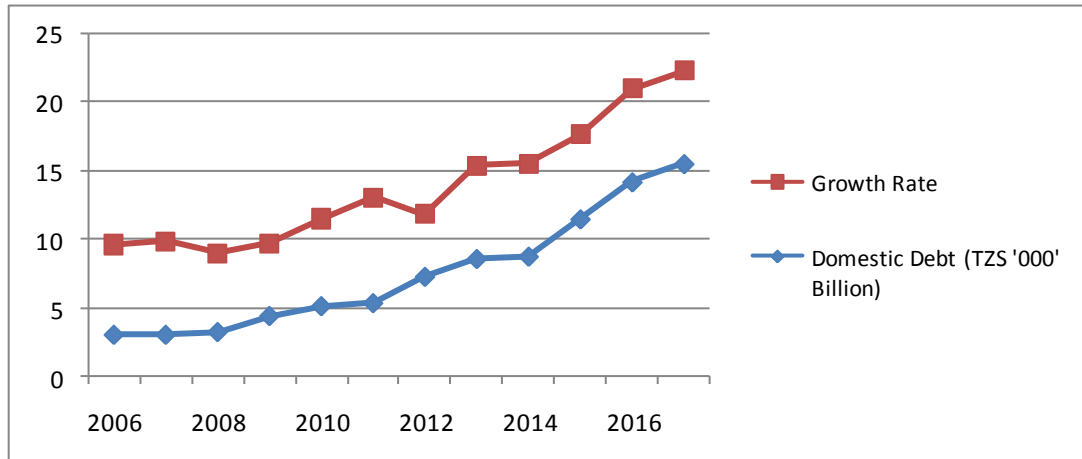


Figure 4.3: The relationship between Economic Growth and Domestic Debt
Source: Study Findings

Figure 4.3 shows that domestic debt is increasing over time. According to DSA report (2018), the stock of domestic debt reached TZS 15,546.16 Billion equivalent to 11.84 percent of GDP. The report shows that the increase was mainly on account of government borrowing to refinance matured securities and developing projects. The negative sign may indicate financial constraints to private sector since they cannot compete with the government. This reduced the level of investment.

4.5. Co integration Analysis

Before conducting cointegration tests, the optimal lag length in the VAR Models is determined so as to have Gaussian error terms that do not suffer from non-normality, autocorrelation and heteroscedasticity. The results for the lag selection criterion are presented in table 4.5.

Table 4.5: Lag Selection Criteria

Lag	LL	LR	Df	p	FPE	AIC	HQIC	SBIC
0	-73.8976				0.09426	6.15181	6.19238	6.29807
1	2.77363	153.34	9	0	.000423*	.73811*	.90038*	1.32317*
2	10.6374	15.728	9	0.073	0.000482	0.829005	1.11298	1.85286
3	19.8115	18.348*	9	0.031	0.000523	0.815079	1.22076	2.27773
Endogenous: LGNP LEDEBT LDS								
Exogenous: _cons								

Source: Study Findings

Since the interest of the study is on the correct VAR model (examining the relationship between the variables) it is advised to select the criterion which is consistent such that it is the desirable sampling techniques. Table 4.5 shows that all criteria suggest the optimum lag to be 1.

4.5.1: Johansen Co-integration Test

The Johansen Co-integration test is used to measure the existence of long run relationship among the variables. This study applies both trace statistics and maximum eigenvalue method. The results are shown in table 4.6

Table 4.6: Trace statistics and Maximum Eigenvalue

Trend: Constant				Number of obs = 27	
Sample: 1991-2017				Lags = 1	
maximum rank	parms	LL	eigvalue	trace statistic	5% critical value
0	3	-6.3652335		20.2409*	29.68
1	8	1.1262793	0.42589	5.2579	15.41
2	11	3.2055848	0.14275	1.0993	3.76
3	12	3.7552226	0.0399		
maximum rank	parms	LL	eigvalue	max statistic	5% critical value
0	3	-6.3652335		14.983	29.97
1	8	1.1262793	0.42589	4.1586	14.07
2	11	3.2055848	0.14275	1.0993	3.76
3	12	3.7552226	0.0399		

Source: Study Findings

Table 4.6 indicates that the null hypotheses of zero cointegration equation are rejected by both Trace Statistics and maximum eigenvalue at the 5% level of significance. According to trace statistic test, the result indicates the existence of one cointegration values among the variables. Thus, the Johansen co-integration test suggests that there is a long run relationship between Economic growth and external debt. This means that the variables move together in the long run. These findings are

consistent to the study conducted by Ajao and Ogiemudia. Their findings proved that there is existence of long run equilibrium between external debt, debt servicing and economic growth.

4.6 Estimation Results from ECM

The study applied the Error Correction Mechanisms (ECM) Estimation method in order to explore the short run dynamic and long run impact of external debt on economic growth. The Error Correction Model consists of two parts: the long-run equilibrium relationship results and short-run equilibrium relationship results. The long-run results are provided by the error correction coefficients whereas the short-run results are provided by the short run equilibrium coefficients. If the coefficient of lagged residual is positive, the dependent variable is above its equilibrium. Generally, the coefficient of the error correction term (ECT) will need to be negative which will cause the dependent variable to be negative. Therefore, leading the independent variable to fall in period t . The value of ECT decides how quickly the equilibrium is restored.

Table 4.7: ECM Results for Public Debt and Economic growth

Source	SS	df	MS		Number of obs	11
					F(4, 6)	11.31
Model	0.051583139	4	.012895785		Prob > F	0.0059
Residual	0.006838854	6	.001139809		R-squared	0.8829
Total	0.058421993	10	.005842199		Adj R-squared	0.8049
					Root MSE	0.03376
Δ LGDP	Coef.	Std. Err.	t	P>t	[95% Conf. Interval]	
Δ LEDS	0.7334575	.1949297	3.76	0.009	0.2564817	1.210433
Δ LDSP	0.0139098	.0487552	0.29	0.785	-0.1053899	0.1332095
Δ LDDS	-0.3673859	.1526201	-2.41	0.053	-0.7408339	0.0060621
ECT1	-1.476075	.3248186	-4.54	0.004	-2.270878	-0.6812729
_cons	0.0179596	.0309265	0.58	0.583	-0.0577149	0.093634

Source: Study findings

Note: Δ = Differenced variable.

Table 4.7 shows that; the Error Correction Term (ECT) is negative and statistically significant. The negative sign indicates that if there is one-unit percent disequilibrium shock in the preceding period, the impact of a shock to change in dependent variable is corrected by 148%. Like the OLS results the coefficient of External debt is positive and statistically significant. The results reveal that the contribution of external debt on the economic growth is positive. Moreover, the findings show that the Coefficient of Debt Service Payment is positive but not statistically significant. These findings may indicate that service of external debt has no direct impact on economic growth since funds that can be used to finance development projects are used to payback debt. The study also revealed that there is long run relationship between domestic debt and economic growth. Table 4.7 shows that there is negative relationship between domestic debt and economic growth.

4.5.2 Other Diagnostic Tests

In order to make sure that the results obtained in this study can be used for forecasting or policy purpose, the study conducted some diagnostic tests. These include:

4.5.2.1 Autocorrelation Test

Autocorrelation refers to the correlation of a time series with its own past and future values. This test helps to identify any relationship that may exist between the current values of the regression residuals and any of its lagged values. The null hypothesis is that there is no autocorrelation at lag order. If p-value is less than 5% we reject null but we accept null if p-value is greater than 5%.

Table 4.8: Results for Autocorrelation Test

Lags (p)	Chi2	Df	Prob > chi2
3	5.016	3	0.1706

H0: no serial correlation

Source: Study Findings

Table 4.8 represents the test for residual autocorrelation from Breusch-Godfrey LM test). The results show that at the 5 percent significance level, we cannot reject the null hypothesis

4..2.2 Heteroscedasticity

Test for heteroscedasticity was conducted and the results show that the model does not suffer from heteroscedasticity since the null hypothesis of constant variance is not rejected.

Table 4.9: Results for Heteroskedasticity Test

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity	
Ho: Constant variance	
Variables: fitted values of	
chi2(1)	= 1.49
Prob > chi2	= 0.2227

H0: Constant Variance

Source: Study Findings

Variables: Fitted value of lnGDP

Table 4.9 shows that the P value is greater than 0.05 hence the null hypothesis of constant variance is accepted

CHAPTER FIVE

CONCLUSION AND POLICY IMPLICATIONS

5.1 Introduction

This chapter comprises of three sections. Section 5.1 provides a summary and conclusion of the empirical findings. Section 5.2 provides policy implications of the empirical findings. Finally, section 5.3 provides the recommendation for further studies.

5.2 Summary and Conclusion

The main objective of the study was to analyze the impacts of public debt on economic growth. The study applied Ordinary Least Square (OLS) and Error Correction Model to assess the impact of Public debt on economic growth for the period from 1990 to 2017. The data collected from World Bank Indicators, Bank of Tanzania and National Bureau of Statistics. The data was analyzed using Stata software. The motivation for carrying out this study comes from the fact that the external debt in Tanzania has been increasing from year to year.

Therefore, the study aimed at investigating how external debt affects economic growth. The dual gap Analysis justifies the need for external borrowing so as to bridge saving-investment gap. The regression analysis from OLS shows that the external debt stock affect positively the economic growth while Debt service payment affect negatively the economic growth. The negative significant impact of debt service on economic growth shows that there is debt service burden at the economy. The results from ECM also revealed that external debt stock affects positively the economic growth while the impact of debt service payment is not

statistically significant.

Moreover, the results from the Cointegration test reveals the existence of long run relationship between economic growth and external debt. This means external debt and economic growth have the same trend. It is argued that Tanzania spend mostly external debt for financing BOP and the rest spent in other activities such as infrastructure development. This means that the country spent small amount of external debt for other sectors that can generate employment or promote production and stimulate economic growth. Moreover, the debt servicing also affects the economic growth because the returns from infrastructure sector take a long time to implement hence the payment of debt service comes from other sectors. Therefore, when the country continues increasing its external debt it might lead to slow economic growth since some of national income will be used for servicing the debt.

5.3 Policy Implication

Although the results from the findings show that external debt has positive impact on the economy, still there is a need to control the volume of public debt especially external debt in order to maintain the level of debt sustainability. High indebted countries discourage foreign investment. The result also showed that debt servicing has negative impact on economic growth. Therefore, it is recommended to ensure that debt finance investments are productive and well managed to earn considerable rate of return that is high than the cost of debt servicing. Burden of debt servicing may also be contributed by depreciation of Tanzania currency since external debt payment is done in foreign currency. Therefore, the country must ensure that there is high stability in exchange rates and financial markets in general.

The main focus of Tanzania government is now towards industrial led economy. This can be done in many ways including public debt and capital Inflows. Through the findings which shows negative impact of debt servicing on Economic growth, it is fair to encourage foreign private capital inflows to public debt in implementing this policy. This can be used to increase production of goods for consumption as well as production of machinery inputs. This will help to reduce the burden of Public debt servicing.

5.4 Limitations of the study and Recommendation for Further Studies

One of the major limitations for this study was conflicting data from different sources. Different sources have different data for the same variable in the same year. This required an in-depth study of data from each source in order to select the best data source. The study used time series data from 1990 to 2017 to analyze the impact of external debt on economic growth of Tanzania. Given the duration of investigation and the methodology used, the model could only accommodate a limited number of variables that explain impacts of external debt on economic growth inflows and left out other variables. The future research may add the variables that were left out in this study. Therefore, this study recommends future studies to investigate the effect of external debt on FDI, exchange rate or domestic revenue.

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APPENDIX

Table 6.1 Data used in the Study

Year s	GDP Rate	GDP	ED	DS	GDP Per capita	EDS(%GNI)
1990	7.04507 2	4258743263	6432116281	4.39643 9	172.044798 4	157.9483
1991	2.07198 8	4956588279	6558177250	4.35037 6	193.740095 2	137.4552
1992	0.58432 2	4601413264	6668091984	5.31229 3	173.891382 8	151.0562
1993	1.20580 1	4257702197	6767949416	5.15279 5	155.598275 1	165.3299
1994	1.56766 2	4510846968	7227078642	4.21076	159.635742 4	165.871
1995	3.56991 2	5255221425	7370002189	4.41064 7	180.465023 3	143.7838
1996	4.54436 7	6496195451	7343151663	4.17352 9	216.932793 2	114.3041
1997	3.52527 8	7683852497	7105135535	2.15870 3	249.931287	93.95451
1998	3.70851 2	1227044870 0	7505391495	1.91236 9	389.103123 2	81.22559
1999	4.86386 4	1271121345 1	7907249726	1.76591	392.938073	82.34277
2000	4.52078 5	1337597635 4	7187824540	1.27138 6	402.789780 5	71.4802
2001	6.07080 8	1358164424 6	6511080019	1.07504 4	398.074229 4	64.7046
2002	7.09319 5	1414203508 0	7145819696	0.74575 3	403.174892 6	66.73273
2003	6.67279	1522425769 8	7307954236	0.58832 4	421.861069 6	63.74408
2004	7.50381 5	1667594841 5	8628762340	0.73307 3	448.810772	68.50451
2005	7.47631 9	1839904602 5	8409774097	0.73813 6	480.628580 5	50.73798
2006	6.53222 1	1864959024 8	4097945623	0.47855 6	472.518798 6	22.04678
2007	6.76853 5	2184352902 5	5030962807	0.33775 7	536.457551 9	23.70902
2008	5.68641 7	2794117743 5	6010233474	0.26581 2	664.892665 5	22.21544
2009	5.26910 5	2908142528 2	7685190153	0.56978 6	670.461596 5	27.1792
2010	6.33652 3	3201424984 1	8892091728	0.60822 2	715.149284	28.61234

Year s	GDP Rate	GDP	ED	DS	GDP Per capita	EDS(%GNI)
2011	7.67215 5	3465713949 5	1001093739 3	0.41969 3	750.266132 6	29.7775
2012	4.50015 4	3965053021 4	1158521038 6	0.40745 3	831.964828 2	30.08397
2013	6.78158 6	4568053261 4	1313916724 4	0.52174 7	929.130627 3	29.86045
2014	6.73246 2	4996478881 4	1433140767 8	0.53128 3	985.228059 5	30.04439
2015	6.16062 9	4737859902 5	1545105562 1	0.75820 2	905.756292 1	34.4372
2016	6.86711 6	4977402100 3	1619226568 1	1.42307	922.623927	34.51747
2017	6.78568	5332062595 9	1824231033 8	1.42670 1	958.445683 2	35.37428