THE EFFECT OF PUBLIC DEBT ON ECONOMIC GROWTH IN TANZANIA

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MASTER OF SCIENCE IN ACCOUNTING AND FINANCE

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BY

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I, **Salima Alfred,** declare that this dissertation is my own original work and that it has not been presented and it will not be presented to any other university for a similar or any other degree award.

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CERTIFICATION

The undersigned certifies that he has read and hereby recommends for acceptance by the University of Dodoma, a dissertation titled ***''The Effect of Public Debt on Economic Growth in Tanzania,''*** in partial fulfilment of the requirements for the Degree of Master of Science in Accounting and Finance of the University of Dodoma.

Dr. Alex Reuben Kira

Signature: ..... Date: 4/12/2020

(SUPERVISOR)

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DEDICATION

This dissertation is dedicated to my lovely husband, Benitho Erasto Vegula, and my daughters Anna George Tarimo, Glory George Tarimo, Glory Benitho Vegula and Gabrielle Benitho Vegula.

ABSTRACT

This dissertation reports the findings of the evaluation of the effect of public debt on economic growth in Tanzania. The specific objectives of the study were two: to find out the effect of external debt on the economic growth of Tanzania and determine the effect of domestic debt on the economic growth of Tanzania. References were drawn from the external debt components, namely multilateral debts and external debt, and domestic debt documents reviewed were treasury bills and government bonds. The control variables of the study are the private investments, imports, exports, subsidies, and tax revenues. A causal relationship research design was employed in which time series data of 18 years were used to generate data from each variable. The study adopted the annual data from financial year 2000/2001 to 2018/2019. The sample for the study was 18 observations. The data collected from various trusted sources which included the World Bank and Ministry of Finance and Planning and the Bank of Tanzania (BOT).

The analysis of the data obtained revealed that a total external debt stock has a positive effect on economic growth. Evidence to justify this comes from the calculated p-value (0.000) which is small at all levels of significance (5%,). Further, the domestic debt appears to have no significant effect on economic growth, as evidenced by the probability value of 0.619, which is higher at all levels of significance. The long-term external debt stock does not have significant effect on economic growth. In contrast, a short-term external debt appears to have significant effect on economic growth. However, the effect on the economy is minimal as evidenced by the size of coefficient.

Generally, the study concludes that sustainability of the public debts was still below the required threshold of sustainable public debts. External debts have a positive effect on the economic growth while the long term effect has an insignificant effect on economic growth. In contrast, the short term effect appears to have a positive significant impact. However, domestic public debts were found to be statistically significant to economic growth because of high interest. The Ministry of finance are recommended to take soft loans, to allocate on development projects and to make timely payment. And the CAG is should have full authority to examine public debts and his or her recommendations must be followed by the Government.

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LIST OF ABBREVIATIONS AND ACRONYMS

ACF	Auto-Correlation Function
ACTEST	Autocorrelation Test
ADF	Augmented Dickey-Fuller
AIC	Akaike Information Criterion
ANOVA	Analysis of Variance
ARDL	Autoregressive Distributed Lag Model
BIC	Bayesian Information Criterion
BOA	Bank of Tanzania
BOT	Bank of Tanzania
CAPM	Capital Asset Pricing Model
CBN	Central Bank of Nigeria
CMSA	Capital Market Securities Authority
EAMU	East Africa Management Union
ECM	Error Correction Model
EDS	External Debt Stock
GCE	Government Consumption Expenditure
GDP	Gross Domestic Product
GNP	Gross National Product
IMF	International Monetary Fund
KDE	Kernel Density Estimation
MPC	Monetary Policy Committee
OECD	Organization of Economic Cooperation Development
OLS	Ordinary Least Square Regression
PPG	Public and Publicly Guaranteed
TZS	Tanzania Shillings
URT	United Republic Tanzania
USD	US Dollar
VAR	Vector Autoregressive
WB	World Bank

CHAPTER ONE
INTRODUCTION

1.0 Introduction

This section provides an overview of the research on the investigation of the effect of public debt on Tanzania's economic growth. This first chapter covers the background of the study, statement of the research problem, research objectives, and research questions, followed by the significance of the research.

1.1 Background of the Study

Borrowing is a central aspect of sustainable development of economy of a nation since it is one of the principal tools for resource mobilization and bedrock to direct the mobilization of resources, particularly in developing nations (WB, 2018). Underlying this is the fact that economic growth is the foremost objective of most developing countries thus resources are mobilized from various sources including the public debt for investment into viable projects for the growth acceleration (Reinhart, Carmen, Vicent & Keneth, 2012). Nations across the world have been taking advantage of the advantage of multilateral resources to raise their resources and grow the economy. Underlying this is the fact that the sustainable economic growth of an economy is the most vital objective of macroeconomic policies especially the less developed countries like Tanzania. This is based on the reason that these countries are characterized by low capital formation due to low levels of domestic savings, investment and the burgeoning fiscal deficits driven by high levels of debt service (Reinhart *et al.,* 2012).

World Bank elucidates how countries can take advantage of the available funds to borrow to strengthen their economy. The World Bank through its Report of 2018 remarked that public debt or government borrowing is a perpetual global practice especially by the developing economies. Government borrowings have mainly been triggered by inability to finance critical development plans including education, infrastructures, water, electricity, etc. However, in its subsequent report the World Bank noted a massive increase in public debt (WB, 2019). There is a similar evidence coming from Adam, Collier, and Ndulu, (2016) who observed developing countries to have experienced a snail speed of economic growth across sectors in the past five decades. This unsatisfactory growth in economy is accelerated by the

minimal and low quality products and services produced in respective sectors (EIbadawi, Ndulu, & Njuguna, 2017). Reflection on the growing public debt globally could attest the everlasting cries by the developing economies about their serious lack of necessary capital for appropriate, adequate and productive investment, which make them to experience very little outputs with low quality standards which cannot compete in the global market (Ngowi and Z. Brixiová, 2019).

The Government of Tanzania is one example of the countries with multilateral debts services, which have increased from 29.4 million USD in 2007 to 168.8 million in 2018 (World Bank, 2020). Equally, a treasury bond as of June 2019 was TZS 9247.62 billion. The uptake of these debts in the country is fundamental and well calculated. Notably, (Kasoga, 1998) indicated that Tanzania has implemented major socio-economic project such as the North-South-Highway, inter region roads, railways, water, electricity projects and health sector to boost the economic growth and improve the wellbeing of its people. Other projects, which have taken the advantage of external debts are such as Rufiji Hydro-Electricity project, standard gauge railway from Dar to Kigoma and Education Programme for Children Support (URT, 2020).

Like other developing countries, Tanzania cannot advance its economy to the level deemed satisfactory, neither has improved infrastructure and delivery of quality services to its public using its own resources (Msambichaka, 2016). Under that background situation, the Government of Tanzania has been borrowing since its independence. The country has been borrowing from both the developed economies and international financial organisations, predominantly the International Monetary Fund (IMF) and World Bank (WB) to finance budget deficit. For example, in 1975 and 1985 government spending average above 30% of GDP, increase government spending contributed to fiscal deficits which also trigger an increase of external debt

Tanzania has no exception when it comes to the use of external borrowings due to budget deficit. However, Tanzania external debts have consistently been growing from USD 4,696 million in 1986 to the peak level of USD 8,017 million in 1995 and start a slitter 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 continues to grow but in 2006 there was a further decline of country external debt stock this was due to the 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 13,281.4 million in June 2013 (MOF, 2013), representing 75 percent of the national debt stock of USD 17,690.5 million. In which domestic debt was USD 4,409.1 million representing 25.0 percent of the national debt stock, these increases are alarming and needs attention.

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 (MOF, 2013).

Furthermore, for the period ranging from 2011 the Tanzania External Debt was 80,183,4 Million -USD and Domestic debt was 12,446,877,724 Bill- TZs to 2015 the External debt 95,751,529 Mil –USD and domestic debts was 22,140,128,568 .Bill-Tzs. The Tanzania debt sustainability analysis report (DSA , 2016) And from 2016 the Tanzania External Debt stock was 41,493.00 Million-USD and the domestic debt was 114,926.20 Billion-Tzs to 2018 the external debt stock was 45,160.20 Million-USD and the Domestic debt stock was 156,563.70 Billion-Tzs ,either for this period a lot of external debt have been invested in development projects like Rufiji Hydro-Electricity project, standard gauge railway from Dar to Kigoma and Education Programme for Children Support (URT, 2020) hence the moderate economic growth.

The evidence above shows that despite the government conscious effort in managing the nation's debt, the issue of debt has still been a burden to the Tanzanian economy. Also Large debt service payment obligations and debt burden has depressed investment and hence economic growth through its illiquidity and disincentive effects due to these increasing trends of external debts.

Literature explores that Tanzania public debt is still under reasonable control despite the rapid growth of the domestic borrowing by the Tanzania government to finance the 2018/19 budget. Recently Tanzania has been using 40% of the domestic revenue

to service the debt bill. The World Bank Group Report (2019) discusses the matter stating that, “Public debt is still sustainable, despite the recent jump in domestic borrowing. Though Tanzania is at low risk of debt distress, commercial debt as a share of total public debt has risen because domestic debt has risen by 2.3 percent of GDP to finance the 2018/19 budget”. Charles (2018) insisted that the Tanzania public debt is still sustainable for short and medium term for the Country. He argued that, “The most recent debt sustainability analysis (DSA) by the Government (2017) and by the IMF and World Bank (2016/17) indicated that Tanzania’s public debt remains sustainable in both the short and medium term”. Evidence still shows that the Tanzania debt is still well manageable with regard to macroeconomic indicators including growth, inflation, interest rate, primary balance and the possibility and availability of external finance.

Recently Tanzania has been using 40% of the domestic revenue to service the debt bill. The World Bank Group Report (2019) discusses the matter stating that, “Public debt is still sustainable, despite the recent jump in domestic borrowing. Though Tanzania is at low risk of debt distress, commercial debt as a share of total public debt has risen because domestic debt has risen by 2.3 percent of GDP to finance the 2018/19 budget”.

The Tanzania economy is still dependent largely on the agriculture sector as its contribution surpasses other sectors contribution to the economy. In addition to that, the Tanzania agriculture sector is the leading employer for the larger population of the country depending on the agriculture. This emphasized on the Deloitte Report (2016, pg.11) argued that, “The contribution of the agricultural sector to the economic growth and the development of Tanzanians has continued to increase. In 2015, the agricultural sector contributed 29% of the GDP, compared to 28.8% in 2014. This was the largest contribution, surpassing all other sectors. In addition, agriculture is the largest employer in the country”.

Attapattu and Padmasiri (2018) emphasized that most developing countries borrow to either finance higher investment or higher consumption or circumvent hard budget constraint. It is arguably that less debt-burdened countries tend to have higher rates of growth than the higher debt-burdened nations this is because less developed economies accumulate more debt for promoting economic growth due to their

inability to generate enough resources to bridge deficits gap and enhance economic growth (Akram, Padda, Khan, & Husnain, 2011). Some governments prefer debt accumulation rather than tax or printing new money because of its anti-inflationary effects unlike which distort the structure of relative prices and may create problems in international equity among nations (Akram *et al*., 2011).

While some countries tend to accumulate debts or print new money than mobilizing resources through tax, a health remark from Isaac and Rosa (2016) is that reasonable borrowing level by emerging economies is likely to accelerate their economic growth and alleviate poverty as they borrow to compliment inadequate domestic capital stock and provide more investment opportunities. Despite the importance of public debt in the social-economic growth of the people and country, if not properly managed, the debt may lead to many challenges, including government failure to provide basic and important facilities to its people such as clean water, electricity, roads, and school infrastructures as well as supporting agriculture production (Ndulu *et al.,* 2016).

Developing countries could face loss of trust and integrity from their financiers, massive debt perpetuates economic dependence and limited development plans and failure to meet their targets hence they need a strategic measure for effective management of their debt (BOA, 2018). Some scholars have warned that the public debt by WB, IMF, and development agencies contain directives on their which are not the priority to the respective countries, as a result developing countries does not benefit from them (Ngowi *et al.,* 2019). Some other scholars have added that public debt may reduce the productivity of public expenditure (Teles & Cesar, 2014), create anticipations of future financial repression and increase uncertainty (Cochrane, 2011), increase severing risk and crowd out the private investment through increasing interest rate levels (Laubach, 2009). Delong and Summers (2012) proscribe that expansionary fiscal policy that lead to high public debt and avoid economic protracted recessions, raise short and long term growth.

The foregone arguments show an inconclusive stand about public debts thus necessitating research that is selective to a particular country to show what has been the effect of public debt on economic growth. Along with this remark is the

observation that the economic recession and debt crises experienced in many created and rising nations, starting in 2007, prompted the re-established scholastic and strategy banter on the causal connection between open obligation and monetary development and between open obligation administration and financial development (Donayre and Taivan, 2017; Gómez-Puig and Sosvilla-Rivero, 2018). An enormous extent of existing hypothetical and observational writing upholds the view that impractical public obligation decreases a nation's seriousness and expands a nation's money related market powerlessness to global stuns (Castro, Félix, Júlio, and Maria, 2015; Cochrane, 2011; Soydan and Bedir, 2015). Though there is significant hypothetical and observational writing on the commitment of public obligation on monetary development (Eberhardt and Presbitero, 2015; Ewaida, 2017; Huang, Panizza, and Varghese, 2018). Nonetheless, the hypothetical and observational underpinnings of the causal relationship in particular countries is scant. However, the socio-economic and political grounds under which the previous studies were conducted elaborate the reasons for the mixed results and sometimes conflicting (Donayre & Taivan, 2018; Gómez-Puig & Sosvilla-Rivero, 2018).

Moreover, this background pointed to a need to conduct studies that are selective to particular countries, particularly developing countries in Sub Saharan countries. Such studies are required to cover the effect of external, domestic, and total debt on economic growth of the countries and provide practical contribution and expanding literature on the matter of public debt in emerging economies. There is more requirement to examine the effect of public debt on economic growth in such countries using secondary data on external debt, domestic debt, and gross domestic product as indicator of economic growth. Thus, this dissertation is a result of the pointed research opportunity using the data from financial year 2000/2001 – 2018/2019 which is a new inception of political leadership and current developments to evaluate their relationship.

1.2 Statement of the Research Problem

Many developing countries depend on debts to finance budget deficit through borrowing domestic or foreign debts. While the government tries its best to make the economy grow by ensuring its revenue collection is continually maximised, investment in industrial based projects including construction of hydroelectric plant,

transport infrastructure, management of all corrupt practices, and building an accountable public service, it appears that its debt keep growing annually (Ndulu *et al.,* 2016).

However, the literature about the link between public debts and its effect on economic growth has not been conclusively brought out in the literature. As such, debates on this relationship between public debt and economic growth have continued to yield inconsistent results. Some studies by Vaicekauskas and Lakstutiene (2012), Shah and Pervin (2019), Reinhart and Rogoff (2019), Kumar and Woo (2017) present a negative effect of public debt on economic growth while other studies by Gikandu (2012), Chironga (2016) find a positive effect of public debt on economic growth. In Tanzania, Faraji and Makame (2013) based on external debts and its servicing, Lotto (2018), Jilenga et al (2017) on external debt while Kasadi and Awan (2016) focus on domestic debt and economic growth

Furthermore, the studies conducted on public debt and economic growths have presented contextual, conceptual and methodological research gaps. The results from these studies are inadequate to reach a consensus on the effects of public debts on economic growth. While this has been the situation in the technical aspect and the academia, observations made in recent years show that huge amount of debts are flowing into emerging states because of budget deficit and demand for economic growth (Ndulu, 2019). What motivates this kind of research is the general remark that the inflowing debts are to strengthen the economy of the borrowing. As countries like Tanzania keeps on borrowing since independence, research is required to declare the contribution of the growing debts to the economy of the countries. This current study explored this research opportunity with a hope to ascertain the possible association between public debt (domestic and foreign debt) variables and economic growth becomes more imperative. This ascertaining is important to inform the possible intervention required.

As the study sought to investigate whether the economic growth, namely gross domestic product can explained by public debts element thus are domestic, external and total debt, it was a wise decision to depend on the data spanning from 2000 to 2018. This is an appropriate timing to investigate the relationship between public

debts and economic growth in Tanzania. Generally, the findings of this study are believed to extend the existing body of literature by providing more insight to the effect of public debts on economic growth of the Tanzania.

1.3 Research Objective

1.3.1 General Objective

The main objective of this study was to evaluate the effects of public debt on the economic growth in Tanzania.

1.3.2 Specific Objectives

i. To find out the effect of external debt on the economic growth of Tanzania
ii. To determine the effect of domestic debt on the economic growth of Tanzania

1.4 Research Questions

The questions that this study sought to respond are as printed below.

i. What are the effects of external debt on the economic growth of Tanzania?
ii. To what extent does domestic debt influence the economic growth of Tanzania?

1.5 Study Significance

The findings from this study will help to inform the stakeholders, including the economists, policy makers, legislators, researchers, and politicians on peoples' mindsets against public debt, management of public debt, the relationship between public debt and the economic growth of the country.

Furthermore, the findings will help the shareholder to make decision on what type of national debt to take, where the debt should be allocated or utilised in order to accomplish social and development goals for economic growth as well as how the debt are going to be servicing. It also offers available benchmarks for improving public debt management. The knowledge trained through this study might thus support stakeholders to make informed decision when it comes to borrowing for socio-economic investment.

Moreover, researchers may use the knowledge generated through this study to either for argument to their studies or plan for further studies around the topic.

CHAPTER TWO
LITERATURE REVIEW

2.0 Introduction

This chapter describes the definition of the key terms, theoretical literature review where the main theories supporting the study were discussed, empirical literature review, research gap and conceptual framework.

2.1 Definition of Key Terms

2.1.1 Public Debt

Public debt is defined as sovereign liabilities According to the International Monetary Fund (IMF, 1988), all debts acknowledged by the government to borrow from the rest of the economy or foreign countries at a given levels at a specific point of time. Ahuja (2013) defines public debt as the amount of money owed by the government or all financial liabilities of a government from individuals, financial institutions, organisations and foreign countries. If revenue collected through taxes and other sources is not adequate to cover expenditure, the government may resort to borrowings. Thus public debt is one of the instruments to finance the budget deficit. In short, public debt refers to obligations of governments particularly those evidenced by securities to pay the sum to the holders at some future debt. Borrowed funds are utilised for development and non-development activities.

Others scholars such as Baum, Checherita, and Rother, (2013), Uma, Eboh and Obidike (2013), Gohar *et al.* (2012) and Ajayi and Oke (2012) provide similar experience regarding the necessity of a developing country like Tanzania to borrow fund for economic growth despite having good economic policies centred on socialism and self-reliance, still cannot live like an island without being positively or negatively affected by the global economy. Ndulu *et al*., (2016) state that Tanzania needs to maximize its economic production in order to compete competitively in the global market and reduce economic gaps by massive investment. Additionally, Pegkas (2019) concedes that borrowing money for development is a necessary strategy for any country rather than printing money or raising taxes that will create a lot of social problems.

2.1.2 Foreign Debt

This is the part of sovereign debt that is borrowed from foreign lenders including commercial banks, governments or international financial institution always with interest paid in the currency which the loans was made (BOT,2013). A country which has borrowed money has to export its goods and resources to the lender country or to the international market to earn the borrowed foreign currency and to pay back (Panniza, 2013). External debt represents the outstanding amount of its actual or current liabilities that require a certain payment of principal plus some interest attached to it in future which include debt securities, bond notes, deposits and currency (Dias, & Sosvilla, 2010).

2.1.2.1 Multilateral Debt

According to the World Bank (2020), Multilateral debts are the Public and publicly guaranteed multilateral loans include loans and credits from the World Bank, regional development banks, and other multilateral and intergovernmental agencies However, multilateral debt services are the payments that include the sum of principal repayments and interest payments actually made in the specified year.

In most cases, governments from developing countries borrow fund from the multilateral sources especially from the word Bank. The main purpose is to use for projects with satisfactory social and infrastructural projects and export–increase / import–decreasing features for economic projects (Obadan, 2000). However, there is no consensus on the effect of multilateral debts on economic growth. For example, Liaqat (2019) believes that with a developing country debt is an essential tool to finance capital, to meet investment needs and encourage production when the accumulation of the economy is still low. In the same line, Lora and Olivera (2017) examined the effect of public debt and development expenditure and confirmed multilateral has a negative effect on economic growth.

2.1.2.2 External Debts Stocks

Equally, the World Bank refers external debt stocks as debt owed to non-residents repayable in currency, goods, or services. Thus, total external debt is the sum of public, publicly guaranteed, and private nonguaranteed long-term debt, use of IMF credit, and short-term debt. Short-term debt includes all debt having an original

maturity of one year or less and interest in arrears on long-term debt. Data are in current U.S. dollars.

Furthermore, financing investment through gross national savings is impossible due to budget deficit. To fill the gap, external debts stocks are sought to complement the deficit (Presbitero and Panizza, 2012). The central question is whether or not such external source of finance, such external public debt contributes to economic improvement in developing countries and at what thresholds. The identities of national income accounting provide the basis of dual-gap analysis by equating the components of income. National income is a function of consumption, net export an investment/savings. External debts stocks can be used when the national savings fall short and when imports exceed the necessary level of exports (Balago, 2014).

2.1.3 Domestic Debt

Domestic debt is also known as internal debt. It is the portion of government debt which is owed to lenders within the country whereby a government can borrow from commercial banks, financial institutions, individuals and issuing government securities such as Treasury bill (BOT, 2013). Internal debt owed by a government as funds borrowed by the government from its citizens is part of national debt where the government uses fiat creation of money in which the government obtains finance not by creating it but by borrowing through treasury securities (OECD, 2018).

2.1.3.1 Treasury Bonds and Bills

Msinjili and Mselle (2019) documented that treasury bonds and bills are forms of government securities. They are used to mobilize resources for implementing its recurrent and development activities. T-bonds are the long-term securities that mature over 12 months meanwhile T-bills mature in less than a year. The Bank of Tanzania (BOT) issues T-bonds in five categories with maturities of 2 years, 5 years, 7 years, 10 years and 15 years. T-bills are issued in four categories with maturities of 35 days, 91 days, 182 days and 364 days. The researcher used amount collected in Tanzanian shillings to examine their effects on economic growth. In Tanzania, Treasury bonds and bills have been used as a source of revenue among others. The collected resources are used for development activities in order to stimulate both social and economic growth. The following picture shows extracted part of the

budget speech from the ministry of finance and planning that shows the use and the effect of the treasury bonds to the economy.

Budget Speech 2018/2019 (Page 62)

"*Honourable Speaker, the Capital Markets and Securities Authority in collaboration with the United Nations Capital Development Fund has held talks with local government authorities on opportunities for the issuance of local government bonds to finance projects that can operate on their own. to bring about social and economic productivity. Until now, education has been provided to the municipal councils of Mwanza, Tanga and Arusha regions and efforts are being made to provide education to all councils in the country*".

Source: Budget Speech 2018/2019 (URT)

Briefly, the above quote stands to mean that the united republic of Tanzania was in conversation with the United Nations Capital Development about issueing treasury bonds of municipality. The minister commented that this would promote social and economic growth. Equally, Matiti (2016) confirmed that economic growth and treasury bonds as well as treasury bills have positive relationship. As stated by Saboniene (2009), public borrowing is inevitable and not reprehensible phenomenon of economic growth

2.1.4 Economic Growth

It is a broad concept with both qualitative and qualitative dimensions which implies economic growth plus progressive changes in certain essential variables which determine well-being of the people for example health, education and other development projects (BOT, 2013). Ahuja (2013) defines economic growth as a sustained annual increase in an economy real national income over a long period of time or the annual increase in real per capita income of a country over the long period. Economic growth also is termed as increase over time in a country's real output of goods and services usually presented as real gross domestic product of a country. Thingan, (2011) defines economic growth as an innovative process leading to the structural transformation of social system and is deemed to operate as a problem for developing countries.

2.1.5 Gross Domestic Product

Is the total value of all goods and services produced over a given period of time usually a year (BOT, 2013) The annual percentage growth rate of gross domestic product per capital is an indicator of economic growth in a given period of time as an indicator or measure of overall domestic production (Sheikh, & Tariq, 2012). It functions as a comprehensive scorecard of a given country economic health usually calculated quarterly or annually.

2.2 Guiding Theories

This section covers the theories underpinning the study which include both debt overhanging theory and crowding out effect theory.

2.2.1 Conventional Theory of Government Debt

This theory was founded by Elmendorf, D. W., & Mankiw, N. G. (1999) as they were assessing Government debt and its effect on the economy. The authors have documented both short run and long run effect of government debts. From this convention theory, the proponents believe that government debt stimulate aggregate demand in the short run and crowding out in the long run.

In a short run, the proponents state that the government uses its debts and minimize tax to finance its spending. As a result, both households' current disposable income and their wealth increases. The conventional theory states that the increase of both disposable and wealth of households accelerate their overall demands of products. The important question here is the linkage to the economic growth. Elmendorf & Mankiw (1999) are in agreement with Keynesians that the increase in aggregate demand increases national income as well. The national income is a functional of expenditure on investment, consumption, and trade openness among others. On top of that, when the government use debts to finance its both development and recurrent budgets, it ultimately affects its national income. The emphasis of this in the short run is positive relationship between stimulated aggregate demand attributed by the increase in wages, and production in the economy.

In the long run, this conventional theory emphasizes the relationship between national income and list of economic variables including private consumption, private savings, and taxes minus government transfers, investment, and net export.

Elmendorf & Mankiw (1999) claim that usually when the government uses debts to finance its spending then taxes normally is reduced. This affects public savings but increases private savings. Therefore, in the long run, the decrease in public savings resulted from the public debt affect both direct domestic capital stock and foreign investment. In conversional view, the decrease in domestic capital signifies the decrease in output and income as well. Equally, when foreign investment decreases as a result of public a debt that implies means residents will likely have small capital abroad and thus decrease their capital income.

Conventional theory has provided and has clearly shown interaction between public debts and its effect on the economy thorough interaction between public debts and its impact on the economy, in particular national income. The theory has documented national income as function aggregate demand measured by final consumption, investment, next export, taxes less government spending. The theory has further shown short run positive relationship between public debt and aggregate demand which affect national income, as well as the extent to which public debt reduced national savings that ultimately affect domestic investment, foreign investment and net export of a country.

2.2.2 Keynesian Economic Theory

This theory was founded by the British economist, John Maynard Keynes, in the 20th century. The theory initially addressed government spending and taxation as tool of regulating and stimulating economic growth. Furthermore, the proponent believes that poor economic growth is attributed by the deficiency in the consumption expenditure and overall demands of goods and services in the economy. In this view, the theory suggests that economic recovery can be improved by adjusting its spending and income using fiscal policies (Keynes, 1935)

Additionally, source of the government budget (fiscal) for financing its spending and increasing its economic growth is not only limited to taxation but also through borrowing. The government can borrow from its domestic sources, external sources of from both sources. Domestic sources that also make domestic debts include treasury bills, Treasury certificates, Federal government development stocks and treasury bonds (Adofu & Abula, 2010).

The proponents have further indicated there is a negative relationship between domestic debts and economic growth. In Tanzanian context, the ministry of finance and planning for the year 2018/2019 has also classified domestic debts in the same dimension, it includes treasury bills, special bonds and government stocks. The researcher is interested to examine the impact of these types of domestic debts among others including government expenditure on economic growth. Equally, Rais and Anwar (2012) have used government expenditure on consumption, investment and savings as proxies of domestic debts to assess their impact on economic growth. Therefore, the study at hand intends to use similar variables in the analysis.

Likewise, the government budget can be financed through external sources (external debts) or by borrowing from international institutions like the World Bank, IMF and other development country partner. For instance, the government of Tanzania through Ministry of Finance and planning have reported to have borrowed fund from Multilaterals, Bilateral and Commercials. On top of that, Rais and Anwar (2012) have also documented those Government consumption expenditures, investment expenditures, exports of the nation, imports of the nation, Taxes, Subsidies, government stocks are the indicators of external debts. The researcher has used these indicators to establish their relationship with economic growth.

2.2.3 Dual- Gap Theory

The theory postulates that investment is a function of saving (Boboye & Ojo, 2012). According to this theory, domestic saving is not sufficient to finance investment for economic growth. To fill the gap external sources of capital for investment are sought to complement the deficit (Presbitero & Panizza, 2012). The central question is to assess whether or not such external source of finance such external public debt contributes to economic improvement in developing countries and at what thresholds. The identities of national income accounting provide the basis of dual-gap analysis by equating the components of income and expenditure approach as below:

Income = consumption + Import + Savings……(i)

Output = Consumption + Exports + Investments……..(ii)

Since income = output from (i) and (ii) it implies that;

Investment –Saving = Import – Export……(iii)

In theory for identity (iii) to hold true it require that;

Investment = Saving + import - exports…….(iv)

If domestic saving fall short of targeted economic growth then a saving investment gap occurs, likewise for imports exceed the necessary level of exports it creates an export of origin exchange gap (Balago, 2014).

2.3 Empirical Literature Review

2.3.1 The Effect of External Debt on Economic Growth

Lora and Olivera (2017) examined the effect of public debt and development expenditure. One of the key question was to make any difference if the lender is in a multilateral organization, including IMF, or a multilateral development bank. The authors used econometric model for establishing the estimates of effects. The findings show that multilateral debts have negative consequences on the development. This is because international lenders are more likely to impose further discipline on total expenditures.

Study conducted by Kasidi and Awan (2016) in Tanzania on the impact of external debt on economic growth. The study collected data for the period of 1990 – 2010 to assess the impact of external debt on economic growth. The results indicated that, there was no long run relationship between external debt and economic growth. Noting the straight forward as well as response impact of national debt while analyzing the effects of external debt on Tanzania's growth.

Jilenga, Xu and Dacka (2016) studied the impact of external debt on economic growth of Tanzania using ARDL model utilizing time series data from 1971-2011. They found that in the long run external debt is positively related to economic growth while foreign direct investment had a negative impact on economic growth. Furthermore in short run analysis revealed no directional causality between the variables.

Kasidi and Said (2016) in Tanzania studied the impact of external debt on economic growth for the period of 1970 – 2010. The study used ordinary least regression (OLS) and the findings revealed that, external debt has a positive effect with the positive coefficient of 0.369 and debt servicing has a negative effect about 28.5 on economic growth.

In the same line proceeding with discussion, Kasidi and Awan (2016) conducted similar study on the impact of external debt on economic growth in Tanzania. The study collected data for the period of 1990 – 2010 to assess the impact of external debt on economic growth. The results indicated that, there was no long run relationship between external debt and economic growth. Noting the straight forward as well as response impact of national debt while analyzing the effects of external debt on Tanzania's growth.

Kabir and Wani (2016) examined the relationship between public debt and economic growth in Afghastan for the period of 2008 – 2012 using analysis of variance (ANOVA). The study used variables like gross domestic product, government stocks, advances from commercial banks and external debt. The outcome showed that government stock, advance from commercial banks and external debt has negative and insignificant influence on the gross domestic product. The study suggest the government to develop framework for recording and monitoring all contingent liabilities and formulate and implement a policy liabilities and conducting continuous wider economic reforms.

Naeem (2015) conducted a study on the consequences of public debt in economic growth investment in the Philippines for the period 1975 – 2010 using the autoregressive distributed lag techniques. The results show that public external debt had a negative and significant impact on the economic growth and investment which confirmed the existence of a debt overhang effect. However the study could confirm the existence of crowding out theory since debt servicing revealed insignificant correlation with investment and economic growth.

Nawaz, Qureshi and Awan (2017) conduct a study in Pakistan to examine the long run and short run dynamics of public debt and economic growth. The study adopted

Johansen Co integration and granger causality test. The results revealed that, there is a long run relationship between external debt and economic growth.

Ajayi and Okei (2016) investigate the effect of external debt burden on economic growth and development of Nigeria they adopted the regression analysis of OLS, their finding demonstrates that outer obligation trouble adversy affects public salary and per capital pay of the country Nigeria. They contend that significant level of outside obligation prompted the debasement of public money, increment in conservation of labourers, nonstop modern strike and helpless instruction framework.

They further went on recommend that everything prompted the downturn of Nigeria financial development, other than their discovering they likewise propose that obligation administration commitment ought not be permitted to ascend than unfamiliar trade winning and furthermore the obligation contracted ought to be put resources into gainful endeavour which will produce the sensible measure of cash for obligation reimbursement. Likewise an investigation by (Ndungu, 2018) inferred that the outer obligation issue in Africa has prompted a venture delay and has diminished growth performance.

Obademi (2017) their finding demonstrates that outer obligation trouble adverse affects public salary and per capital pay of the country Nigeria. They contend that significant level of outside obligation prompted the debasement of public money, increment in conservation of labourers, nonstop modern strike and helpless instruction framework. They further went on recommend that everything prompted the downturn of Nigeria financial development, other than their discovering they likewise propose that obligation administration commitment ought not be permitted to ascend than unfamiliar trade winning and furthermore the obligation contracted ought to be put resources into gainful endeavour which will produce the sensible measure of cash for obligation reimbursement. Likewise an investigation by (Ndungu, 2018) inferred that the outer obligation issue in Africa has prompted a venture delay and has diminished with economic growth.

Abdelhadi (2017) conducted a study in Jordan, discovered that there is positive and noteworthy impact between outer obligation and financial development. Obligation overhauling has negative and critical impact on monetary development of Jordan. A

similar outcome has additionally been found in Tanzania in the examination led by Kasidi and Said (2016) for the time of 1990-2010 however there was no since quite a while ago run connection between outer obligation and monetary development. Nawaz, Qureshi and Awan (2017) conduct a study which endeavours to analyze the since quite a while ago run and short run elements of outside obligation and monetary development in Pakistan, they utilized Johansen co integration and granger causality test. The outcomes revel that there is a since quite a while ago run connection between outside obligation and monetary development.

Ajao and Ogiemudia (2016) additionally direct an exploration explicit for Nigeria over the time of 1979-2009 to audit the impact of unfamiliar obligation the executives on reasonable monetary turn of events. During their direct the information investigation shows that admittance to outside funds is emphatically impact the financial advancement cycle of Nigeria and different countries also. They utilize standard least assistant various strategy and blunder adjustment model (ECM) to analyze the connection between outer obligation the executives and monetary turn of events, decide the since quite a while ago run and short run elements among the significant factors separately. Their experimental outcomes shows that there is noteworthy connection between outside obligation and financial improvement in Nigeria likewise outer obligation stock contributes altogether to Nigeria GDP while obligation overhauling has a negative huge effect on Nigeria GDP. Their outcome likewise went further to uncover that outer obligation and obligation adjusting had a blend postpone impact on Nigeria economy. They remark that obligation must be beneficial just if is all around oversaw in a climate with sound macroeconomic strategies which is a significant essential for improvement of an economy. Additionally in an investigation by (Audu, 2014), it was found that obligation overhauling has had critical unfriendly impact on the development cycle.

Ochieng (2017) looked at the relationship between public debt and economic growth using the Harrod Domar Growth model and inferred that domestic obligation in Kenya was sensibly economical. The investigation broke down the effect of outside and domestic obligation utilizing the Harrod Domar Growth model while the current examination is utilizing the Endogenous development model.

Njuru (2016) featured the impact of financial strategy on private interest in Kenya utilizing the VAR model and the outcomes indicated that monetary arrangement plan and execution matters to private venture levels. The examination zeroed in on financial strategy on private speculation.

Qureshi and Ali (2017) broke down the effect of high open obligation trouble on the economy of Pakistan. The example of the examination was 1981 to 2008. From their examination a huge negative effect of public obligation on the economy of Pakistan had been found by the creators. The investigation was situated in Pakistan. The current investigation has obtained intensely from the above study.

Kumar and Woo (2017) studied the effect of high external public obligation on since quite a while ago run monetary development for a board of cutting edge and rising economies more than 1970-2007. By and large, a 10 rate guide increment in the underlying obligation toward GDP proportion is related with a stoppage in yearly genuine per capita GDP development of around 0.2 rate focuses every year, with the effect being to some degree littler in cutting edge economies. The investigation took a gander at Euro nations and it was a premise to take a gander at a model in African creating nations to show the effect the public obligation has on their monetary development. The factors were populace, venture and government size. In the current investigation more boundaries of public obligation were included.

2.3.2 The Effect of Domestic Debt and Economic Growth

Adofu and Abula (2010) analysed the effect of domestic debt in particular treasury bills and bonds on economic growth in Nigeria. The authors used secondary data from 1990- 2010. This study was based on the Solow growth model augmented for debt. The findings show that domestic borrowing using treasury bills and bonds has positive impact on gross domestic product.

Lotto (2018) examined the impact of domestic debt on the economic growth of Tanzania for the period of 1990 to 2015 utilizing standard least relapse to assess its belongings. The investigation finds that there is backwards however unimportant connection between home-grown obligation and the financial development of Tanzania as estimated by gross domestic product annual growth. Furthermore the

study suggested such relation has might been influenced by over borrowing and improper use of the borrowed funds.

Lucky and Godday (2017) in Nigeria empirically examined the serial correlation between public debts structure and the performance of Nigerian economy for the period 1990-2015 using simple and multiple regression analyses. The variables used in the analysis include gross domestic product, domestic debt, external debt and total debt. The results of simple regression total public debt have a positive and significant impact on gross domestic product. Similarly results of multiple regression revealed that the domestic debt has a positive and significant effect on the economic growth. Therefore recommend to pursue domestic debt policies as against its external debt counterpart.

Precious (2015) in Swaziland examined the effects of public debt on economic growth of Swaziland for the period 1998-2013 by applying unit root test and ordinary least square (OLS) approach. The study employed real gross domestic product, domestic debt, and government use and expansion rate. The examination found that home-grown obligation impacted financial development. The investigation prescribes the legislature to energize manageable home-grown borrowings and use the assets in profitable monetary exercises.

Abbas and Christensen (2016) dissected ideal home-grown commitment levels in low compensation of GDP countries including 40 sub-Saharan Africa countries and creating business areas some place in the scope of 1975 and 2004. The assessment found that moderate degrees of alluring local commitment as a degree of GDP have tremendous helpful results on money related turn of events. The examination gave confirmation that commitment levels outperforming 35% of complete bank stores adversely influence monetary growth.

Adofu and Abula (2010) conducted similar study in the context of Nigerian economy. The authors examined relationship between domestic debt and economic growth in Nigeria. They used econometric modelling and the time series data time series data from 1986 – 2005. The findings reveal that there is negative relationship between domestic debt and economic growth. In the light of the results, the authors

recommend that Government domestic borrowing should be discouraged. They emphasized to enhance tax system and use tax revenue to finance fiscal policy.

Maana and Owino (2018) assessed the development in public domestic debt in Kenya and its impact on the economy for the period 1996 to 2007. The study used secondary data which were further analysed by using regression. Their results show that the results indicate that domestic debt expansion had a positive but not significant effect on economic growth during the period.

Christabell and Matiti (2016) study establishes the connection between open obligation and monetary development in Kenya. The investigation utilized auxiliary information gathered from different sources gathered from the Kenya National Bureau of Statistics and the Central Bank of Kenya. The investigation period included 2002/2003-2011/2012 money related periods. The information was gathered utilizing information assortment sheet which was altered, coded and cleaned. To set up the connection between open obligation and financial turn of events, the investigation directed a relapse examination. The study found that influenced monetary development in Kenya up to 96.20%. What's more, the examination set up that outer credits emphatically influence utilization, speculation, imports and GNP. Examination of the individual segments of both public and domestic grown obligation except for depository bills and depository bonds, all different factors had negative relationship with financial turn of events. The discoveries in this examination additionally show that domestic grown obligation affects monetary development in Kenya. These included depository bills and depository bonds. The examination set up that a unit change in depository bonds holding different components consistent will prompt change the monetary development by 1.381; a unit change in depository charges holding different elements steady will change financial development by 1.312. A unit change in overdraft at the national bank of Kenya holding different variables steady will change financial development by -2.461. A unit change in open obligations holding different variables steady will change the financial development by -0.465.

Putunoi and Mutuku (2016) studies the impact of domestic debt on economic growth of Kenya over the period 2000-2010 using the Engel-Granger remaining based and

Johannes VAR based cointegration tests and uncovered that domestic obligation markets assume an inexorably significant part in supporting monetary development. They locate that domestic obligation extension has a positive since quite a while ago run and critical impact on financial development.

Sheik *et al.* (2015) examines the effect of domestic obligation on monetary development of Pakistan for the period 1972-2009 by applying normal least squares (OLS) strategy. The examination finds that domestic obligation well influences financial development in Pakistan suggesting that the assets produced through domestic obtaining have been utilized mostly to fund those uses of government that add to development of GDP. The standard is that domestic just as outer obligation ought to be spent for long haul improvement purposes. Another purpose behind the positive connection between domestic obligation and financial development in Pakistan might be that domestic obligation is attractive.

Maana *et al.,* (2018) investigates the effect of domestic obligation on Kenya's economy covering the period 1996 to 2007 utilizing an altered Barro development relapse model. The investigation set up that domestic obligation development had a positive yet not critical impact on monetary development during the period. Notwithstanding, the investigation found no proof that the development in domestic obligation swarms out private area loaning in Kenya.

Adoufu and Abula (2017) look at the impact of domestic obligation on the Nigerian economy during the period 1986-2005 utilizing OLS procedure. The discoveries uncover that domestic obligation has adversely influenced the development of the economy and suggests that the legislature ought to acquaint endeavours with resolve the remarkable domestic debt.

Boboye & Ojo (2017) examined the impact of obligation trouble on monetary development and improvement. A relapse investigation, OLS was utilized to break down information (optional) from Central Bank of Nigeria (CBN), Economic audit, Business Times, Financial Standard and other significant Nigerian distributions covering the factors. An expansion in unfamiliar obligation prompted a decline in National pay with more elevated levels of unfamiliar obligation prompting conservations, expanded specialist’s strike, and public cash downgrading and

disintegrated instructive stage prompting financial downturn. In light of these discoveries, the specialist suggested that obligation ought to be applied in fitting gainful speculations where they can produce sensible measure of cash to subsidize debt repayment.

Reinhart and Rogoff, (2019) analyzed the impact of public obligation on monetary development for 44 created and creating nations in the course of the most recent hundred years. They presumed that elevated levels of public obligation comparable to GDP of over 90% is joined by a lower levels of monetary development in both created and creating nations. Thus, on account of creating nations outer obligation levels of over 60% of GDP adversely influences financial development.

Acemoglu *et al*. (2019) recommends that unfamiliar obtaining positively affects venture and development of a nation up to an edge level. In any case, outside obligation administration can conceivably influence the development of a nation antagonistically as the majority of the assets go in the reimbursement of the obligation instead of to ventures. Besides, Fosu (2019) finds that obligation overhauling shifts spending ceaselessly from the social area, wellbeing, and training. This shows that the point of taking obligation for improvement is discouraged by obligation administration repayment that cut assets accessible. This makes a prevention to monetary development of a nation because of high intrigue repayment on the outside obligation, and unfamiliar trade reimbursements (Ibadan, 2012).

Mustafa (2016) directed an examination to discover the effects of public obligation on monetary development in Pakistan economy. Both short run and since quite a while ago run impacts were set up utilizing co integration strategy. The discoveries indicated both since quite a while ago run and short run critical impact of outer obligation on monetary development while work power contrarily influences GNP in both short and since a long time ago run. Additionally; Ullah (2011) utilizing Trace and Eigen insights likewise settled a since quite a while ago run connection among help and financial development in Pakistan.

Gikandu (2012) used Spearman rank connection and engaging insights to build up whether domestic obligation identified with monetary development in Kenya and found that there existed a feeble positive connection between the two factors

implying that the utilization of domestic obligation has some slight commitment to economic growth.

2.4 Research Gap

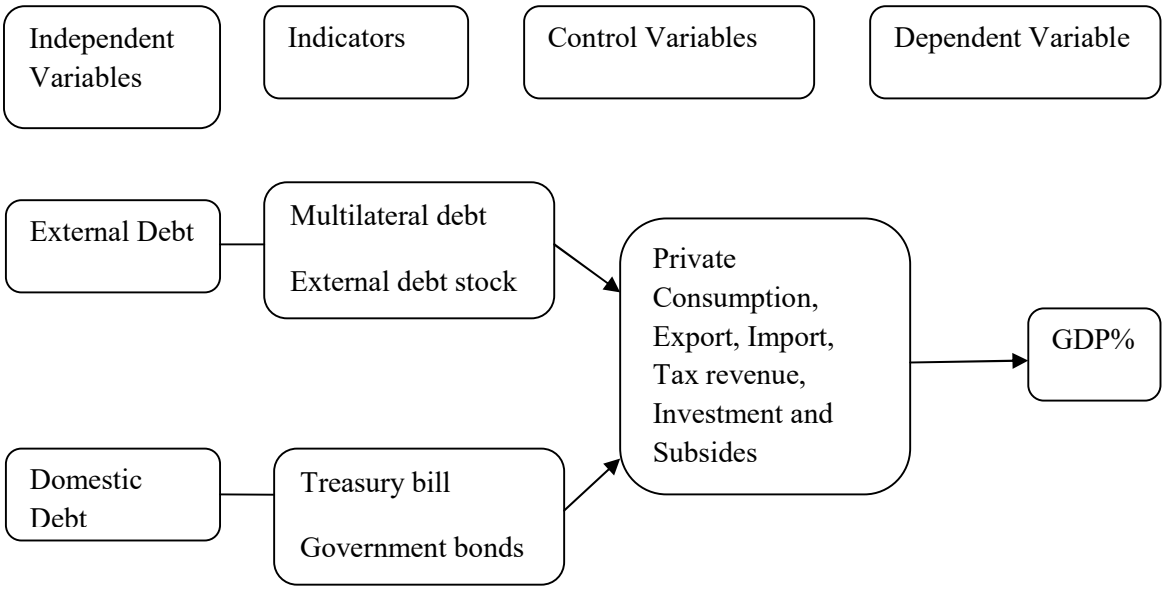
A number of studies have assessed the effects public debt on the economic growth in developing economies and the available empirical evidence is mixed. The review of existing empirical and theoretical studies of public debt and economic growth relationship indicates that it is inadequate to make any generalization of the relationship between economic growth and public debt. Various studies (e.g. Reinhart and Rogoff 2019, Cristina and Rother, 2012, Baum *et al.,* 2013, Arai *et al.,* 2012) indicate that public debt will affect economic growth if it reaches a certain threshold and it is only to a certain limit. It is necessary to consider the case of each country separately in order to understand various dynamics involved in economic growth. Many researchers have focused on developed economies in examining external and internal debt leaving the total public debt influence on economic growth.

In Tanzania, Faraji and Makame (2013) based on external debts and its servicing, Lotto (2018), Jilenga et al (2017) on external debt while Kasadi and Awan (2016) focus on domestic debt and economic growth. Most of these have ignored the combining effect of domestic and external debt on economic growth in Tanzania.

Therefore this study focuses on assessing both effect of external and domestic debt on the economic growth in Tanzania.

2.5 Conceptual Framework

This section presents the relation regarding the study variables (independent and dependent variable). According to Mugenda and Mugenda (2003) the frameworks postulates a working definition of variables and uses a diagram to pose a vivid and easy clarification of the movement of a conceptual framework.



Source: Adopted from Elmendorf & Mankiw (1999) with minor modification

Figure 2. 1: Conceptual Framework

2.5.1 External Debts

The study used multiple indicators of external debts; these include multilateral debts (measured in USD), total external debt stocks (measured in USD) which is debt owed to non-residents repayable in currency, goods, or services. According to the World Bank, total external debt is the sum of public, publicly guaranteed, and private nonguaranteed long-term debt. This indicator has been used by several authors including Jilenga and Dacka (2016). Additionally, the researcher used private consumption (measured in TZS), Investment expenditure (measured in TZS), Net exports (measured in TZS), Taxes less subsidies (measured in TZS). These indicators were also been shown in the in the conventional theory of government debts

2.5.2 Domestic Debts

Matiti (2016) conducted a similar study used government bonds and treasury bills as indicators of domestic debts. The indicators were measured by the local currency. Equally, the ministry of finance and planning in Tanzania has classified domestic debts into the same level. The researcher employed the same indicators which were measured in Tanzania shillings.

2.5.3 Economic Growth

Economic growth was represented by gross domestic product which is measured in percentage of economic growth. GDP is one of the most common measurements of national income (Matiti, 2016; Lotto, 2018; Lucky and Godday, 2017) Mathematical relationship between external, domestic debts including their proxies are presented in equation (i) and (ii).

CHAPTER THREE
RESEARCH METHODOLOGY

3.0 Introduction

This section covers descriptions of the research design, population, sample size, and procedure for the selection of the sample used in this study. Data collection instruments and analysis tools used are explained to inform readers how the data used for analysis and discussions in this study were generated. The chapter also presents information about the validity and reliability was assessed and ethical consideration.

3.1 Research Design

This study opted for causal research design, also called explanatory research whose central tendency is to investigate the cause and effect relationships (Creswell, 2014). The researcher explored the advantage of the approach in exploring variations of variables assumed to cause change in other variables and measure changes in other. The selection of the approach, therefore, followed from its appropriateness in showing the effect of public debt on the economic growth in Tanzania.

3.2 Research Approach

This study is predominantly quantitative. Two reasons justify the selection of the approach; first, the secondary data required in this study are numeric. Second, the study is explanatory – cause effect nature, whose conclusions draw from quantitative data. Third, this is an approach commonly used for testing hypothesis that intends to address the relationship between the variables. Furthermore, the study report, therefore, include introduction, literature, methodology, results for the given research objectives, and hypothesis, in line discussion, conclusion and recommendations.

3.3 Population and Sample Size

The population is the collection of people, elements, services and events, groups of things, or households to be investigated and onto which a measure is subjected to make inferences (Cooper & Schindler, 2014). The study adopted the annual data from financial year 2000/2001 to 2018/2019. The researcher selected this period because most of the macro economic data are available from 2000 onward. On the other hand, number of observation recommended to be greater than the number of

independent variables included in the model. The sample for the study was 18 observations. However, the researcher ended with 17 observations due to data availability and proper source of collecting data.

3.4 Sampling Procedures

The sample selection procedure was guided by sequence orders of annual data from financial year 2000/2001 to 2018/2019. To decide on the years to be included for analysis, the researcher selected years which had complete data entry for all variables. This, however, excluding the observations with missing cases likely improved normality of data, which is essential when testing assumptions of the regression model.

3.5 Data Collection/Sources

Secondary data were used in this study in which time series data from 2000 to 2018 were gathered. External, domestic debt, total debt data and gross domestic products were collected from various trusted sources. These included the World Bank and Ministry of Finance and Planning as the minister responsible to borrow and issues guarantees on the behalf of the Government and the Bank of Tanzania (BOT). BOT is the institution framework responsible for the management of public debts. The study depended on the secondary data because the data needed for the study could predominantly be solicited through the procedure (more open to public scrutiny). It was the only source of data that could allow comparisons and replications. These data were trusted in this study because they are generated and published by experts in respective filed; hence, they tend to have high quality and become more reliable for analysis from which conclusion is drawn.

3.6 Data Management

Data were managed using STATA 16. The researcher exported CSV files from the World Bank data bank and selected all the relevant variables. The researcher identified and dropped the cases with missing values and retained those applicable for analysis. This implies number of observation decreased of the miss of some data. All the work was done on do files for s reference. Cleaned data file was kept for further analysis as explained in the next section.

3.7 Data Analysis

Regression analysis was employed in testing the effects of both domestic and external debts on economic growth measured by gross domestic products. The entire analysis was aided by STATA. The equation..i below presents the regression equation and variables included in the model. As well, diagnosis of the regression assumptions is briefly explained in the next section.

Model 1: High Breed Model

This model combines both domestic and external debts. Proxies of domestic debts include treasury bills and bonds, while external debts include multilateral and external debts stocks.

$$GDP = \alpha + \beta_1 TBills + \beta_2 GBonds + \beta_3 SBonds + \beta_4 Mil + \beta_5 PPG + \varepsilon \ldots. (i)$$

Figure 3. 1: Multiple Regression Model under High breed Model

Where

βs are the symbols of expected estimates of the regression model and

Ɛ is the error term which take into account post estimation of other factors which are likely to influence GDP

GDP = Gross Domestic Product, indicator of economic growth

T-bills = Treasury Bills (are short term securities that mature in less than a year) GBonds = Government Bonds, (are long term securities that mature over 12 months) and SBonds = Security Bonds (in security bond there is collateral that is required) which represent domestic debts

Mll= Multilateral debts (are debts owed by developing countries to the World Bank and International Monetary Fund (IMF)) and PPG=External debt stocks, (refers to the country's debt that was borrowed from foreign lenders including commercial banks, Governments or International Financial Institutions) public and publicly guaranteed (PPG) which represent external debts

Model 2: GDP Vs Public Debts and Control Variables

External debt type 1 includes the proxies presented below. The antagonistic part of it is that this model assumes GDP is a function of public debts and other control variables. Control variables included Government consumption expenditures, investment expenditures, exports of the nation, Imports of the nation, Taxes and Subsidies

$$GDP = \alpha + \beta_j \Gamma + \beta_1 GCE + \beta_2 InE + \beta_3 Exp + \beta_3 Impt + \beta_4 T + \beta_4 S + \varepsilon \ldots\ldots\ldots \text{(ii)}$$

Γ=multilateral debts, external debts stocks, treasury bills and treasury bonds, GDP=Gross Domestic Product, GCE= Government consumption expenditures, InE = investment expenditures, Exp = exports of the nation, Impt = Imports of the nation, T=Taxes, S=Subsidies.

3.8 Diagnostic of the Regression Model

Multiple regressions is parametric analysis technique which is attached to several assumptions. These assumptions include but not limited to linearity, absence of perfect multi collinearity , Homoscedasticity, absence of autocorrelation and no omitting of important variables, unusual and influential data, leverage, influence and normality. The methods for detecting violation problems included histogram with normal distribution curve, correlation techniques, Breusch-Pagan/Cook-Weisberg test and Breusch-Godfrey test among others.

3.8.1 Linearity

Linear regression model requires the parameters of dependent variable and independent variables be linearly related. This can be tested by using scatter plot of the GDP on X-values, where X represent independent variables.

3.8.2 Absence of Multicollinearity

The regression model must ensure independent variables are not perfectly correlated. In this regard, the researcher used correlation technique to check if perfect multicollinearity exists. In case the problem exists, the researcher dropped a variable among the strongly correlated variable.

3.8.3 Homoscedasticity

The model requires zero variance when assessing (relationship) between independent variables (domestic and external debts) and outcome/dependent, in this case, economic growth (GDP). If this assumption is violated, it makes the estimates become inefficient because the standard error will be high. The problem can be tested by Breusch-Pagan/Cook-Weisberg test or scatter plots. In case the problem existed, the variables were transformed using natural logarithm that made standard error reflect violation of the assumption.

3.8.4 Absence of Autocorrelation

The presence of inter-correlation between error terms make the estimators inefficient (similar to the effect of heteroscedasticity). Besides, even if the estimators are linear and unbiased, in the presence of autocorrelation the estimators become inefficient. To detect this problem, the researcher used scatter plots of error terms against time and Cumby-Huizinga test for autocorrelation (Breusch-Godfrey).

3.8.5 Stationarity

Moreover, the researcher examined stationarity of data to avoid spurious results of the regression. Time series data have tendency of increasing the value of r-square, this can be misleading. Thus, the researcher used Augmented Dickey-Fuller Test for detecting stationarity and Unit of Root test. The results are presented on chapter four

3.8.6 Confounding and Endogeneity

Regression estimates can be biased if unobserved confounding and endogeneity exist in the model. Unobserved confounding occurs when a third variable affect both independent variables and dependent variable at the same time. Endogeneity happens when error terms is correlated with the dependent variable, in this case is GPD. The researcher used two-old least square so that to identify whether problem exist and generate unbiased estimates.

3.8.7 Unusual and Influential Data

An influential observation is a perception for a factual estimation whose cancellation from the dataset would observably change the after effect of the count. Specifically, in relapse examination a powerful point is one whose erasure largy affects the boundary gauges. A powerful point is any point that largy affects the incline of a

relapse line fitting the information. This unusual and influential data include outliers, leverage and influence.

3.8.8 Normality of Residuals

The core component of the suspicion of ordinariness attests that the dissemination of test implies (across free examples) is ordinary. In specialized terms, the suspicion of ordinariness guarantees that the examining appropriation of the mean is typical or that the dissemination of means across tests is ordinary. This investigation utilized destiny to check ordinariness supposition. So as to make substantial derivations from your relapse, the residuals of the relapse ought to follow a typical circulation. The residuals are simply the error terms, or the differences between the observed value of the dependent variable and the predicted value.

3.8.9 Model Specification

Model specification refers to the assurance of which autonomous factors ought to be remembered for or rejected from a relapse condition. A different relapse model is, truth be told, a hypothetical explanation about the causal connection between at least one autonomous factors and a ward variable.

3.9 Ethical Considerations

According to Mugenda (2003) in the research process ethics focus on the application of ethical standards in the planning of the study, data collection and analysis, dissemination and the use of the results. The data collected from the Government and the World Bank is used only for academic purpose and not otherwise. All scholars quoted in this study were acknowledged and plagiarism was highly observed. All the permission from University of Dodoma was obtained.

CHAPTER FOUR
RESULTS AND DISCUSSION

4.0 Introduction

This study evaluated the effects of public debt on the economic growth in Tanzania by making a regression analysis of both external and domestic debts. This chapter, therefore, presents the results of the model assumptions followed by the key findings of each objective. Thereafter, the presentations of the effect of both external and domestic model are included.

4.1 Descriptive Analysis

Descriptive analysis is presented to show public debt sustainability and trend analysis of gross domestic product, treasury bills and bonds, and total external debts stocks (See figure 4.1 and 4.2). This was followed by the sustainability of public debts.

4.1.1 Public Debts Sustainability

The general Government debt-to-GDP ratio measures the gross debt of the general Government as a percentage of GDP. It is a key indicator for the sustainability of government finance. Figure 4.1 shows the trend of the public debt sustainability among selected EAC from 2000 to 2015. These include Tanzania, Kenya, Uganda, Rwanda and Burundi.

Overall, the public debt to GDP ratio of Burundi was very high compared to the rest of the counterparts, especially between 2000 and 2010. Contrary, debts (% of GDP) for Rwanda and Uganda are very low compared Tanzania, Kenya and Burundi. The statistics produced, in the recent years, is that all countries are still below the threshold of 56%. Besides, South Sudan was excluded in the analysis because unavailability of data.

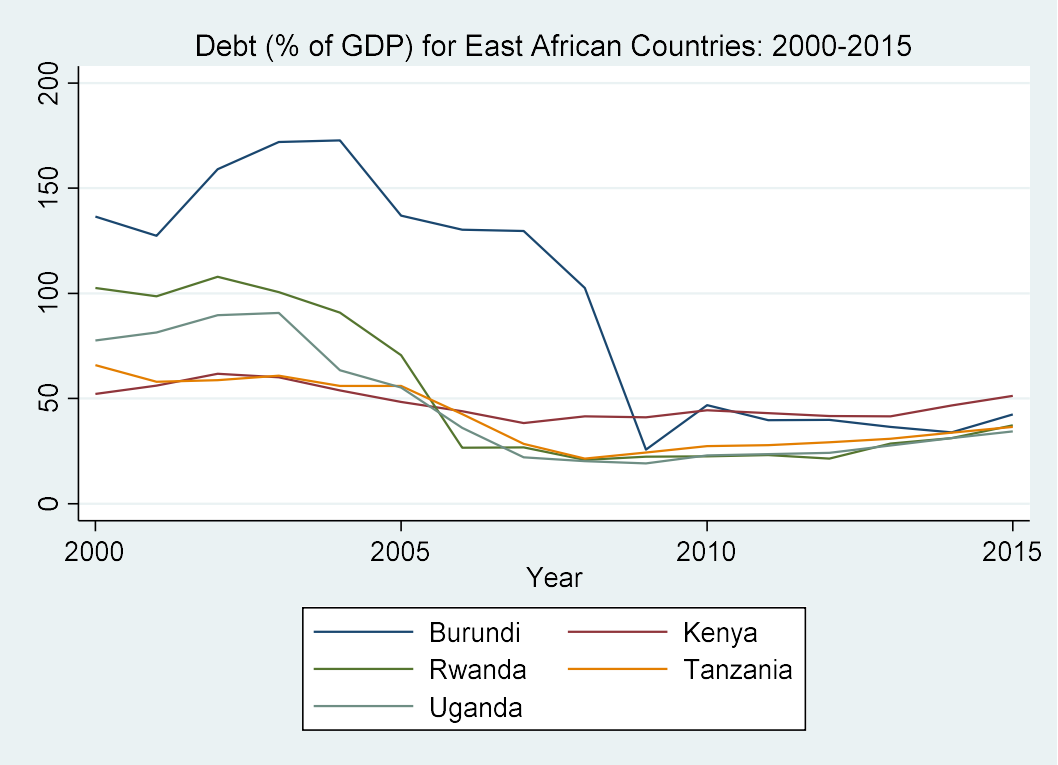


Figure 4. 1: Government Debt to GD ratio among East African Countries showing Debt Sustainability

4.1.2 Trend Analysis of GDP, External Debts, and Domestic Debts in Tanzania

A trend analysis of external debts stocks, domestic debts and gross domestic was conducted through this study. The analysis employed the natural log to normalize and get percentage of each over the years

Overall, economic growth and public debts shows upward trend over the past 20 years. The log of GDP is slightly above the log of treasury bills and bonds. This is healthy for the economic growth. However, the total external debt stocks is above the log of external debts stocks (EDS) is above the log of GDP. This implies that the EDS has outperformed Tanzanian's economic growth. Furthermore, the EDS in 2015 was extreme compared to the rest of the years (WB, 2015). There are clear reasons but possible educated guess is election which was held in the same year. The government likely borrowed more money to finance the election and other development projects.

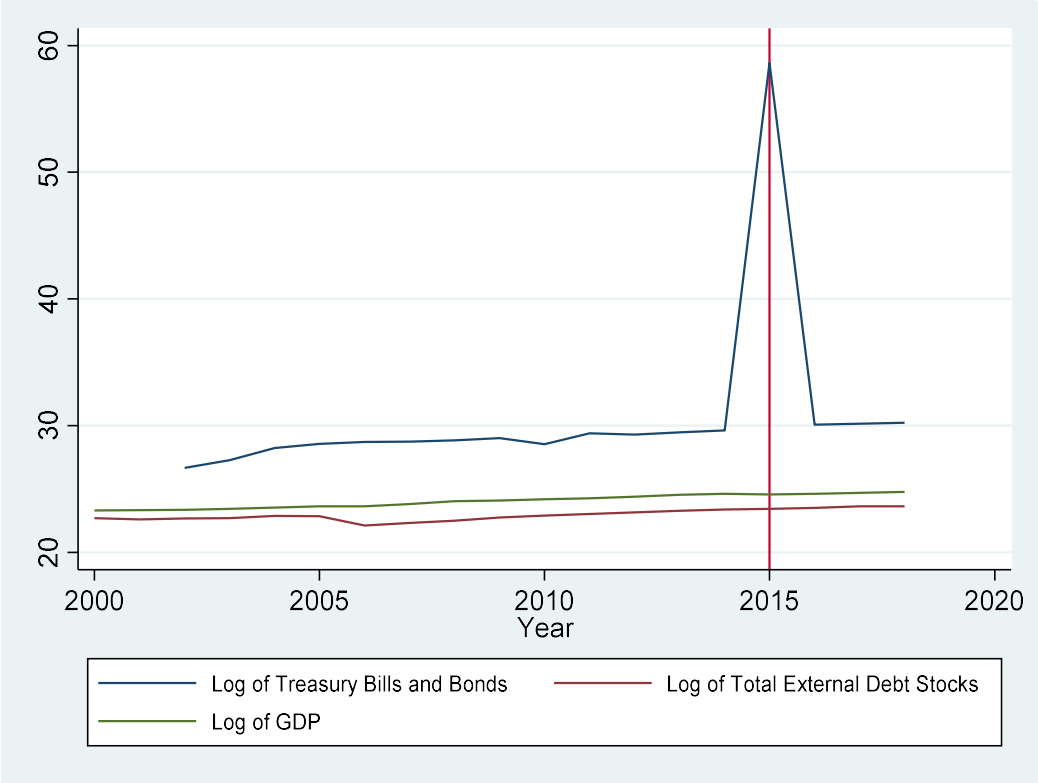


Figure 4. 2: Trend of Treasury Bills and Bonds, Total External Debts and Gross Domestic Product

Overall, the debt of the Government of the United Republic of Tanzania is still sustainable. evidenced recent evidence was produced by the Minister of Finance, in the budget speech of 2018/2019, "*The ratio of government debt to GDP is 34.4 percent compared to the 56 percent limit; The value of the External Debt only for GDP is 19.17 percent compared to the limit of 40 percent*," Budget speech (2018/2019. In translation, the government debt to GDP ratio is 34.4 percent compared to the limit of 54 percent, external public debt to the GDP ratio is 19.17 percent compared to the limit of 40 percent.

4.2 Assessment of the Model Assumptions

Multiple regressions were used to make an assessment of the model assumptions of the research. By definition, multiple regressions is parametric analysis technique which is attached to several assumptions. These assumptions include but not limited to absence of perfect multi collinearity, homoscedasticity, absence of autocorrelation and no omitting of important variables. The methods for detecting violation problems included correlation techniques, Breusch-Pagan/Cook-Weisberg test and Breusch-

Godfrey test among others. The following are, therefore, the results of the model assessment

4.2.1 Perfect Multicollinearity

The model requires imperfect correlation of the independent variable, which is determined by any other independent variable. If multicollinearity is present; that is, if the relationship between independent variables exist, it is very difficult to separate the effect of individual independent variables on the predicted outcome (dependent variable). Thus, regressions analysis fails to reveal a true relationship between dependent variable and independent variables. According to Damodar (2004), perfect multicollinearity exists if the correlation coefficient between independent variables is unity (equal to one). The following are, therefore, the results that show the absences (or absence) of perfect multicollinearity (1 or 100%) using correlation technique.

Table 4. 1: Correlation Matrix showing Level of Multicollinearity

Variables (In USD)	(1)	(2)	(3)
(1) Total External Debts Stock	1.000		
(2) Treasury Bonds and Bills	0.260	1.000	
(3) GDP	0.917	0.238	1.000

Source: STATA Output,(2020)

Total external debts stock appears to have small correlation with treasury bonds and bills (0.260). This implies that the assumption about the absence of perfect multicollinearity has not been violated. However, other assumptions, including the absence of heteroscedasticity are violated.

4.2.2 Heteroscedasticity

The prediction of GDP (dependent variable) for a given values of independent variables becomes inefficient because the variance of the outcome includes the variance of both residuals and of the parameter estimates. However, some authors, like Koutsoyiannis (1975), argue that the assumption of homoscedasticity is often violated in practice. This is due to the nature of variables. For instance, consumption versus income, when income changes, it is obvious that consumption will also change. Therefore, the variance of consumption will be due to the variance of both income and residuals.

Table 4. 2: Breusch-Pagan / Cook-Weisberg Results showing Heteroskedasticity

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
Ho: Constant variance
Variables: fitted values of GDP
chi2(1) = 3.20
Prob > chi2 = 0.0738

Source: STATA Output (2020)

The p-values of Breusch-pagan (0.0738) are less than our 10 level of significance (10% or 0.1). Therefore, null hypothesis which states that the variance for residual is homogeneous and, thus, cannot be rejected. This further implies that the assumption has been violated. So even if the estimators are linear and unbiased, they lack still inefficient.

4.2.3 Stationarity/Unit Root Test

Dickey and Fuller (1979) developed a technique for testing whether a variable has a unit root or, proportionately, that the variable follows an irregular walk. Hamilton (1994, 528–529) depicts the four distinct cases to which the enlarged Dickey–Fuller test can be applied. The invalid theory is consistently that the variable has a unit root. They contrast in whether the invalid theory incorporates a float term and whether the relapse used to get the test measurement incorporates a steady term and time pattern. Unit root test was thus examined as presented Table 4.3.

The null hypothesis is that the variable contains a unit root, and the alternative is that the variable was generated by a stationary process. Since the coefficient of the Uhat and MacKinnon are statistically significant at all levels of significance (5%, 10%). This implies that the null hypothesis of a unit root is rejected. So, the assumption of homoscesticity has been satisfied as shown in Table 4.3.

Table 4. 3: Dickey-Fuller Results for Unit Root Test

		Interpolated Dickey-Fuller				
	Test Statistic	1% Critical value			5% Critical value	10% Critical value
Z(t)	-4.669	-3.75			-3	-2.63
MacKinnon approximate p-value for Z(t) = 0.0001						
D.uhat	Coef.	Std.Err.	T	P>t	[95%Conf.	Interval]
Uhat						
L1.	-1.292	0.277	-4.670	0.000	-1.889	-0.694
_cons	5.65e+19	1.24e+19	4.560	0.001	2.98e+19	8.33e+19

Source: STATA Output, (2020)

4.2.4 Autocorrelation

ACTEST performs the general specification test of serial correlation in a time series proposed by Cumby and Huizinga (1992). It can be applied to a univariate time series or as a post estimation command after OLS or instrumental variables (IV) estimation. The null hypothesis of the test is that the time series is a moving average of known order q, which could be zero or a positive value. The test considers the general alternative that autocorrelations of the time series are nonzero at lags greater than q.

The lag of 1 period, the calculated p-value is 0.015 (See table 4.5). This implies null hypothesis that states the existence of a serial correlation which cannot be rejected. This implies using old least regression will generate invalid t-values and F-values. So, transforming variables or using generalized linear model will be more relevant.

Table 4. 4: Autocorrelation results using Breusch-Godfrey

H0: q=0 (serially uncorrelated) **HA: s.c. present at range specified**				**H0: q=specified lag-1** **HA: s.c. present at lag specified**			
lags	chi2	df	p-value	lag	chi2	df	p-val
1-1	5.952	1	0.015	1	5.952	1	0.015

Cumby-Huizinga test for autocorrelation (Breusch-Godfrey)

H0: variable is MA process up to order q

HA: serial correlation present at specified lags >q

Source: STATA Output, (2020)

4.2.5 Linearity

Is a regression assumption where linear functional form the response variable y should be a linearly related to the explanatory variables X. The assumption addresses the functional form of the model. A regression model is linear when all terms in the model are either the constant or a parameter multiplied by an independent variable. From figures 4.3, 4.4, and 4.5 show that the linearity relationship exist between total external debt and economic growth and domestic debt with economic growth and, finally, the combined graph of the variables which shows a linear relationship between variable hence regression assumption hold.

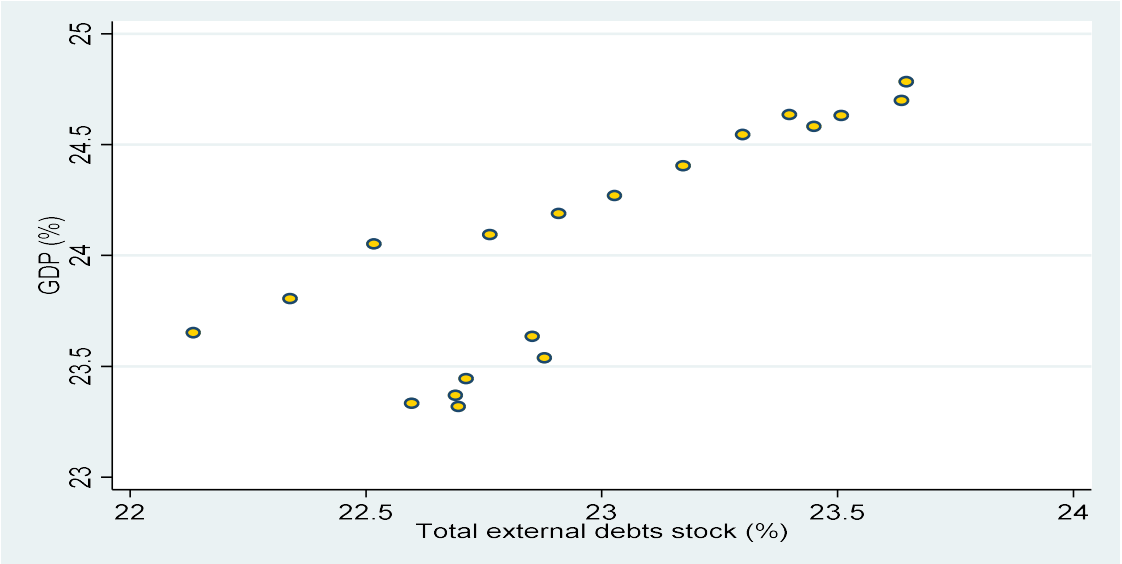


Figure 4. 3: Linearity GDP vs Total External Debt

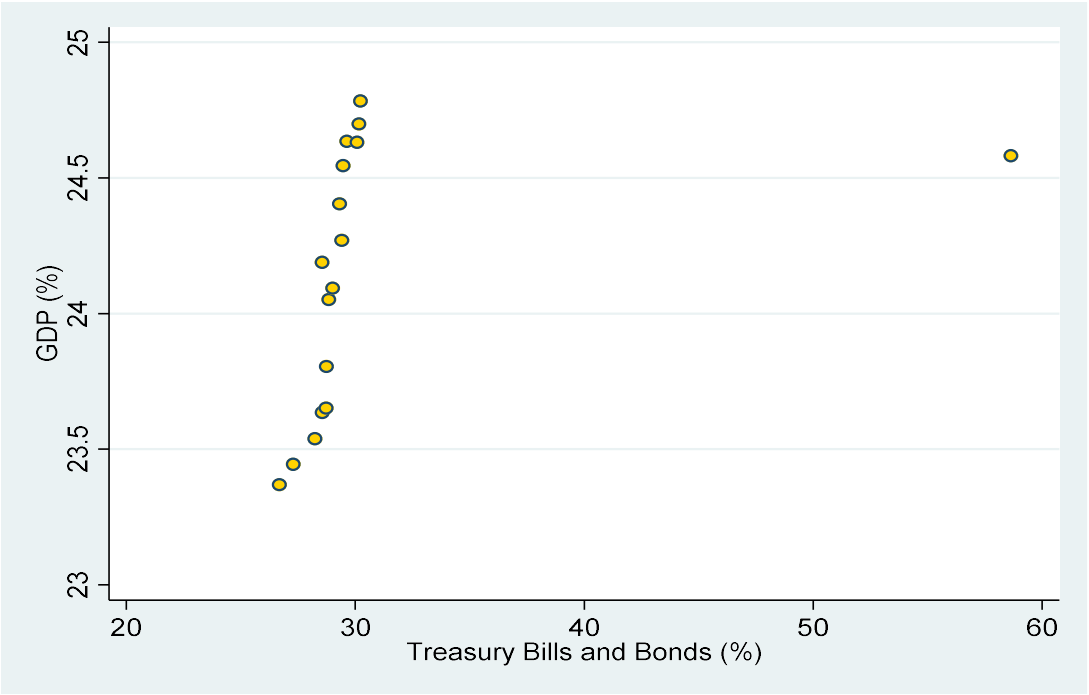


Figure 4. 4: Linearity between GDP and Domestic Debt

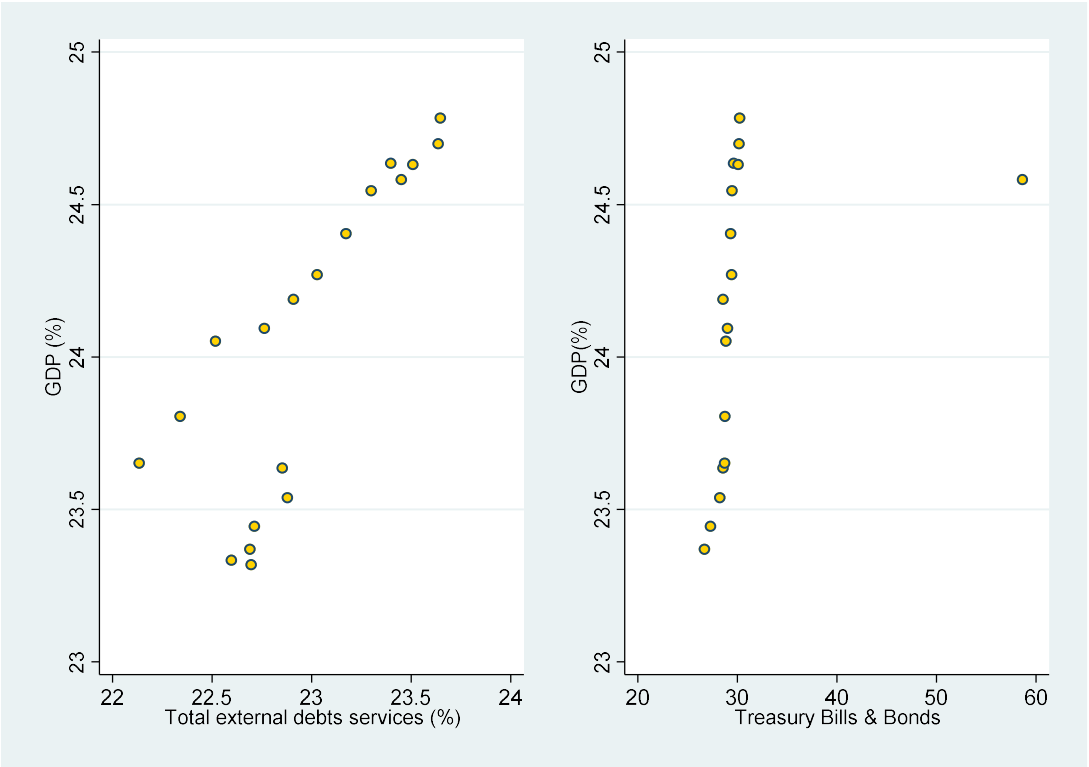


Figure 4. 5: Linearity Combined Graph

4.2.6 Normality

To make valid inferences from your regression, the residuals of the regression should follow a normal distribution. The residuals are simply the error terms or the

differences between the observed value of the dependent variable and the predicted value. Below in figures 4.6 and 4.7 are the k-density commands to produce a kernel density plot with the normal option requesting that a normal density be overlaid on the plot. K-density stands for kernel density estimate. Kernel density estimation (KDE) is a non-parametric way to estimate the probability density function of a random variable. Kernel density estimation is a fundamental data smoothing problem where inferences about the population are made, based on a finite data sample.

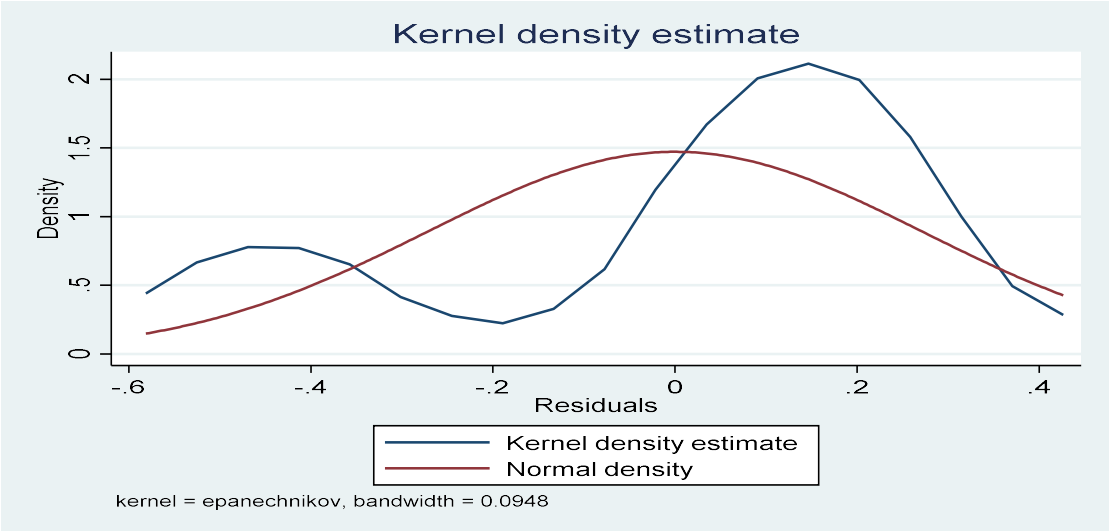


Figure 4. 6: Kernel Normlity Density Estimate

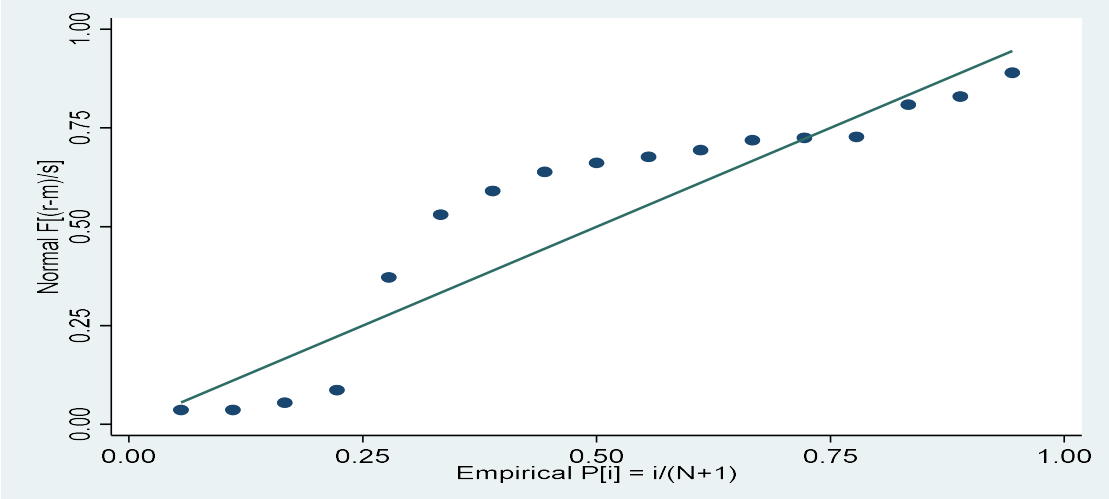


Figure 4. 7: Normality

4.2.7 Unusual and Influential Data

A single observation that is substantially different from all other observations can make a large difference in the results of the regression analysis. If a single

observation (or small group of observations) substantially changes the results, there comes a motivation to know about the change and make further investigations. There are three ways that an observation can be unusual.

4.2.7.1 Outliers

In linear regression, an outlier is an observation with large residual. In other words, it is an observation whose dependent-variable value is unusual, given its values on the predictor variables. An outlier may indicate a sample peculiarity or may indicate a data entry error or other problem.

qr stands for inter-quartile range and assumes the symmetry of the distribution. Severe outliers consist of those points that are either 3 inter-quartile-ranges below the first quartile or 3 inter-quartile-ranges above the third quartile. The presence of any severe outliers should be sufficient evidence to reject normality at a 5% significance level. Mild outliers are common in samples of any size. In this case, there are no any severe outliers and the distribution seems fairly symmetric. The residuals have an approximately normal distribution.

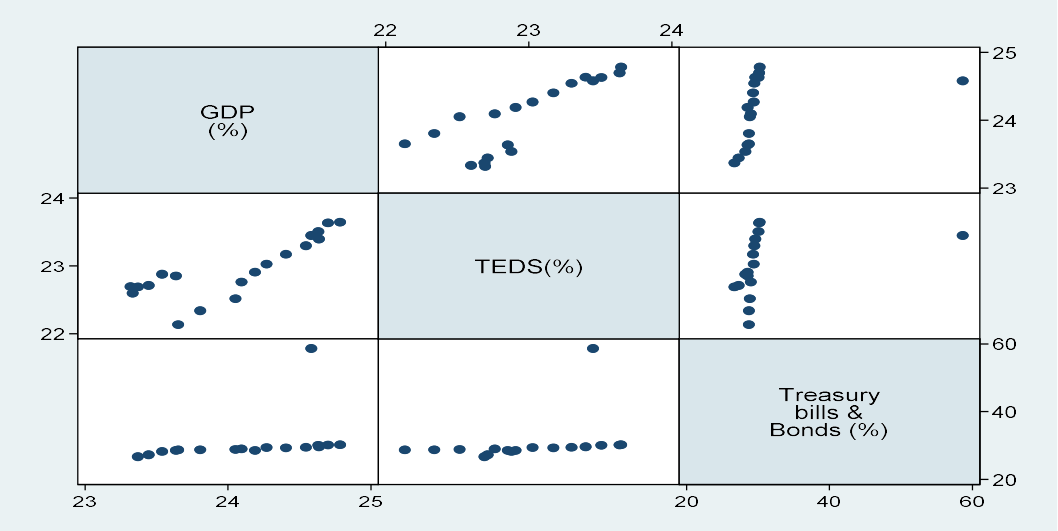
Table 4. 5: Outliers

```
. iqr r

   mean= -7.7e-10          std.dev.=  .2711          (n= 17)
 median=   .113    pseudo std.dev.=  .1857        (IQR=  .2505)
10 trim=  .0294

                                          low          high
                                    -------------------------
                         inner fences   -.4644        .5377
                  # mild outliers       2            0
                  % mild outliers       11.76%       0.00%

                         outer fences   -.8401        .9134
                  # severe outliers     0            0
                  % severe outliers     0.00%        0.00%
```

Source: STATA Output (2020)

4.2.7.2 Influence

An observation is said to be influential if removing the observation substantially changes the estimate of coefficients. Influence can be thought of as the product of leverage and outlierness.



4.2.7.3 Leverage

An observation with an extreme value on a predictor variable is called a point with high leverage. Leverage is a measure of how far an observation deviates from the mean of that variable. These leverage points can have an effect on the estimate of regression coefficients. The lines on the chart show the average values of leverage and the (normalized) residuals squared. Points above the horizontal line have higher-than-average leverage; points to the right of the vertical line have larger-than-average residuals. As well, the graph shown in Figure 4.8 cases have a very large residual but it doesn't have much leverage.

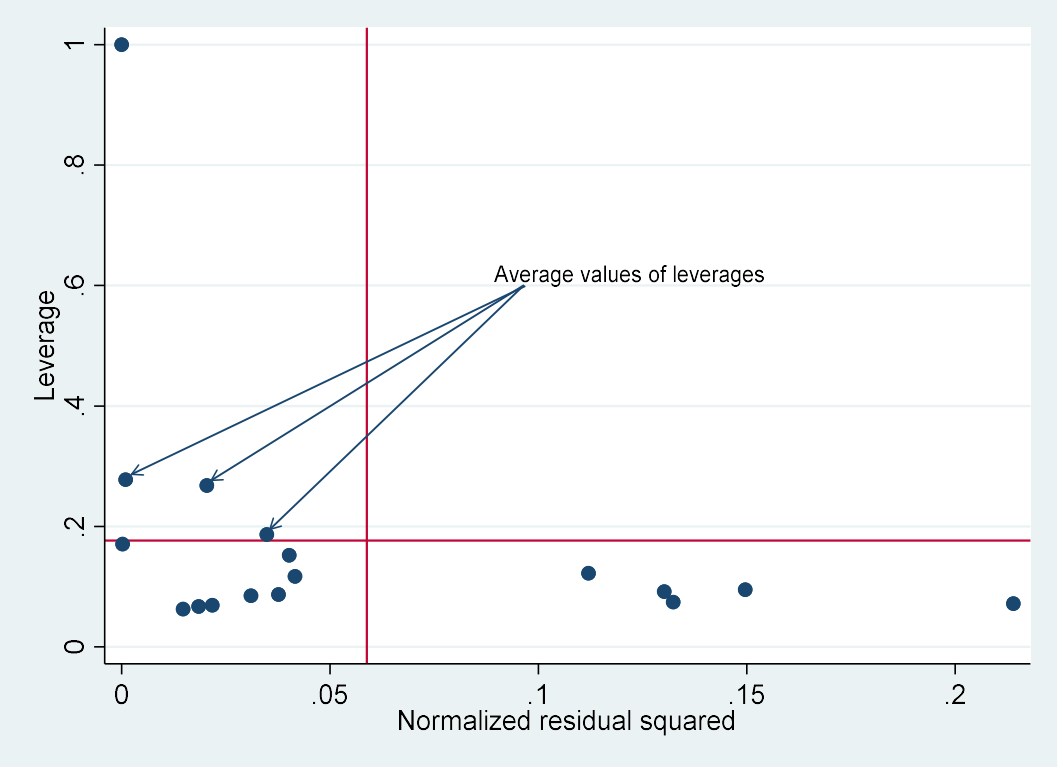


Figure 4. 8: Leverage

4.2.8 Model Specification

There are a couple of methods to detect specification errors. The linktest command performs a model specification link test for single-equation models. linktest is based on the idea that if a regression is properly specified, one should not be able to find any additional independent variables that are significant except by chance. linktest creates two new variables, the variable of prediction, _hat, and the variable of squared prediction, _hatsq. The model is then refit using these two variables as predictors. _hat should be significant since it is the predicted value. On the other hand, _hatsq shouldn't, because if our model is specified correctly, the squared predictions should not have much explanatory power. That is we wouldn't expect hatsq to be a significant predictor if our model is specified correctly. So the p-value for _hatsq is the centre for decision.

Table 4. 6: Normality Linktest

Source	SS	df	MS	Number of obs	=	17
				F(2, 14)	=	18.97
Model	2.71462911	2	1.35731455	Prob > F	=	0.0001
Residual	1.00160585	14	.071543275	R-squared	=	0.7305
				Adj R-squared	=	0.6920
Total	3.71623496	16	.232264685	Root MSE	=	.26748

ln_GDP	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
_hat	-31.6512	20.93589	-1.51	0.153	-76.55422	13.25182
_hatsq	.6769519	.4340464	1.56	0.141	-.253985	1.607889
_cons	393.6122	252.4078	1.56	0.141	-147.7488	934.9732

Source: STATA Output (2020)

From Table 4.6 linktest, the test of _hatsq is not significant. This is to say that linktest has failed to reject the assumption that the model is specified correctly. Therefore, it seems that there is specification error.

4.3 Effect of External and Domestic Debts on Economic Growth

This section attempts to answer the main purpose of the study in the attempt to assess the effect of external debt on the economic growth in Tanzania. After observing violation of heteroscedasticity and autocorrelation, log was used to make transformation of some variables and use OLS regression model for estimation. In the first part, the model excludes control variables, including tax revenues, subsidies, imports and investment. As well, the marginal effect of the external debts is also revealed. Thereafter, the researcher has disaggregated total external debts to show the effect of both long term and short term debts on economic growth.

Table 4. 7: Output GLM without Control Variables

Generalized linear models

ln_GDP	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
ln_TEDS	0.85	0.171	4.98	0.000	0.516	1.185	***
ln_TBill-Bon	0.005	0.011	0.50	0.619	-.016	0.026	
Constant	4.42	3.828	1.15	0.248	-3.083	11.922	
Mean dependent var		24.137	SD dependent var			0.482	
Number of obs		17.000	Chi-square			30.255	
Prob > chi2		0.000	Akaike crit. (AIC)			8.830	

** *p<.05*

Source: STATA Output, (2020)

Generalized linear model was used because of the violation of autocorrelation, homosecedastcity and the likelihood of the effect of unobserved variables (confounding effect). From Table 4.7, the log of the total external debts stock (ln_TEDS) shows to have significant positive effect on the economic growth. This evidenced by the calculated p-value (0.000) which is small at all level of significance (5 %,). These results show that when log of total external debts increase by 1 percent then the log of gross domestic product will increase by 0.85 percent. On top of that, marginal effect was used to understand the effect when the debt increases over time. The results of this analysis are presented on the marginal plots below (Figure 4.8).

Figure 4.9 shows the marginal effect at the intervals of 4 percent. Overall, the results revealed that the economic growth decreases when the external debts increases. As shown in the figure, the marginal effect is high at 5% compared to the 17%. An examination of the effect of both long term and short term debt was also done in this research. Equally, regression of these variables was made on economic growth in the absence of the control variables. The regression outputs including marginal effect is presented in the following section

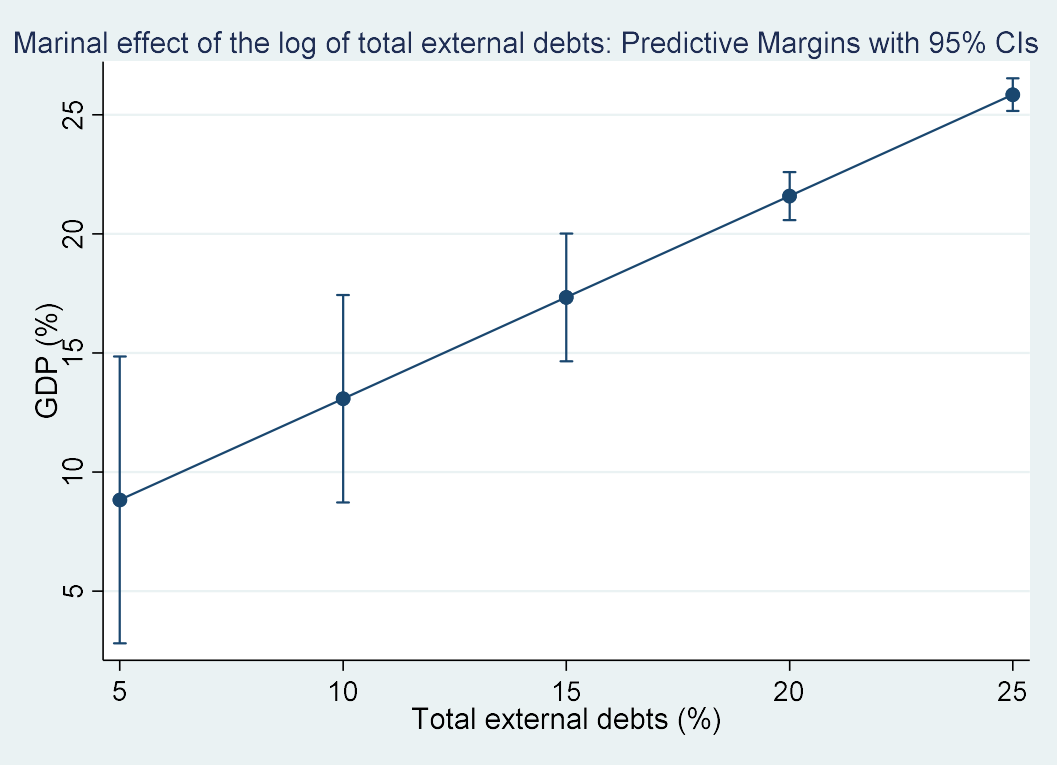


Figure 4. 9: Marginal Effect of total external debts economic growth

Furthermore, domestic debts appeared to have no significant effect on the economic growth as evidenced by the calculated probability value (0.619), which is higher at all levels of significance (5%). As documented by the Christensen (2005), domestic interest rate payments present a significant burden to the budget with significant crowding-out effects. These results are in good agreement with Kabir and Wani (2016) who examined the relationship between domestic debt and economic growth. Equally, Lotto (2018) examined the impact of domestic debt on the economic growth of Tanzania for the period of 1990 to 2015 using ordinary least regression to estimate its effects. The author revealed insignificant relationship between domestic debt and the economic growth in Tanzania. Similarly, Adofu and Abula (2010) had similar findings but in the context of Nigerian economy. The authors examined the relationship between domestic debt and economic growth in Nigeria and came up with an observation that there is negative relationship between domestic debt and economic growth. The insignificant effect is more likely attributed by high interest rate compared to the external debts which usually are provided as soft loans.

However, the current findings about the domestic debts are in disagreement with those of Adofu and Abula (2010). The analysis of the effect of domestic debt, and

particularly the treasury bills and bonds on economic growth revealed that domestic borrowing through treasury bills and bonds has positive impact on gross domestic product. Equally, Lucky and Godday (2017) revealed that domestic debt has a positive and significant effect on the economic growth. A similar study was conducted by Precious (2015), in Swaziland, to examine the effects of public debt on economic growth of Swaziland. The study discovered that domestic debt had a positive and significant influence on economic growth. The same results also reported by Abbas and Christensen (2016) and Maana and Owino *et al.* (2008).

Table 4.8 shows that the long term external debt stock does not have significant effect on economic growth. Evidence to justify this comes from the calculated p-value which is larger at all level of significance (5%). In contrast, short term external debt appears to have significant effect on the economic growth (Coefficient: 8.51) at 1 percent level of significance. However, its effect on economic is very small as evidenced by the size of coefficient which is less than 1%. Besides, it is important to consider the effect of debts on economic growth while observing other variables as shown in the next section.

Under normal circumstances, estimating the effect of economic growth requires consideration of other observed and unobserved factors. Observed factors included variables with available data. In this case, dataset had information about tax revenue, Tax Revenue subsidies export import with ingredients of gross domestic product. To achieve this objective, instrumental regression was used in the analysis. Log of Total Debts Stocks was instrumented by tax revenue, subsidies, export, import, and investment. Both estimation of the parameters and marginal are shown in Table 4. 8

4.3.1 The Effect of Long Term and Short Term Loan on Economic Growth

Table 4. 9: Results showing the Effect of both Long Term and Short Term External Debts on Economic Growth

	(1) ln_GDP
ln_GDP	
ln_EDS_LT	0.208
	(1.95)
ln_EDS_ST	1.081***
	(8.51)
_cons	-3.378
	(-1.75)
N	19
adj. R-sq	
rmse	

t statistics in parentheses
* p<0.05

Source: STATA Output, (2020)

Table 4. 10: Estimation Outputs Generated by the Instrumental Regression Model

Instrumental variables (2SLS) regression

Number of Obs	=	10
Wald chi2(2)	=	439.2
Prob	> chi2	0.000
R-squared	=	0.9778
Root MSE	=	0.03283

ln_GDP	Coef.	Std.Err	z	P>|z|	[95% Conf.	Interval]
ln_TEDS	0.76154	0.037	20.53	0.000	0.688827	0.834254
ln_TB	-0.00118	0.001	-0.97	0.334	-0.00358	0.001218
_cons	6.792788	0.855	7.95	0.000	5.117354	8.468222

Instrumented: log of Total External Debts Stocks
Instruments: log of Treasury bills & Bonds, Tax revenue, subsidies, exports & imports

Source: STATA Output, (2020)

Table 4.9 shows that the instrumental regression model is statistically significant in explaining the effect of both external debts and domestic debts on economic growth (Prob>chi2=0.000). Besides, the results show that, when tax revenue, subsidies,

export and import are controlled, there would be an increase of the total external debts services by 1% will increase the log of GDP by 0.76 percent. However, when total external debts increases, its marginal effect decreases as shown on the next figure 4.10

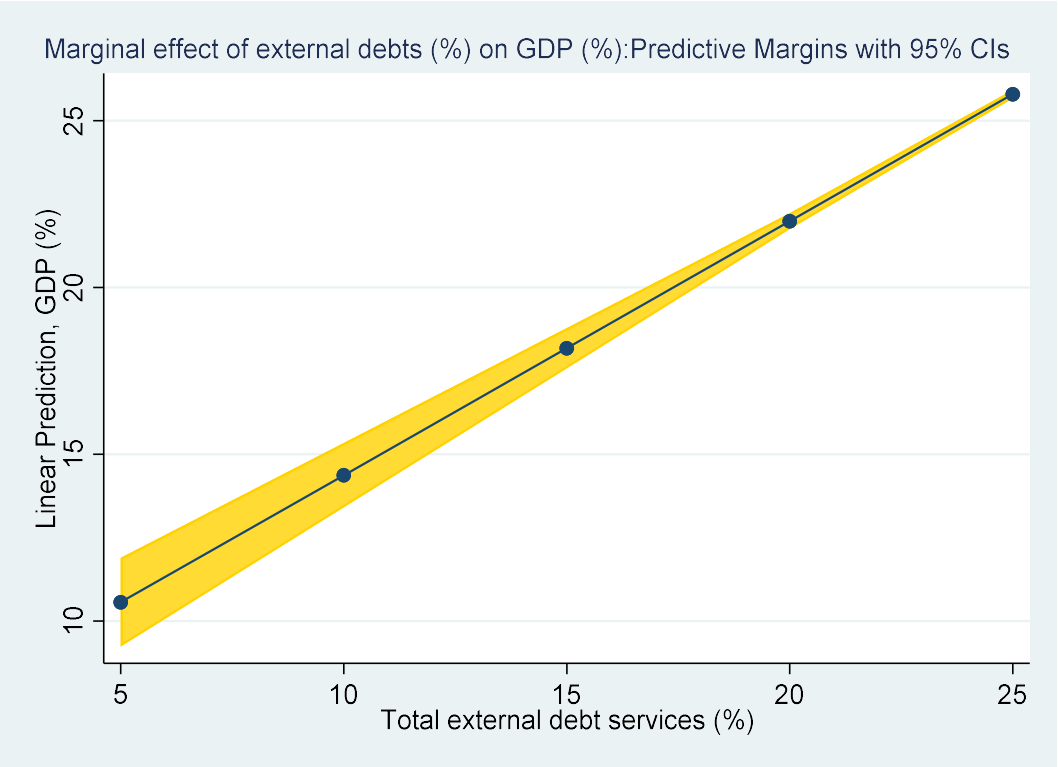


Figure 4. 10: Marginal effect of Debts in the presence of Control Variables:

Equally, Figure (4.10) presents the marginal effect at the intervals of 5 percent. The figure shows that the marginal effect on GDP is high at 5 percent compared to external debt ranging from 10% to 25%. Generally, the results shows economic growth decrease when an external debt increases.

This study is contrary to the observations put forth by some authors, for instance, Lora and Olivera (2017) who examined the effect of public debt and development expenditure. The findings show that multilateral debts have negative consequences on the development. However, the authors looked specifically on multilateral and not the entire stock of external debts. This study excluded multilateral debts after showing strong multicollinearity with total external debts.

Furthermore, a study conducted by Kasidi and Awan (2016), in Tanzania, on the impact of external debt on economic growth indicated that there was no a long run relationship between external debt and economic growth. Similar findings were generated by Jilenga, Xu, and Dacka (2016). However, the author did not disaggregate both short term and long term external debts. Therefore, the researcher made disaggregation of the external debts and revealed results that point to different perspectives. The results for the relationship between the long term external debt and economic growth shows insignificant effect wile short term external debts reveal to have significant positive effect. Similarly, As well, Kasidi and Awan (2016) conducted a similar study on the impact of external debt on economic growth in Tanzania. The author's findings revealed the existence of marginal effect of external debt on economic growth decreases when the debt increases.

4.3.2 Granger Causality Analysis

The researcher made further analysis to understand if there is any bidirectional or unidirectional relationship between variables of the study. To achieve this objective, the first stage the research conducted vector autoregressive analysis with two lags (lag1 and lag 2) of each variable. Second, granger causality test was performed to understand causality relationship between GDP, external debts and treasury bills/bonds. Vector autoregressive results are presented in Table 4.11

Table 4. 11: Vector Autoregressive of the GDP (%) on the Lagged Values of the GDP, TEDS and TB

		Coef.	Std.Err.	z	P>z	[95%Conf.	Interval]
ln_GDP							
	ln_GDP						
	L1.	0.727	0.328	2.21	0.027	0.083	1.371
	L2.	0.329	0.346	0.95	0.342	-0.35	1.007
	ln_TEDS						
	L1.	-0.06	0.079	-0.76	0.447	-0.215	0.095
	L2.	-0.09	0.088	-1.03	0.305	-0.263	0.082
	ln_TB						
	L1.	-0.001	0.003	-0.49	0.622	-0.006	0.004
	L2.	0.001	0.002	0.33	0.742	-0.003	0.005
	_cons	2.246	1.057	2.12	0.034	0.174	4.318

Source: STATA Output (2020)

Furthermore, the lagged external debts both at lag 1 and lag 2 reveal insignificant effect on the gross domestic product (GDP). This can be evidenced by large probability values of lag 1 (0.447 > 0.05) and lag 2 (0.305 > 0.05). Equally, the lagged treasury bills and bonds at lag 1 and lag 2 shows insignificant effect on the gross domestic product (GDP).This can also be evidenced by large probability values of lag 1 (0.622 > 0.05) and lag 2 (0.743 > 0.05).

The causality relationship between these two variables is statistically significant at 5%

Table 4. 12: Vector autoregressive of TEDS (%) on the lagged values of the GDP (%), TEDS (%) and TB (%)

		Coef.	Std.Err.	z	P>z	[95%Conf.	Interval]
ln_TEDS							
	ln_GDP						
	L1.	-0.267	1.078	-0.25	0.804	-2.379	1.845
	L2.	0.797	1.136	0.7	0.483	-1.429	3.023
	ln_TEDS						
	L1.	0.664	0.259	2.56	0.01	0.156	1.173
	L2.	-0.255	0.289	-0.88	0.379	-0.821	0.312
	ln_TB						
	L1.	-0.003	0.009	-0.31	0.756	-0.019	0.014
	L2.	0.003	0.007	0.37	0.71	-0.011	0.016
	_cons	0.887	3.469	0.26	0.798	-5.912	7.687

Source: STATA Output (2020)

As it shown in Table 4.12, the first lagged value of GDP shows vector autoregressive effect on unlagged external debts. Since the calculated probability value is large ($0.804 < 0.05$), the first lagged GDP has no effect on the unlagged GDP. Similarly, second lagged GDP shows insignificant effect on the unlagged external debts. This, therefore, suggests that there is an existence of autoregressive effect at lag 1 but it has insignificant effect at lag 2.

The lagged external debts at lag 1 shows significant effect on the unlagged external debts. This is evidenced by small probability values of lag 1 ($0.01 < 0.05$). However, the lagged external debts at lag 2 reveal insignificant effect on external debts. This is evidenced by the calculated probability value which is large ($0.379 > 0.05$)

Furthermore, the lagged treasury bills and bonds at lag 1 show no significant effect on the unlagged external debts. This is evidenced by large probability values of lag 1 ($0.756 < 0.05$). Equally, the lagged treasury bills at lag 2 shows insignificant effect on the external debts. This is evidenced by the calculated probability value which is large ($0.71 > 0.05$).

Table 4. 13: Vector autoregressive of TB (%) on the lagged values of GDP (%), TEDS (%) and TB(%)

		Coef.	Std.Err.	z	P>z	[95%Conf.	Interval]
ln_TB							
	ln_GDP						
	L1.	4.505	39.504	0.11	0.909	-72.922	81.932
	L2.	3.187	41.634	0.08	0.939	-78.413	84.787
	ln_TEDS						
	L1.	-1.439	9.506	-0.15	0.88	-20.07	17.192
	L2.	5.309	10.602	0.5	0.617	-15.47	26.088
	ln_TB						
	L1.	-0.262	0.314	-0.83	0.405	-0.877	0.354
	L2.	-0.265	0.255	-1.04	0.299	-0.766	0.235
	_cons	-226.573	127.189	-1.78	0.075	-475.86	22.714

Source: STATA Output, (2020)

In Table 4.13, the first lagged value of GDP shows vector autoregressive on unlagged treasury bills and bonds. Since the calculated probability value is large ($0.909 < 0.05$), the lagged GDP has no effect on the un lagged treasury bills and bonds. Equally, second lagged GDP indicates insignificant effect on the unlagged bills and bonds. This implies a lack of autoregressive effect the lagged GDP on treasury bills and bonds at both lag 1 and lag 2.

Equally, the lagged external debt both at lag 1 and lag 2 reveals insignificant effect on the treasury bills and bonds. This is evidenced by large probability values of lag 1 ($0.88 > 0.05$) and lag 2 ($0.617 > 0.05$). Equally, the lagged treasury bills and bonds at lag 1 and lag 2 shows insignificant effect on the unlagged treasury bills and bonds. This can also be evidenced by large probability values of lag 1 ($0.405 > 0.05$) and lag 2 ($0.299 > 0.05$).

Table 4. 14: Granger causality analysis

Equation	Excluded	chi2	df	Prob>Chi2
ln_GDP	ln_TEDS	4.907	2	0.086
ln_GDP	ln_TB	0.465	2	0.793
ln_GDP	ALL	4.975	4	0.29
ln_TEDS	ln_GDP	6.984	2	0.03
ln_TEDS	ln_TB	0.314	2	0.855
ln_TEDS	ALL	7.974	4	0.093
ln_TB	ln_GDP	1.192	2	0.551
ln_TB	ln_TEDS	0.314	2	0.855
ln_TB	ALL	4.671	4	0.323

The first row of Table 4.14 above shows that lagged values of total external debts (TEDS) cause total external debts (%) as p-value is 0.086 which is significant at 10%. Nonetheless, because of the p value (0.793 > 0.05), lagged values of treasury bills and bonds (TB) do not cause gross domestic product (GDP). Therefore, the null hypothesis cannot be rejected. The direction of causality is therefore from **TEDS** to GDP at 10%.

Furthermore, in the second row, the p value for GDP is also small (0.03 < 0.05). Thus, the null hypothesis that that lagged values of GDP do not cause the total external debts can be rejected at 5% level of significance. In contrast, the null hypothesis that lagged values of treasury bills and bonds (TB) do not cause the total external debts cannot be rejected as the corresponding p-value (0.855) is greater than 0.05. This implies that treasury bills and bonds do not Granger-cause external debts and the direction of causality is from GDP to total external debts.

The results in the third row show that lagged values of both GDP and external debts do not Granger cause treasury bills and bonds. Since p values for both the variables are greater than 0.05, the null hypothesis that state lagged values of GDP and External debts do not cause treasury bills and bonds cannot be rejected. Therefore there is direction of causality from GDP, total external debts to treasury bonds.

Overall, the presence of Granger causality is as follows. GDP and total external debts has demonstrated bidirectional granger causality. However, there is no direction

causality relationship between the lagged values of treasury bills/bonds and external debts.

CHAPTER FIVE

SUMMARY, CONCLUSION, AND RECOMMENDATIONS

5.0 Introduction

This chapter provides the main summary of the findings and draws some conclusions and recommendations from the findings of the study. Also, the chapter points out the areas for further research.

5.1 Summary of the Findings

The study found that total external debt stock has a positive effect on economic growth. This is evidenced by the calculated p-value which is small at all levels of significance. Further analysis revealed that the total external debt stock has a positive effect on economic growth. This is witnessed by the calculated p-value (0.000) of external debts which is small at all levels of significance (5%). The results further show that, when external debts increase by 1%, GDP increases by 0.8 percent. Besides, the study found a marginal effect that indicates economic growth decrease when external debts increase. For instance, the log of external debts at 5% contributed to high GDP compared to the log of external debt at 10% and 25%.

However, the domestic debt has no significant effect on economic growth as evidenced by the calculated probability value (0.619) which is higher at all levels of significant (5%). The study further found that the long term external debt stock has a small significant effect on economic growth compared to short term external debt. Generally, the results shows economic growth decrease when an external debt increases.

5.2 Conclusion

The overarching objective of this study was to examine the effect of public debt on economic growth. In particular, external and domestic debts were examined to analyse their effect on gross domestic growth which is widely used as an indicator for economic growth. The results show external debt has a positive effect on economic growth is consistent with the observation earlier made by Mustafa (2016), Kasidi, and Saidi (2013) who found a significant correlation in a long run and short run between external debt and economic growth. In addition, Ullah (2011) attained similar findings which reveal that a long run relationship exists between external

debt and economic growth. The researcher made further analysis of both long term external debts and short term debt to check the effect of each on the GDP. The results show long term effect has an insignificant effect on the economic growth. This is in agreement with Reinhart and Rogoff (2012) who established that the high level of external debt are negatively correlated with economic growth mostly when public debt is below 90%. This is supported by Kasidi and Awan (2016) who established a lack of long run relationship between external debt and economic growth. In contrast, short term appears to have positive significant impact on the economic growth as said by Shah and Pervin (2019) who revealed that external debt has a significant positive relationship to economic growth.

However, domestic public debt was found to be statistically insignificant to the economic growth because of high interest. This was similar to the findings of the study by Sheikh, Faridi, and Tariq (2010) and observed that domestic debt impact on economic growth with a significant negative relationship with economic growth. This implies that it has only a little contribution to growth due to debt servicing. Moreover, Checherita and Rother (2010) made similar observation that domestic debt had a non-linear negative relationship impact on economic growth. In addition, Lotto (2018), Adofu and Abula (2010) found an inverse but insignificant relationship between domestic debt and economic growth.

The sustainability of the public debts was also assessed and the results reveal that the Government of Tanzania is still below the required threshold of sustainable public debts. The current increase of the public debts was attributed to the accrued interest of the long term debts. The researcher, therefore, made recommendations in reflection with the findings as indicated below.

5.3 Recommendations

5.3.1 Recommendation to Government and Authority Responsible

i. Soft Loans

The government of Tanzania through the Ministry of Finance should continue to secure loans with terms that are very favourable. Therefore, soft loans need to be made in exchange for the activities that are not harmful to the social and economy in long run.

ii. Budget Allocation on Development Projects

The Government should continue to ensure public debts are largely spent on projects that stimulate economic growth, such as roads, railways, ports and energy. Most of these projects would help to stimulate both micro and macroeconomic development.

iii. Timely Payment

The Government needs to be committed to paying its creditors within the agreed timeframe. First, timely payment will increase trust in both domestic and external creditors. Second, timely payment decrease the cost of debt attributed to the increased interest.

iv. Public-Private Partnership

The Government should not secure loans for programmes that could be better performed by the private sector. This implies that the existing National Public Partnership Policy is a good initiative. If this will be well implemented, it will help the Government to identify projects which should be implemented by the private sector instead of the Government. This requires comprehensive legal and institutional frameworks that would provide clear guidelines and procedures for the development and implementation of PPPs.

v. Realistic and Comprehensive Technical

Since public debt is encouraged to be spent on development projects, therefore, then projects financed by loans must be designed and executed after conducting a comprehensive feasibility study. Social and economic benefits must be identified before committing resources.

vi. Capacity Building

The Government should increase capacity negotiations, procurement, implementation, and management of the projects financed by public loans. Weak negotiation skills are likely to create the risk of getting loans with unfavourable terms. As well, procurement is another area which cost the Government during the implementation of the development projects. Thus, having officials with in-depth knowledge of procurement will help the government to procure goods with reasonable cost. Furthermore, capacity building will equip public officials with project design and management skills which is essential for successful public

projects. Generally, capacity building is essential for ensuring the entire chain of public debts is executed with highly knowledgeable government staffs.

vii. The Role of CAG

The CAG should be given full authority to examine public debts and his/her recommendations must be followed by the government. For instance, for the financial year ended June 2019, the CAG office recommended, first, to set up a monitoring and evaluation mechanism that will track down the disbursement and utilization of funds generated from public debt; the follow up mechanism will ensure implementing agencies properly account for the utilization of borrowings on regular basis, and establish coordination mechanism to facilitate the reconciliation of signed loan contracts and disbursement. Second, consider a strategy to promote development of domestic financial market to attract more investors on longer term maturities (Treasury bonds). Third, establish the auction committee with clear stipulated roles and responsibilities and formally document any decisions made during auctions. Forth, consider having own list / database of eligible payees rather than depending on bills raised by the agent to facilitate meaningful reconciliation and safeguard of public resources. These are useful recommendation to be followed by the government.

viii. Avoid Duplicative Programmes

The Government usually receives loans from a wide range of different partners for financing social and economic activities. However, none state actors, like non-government organizations and others alike, supported by the development partners most often do similar activities done by the Government. It is, therefore, important to have well-coordinated projects, that track the existing programmes and avoid those which are already in place.

ix. Avoiding Outdated and Unnecessary Programs

The Government should ensure public loans are not allocated in the development projects are currently irrelevant or unnecessary programmes. Improving efficiency, proper management of public resources and tackling fraud. The Government should use internal controls ad mechanisms to improve efficiency, proper management of public resources and tackling fraud. This can be done by setting rules, policies, and procedures implemented by government and its public entities to provide direction, increase efficiency and strengthen adherence to policies, promote accountability and prevent fraud and errors to ensure financial reports are reliable operations are effective and efficient to a tolerable level.

x. Political Harmonization

Some development projects financed by the public debts are exposed to political critics. Most of the giant projects are being criticized by the opposition parties. It would be important to ensure there is harmony for all public projects. This will minimize the risk of abandoning development projects which are being executed.

5.4 Suggestion for Further Research

There is need to investigate other effects of public debt on private investment in Tanzania necessary for economic growth other than in economic. To this end, there is, therefore, a need to undertake more studies in other developing countries or even the EAC to compare and corroborate the results of this study. Such findings can enhance management of public finance in the country. Also, there is need to conduct a study on the effect of domestic debt separate and external debt separate on economic growth on Tanzania.

Also, another study should be done to evaluate the effect of public debt on private investment, export, import and tax revenues.

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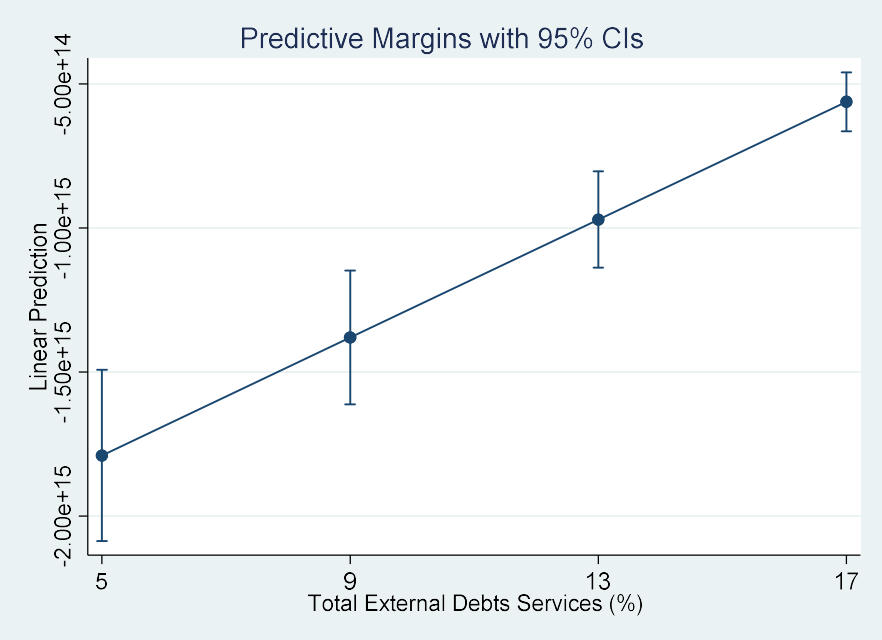
APPENDICES

Appendix A: Marginal Effect of External Debts with control Variables



Marginal Effect External Debts Stocks (%) on GDP (%)

```
Expression   : Predicted mean ln_GDP, predict()

1._at        : ln_TEDS         =           5

2._at        : ln_TEDS         =          10

3._at        : ln_TEDS         =          15

4._at        : ln_TEDS         =          20

5._at        : ln_TEDS         =          25
```

	Delta-method					
	Margin	Std. Err.	z	P>|z|	[95% Conf.	Interval]
_at						
1	8.83338	3.073097	2.87	0.004	2.81022	14.85654
2	13.08544	2.219788	5.89	0.000	8.734733	17.43614
3	17.3375	1.366866	12.68	0.000	14.65849	20.0165
4	21.58955	.5162464	41.82	0.000	20.57773	22.60138
5	25.84161	.3493214	73.98	0.000	25.15695	26.52627

Untransformed Data

```
. reg gdpcurrentus eds_total Tbills_Bonds
```

Source	SS	df	MS	Number of obs	=	17
				F(2, 14)	=	36.77
Model	2.9756e+21	2	1.4878e+21	Prob > F	=	0.0000
Residual	5.6642e+20	14	4.0459e+19	R-squared	=	0.8401
				Adj R-squared	=	0.8172
Total	3.5420e+21	16	2.2138e+20	Root MSE	=	6.4e+09

gdpcurrentus	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
eds_total	2.968479	.3584016	8.28	0.000	2.199784	3.737173
Tbills_Bonds	-1.57e-18	2.33e-16	-0.01	0.995	-5.00e-16	4.97e-16
_cons	2.09e+09	4.04e+09	0.52	0.612	-6.56e+09	1.08e+10

Marginal Effect with Inclusive Control Variables

```
. margins, at( ln_TEDS =(5(4)20))

Predictive margins                              Number of obs     =         10
Model VCE    : Unadjusted

Expression   : Linear prediction, predict()

1._at        : ln_TEDS         =           5

2._at        : ln_TEDS         =           9

3._at        : ln_TEDS         =          13

4._at        : ln_TEDS         =          17
```

	Delta-method Margin	Std. Err.	z	P>|z|	[95% Conf.	Interval]
_at						
1	-1.79e+15	1.52e+14	-11.80	0.000	-2.09e+15	-1.49e+15
2	-1.38e+15	1.19e+14	-11.65	0.000	-1.61e+15	-1.15e+15
3	-9.71e+14	8.53e+13	-11.38	0.000	-1.14e+15	-8.04e+14
4	-5.62e+14	5.22e+13	-10.77	0.000	-6.64e+14	-4.60e+14

Appendix B: Secondary Data Collection Template

B1: Raw Data

year	eds_longterm	eds_short_term	eds_total	Tbills_Bonds
2000	5974373820	849011159	7187824540	
2001	5524871999	605931576	6511080019	
2002	5991488306	712147510	7145819696	387672702976
2003	5999171040	824914215	7307954236	709099978752
2004	7022434044	1134646546	8628762340	1831399981056
2005	7016164549	1006273090	8409774097	2522700054528
2006	3037368497	1000744129	4097945623	2984500002816
2007	3927046388	1036642016	5030962807	3023530098688
2008	4600553150	1344107949	6010233474	3349600010240
2009	5655584488	1401571160	7685190153	3967800049664
2010	6823602158	1421335988	8892091728	2504899952640
2011	7684380402	1683553041	10010937393	5927799881728
2012	8827825234	2110127510	11578635386	5373699817472
2013	10623301685	1757576583	13134279244	6271900057600
2014	11742395454	2078153745	14503038678	7344300228608
2015	12826985243	1858721521	15277884621	72100000000000
2016	13637158709	2037423419	16189113681	11513300516864
2017	15877841704	2060135970	18396728338	12519300136960
2018	16409123485	1811769591	18584988400	13350299762688

B2: Transformed raw Data

ln_GDP	ln_EDS_LT	ln_EDS_ST	ln_MT	ln_TB
23	23	21	19	
23	22	20	19	
23	23	20	19	27
23	23	21	20	27
24	23	21	20	28
24	23	21	20	29
24	22	21	20	29
24	22	21	20	29
24	22	21	20	29
24	22	21	21	29
24	23	21	21	29
24	23	21	20	29
24	23	21	20	29
25	23	21	21	29
25	23	21	20	30
25	23	21	21	59
25	23	21	20	30
25	23	21	20	30
25	24	21	20	30

Appendix C: Do Files

```
se "C:\Users\game\MOFEA Salima Afred\Final Data.dta"

******Multicollinearity
edit
corr eds_total Tbills_Bonds ln_GDP
corr eds_total Tbills_Bonds gdpcurrentus
reg gdpcurrentus eds_total Tbills_Bonds
asdoc corr eds_total Tbills_Bonds gdpcurrentus
********* Residual analysis
reg gdpcurrentus eds_total Tbills_Bonds
predict r, residual
reg r gdpcurrentus
gen rsquared= r^2
scatter gdpcurrentus rsquared
scatter rsquared gdpcurrentus
reg rsquared gdpcurrentus
predict yhat
br
reg yhat eds_total Tbills_Bonds
reg gdpcurrentus ln_TEDS Tbills_Bonds
eststo model_Het
esttab, r ar2 se scalar(rmse)
asdoc esttab, r ar2 se scalar(rmse)

********** Multiple linear regression and plots
reg gdpcurrentus ln_TEDS Tbills_Bonds
eststo model4
asdoc esttab, r ar2 se scalar(rmse)
tsset year
scatter year r
scatter yhat ln_TEDS,c(1) s(1 0)
scatter r year
corr r year
```

```
predict rstandardize
br r rstandardize
tsline r rstandardize
reg gdpcurrentus ln_TEDS Tbills_Bonds
drop r
predict r, residual
edit r
****************** Variables generation abd dfuller test
gen AR_3=d.r
gen rsquared2= r^2
gen r2=d.rsquared2
br rsquared2 r2
reg rsquared2 r2
predict uhat
dfuller uhat,regress
asdoc dfuller uhat,regress
corr eds_longterm eds_short_term ln_GDP
reg ln_GDP eds_longterm eds_short_term
eststo model5
asdoc esttab, r ar2 se scalar(rmse)
reg gdpcurrentus ln_TEDS Tbills_Bonds
actest
help actest
asdoc actest
help generalized regression

**********Generalized Linear Model and Marginal analysis
glm gdpcurrentus ln_TEDS Tbills_Bonds
asdoc glm gdpcurrentus ln_TEDS Tbills_Bonds
reg ln_GDP eds_longterm eds_short_term
help margin
reg ln_GDP ln_EDS_LT ln_EDS_ST
margins, at( ln_EDS_ST =(25(4)100))
```

br ln_GDP ln_EDS_LT ln_EDS_ST

sum ln_GDP ln_EDS_LT ln_EDS_ST

margins, at(ln_EDS_ST =(5(4)20))

help margin plot

marginsplot

help ivregress

reg gdpcurrentus ln_TEDS Tbills_Bonds

drop e

predict e

********** **Instrumental regression and marginal analysis**

help ivregress

ivregress 2sls gdpcurrentlcu Tbills_Bonds (ln_TEDS= tr subsidies exports imports)

margins, at(ln_TEDS =(5(4)20))

marginsplot

margins, at(ln_TEDS =(5(4)20))

marginsplot

help Multicollinearity

reg gdpcurrentus ln_TEDS Tbills_Bonds

drop r

predict r, residual

estat hettest

help Dickey-Fuller

save "C:\Users\game\MOFEA Salima Afred\Final Data.dta", replace

**********Granger Causality relationships**

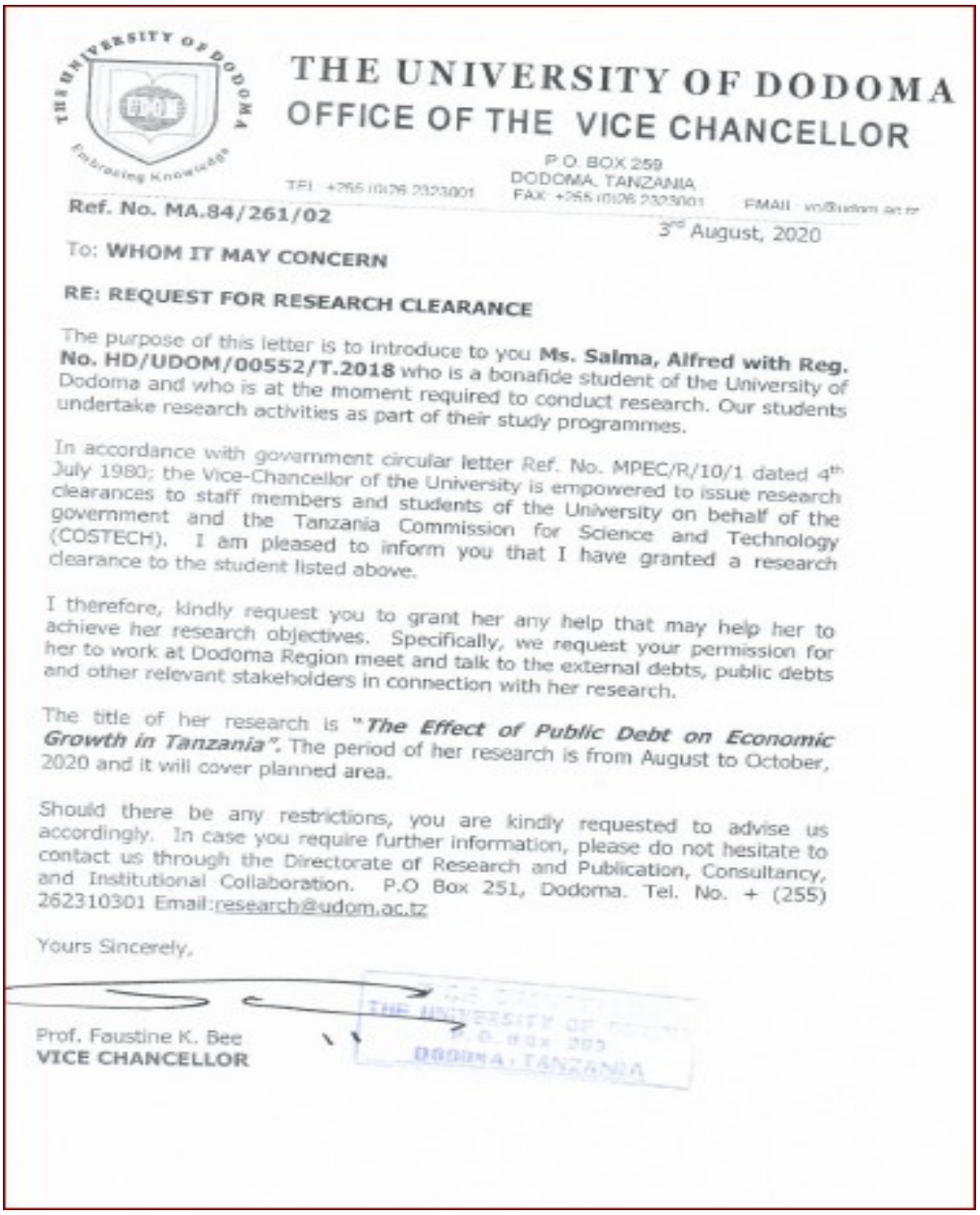
tsset year

var ln_GDP ln_TEDS ln_TB, lags(1/2)

asdoc var ln_GDP ln_TEDS ln_TB, lags(1/2)

asdoc vargranger

Appendix D: Research Clearance from the University of Dodoma



THE UNIVERSITY OF DODOMA
OFFICE OF THE VICE CHANCELLOR

P.O. BOX 259
DODOMA, TANZANIA
TEL: +255 (0)26 2323001
FAX: +255 (0)26 2323001
EMAIL: vc@udom.ac.tz

Ref. No. MA.84/261/02

3rd August, 2020

To: **WHOM IT MAY CONCERN**

RE: REQUEST FOR RESEARCH CLEARANCE

The purpose of this letter is to introduce to you **Ms. Salma, Alfred with Reg. No. HD/UDOM/00552/T.2018** who is a bonafide student of the University of Dodoma and who is at the moment required to conduct research. Our students undertake research activities as part of their study programmes.

In accordance with government circular letter Ref. No. MPEC/R/10/1 dated 4th July 1980; the Vice-Chancellor of the University is empowered to issue research clearances to staff members and students of the University on behalf of the government and the Tanzania Commission for Science and Technology (COSTECH). I am pleased to inform you that I have granted a research clearance to the student listed above.

I therefore, kindly request you to grant her any help that may help her to achieve her research objectives. Specifically, we request your permission for her to work at Dodoma Region meet and talk to the external debts, public debts and other relevant stakeholders in connection with her research.

The title of her research is "***The Effect of Public Debt on Economic Growth in Tanzania***". The period of her research is from August to October, 2020 and it will cover planned area.

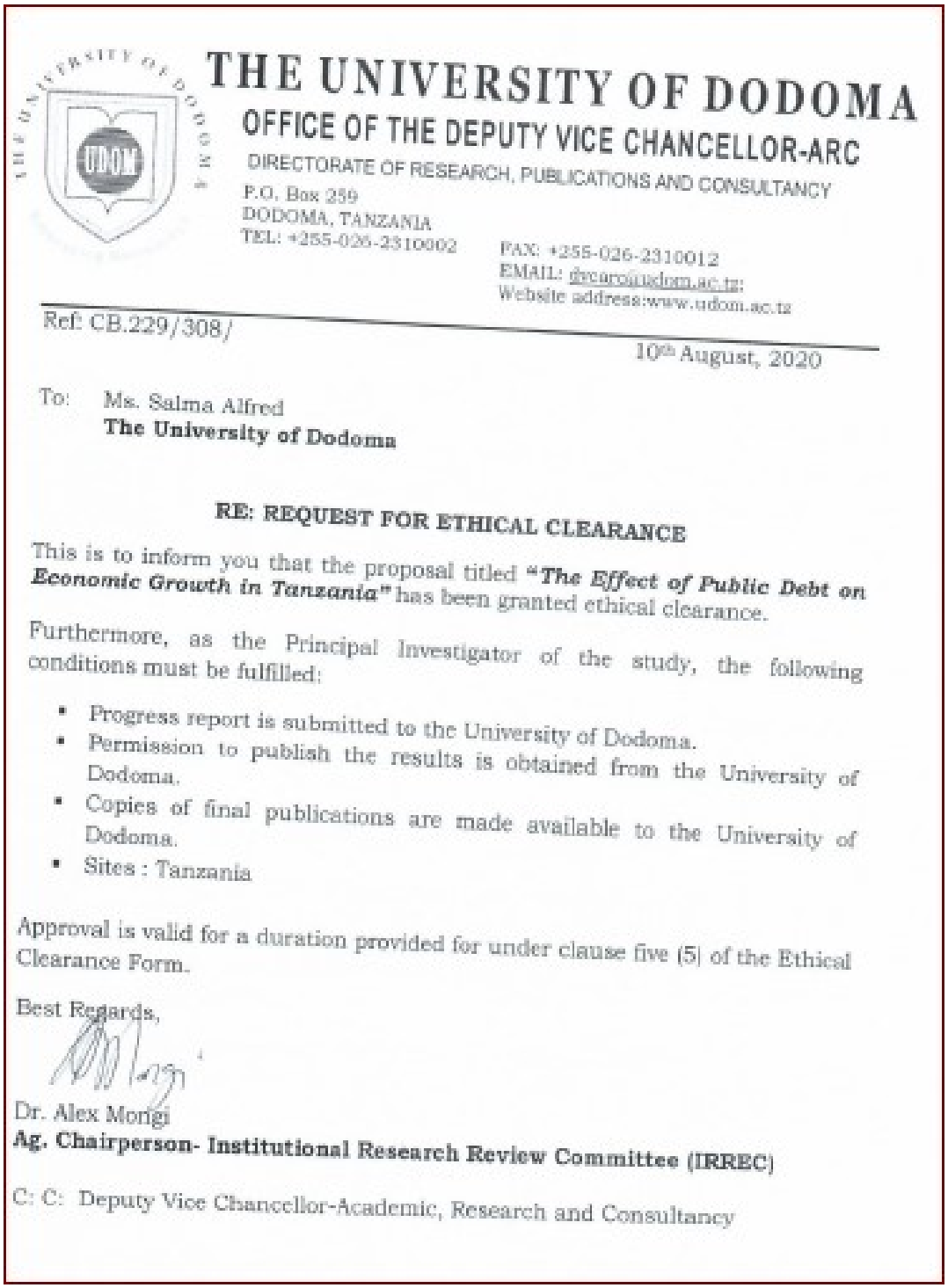
Should there be any restrictions, you are kindly requested to advise us accordingly. In case you require further information, please do not hesitate to contact us through the Directorate of Research and Publication, Consultancy, and Institutional Collaboration. P.O Box 251, Dodoma. Tel. No. + (255) 262310301 Email:research@udom.ac.tz

Yours Sincerely,

Prof. Faustine K. Bee
VICE CHANCELLOR

THE UNIVERSITY OF DODOMA
P.O. BOX 259
DODOMA, TANZANIA

Appendix E: Ethical Clearance from the University of Dodoma



THE UNIVERSITY OF DODOMA

OFFICE OF THE DEPUTY VICE CHANCELLOR-ARC

DIRECTORATE OF RESEARCH, PUBLICATIONS AND CONSULTANCY

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EMAIL: drcarc@udom.ac.tz;
Website address:www.udom.ac.tz

Ref: CB.229/308/

10th August, 2020

To: Ms. Salma Alfred
The University of Dodoma

RE: REQUEST FOR ETHICAL CLEARANCE

This is to inform you that the proposal titled ***"The Effect of Public Debt on Economic Growth in Tanzania"*** has been granted ethical clearance.

Furthermore, as the Principal Investigator of the study, the following conditions must be fulfilled:

- Progress report is submitted to the University of Dodoma.
- Permission to publish the results is obtained from the University of Dodoma.
- Copies of final publications are made available to the University of Dodoma.
- Sites : Tanzania

Approval is valid for a duration provided for under clause five (5) of the Ethical Clearance Form.

Best Regards,

Dr. Alex Mongi
Ag. Chairperson- Institutional Research Review Committee (IRREC)

C: C: Deputy Vice Chancellor-Academic, Research and Consultancy