



The Effects of Real Interest Rate, External and Domestic Debt to Economic Growth in Uganda

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Abstract: This study used Autoregressive Distributed Lag (ARDL) approach provide analysis of the effects of real interest rate, external and domestic debt to GDP ratio and other factors on economic growth for a period (1986–2023) for Uganda. This study observes a negative relationship between external and a positive domestic debt and growth in the short run. The estimates of the model show that a 10 percentage point increase in the external debt-to-gross domestic product ratio will result in 91.9 percent point reduction in economic growth. In addition, a 10 percent increase in the domestic debt to GDP ratio results in a 30.7 percentage increase in economic growth. Also the real interest rate affects the economic growth negatively. A 10 percentage increase in real interest rate will result in a 1.06 reduction in economic growth. In the long run, the results established that both the external and domestic debt to GDP ratio affect economic growth negatively while the real interest rate affect economic growth positively. A 10 percent increase in external and domestic debt to GDP ratio will result in a 21.5 and 4.97 percentage reduction in economic growth respectively. While a 10 percentage point increase in real interest rate will cause a 2.7 increase in economic growth in the same period.

Keywords: Real Interest Rate, External debt, economic growth, Domestic debt, ARDL, Uganda

Received : 09 April 2025

Revised : 06 May 2025

Accepted : 12 May 2025

Published : 28 June 2025

TO CITE THIS ARTICLE:

Ssmanda Patrick Edward and Prof. Fred Matovu (2025). The Effects of Real Interest Rate, External and Domestic Debt to Economic Growth in Uganda, *Journal of International Money, Banking and Finance*, 6: 1, pp. 79-135.

1. INTRODUCTION

Public Debt can be defined as the loan taken by the government from its public and foreign countries. There are two types of public debt: Internal and External Debt. The government's borrowing within the country is known as internal debt. The government can borrow this debt from sources like banks, individuals, business firms and other internal sources. On the other hand, the government's borrowing from abroad or

international is known as external debt. Public debts are subject to a fixed interest and are repaid by the government to the creditors after the expiry of the stipulated period. By handing out government bonds and bills, the government can create public domestic debt. Debt can be either short-term, medium-term or long-term. A debt of one year or less is generally considered short-term debt. In contrast, the ones that go for around ten years or longer come under long-term debt. The one that is between these two ranges is the medium-term debt.

The goal of a nation is to attain sustainable economic growth and to achieve it in the economy policies that enhance capital formation through savings and investment must be put in place. Uganda relies on foreign borrowing to maintain availability of financial resources and stimulate economic growth because there is limited domestic capital and savings to achieve economic development. There are insufficient internal resources to cover domestic demands and the country resort to external financing to achieve economic growth. As Adepoyu, Salau and Obayelu (2007) argued, the very reason why countries resort to public debt to complement savings. The adverse effect of high public debt burden is as a result of unstable oil prices, volatility in exchange and interest rate etc. they negatively affect economic growth of the country involved as opined by Favour et. al. (2017).

Debt is still important to stimulate economic growth of a country mainly for developing economies according to Muhammad et. al.(2017). Budget deficits are meant to grow the economy and, in most cases, the only available option to finance the deficit is by borrowing as argued by Mankiw (2013). Deficit is said to occur in public budget when expected revenue falls short of expenditure and one of the ways of financing the short fall is by acquiring debt. Therefore, public debt is simply the borrowing of the governments in both domestically and externally as said by Idenyi, Igberi and Anoke (2016). It should also be noted that though the government has the powers through the central bank to go into currency inflation of printing more money, such action may possibly reduce interest rate and also promote hyperinflation.

According to Soludo (2003) countries borrow to enhance consumption, investment, finance balance of payment deficit and budget deficit and all these are aimed at growing the economy. Many countries rely on debts in order to finance capital accumulation. Some of these debts are medium term facilities and used for economic projects geared towards enhanced standard of living of the people. Hamed (2008) is of the view that external borrowing complements domestic financing so as to enhance economic growth. There is no doubt that debt will improve factor productivity through increased output which results in increased total output. Although external debt may be seen as a tool for economic growth and improved standard of living, at times it is

an impediment to economic growth and stability, as there is exportation of resources when interest and principal are repaid. Currently, the main reasons for rise in the budget deficit and resulting public debt are:

- inadequate synchronization between budgetary expenditures and budgetary receipts;
- excessively expanded functions of the state;
- lack of an optimal relationship between tax revenues that do not slow down economic
- growth and the size of government spending;
- unfavorable demographic trends (negative balance of natural growth, aging populations);
- fiscal interventions under economic recession;
- Excessive public expenditures in relation to the possibility of raising budget revenues.
- International integration of financial markets is increasing the possibilities of financing of sovereign debt in foreign markets.

Hence countries take advantage of this opportunity to take out loans. They issue financial instruments abroad, which results in the increase of foreign debt.

1.1.External and Domestic Public Debt of Uganda since 1986 trend

Uganda is endowed with significant natural resources, including ample fertile land, regular rainfall, and mineral deposits. Political instability and economic mismanagement since independence has resulted in economic decline that has left Uganda among of the world's poorest and least-developed countries according to Staff (2016). After the turmoil of the former president Iddi Amin era, the country began a program of economic recovery in 1981 that received considerable foreign assistance. From mid-1984 onward, overly expansionist fiscal and monetary policies and the renewed outbreak of civil strife led to a setback in economic performance. According to World Bank (2018), since the 1990 to 2015; real Gross Domestic Product (GDP) grew at an average of 6.7% annually during the period 1990–2015 and real GDP per capita grew at 3.3% per annum where the Ugandan economy experienced economic transformation: the share of agriculture value added in GDP declined from 56% in 1990 to 24% in 2015; the share of industry grew from 11% to 20% with manufacturing sector increasing at a slower pace, from 6% to 9% of GDP; and the share of services went from 32% to 55%.

Since assuming power in early 1986, NRM's government has taken important steps toward economic rehabilitation. The country's infrastructure, which was destroyed by war and neglect, was rebuilt. Uganda subsequently began implementing economic policies designed to restore price stability and sustainable balance of payments, improve capacity utilization, rehabilitate infrastructure, restore producer incentives through proper price policies and improve resource mobilization and allocation in the public sector. These Structural Adjustment Programs greatly improved the shape of the Ugandan economy. Since 1995, Uganda has experienced rapid economic growth and this positive development can be attributed to Structural Adjustment according to *Baten (2016)*.

Uganda's high domestic and external debt stems from persistent budget deficits, reliance on borrowing for development projects, and the impact of factors like the COVID-19 pandemic, leading to increased borrowing from both domestic and external sources. A primary driver of debt accumulation is Uganda's consistent need to finance government activities through borrowing due to persistent budget deficits. The government has relied heavily on borrowing, including both concessional and non-concessional loans, to fund infrastructure projects and other development initiatives. The COVID-19 pandemic exacerbated the situation, leading to a surge in public debt as the government responded to the crisis with increased spending. The need to roll over existing debt and take on new loans to cover maturing obligations and finance ongoing projects has also contributed to the rising debt levels. Fluctuations in the exchange rate (Ugandan Shilling against other currencies) and changes in global interest rates can further impact the debt burden, particularly for external debt. While concessional loans have traditionally been a major source of external financing, Uganda has increasingly turned to commercial loans, which often come with higher interest rates. Increased borrowing from the domestic market, often at higher interest rates than external borrowing, has also contributed to the rise in domestic debt. The government's focus on infrastructure development, such as road and energy projects, has led to increased borrowing to finance these large-scale projects.

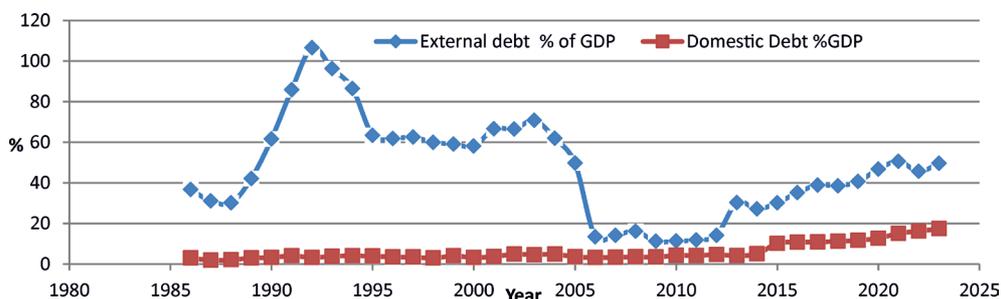


Figure 1.1: External and Domestic Public Debt

Source: Authors Computation

For the period 1986 to 2023, the external debt to GDP has averaged to 46.82 percent and domestic debt has averaged to 6.98 percent in the same period. Uganda's economy experienced significant growth, with an average annual growth rate of over 6 percent. There isn't a universally agreed-upon, specific sustainable level of public debt-to-GDP ratio, however, many economists and policymakers consider a ratio below 60 percent as a wise target. Throughout the period 1986 to 2023 the public debt to GDP ratio in Uganda has kept below this mark as indicated in table 1.1 below. This is evidence that the public debt is sustainable. The export and import to GDP ratio in this period is 12.65 percent and 22.89 percent respectively while the Gross fixed capital formation to GDP is 20.27 percent. In the past 30 years the economy has been driven by economic liberalization and diversification. However, the country also faces challenges like poverty, political tensions and reliance on donor funding. The services and industrial sectors have been leading growth drivers. The liberalisation of the economy in 1986 contributed substantially to Uganda's accelerated economic growth. The GDP per capita trend which shows a general increase over time and reached an all-time high of \$955.75 in 2023, starting as low at \$329.58 in 1986.

Table 1.1: Economic Indicators and Public Debt

<i>Indicators</i>	1986-1991	1992-1997	1998-2003	2004-2009	2010-2015	2016-2021	2022-2023
External debt stocks (% of GDP)	47.93	79.49	63.50	27.77	20.82	41.77	46.49
Total debt service (% of GDP)	3.61	3.27	1.54	0.94	0.33	1.65	3.53
GDP growth (annual %)	5.17	7.31	6.08	7.97	5.46	4.52	4.96
GDP deflator	4.16	28.42	39.65	54.91	81.13	105.23	122.91
Exports of goods and services (% of GDP)	8.55	10.28	11.11	16.96	14.42	15.41	11.81
Imports of goods and services (% of GDP)	18.41	21.60	23.39	27.74	25.30	21.71	22.11
Gross fixed capital formation (% of GDP)	11.33	16.00	19.02	22.04	26.63	24.07	22.77
Domestic Debt (% of GDP)	2.87	4.15	3.89	3.67	5.42	12.07	16.8

Source: Authors Computation

1.2. Statement of the Problem

Due to low level of internal resources and capital formation, Uganda resorted to borrowing and bridges the shortfalls in internal revenues. Uganda recorded a public debt to GDP ratio of 50.8 percent average between 1986 and 1991 while between 1992 and 2023 the public debt averaged to 53.2 percent. The development fund is required for economic development but most of it is channeled to debt payment, reducing the standard of living of people of the country. The total debt service between 1986 and 1991, the total debt servicing to export of goods and services stood at 64.7

percent for 1986 to 1991 and 12.9 percent for 1992 to 2023. Uganda borrows to finance the shortfalls in capital expenditures to enhance and sustain standard of living of the people. The government borrows from internally and externally whenever there is shortfall in internal savings. This helps the country to take care of macroeconomic issues that include financing of high levels of consumption and investment and the balance of payment budget deficits. The frequent budget deficits have accelerated internal and external borrowing. Public borrowings have become a good source of financing projects and infrastructures for economic growth to enhance the standard of living of the people.

Public debt is meant to increase capital formation which then boosts factor productivity and Gross Domestic Product of the country. Therefore public debt mainly foreign debt should be taken with care because excessive and abuse of external debts has resulted in instability to developing countries, which also has become a threat to sovereignty. Uganda should only borrow for projects that are self-liquidating and adequate to economic growth. It should not burden servicing of the loan and create problems on the economy. In 1986, Uganda came with the Structural Adjustment Programme (SAP) which led to the liberalization of the economy so as grow the GDP.

The large external debt does not always amounts to slow economic growth rather what is important is the country's ability to channel the debt to the priority and productive sectors of the economy. The important point is how Uganda has performed with the loan. Uganda has not done well in its administration and this has exposed her to a high debt servicing threat. When government borrows, it agrees on the terms repayments and this come with conditions that may not be very favorable Uganda. More times lending conditions may result to rising inflation and crowding out of private investment and low economic growth. In 1986 the ratio of total debt service to export of goods and services was 40.7 percent while in 2023 stood at 25.8 percent. It was at its pick in 1990 at 81.4 percent and smallest in 2012 at 1.3 percent. These figures are very high that burdens the economy and likely to affect the economic growth of Uganda. There have been mixed reactions on role of public debts in Uganda's economy. While some commend the use of debt to boost the economy, others share a different view as to what this debt has done to the economy over the years as witnessed by undesirable debt servicing that burdens economic growth. This is what the study is trying to resolve.

1.3.Objectives of the Study

The overall objective of the study is to determine the effects of public debt on the Uganda's economic growth while the specific objectives are:

- To find out the significant effect of external debt on the economic growth of Uganda
- To determine the effect of Domestic debt on the economic growth of Uganda.
- To find out affect of real interest rate on economic growth of Uganda

2. LITERATURE REVIEW

2.1. Theoretical Framework

The theoretical and empirical literature underpinning public debt and economic growth are reviewed here. In theoretical literature, four schools of thought are advanced. Classical, Keynesian, Ricardian and Modern Monetary, that made varied arguments on the causal relationship between public debt and economic growth. The classical school of thought argues that public debt obstructs economic growth because it reduces both the financial discipline of the budget process and the private sector's access to credit according to Broner et al., (2014). Proponents of this theory assert that public debt repayments, typically external debt, crowd out economic growth by discouraging private investment and dissuading potential foreign investors and supported by Saungweme and Odhiambo (2019).

In economic literature concerning relationships between public debt and economic growth of the countries, theoretical and empirical analysis is divided into three main beliefs. The first part is the work of the Keynesians, which emphasizes that the budget deficit and the public debt have a positive influence on the economic situation in the country, mainly through the budget expenditure multiplier. The Keynesian school gives opinions demonstrating the existence of so called crowd-in effect of private expenditure on public spending due to budget deficit and public debt caused by expansionary fiscal policy. They further underline that usually the budget deficit and public debt lead to a boost in domestic production, which makes private agents more optimistic about their future economic situation while increasing their investment.

For a long time, John Maynard Keynes has been the subject of much discussion and debate while the neoclassical and Ricardian schools of thoughts focus on the long run effects and Keynesian view emphasizes the short run effects as pointed out by Bernheim (2015). Keynes argument based on two assumptions: First, there is a possibility of some economic resources being unemployed. Secondly, aggregate consumption is very sensitive to changes in disposable income due to large number of liquidity constrained or myopic individuals in the society. Keynes theories on economics ignored the basic laws of supply and demand. However, unlike economists before to Keynes, he argued that demand drives supply. In Keynes view, insufficient

demand leads to excess supply of goods, which leads to cease production. According to Keynes these objective of stimulating economy could be achieved through fiscal policy; expanding public spending or tax cuts.

Out of these two options Keynes concerned on cutting taxes rather than increasing expenditure to boost the underactive economy. Keynes favored government deficit spending through increasing expenditure only to handle economic depressions, not to uptrend low levels of unemployment created through weak demand. He also favored creating surplus budgets to eliminate government debt when the economy is overly active. Keynes was flexible for both situations concerning short term. The primary concern about large government debt for financing deficit would lead inflation. Keynes advised that inflation could be treated with the help of budget surpluses and restrictive monetary policy. Though Keynes argued for budget deficits to stimulate demand, he also advocated for subsequent budget surpluses to eradicate public debt.

The Keynesian school of thought is considered a mono-causal theory of growth, which posits that debt-financed public expenditures have a fiscal multiplier effect on national output or income. The Keynesian theory is based on the law of increasing state *activity* hypothesis, which postulates that increased government spending enhances the domestic economic activity and crowds in private investment. according to Ncanywa and Masoga (2018). The view of the Keynesian economic theorists suggests that public debt withdraws cash from private investors and does not impact consumption because the borrowed funds are injected back into the economy to increase overall demand through wages and salaries and other capital expense. Therefore, Keynesian economic theorists ignored the challenge of financing budget deficits using either tax cuts or borrowing and emphasized frequent public interference to boost aggregate demand, jobs and production as fueled by government borrowing, either domestically or externally according to Nwannebuike et al. (2016).

Secondary the opposite view on budget deficits and public debt is represented by the neoclassical school, who argue that the budget deficit and public debt have negative effects on economic growth. The neoclassical school analyze consumer spending of households throughout their entire life cycle. They argue that the state, by noting the budget deficit, shifts the burden of taxes to future generations, leading to an increase in present consumption. If full employment is assumed, representatives of the neoclassical school argue that higher consumption means a decrease in the size of savings. Interest rates need to re-establish equilibrium on the capital market. In turn, higher interest rates lead to a decline of private investment, crowding out of private investments, according to Dombi and Dedák (2019).

The Ricardian Equivalence Hypothesis (REH) stipulates that public debts have a neutral impact on economic growth according to Ricardo (1951); (1979), 1990) and Afzal and Alli (2012). This hypothesis is constructed on the assumption that variations in public expenditures and revenues are matched by changes in private savings as argued by Kourtellos et al., (2013). The REH submits that regardless of the financing of public expenditures by debt or tax increase, the impact of the overall economic level on demand is identical Ricardo (1951) said. The theory posits that potential tax will allow debt repayment, that is, by the purchase of bonds issued by the government, individuals will boost their earnings. The REH further explains that when a government reduce taxation and decide to fund her budget deficits through a problem of bonds, households are generally sensitive to increasing consumption as they believe that the government would in future increase taxes so as to repay debts, thus, neither debts nor fiscal development has a lasting impact on economic growth according to Onogbosele and Ben (2016).

The thirdly is the Ricardian equivalence concept that believe that budget deficits and public debt are neutral for economic growth. They reason that the current budget deficit resulting from the reduction of taxes has to be balanced in the future, by raising taxes, thus keeping interest rates and private investment unchanged. These three theories above have led to many disputes at home and abroad about the impact of budget deficit as well as public debt on economic performance of the country. Hence, the aim of the study is to determine the effects of public debt on economic growth of Uganda.

Finally, the Modern Monetary Theory (MMT) is a macroeconomic theory that says government spending should not be restrained by fears of rising debt. It postulates that public debt is merely money the government put into the economy and did not tax back. The MMT suggests that comparing a government's budgets to that of an average household is inaccurate according to Wray (1998). The MMT argues that sovereign governments that issue debt in their own currency cannot be expected to default. This claim is buttressed by further arguments that the central banks of sovereign governments would consistently set interest rates near or at zero that would support deficit financing at lower economic growth rates as argued by Driessen and Gravelle (2019). Governments can print money as a substitute for taxes or borrowing to finance their expenditures. Thus, governments' deficits would be small enough to limit inflation, thereby stimulating economic growth in the short-run supported

Sargent and Hall (2015) pointed that, the national debt is a direct consequences of past deficit in the Federal budget. The national debt increases when there is a budget deficit and decreases when the economy experience budget surplus. They came up with

the following equation for budget deficit: $-DF = (G_o + R) - T = BUS$; where DF is budget deficit, G_o is government spending on goods and services, T is spending on transfer, BUS is budget surplus, and $(G_o + R)$ is total government spending. The above theories reveal that the relationship between external debt and growth is negative.

The empirical literature on public debt and economic growth reveal mixed findings from both cross-country heterogeneity and time-frame considered and in line with each of the hypothesis. These findings addressed the five main hypotheses on the causal relationship between public debt and economic growth. The budget deficit means that public debt is rising but since GDP is also rising, the debt to GDP ratio can change or stay constant. This ratio will depend on the growth rate of public debt and the rate of economic growth of the country. The growing of the national debt to GDP is a risk to the country leads to insolvency. It is extremely important to understand the reasons for the increase in the ratio of public debt to GDP and to find the optimal size of this relation for the country. Therefore, it is necessary to distinguish between a standard budget deficit and a basic budget deficit. The basic budget deficit, also called the primary deficit, is equal to the standard budget deficit less costs associated with servicing public debt according to Misztal (2021).

$$SB = G + (i \cdot PD) - T \quad (1)$$

$$PB = G - T \quad (2)$$

Where: SB – standard budget deficit; PB – basic budget deficit; PD- public debt; G – government expenditure; i – interest of public debt; T – government incomes (tax and non-tax).

As a ratio of public debt to GDP,

$$PD/GDP = (G - T / GDP) + (i - \Delta GDP / GDP) \cdot (PD / GDP) \quad (3)$$

Where: GDP – Gross Domestic Product. Hence, the public debt-to-GDP ratio increases when the public debt rate is higher than the GDP growth rate under the conditions of a basic budget deficit. To reduce the ratio of public debt to GDP, there must be a surplus in the basic balance of the state budget, higher income than state expenses; otherwise GDP must grow at a faster rate than the cost of servicing public debt. Because of liberalization of international capital flows, savings are seeking the most efficient use regardless of location. Foreign loans are also called basic transfers (BT) and are define as a variation between net capital inflows and interest payments on foreign debt.

$$BT = dD - rD = D(d - r) \quad (4)$$

where: BT - basic transfers; D - total foreign debt; d - foreign debt growth rate; r - average annual interest rate; dD - net capital inflow; rD - total annual interest payments.

Equation (4), basic transfers mean profits for the country if $d > r$ or losses if $d < r$. If the inflow of foreign loans is associated with an increase in productivity, the rate of return exceeds the average level of interest rate in the country, and basic transfers are positive, then the increase in foreign debt does not have long-term, negative impact on the economic growth in the country. Taking into account changes in foreign debt over time, this situation can be presented as below:

$$(D_t - D_{t-1}) = Y_t - rD_t - C_t - I_t - G_t \quad (5)$$

Foreign savings are one of the sources of internal accumulation in economy. In particular, developing countries are characterized by inadequate accumulation of internal capital due to the presence of a kind of vicious circle in these countries associated with low efficiency, low income and low savings. Hence, this state requires technical and financial assistance from highly developed countries to fill this gap in capital resources. Growing savings and investments in the economy lead to economic growth. It should be noted, however, that economic growth will not appear until capital resources reach a specific level.

As capital, investment and production rise, the level of savings also grows. After exceeding a certain level of growth in both capital and savings, sufficient conditions will appear to trigger economic growth. The authors of the double gap theory proved that investment is a function of savings, and therefore in developing countries the level of national savings is insufficient to finance the necessary investments to ensure economic growth. On the other hand, if foreign debt is so large that the sum of internal production, consumption, investment and government expenses is smaller than basic transfers, then this situation leads to a debt crisis equation (6).

$$C_t + I_t + G_t - Y_t < dD_t - rD_t \quad (6)$$

A debt crisis means a situation in which a country is unable to service its foreign debt. This situation may be temporary, in which case it is referred to as a liquidity crisis or it may be permanent, referred to as a solvency crisis. High public debt can cause serious problems in the economy. It should be noted that public debt as such does not have to be detrimental to the economy. Depending on the situation, increasing public debt can increase or decrease prosperity. The absolute amount of public debt is not important in this case, but the share of public debt in relation to gross domestic product is important. So, it is important not to maintain the full financial independence of the state, but to guarantee the financial security of the state, i.e. to maintain the ability of the state to raise cash when it is needed.

2.2. Empirical literature review

As for the results of empirical studies on the impact of public debt (including foreign ones) on economic growth, it has to be stated that in most cases the negative impact of high public debt on growth has been confirmed, while only a small part of the analyzes have revealed no significant relations cause and effect between economic growth and sovereign debt according to Akram (2011). At the same time it must be stated that government debt cannot be compared with private debt. This applies in particular to future public debt burdens, which are not identical to the tax burden that future generations will incur to finance amortization and interest. The future burden of debt depends in particular on the extent to which private investment is displaced by government spending as a result of borrowing in the public sector and the size of public investment financed by loans. Given the various reasons and macroeconomic interdependence, there is no specific percentage for the ratio of public debt to GDP that can be defined *ex ante* as a threshold over which governments should expect deterioration in credit conditions on the capital markets and worsen the situation in the whole economy. This means that high local currency loans are, for example, much less dangerous than non-residents' foreign currency debt.

Chindengwike (2021) this study was to examine the impact of foreign debts on economic growth in Tanzania: Evidence from 2000 to 2019. A causal relationship research design was used in which time series data of 18 years were used to create data from variable. The research takes on the annual data from financial year 2000/01 to 2018/19. The sample size for the study was 18 observations. The data collected from different reliable sources which included the Ministry of Finance and Planning (MoFP), World Bank (WB) and the Bank of Tanzania (BOT). The analysis of the data obtained revealed that a total foreign debt stock has a positive impact on economic growth. The long-term external debt stock does not have significant effect on economic growth. In difference, a short-term external debt appears to have significant impact on economic growth. However, the effect on the economy is minimal as evidenced by the dimension of coefficient. He concludes that sustainability of the foreign debts was still below the required verge of sustainable foreign debts. Foreign debts have a positive impact on the economic growth while the long term impacts have insignificant impacts on economic growth. In contrast, the short term effect appears to have a positive significant impact.

This study by Blanchard (2019) focuses on the costs of public debt when safe interest rates are low. It develops four main arguments. First, I show that the current US situation, in which safe interest rates are expected to remain below growth rates for a long time, is more the historical norm than the exception. If the future is like the past, this implies that debt rollovers, that are the issuance of debt without a later

increase in taxes, may well be feasible. Put bluntly, public debt may have no fiscal cost. Second, even in the absence of fiscal costs, public debt reduces capital accumulation, and may therefore have welfare costs. I show that welfare costs may be smaller than typically assumed. The reason is that the safe rate is the risk-adjusted rate of return to capital. If it is lower than the growth rate, it indicates that the risk-adjusted rate of return to capital is in fact low. The average risky rate however also plays a role. I show how both the average risky rate and the average safe rate determine welfare outcomes. Third, looks at the evidence on the average risky rate, i.e., the average marginal product of capital.

While the measured rate of earnings has been and is still quite high, the evidence from asset markets suggests that the marginal product of capital may be lower, with the difference reflecting either miss-measurement of capital or rents. This matter for debt: the lower the marginal product, the lower the welfare cost of debt. Fourth, It discusses a number of arguments against high public debt, and in particular the existence of multiple equilibrium where investors believe debt to be risky and, by requiring a risk premium, increase the fiscal burden and make debt effectively more risky. This is a very relevant argument, but it does not have straightforward implications for the appropriate level of debt. My purpose in the lecture is not to argue for more public debt, especially in the current political environment. It is to have a richer discussion of the costs of debt and of fiscal policy than is currently the case.

According to Boskin (2020), the Traditional View (TV) of large deficits and debt is they have large economic costs, save in a recession and early recovery, because they crowd out investment and lower future income, and taken to extremes, can cause inflation and even a financial crisis. He concludes they may have no fiscal cost and increase welfare. I presented evidence of looming large deficit and debt/GDP increases and their effects on recovery from recession, interest rates and long-run growth. he discussed several substantive issues with the “no fiscal cost” view that limit its applicability, including accounting neither for the effect of increasing debt on interest rates and growth nor the pre-existing primary deficit, debt and their projected evolution; disputable readings of the data; strong assumptions and parameter values driving the results; and a political economy of deficits and debt likely to lead to even larger debt ratios. Acknowledging uncertainties, the evidence still suggests that large increases in the debt ratio could lead to much higher taxes, lower future incomes and intergenerational inequity.

Daher et al (2020) examines whether a debt-to-GDP threshold exists in the public debt and economic growth relationship for 20 Middle East and North Africa (MENA) countries from 1990 to 2016 using the threshold estimation technique. The empirical results reveal that there is a threshold effect in the public debt and economic growth

relationship. The MENA region's debt-to-GDP threshold value as a developing region is lower than the debt threshold computed by earlier studies for developing countries. We found that the effect of public debt on economic growth is significant and positive only below the threshold value of debt-to-GDP. More precisely, debt has a promoting influence on economic growth when the debt is less than 58% of the GDP. This finding indicates that the relationship between public debt and economic growth is contingent on the debt-to-GDP ratio. Importantly, policymakers need to be more prudent when establishing a policy regarding debt issues.

Heimberger (2021) said that the effect of higher public debt levels on economic growth has received much attention and the literature partly points to contradictory results. His paper applied meta-regression methods to 816 estimates from 47 primary studies. The unweighted mean of the reported results suggests that a 10 percentage points increase in public-debt-to-GDP is associated with a decline in annual growth rates by 0.14 percentage points, with a 95% confidence interval from 0.09 to 0.19 percentage points. However, we cannot reject a zero effect after correcting for publication bias. Furthermore, the meta-regression analysis shows that tackling endogeneity between public debt and growth leads to less adverse effects of public debt. In testing for nonlinear effects, our results do not point to a uniform public-debt-to-GDP threshold beyond which growth slows. Threshold estimates are sensitive to data and econometric choices. These findings imply a lack of evidence of a consistently negative growth effect of higher public-debt-to-GDP. The main policy implication is that there should be caution with regard to "one-size-fits-all" fiscal policy prescriptions in dealing with higher public debt levels.

Jacobs et. al. (2020) investigated the causal relationship between public debt ratios and economic growth rates for 31 EU and OECD countries. We estimate a panel VAR model that incorporates the long-term real interest rate on government bonds as a vehicle to transmit shocks in both the public debt to GDP ratio and the economic growth rate. We find no causal link from public debt to growth, irrespective of the levels of the public debt ratio. Rather, we find a causal relationship from growth to public debt. In high-debt countries, the direct negative impact of growth on public debt is enhanced by an increase in the long-term real interest rate, which in its turn decreases interest-sensitive demand and leads to a further increase in the public debt ratio.

Yusuf and Mohd (2021) investigated the effect of government debt on Nigeria's economic growth using annual data from 1980 to 2018 and the Autoregressive Distributed Lag technique. The empirical results showed that external debt constituted an impediment to long-term growth while its short-term effect was growth-enhancing. Domestic debt had a significant positive impact on long-term growth while its short-

term effect was negative. In the long term and short term, debt service payments led to growth retardation confirming debt overhang effect. The findings suggested that the government should direct the borrowed funds to the diversification of the productive base of the economy.

Swamy (2020) analyzed the dynamics of government debt and economic growth for a longer period (1960–2009). It spans across different debt regimes and involves a worldwide sample of countries that is more representative than that of studies confined to advanced countries. The study observes a negative relationship between government debt and growth. The point estimates of the range of econometric specifications suggest that a 10-percentage point increase in the debt-to-gross domestic product ratio is associated with 23 basis point reduction in average growth. The results establish the nonlinear relationship between debt and growth. Further, by employing panel vector autoregressions approach, this study decomposes the cause and effect relationship between debt and growth and offers an answer to the question: Does high debt lead to low growth or low growth leads to high debt? The results derived from the impulse–response functions and variance decomposition show the evidence of the long-term effect of debt on economic growth. The results indicate that the effect is not uniform for all countries but depends mostly on the debt regimes and other important macroeconomic variables like inflation, trade openness, general government final consumption expenditure, and foreign direct investment.

Abubakar and Mamman (2021) examines the effect of public debt on the economic growth of OECD countries by disentangling the effect into permanent and transitory components. The study covers 37 OECD countries. The Mundlak decomposition was employed to decompose the effect of public debt into its transitory and permanent effect on economic growth. To account for potential endogeneity problem, the Hausman and Taylor (HT) estimator was employed to estimate the decomposed model. The study disaggregated the OECD model into country group models for further analysis of the dynamics of the relationship between the variables. The findings of the study reveal that in the full OECD model public debt exerts a significant negative permanent and positive transitory effect on economic growth. The magnitude of the negative permanent effect of debt was found to be larger than the positive transitory effect. The estimates of the disaggregated models reveal that though public debt has a negative permanent effect across all the country groups, it was not the case for the transitory effect of debt. Also, a net public debt model was estimated, and its effect on public debt was found to be largely insignificant, exhibiting a Ricardian-like behavior.

Were and Mollel (2020) provided an analysis of public debt and debt sustainability in Tanzania, focusing on external debt. Though current and previous analyses using the

IMF-World Bank debt sustainability framework indicate low risk of public external debt distress, these analyses are sensitive to exchange rate volatility and export shocks and are predicated on strong assumptions of robust future economic growth and reduced government borrowing. Moreover, empirical evidence of debt sustainability based on the fiscal reaction function approach is weak. The challenge lies in ensuring debt remains sustainable, given the need to scale up development expenditure to address infrastructure gaps amid dwindling donor financing and vulnerability to exogenous shocks, particularly in light of the COVID-19 pandemic. Rapid debt accumulation particularly commercial debts could expose Tanzania to external risks. Leveraging on concessional borrowing, efficient public investment, enhanced debt management, and domestic resource mobilization are critical.

Saungweme and Odhiambo (2019) surveyed existing theoretical and empirical literature on the impact of public debt on economic growth in both developing and developed economies. The aim of the survey was to add to the existing debate on the relationship between public debt and economic growth in world economies. The survey found diverse and, in some cases, inconsistent evidence on the relative impact of public debt on economic growth. Although the majority of the surveyed literature supports the negative effect of public debt on economic growth, several other studies have found a long-run positive impact of public debt on economic growth through the fiscal multiplier effect. The article also found that a few other studies support the Ricardian Equivalence Hypothesis (REH), which states that the relationship between public debt and economic growth is nonexistent. Overall, it concludes that theoretical models and empirical studies yield inconclusive results depending on a set of heterogeneous factors, including the level of development of the sampled countries, data coverage, methodology used, and the researchers' choice of control variables, among other factors. This literature survey differs predominantly from other earlier studies in that it provides a comprehensive review of the linkage between government debt and economic growth, in addition to disentangling public debt into two components, domestic and foreign, and expounding on their relative effects on economic growth.

Sansa (2020), using the multiple linear regression model on time series data covering 2000–2018, found a significantly negative influence of government debt on economic growth in Tanzania. He established that the Tanzania public debt and economic growth are growing simultaneously however the economic growth achievements do not reflect the poverty reduction initiatives in Tanzania. Despite rapid growth of the public debt and poverty for Tanzania no studies have been undertaken to investigate the impact of the public debt on economic growth and poverty in Tanzania. His study aimed at evaluating the impact of the public debt on economic growth and poverty

during the period from 2000 to 2018 in Tanzania. His study employed the multiple linear regression models to evaluate the impact of the public debt on economic growth and poverty during the period from 2000 to 2018 in Tanzania. Time series data from the Bank of Tanzania Annual Reports and the World Bank data indicators during the period from 2000 to 2018 for Tanzania have been used by the study. On investigating the impact of public debt on economic growth and poverty the study assumes public debt to be an independent variable while Gross domestic product (GDP) and poverty to be dependent variables of the study. The findings of the study were indeed very impressive. The study findings showed that there is a negative and insignificant correlation between the public debt and all the study's dependent macroeconomic variables (Gross domestic product and poverty) during the period from 2000 to 2018 in Tanzania. The meaning is that public debt does not have an impact on the economic growth and poverty reduction during the period from 2000 to 2018 in Tanzania.

Salmon (2021) said that, notable pattern emerges from the impact of public debt on economic growth research is that high levels of public debt have a negative impact on economic growth. The main objective of this survey was to review the existing economic literature published during the period 2010 to 2020 on the relationship between public debt levels and economic growth. In addition, the survey was review the claim that there is a nonlinear debt threshold above which debt has a significant deleterious impact on growth rates. This article explains how studies were identified for the survey sample, provides an overview of the theories of how public debt impacts economic growth, reviews the findings of the 40 studies in the survey sample, and concludes with some recommendations for future research. He concluded that given that some studies in the survey find that growth effects depend largely on institutional quality, future research should focus on heterogeneity, and should also seek to explore the various channels through which public debt may hinder economic growth, such as a focus on investment and productivity channels. This approach would provide a more rigorous explanation for the various mechanisms through which debt may reduce growth. While most studies in the survey seek to identify common nonlinear threshold levels, some studies that instead focus on country specific dynamics find that threshold levels can vary significantly across countries. Developing countries should aim to keep their debt ratios below 60 percent of GDP.

Wanniarachchi (2020) studied the nexus among External Debt and Economic Growth in South Asia and said that given the low domestic savings rate of these economies, they are increasingly compelled to invest significant resources in public infrastructure in order to maintain sustainable growth momentum. At the same time, those countries are invited to enrich by integrating with global synergies in the

fields of maritime, trade, and financial initiatives. However, as the recent controversy over the debt-growth association is inconclusive to date; preserving the external debt exposures at an optimal level is incumbent. The study reviewed annual observations of independent cross-sections of South Asia during the period 1981-2017 in order to find the external debt-growth relationship. The results suggest that there is a statistically significant negative association between external debt and economic growth. Also, it has been observed that a significant nonlinear relationship exists for lower-middle-income countries.

Rahman, Ismail and Ridzuan (2019) examined whether there exists mutual consensus on the effects of public debt on the economic growth of a country or group of economies. A systematic review on related articles from SCOPUS database was conducted by adopting a standard procedure in the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA), namely identification, screening and eligibility. Thirty-three articles were chosen as the main articles to be reviewed. It was found that there is no mutual consensus on the relationship between public debt and economic growth. The relationship can be positive, negative or even non-linear. Besides, the 90% threshold as argued in the Reinhart-Rogoff hypothesis is also not applied across all countries. The findings may help governments and policymakers to design their fiscal policy by investigating how existing debts affect the growth level. Future studies should investigate the effects of public debt on the economic growth in the upper-middle-income economies. These economies were least studied in this context.

Pegkas, Staikouras and Tsamadias (2020) empirically investigates the causal relationship between economic growth and several factors (investment, human capital, trade openness and public debt) in the Eurozone countries, where imbalances persist several years after the financial crisis. The results reveal a long-run relationship between variables and public debt, as investment, human capital and trade openness positively affect growth. On the other hand, there is a negative long-run effect of public debt on growth. Furthermore, the results indicate that there is long-run unidirectional causality running from investment, trade openness and human capital to growth and bidirectional causality between public debt and growth. The overall results reveal that Eurozone countries should base their growth strategies on fiscal consolidation, increasing exports, correcting the use of public investment and improving the quality of human capital, especially in higher education.

Law et. al. (2021) conducted a study using a dynamic panel threshold technique and provides new evidence on the threshold value of the ratio of public debt to the gross domestic product in seventy-one developing countries from 1984 to 2015.

They showed a threshold debt value of 51.65 percent, which is much lower than in the previous literature. The debt has a negative and statistically significant impact on economic growth at a high level of public debt but an insignificant effect at a low level of public debt. The findings also reveal that better institutions tend to minimize the negative impact of public debt on economic growth. For further robustness checks, this study uses different estimations, without outlier sample countries, and panel quartile regression, and the findings are unaltered. Our results can be useful for policy makers in designing appropriate fiscal policies to maximize economic growth.

Kengdo (2023) investigates the effect of military spending and public debt on economic growth in Cameroon over the period 1980–2021. Due to the nature of the data, the methodology involves Auto Regressive Distributed Lag (ARDL) models. The results indicate that public debt and military expenditures harm economic growth in the short and long runs. The findings also reveal that the interaction between public debt and military spending reduces growth efforts and highlight the existence of sustainability thresholds for public debt at 56.42 percent of GDP and also for military spending (between 1.29% and 1.47% of GDP), *ceteris paribus*. In addition, this study shows that official development assistance and the size of the government enhance economic growth, while natural resource rents, corruption, and inflation contribute negatively to growth. Robustness checks show that the interaction between natural resource rents and ethnic tensions reduces growth efforts.

The goal of fiscal policy should be to ensure a balanced public debt, rather than reducing it to zero or to a predetermined absolute level. Balanced debt is affected by various factors. One of them is economic growth. High economic growth automatically reduces the ratio of public debt to GDP, generating higher tax revenues and leading to lower social spending contributes to lower deficits, or even government surpluses. Moreover, if the real interest rate on public debt is permanently lower than the real growth rate, then the debt is balanced. On the other hand, if the real interest rate is higher than the real growth rate in the long run, then the primary balance, i.e. the difference between current public income and public expenditure less interest on existing public debt, must show a surplus. Otherwise, the share of interest payments in the public budget will increase and will limit the scope of the public sector. Some economists, such as Modigliani, point out that growing public debt usually leads to a slowdown in economic development. The low levels of public debt had a positive influence on economic growth, while high levels of debt had a negative impact on the rate of economic growth in the country as argued by Fonseka and Ranasinghe (2007).

Misztal (2021) concluded that high public debt can cause serious problems in the economy. It should be noted that public debt does not have to be harmful to the

economy. Depending on the situation, growing public debt can increase or decrease prosperity. The absolute amount of public debt is not important, but the share of public debt in relation to gross domestic product is important. Therefore, it is important not to maintain the full financial independence of the state, but to guarantee the financial security of the state, that is, to maintain the ability of the state to obtain cash when the need arises.

According to Gohar and Butt (2012), the high volume of debt servicing in the emerging economies has been a big problem in economic development. Most times the amount used to service the debts has grown more than the debt principal amount. Nigeria is not left out in this problem as her debt service obligations have caused serious economic burden to the growth and development of the country as pointed out by Audu (2004) and Adesola (2009). Historically the Nigeria's debt service burden started in the late 1970s when there was fall in world oil prices, although before this date Nigeria had already borrowed small loans from: World Bank in 1958, US\$28m; Paris Club debtor nations in 1964, Italy US\$13.1m; with the first big debt of US\$1b in 1978 from International Capital Market.

As Pattilo, Poirson and Ricci (2002), put it borrowing has the effect of increasing the economic growth of a country with less burden but such positive effects erodes out when the debt grows beyond the desirable limit. According to Fosu (2009) such high debt service will also mean starving important sectors of the economy which resultant negative effect on economic growth and development.

Adam and Bevan (2005) find interaction effects between deficits and debt stocks, with high debt stocks exacerbating the adverse consequences of high deficits. In a simple theoretical model integrating the government budget constraint and debt financing, they find that an increase in productive government expenditure, financed out of a rise in the tax rate, will be growth-enhancing only if the level of (domestic) public debt is sufficiently low. An important channel through which public debt accumulation can affect growth is that of long-term interest rates. Higher long-term interest rates, resulting from more debt-financed government budget deficits, can crowd-out private investment, thus dampening potential output growth. Indeed, if higher public financing needs to push up sovereign debt yields, this may induce an increased net flow of funds out of the private sector into the public sector.

Hassan and Akhter (2012) in their study on public debt and economic growth in Bangladesh for the period 1980–2012 found out that there was no strong statistical evidence regarding the negative impact of external debt on the GDP growth. The study used error correction model and vector error collection model for this analysis. They revealed that there exists a significant positive relationship between total public

debt and investment, and between total public debt and government's reserves. They also established that there exists a negative relationship with the manufacturing sector and government subsidy. However, no strong statistical evidence was found regarding the negative impact of external debt on GDP growth. But with domestic debt, it was found negatively related to GDP with little statistical significance.

Cecchetti et al. (2010) showed that in cases of increased public debt, there is a high possibility of negative sustained economic growth and an unstable economic environment. In addition, Kumar (2010) further established that a persistently high level of public debt can trigger detrimental effects on capital accumulation and productivity which potentially has a negative impact on economic growth. They found that over 85% of debt brings in negative effects on the country's economic growth. They stressed that this is manifested through different channels like higher long-term interest rates, higher taxation, higher inflation and greater uncertainty and vulnerability to crises.

Muinga (2018) conducted a study to examine the relationship between external public Indebtedness and economic growth in Kenya. She used the OLS method in data analysis. The study used data from 1970 to 2010 and the results indicated that external debt and interest payments on external debt contribute negatively to economic growth in Kenya and the simulation results showed that any percentage increase of external debt holding other factors constant will reduce the GDP hence slow economic growth. The study recommended that the policies of debt management in Kenya be reviewed and improved.

Chongo (2013) conducted a study to analyze the impact of increasing public debt on Zambia's economic growth covering the period 1980 to 2008 and the study analyzed channels through which public debt is said to have an impact on economic growth namely through private investment, public investment and domestic saving. The vector error correction model approach was employed and the results from the analysis confirmed a long-run negative relationship between public debt and economic growth. The study recommended that the government should put in place a public debt law to rectify any borrowing requirements hence this would help in ensuring that all borrowing by the government is targeted toward the financing of projects that have a high return which would result in crowding in of private investments well as ensure fiscal sustainability. What is noted in the reviewed studies is that the direction of the impact/effect of public debt on economic growth is not clear, some studies portray increased public debt as a menace to development see Hassan (2012), Cecchetti et al. (2010) and El-Mahdy and Burhanudin et al. (2017) argue that even if some people appreciate public role in boosting economic growth for the case of Uganda,

no empirical evidence is yet provided. Some researchers like Ssempala et al. (2020), Ogole (2018) and Nassali (2018) estimated the short-run and the long-run effect of the public on Uganda's economic growth.

Ssempala et al. (2020) when studying the impact of public debt on growth of Uganda, found the speed of adjustment in the short run negative but greater than 1. It indicates a problematic result that likely signifies a misspecification in the model, meaning the model does not capture the relationship between variables accurately and needs further review. This is serious because in an ARDL model, the speed of adjustment coefficient represents how quickly a variable returns to its long-run equilibrium after a shock; a value between 0 and 1 signifies a gradual adjustment process, with 1 representing immediate full adjustment. A negative speed of adjustment indicates that the model predicts a deviation from equilibrium will be further amplified over time, which is not economically intuitive and suggests a problem with the model specification. A value greater than 1 implies that the model predicts a variable will overshoot its long-run equilibrium in response to a shock, which is also not realistic in most economic scenarios. To overcome this, you need to ensure data is correctly formatted and free from outliers or inconsistencies. The stationarity of the data must be checked for potential issues with stationarity of the variables. In addition the correct selection of lag lengths for the variables must be checked. Ensure that you have included all relevant variables in the model and excluded any irrelevant ones and examine potential for endogeneity bias, where variables might be influencing each other simultaneously.

According to Saungweme and Odhiambo (2019) empirical work supports the hypothesis that the level of public indebtedness is determined by the pace of economic growth. This line of argument is underscored by the work of Donayre and Taivan (2017) which established that the causal relationship between public debt and real GDP growth is intrinsic to each country. They further disclosed that in highly market-driven economies, the direction of causality is from low GDP growth to public debt; however, in more socialist states, causality runs either from low GDP growth to public debt accumulation or is bi-directional.

Studies by Reinhart et al., (2012); Kobayashi (2015); Anning et al., (2016); Kobayashi and Shirai, (2017), confirmed that hypothesis that economic growth stagnation is caused by high public debt was established. This hypothesis posits that public debt crowds out private investment through the high cost of capital and consequently strikes economic growth. Therefore excessive public debt reduces GDP growth rates by discouraging private sector investment. Owusu-Nantwi and Erickson (2016) and Donayre and Taivan (2017) tested the third hypothesis that the direction of causality between public debt and economic growth is bi-directional. This hypothesis

is sometimes called the feedback Hypothesis. The relationship can originate from sides, public debt and economic growth.

Studies like Eberhardt and Presbitero (2015), Ewaida (2017), Huang et al. (2018) and Saungweme and Odhiambo (2019) empirically showed consistency with the hypothesis that public debt has a positive causal relationship with economic growth. This hypothesis suggests that economic growth increases as the public debt level rises. The fifth hypothesis suggests that there is no causality between public debt and economic growth. This hypothesis is also known as the neutral hypothesis or debt-growth neutrality hypothesis and it is empirically proved by Reinhart and Rogoff (2010), Jalles (2011) and Panizza and Presbitero (2014).

According to Cecchetti, Mohanty and Zampolli (2011) study of 59 developing countries and 24 economically developed countries came to the conclusion that in the case of developing countries there is always a negative and significant relationship between total public debt and economic growth. However, in the case of economically developed countries there was no significant relationship between public debt and economic growth.

Pathberiya and Wijeweera (2005) in their study of the interdependencies between economic growth and public debt confirmed the presence of a relationship between economic growth per capita and public debt in relation to GDP in the countries belonging to the Organization for Economic Cooperation and Development (OECD) in 1988-2001. Moreover, he stated that this relationship is always two-way.

Shah and Pervin (2012) studied the causal relationship between fiscal deficits and economic growth in seven selected West African countries in the 1980s of the 20th century in 1980–2005. The results obtained were inconclusive. It turned out that there is no causal link between the budget deficit and economic growth in three of the analyzed countries. The results of the study also revealed the presence of a two-way negative relationship between budget deficits and economic growth in the three successive countries.

Kumar and Woo (2010) investigated on highly developed and developing countries, revealed the opposite relationship between initial public debt and economic growth in 1970–2007. The results of their analyzes proved that the rise in the ratio of public debt to GDP by 10 percent was accompanied by a decrease in real GDP per capita of about 0.2 percentage point during one year. It should also be noted that many empirical analyzes carried out in recent years point to the existence of a non-linear connection between public debt and economic growth. Well, the results of these studies indicate that public debt has a positive effect on economic growth, but only to a specific level of debt, beyond which the impact of public debt on the GDP growth rate is negative.

Smyth and Hsing (1995) examined the influence of public debt on economic growth in US in the 1980s and 1990s. These authors assessed the optimal level of public debt for the US economy, i.e. the level of public debt that maximizes economic growth. Their findings suggest that the optimal level of public debt in relation to GDP for the US economy was 38.4% in the period considered. Similar conclusions were drawn by Elbadawi, Ndulu and Ndung (1997), examining the relationship between public debt to GDP in 26 countries of Sub-Saharan Africa in 1980-1994. They have proved that public debt has a positive influence on economic growth in these countries, but only up to 97% of GDP. In contrast, Pattillo, Poirson, Ricci (2002), examining 93 developing countries in 1972– 1998, showed a positive impact of public debt on economic growth to only 35-40% of GDP.

Reinhart and Rogoff (2010) in an analysis of 44 economically advanced and developing countries in the last two hundred years, stated that high public debt in relation to GDP (over 90%) was accompanied by lower economic growth in both developed and developing countries. In addition, in the case of developing countries, a relatively high level of external debt in relation to GDP (over 60%) had a negative impact on economic growth.

Ahlborn and Schweickert (2018) found out that different economic systems in countries with comparable levels of public debt are a major source of heterogeneity in terms of the impact of public debt on growth. In continental countries (the so-called core countries of the European Union) the greater impact of reducing public debt on economic growth is greater than in liberal countries. In liberal (Anglo-Saxon) economies, public debt has a neutral or positive effect on economic growth. On the other hand, the Nordic (Scandinavian) countries are characterized by a non-linear relationship between public debt and economic growth, with negative effects of public debt at debt levels close to 60% of GDP.

Ash, Basu, and Dube (2020) provide a comprehensive assessment of the relationship between public debt and GDP growth in the postwar advanced economies. They used the timing of changes in public debt and growth to account for endogeneity, and find little evidence of a negative relationship. Semi-parametric estimates do not indicate any threshold effects. Finally, they reconcile results with other recent, influential papers that found a substantial negative relationship, especially when public debt exceeds 90 percent of GDP. These earlier results appear to derive mostly from peculiar parametric specifications of nonlinearities, or use of small samples which amplify the influence of outliers. Perasso (1992) looked at the twenty most heavily indebted countries in the world economy with an average income level, examined the relationship between economic growth and external debt in 1982-1989. The results of the study showed

that the adequately conducted economic policy in the country had a greater impact on investment growth and economic growth in highly indebted countries than the reduction of external debt service obligations.

Mugobera and Mahebe (2024) looked at the ability of the SSA economies to generate sufficient domestic revenues to spur their desired economic growth which is limited resulting into fiscal deficits. They established that External Debt has provided alternatives to the fiscal deficits prevalent in SSA economies. Dividends from external debt investments have been unevenly witnessed among the SSA countries. Regions with better institutional quality continue to reap considerable dividends from external debt investments while SSA economies continue to accumulate external debt with sluggish economic performance. This study made use of the Generalized Method of Moments (GMM) to examine the role played by institutional quality on the nexus between external debt and economic growth on a panel of 28 SSA countries over the period 2005 - 2021. Empirical results indicate that institutional quality influences a positive and significant relation between external debt and economic growth. Policy makers in SSA countries should therefore strive to improve on institution

Médard (2018) demonstrated that public over indebtedness negatively impacts on economic activity in developing countries. From estimation by the generalized moments' method in the system of the relationship between economic growth and outstanding public debt on data of the Gabonese economy, he concluded that an increase in the public debt in this country, causes a deceleration of economic activity, thus reflecting a scissor effect between public debt trend and that of economic growth.

Cohen (1993) analyzed the link between external debt and investment in developing countries in the 1980s. Research has shown that there is a comparatively small impact of the size of foreign debt on the size of investment in these countries. The research also revealed the effect of displacing domestic investments (crowding out effect) by spending on foreign debt servicing.

Chowdhury (2018) argued that the negative causal relationship that exists between the external debt accumulation and GDP growth rate was responsible for an economic recession. The study examines the causal relationship among external debt, foreign exchange reserves and economic growth of Bangladesh economy. Empirical analyses are carried out with time series econometric techniques using data over the period of 1976 – 2015. It also suggests that there is only unidirectional causality running from external debt to foreign exchange reserve. In other cases there is no causality. Therefore, foreign exchange reserve in Bangladesh has a stronger role in the growth process. The study recommends that policy makers should take appropriate steps to enhance the foreign exchange reserve to achieve the long run economic growth.

Fosu (1996) studied the relationship between economic growth and foreign debt in sub-Saharan African countries in the period 1986-1990. The study showed that high-debt countries recorded a one-percentage-percent annual decline in GDP growth as a result of the high level of external debt. He explored the impact of external debt on economic growth, finding a nonlinear relationship and confirming the Debt Laffer curve hypothesis, suggesting that high debt burdens can hinder growth, especially through their effect on factor productivity and investment mix.

Deshpande (1997) analyzed the connection between foreign debt and investment size in 13 highly indebted countries during the 1991-1971 period using the simple least squares method. Studies have confirmed a negative correlation between the size of external debt and investment in these countries.

Karagol (2002) studied short-run and long-run interaction between economic growth and external debt servicing expenses in Turkey in the period 1956-1996 using cointegration techniques and the standard production function model. The outcome of the study revealed the negative impact of foreign debt servicing on long-term economic growth. This relationship was as well confirmed by the results of Granger's causality tests.

The discovery of commercial quantities of oil and gas off the coast of Ghana in 2008 gave rise to high expectations and optimism for improved prospects for rapid economic development and poverty reduction. There were public concerns for the proper management of the increased foreign exchange inflows and the transparent use and a possible Dutch disease, which could reduce competitiveness in key export and import-competing sectors and adversely impact the livelihoods of major parts of the population. Ackah et al. (2013) empirically analyzed over the 1970-2011 period using CVAR estimations within a fiscal response framework. The main finding is that oil revenues have the potential to impact positively on macroeconomic performance. This is based on estimated government's fiscal behavior or response with respect to foreign aid and tax revenue. The paper concluded by noting that the realization of these benefits is not guaranteed and will depend crucially on whether the implicit assumption that the incentives associated with oil revenues will be similar to that of foreign aid or tax revenue.

Clements, Bhattacharya and Nguyen (2003) confirmed the negative impact of foreign debt on economic development as a result of the effect of displacing domestic investment by foreign investment. This situation was due to the fact that the high cost of servicing foreign debt contributed to the decrease in the resources and public investment in the country.

Folorunso and Felix (2008) investigated the impact of foreign debt and the costs of servicing it on economic growth in Nigeria and South Africa between 1980 and 2007.

The study was based on the neoclassical model of economic growth and using the classic and double least squares method confirmed the negative impact of foreign debt and its costs on economic growth in all the countries. They revealed the negative impact of foreign debt on economic growth in Nigeria. Also studies conducted by Atique and Malik (2012) study revealed a negative relationship between national sovereign debt and economic growth and a similar dependency between external debt and economic growth. Moreover, it turned out that growing foreign debt slowed economic growth to a much greater extent than domestic debt.

Muoki and Fatoki (2021) examined the effect of public debt on the economic growth of three East African countries using time series data spanning 57 years (1963–2019). Their results indicated that domestic debt significantly negatively affected economic and concessional debt, and external commercial debt had a positive effect. In their estimation, Ehikioya et al. (2020) found a long-term equilibrium relationship between external debt and economic growth in Africa and the outcome revealed that over a certain threshold, the short-run converges to equilibrium in the long run, and external debt will begin to affect African economic growth negatively.

Ayana et al. (2023) examined the effect of external debts on the short- and long-run economic growth of 39 SSA countries from 2011 to 2021. The findings revealed that external debt has a significant negative impact in the short and long run. Similarly, as Yusuf and Mohd (2021) investigated the effect of government debt on Nigeria's economic growth using annual data from 1980 to 2018. The findings from the autoregressive distributed lag technique indicated that external debt limited long-term growth while enhancing short-term growth. Also, the findings indicated that domestic debt had a significant positive impact on long-term growth, while its short-term effect was negative.

Mohsin et al. (2021) assessed the relationship between external debt and the economic growth of the selected countries in the South Asian region. Also, it utilized multiple methods such as the panel ordinary least square (OLS), fixed effect, quantile regression, robust output regression, and the World Bank data from 2000 to 2018. The results showed that while external debt stock has a favorable effect on economic growth, external debt has a negative effect. The results were supported by a rigorous regression analysis, which produced impact estimates for external debt service and total external debt of 39% and 31%, respectively. Furthermore, threshold analysis shows that external debt becomes a drag on growth because of a country's growing indebtedness and causes a more significant negative effect on growth than domestic debt.

Also Abate (2023) in Ethiopia analyzed the relationship between debt and economic growth using ARDL models and time series data for the period 1982–2018.

The findings indicated an asymmetric relationship between the indicated variables, whereby it was found that the major positive shock in debt is favorable to economic growth. In contrast, the effect of a minor and negative shock on debt is unfavorable. Also, the results showed that debt has a threshold effect that makes it advantageous for Ethiopia's economic growth when it is significantly lower than 66.75% of GDP. Debt incurred above these threshold levels worsens the nation's economic growth.

Manasseh et al. (2022) used SSA selected countries, found a negative correlation between external debt and economic growth using the dynamic Generalized Method of Moments (GMM) to a panel of thirty SSA nations between 1997 and 2020. They concluded that foreign debt has a negative impact on economic development. Using data from 1997 to 2019, Hoti et al. (2022) examined the impact of public debt on the Western Balkan countries' long-term growth. Their research, which used the pooled mean group estimator, found that public debt does not negatively impact the growth of Western Balkan nations.

Debt overhang occurs if the external debt in a country exceeds a country's ability to repay given some future probability. The debt overhang theory was first coined by Myers (1977) in an attempt to explain the company's decision on borrowing. He verified that there is always a threshold at which a firm can borrow from capital markets even at a willingness of paying higher interest rates. Later on, other scholars like Sichula (2012) likened the theory and applied the same concept to the debt situation of a country and its ability to meet debt servicing obligations and how debt relief would actually benefit the creditor receiving some payment.

Krugman and Sachs (1988) stated that overhang exists when the country's debt service burden is so heavy such that a large portion of the current output builds up to foreign lenders that discourage investment. They had different perspectives on the national debt, with Krugman often arguing against excessive concern and Sachs expressing more concern about its potential impact, especially on developing countries. The higher the current debt service burdens the higher expected tax on private investors that implies lower future private investment because the resources that would be otherwise available to investors are used for servicing debt. Disincentive to investment further hampers economic growth which virtually makes poor countries to be caught in the vicious circle of poverty. The Laffer curve, which is basically nonlinear and inverted U-shape, is a tool that is used to postulate the peak at which the debt overhang occurs.

Broner et al. (2013) said that by shifting tax to the next generations in the form of debt service, the current consumption is encouraged which reduces savings. This situation increases interest rates in the capital markets which in turn discourage private

investment. Low level of investment further reduces government revenues and hence it impedes its ability to influence fiscal policies. Crowding out effect begins with inability of domestic creditors (mostly the government through central bank as a lender of last resort) to meet investors' needs because of higher external debt servicing because of liquidity constraints. Current higher debt servicing implicates higher future taxes of which private investors escape it by being reluctant to invest.

3. METHODOLOGY

3.1. Model specification

Previous studies have mainly used OLS and GMM techniques, they have been found not to address the potential endogeneity problem. Therefore, over the conventional techniques, ARDL seems to be more popular among researchers because it addresses it and following the initial work of Pesaran, et al. (1997), the applicable ARDL modeling is ideal. Therefore, this study uses the guidance of Pesaran, et al. (1997) for empirical estimations. Notably a similar model has been successfully used by Siddique et al. (2016) in their study in relation to HIPCs.

The econometric technique that is used in estimating this model is the error correction model. Economic theories are based on equilibrium models that require the drifting away of variables from the equilibrium as a result of disturbance to go back to equilibrium in the long run. The assumption here is that variables irrespective of whether they are dependent or independent cannot afford to drift away perpetually but must find their way back to equilibrium in the long run. This implies that error components associated with the corresponding equilibrium relationship must be white noise. ECM is a special case of ARDL technique which is preferred as a method of analysis in this study because it gives both the short and long run co integrating relationship.

Inferences drawn from ECM can be more robust as it provides a wider view of the model parameter estimates to cover both the short run dynamic relationship and the long run time path, when the variables in the model returns to equilibrium. Therefore in this study the economic growth is the dependent variables and can be expressed as:

$$G_t = f(GLEXD_t, LDD_t, LDS_t, LTO_t, LI_t, LGE_t, LPOG_t, RIR_t) \quad (7)$$

3.2. Selection of Variables and source

Endogenous theorists and neoclassical theorists focus on the importance of state factors such as accumulation of physical capital factors. However, the importance of efficiency and other allied factors that contribute to economic growth cannot be overlooked. In

general, theory indicate that physical capital such as trade openness, investment and other trade allied variables are largely positive and significantly related to economic growth according to Rao and Hassan (2011). On the other hand, macroeconomic stability mostly proxied by real interest rate revealed that it is negatively and strongly associated with economic growth. In terms of demographic factors, the theory revealed that the effect depends upon the variables included in the model. Taking everything into consideration, this research focuses on seven explanatory variables other than the 3 variable of interest when modeling the economic performance of Uganda. The variables and sources are indicated in table 3.1 below:

Table 3.1 : Variable definition and data source

<i>Variable</i>	<i>Variable Definitions</i>	<i>Data source</i>
G	Growth in gross domestic Product measured in percentages.	World Banka WDI/statistical abstracts/ Background to Budget
TO	Trade Openness, the sum of exports and imports to GDP ratio	World Banka WDI/statistical abstracts
RIR	Real Interest Rates This is the lending interest rate adjusted for inflation as	World Banka WDI/statistical abstracts
EXD	The ratio of a Uganda's external public debt to its gross domestic product	World Banka WDI/statistical abstracts
I	Gross capital formation, assets of the economy	World Banka WDI/statistical abstracts
DD	The domestic debt to GDP ratio	World Banka WDI/statistical abstracts
L	Logarithm	
DUM2000	Dummy variable	World Banka WDI/statistical abstracts
GE	Government expenditure per GDP	World Banka WDI/statistical abstracts
POG	Population growth rate (POG), rate at which the number of individuals in a population increases	World Banka WDI/statistical abstracts
DS	Debt Service per GDP	World Banka WDI/statistical abstracts

3.4. Structural breaks

The testing of the unit roots of a series is a precondition to the existence of cointegration relationship, therefore it is important to make the best conclusions about series being stationary or not. Originally, the Augmented Dickey-Fuller (1979) test was widely used to test for stationary. However, Perron (1989) showed that failure to allow for an existing break, which may be the change in the series as a result of some unique economic events, leads to a bias that reduces the ability to reject a false unit root null hypothesis. To overcome this, a known or exogenous structural break is considered in the test. All the variables were plotted on a graph and it showed a displacement

at 2000 and this is the time when Uganda was ending the civil war. A CUSUM test was conducted as indicated in figure 3.1. The fluctuations started in 2000 and the parameters start being unstable.

The Chow break point stability test on the parameters is shown in table 3.2. The CUMSUM in figure 3.1 was calculated for the model to detect the presence of structural instability and model misspecification. All estimations were carried out using eviews10 software. From table 3.3, the bound cointegration test rejects the null of no cointegration because the computed F-statistic is much greater than the upper bound of the tabulated F-statistic. After finding the evidence of cointegration between the variables specified above, the long run and short-run relationships were estimated using Autoregressive Distributed Lag (ARDL) approach.

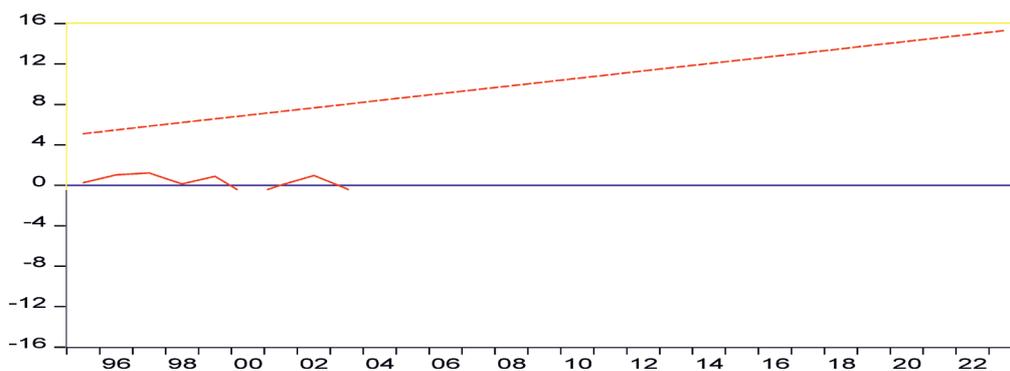


Figure 3.1: CUSUM Test

The Chow test is most commonly used in time series analysis to test for the presence of a structural break. The chow test is often used to determine whether the independent variables have different impacts on different subgroups of the population. However, an important limitation of the Chow test is that the break date must be known a priori. In this study, the data was graphed and a spike in the data was seen in 2000. The null hypothesis that there are no breaks at the specified breakpoints is

Table 3.2: Chow Breakpoint Test

Chow Breakpoint Test: 2000			
Null Hypothesis: No breaks at specified breakpoints			
Varying regressors: All equation variables			
Equation Sample: 1986 2023			
F-statistic	4.665659	Prob. F(9,20)	0.002
Log likelihood ratio	42.98772	Prob. Chi-Square(9)	0.000
Wald Statistic	41.99093	Prob. Chi-Square(9)	0.000

Source: Author's computations

rejected. This implies that the model can be improved by adding a dummy variable at the break point. As a result, DUM2000 is included in the model. And DUM2000 has a value of 0 for 1986-1999 and value of 1 for 2000-2023.

3.5. Cointegration Test

Having established the assumptions for ARDL approach that include; data must be free from autocorrelation, Data must be free from heteroscedisty , data must be normally distributed , all variables must be I(0) or I(1) or mixture of level and first difference, a cointegration test based on the ARDL procedure is employed using annual data over the period 1986-2023. The number of lags on the first-differenced variables was selected using Akaike Information Criterion (AIC). Initially, these were selected by testing down using general-to specific methodology. The final lag was then selected when the estimated equation satisfied all the diagnostic checks and the CUSUMSQ test of stability. Testing for cointegration is a necessary step to establish if a model empirically exhibits meaningful long run relationships. If it fails to establish the cointegration among underlying variables, it becomes imperative to continue to work with variables in differences instead.

The unit root test results reported in Table 3.2 reveal that all variables are integrated of order zero and one, supporting the use of the ARDL approach to co-integration in this study. The bounds testing procedure is carried out by conducting the F test for the joint significance of coefficients of the lagged variables as indicated in table 3.3. The null hypothesis of no cointegration is tested against the alternative hypothesis of cointegration. Since the null hypothesis of no cointegration is rejected since the calculated F-statistic is greater than the upper-bound values. The short-run ARDL

Table 3.3: Results of ARDL Cointegration Test-bound test

<i>F-Bounds Test</i>		<i>Null Hypothesis: No levels relationship</i>		
<i>Test Statistic</i>	<i>Value</i>	<i>Signif.</i>	<i>I(0)</i>	<i>I(1)</i>
F-statistic	8.258961	10%	1.88	2.99
k	9	5%	2.14	3.3
		2.5%	2.37	3.6
		1%	2.65	3.97
<i>t-Bounds Test</i>		<i>Null Hypothesis: No levels relationship</i>		
<i>Test Statistic</i>	<i>Value</i>	<i>Signif.</i>	<i>I(0)</i>	<i>I(1)</i>
t-statistic	-13.24775	10%	-2.57	-4.56
		5%	-2.86	-4.88
		2.5%	-3.13	-5.18
		1%	-3.43	-5.54

Source: Author's computations

model, within the error correction framework, allows for the analysis of dynamic relationships between time series data, disentangling long-run relationships from short-run dynamics and testing for cointegration

The integration level of variables were mixed at I(0) and I(1) therefore a bound cointegration testing technique was used to test for cointegration test in Table 3.3. The results of the bound test indicate that the calculated F statistics 8.261 is greater than the lower and upper bound critical value for any significance level. It means there is a short run and long run equilibrium among the considered variables, in the examined period. The null hypothesis of no cointegration is rejected. The ARDL procedure for differenced variables was constructed. The short run and long run were estimated, according to the Akaike Information Criterion. The objective of adopting the cointegration technique is to determine the long run association among macroeconomic variables in the model. Previous authors who adopted Cunningham (1993) debt inclusive growth model for examining the impact of debt on economic growth have used cointegration technique to examine the long run relationship/association.

To examine the relationship between public debt and economic growth, we follow three steps in the estimation process. In the first step, stationarity of the variables is analyzed. In the second step, tests of the presence of both short-run and long-run relationships between the variables are carried out, and the third step conducts the diagnostics to ensure that the coefficients are stable and not driven by biases. In this study, we follow the autoregressive distributed lag (ARDL) bounds testing technique to cointegration pioneered by Pesaran et al. (2001). This econometric technique has advantages over other traditional cointegration techniques. Firstly, it is a more robust econometric technique for analyzing level relationships even when the sample size is small as argued by Tang (2004) and it can be employed regardless of whether the variables are integrated of order zero or one. Second, the power of the bounds test is not limited in finite samples when invalid restrictions are imposed unlike other cointegration techniques according to Banerjee et al. (1998). Third, the use of ARDL method is advised because it can correct for any possible endogeneity among the independent variables as shown by Wolde-Rufael (2010). Consequently, the ARDL specification of the empirical model in equation (7) can be formulated as follows:

$$\begin{aligned} \Delta G_t = & \beta_0 + \sum_1^n \Delta\beta_{1i}G_{t-1} + \sum_{i=0}^n \Delta\beta_{2i}LEXD_{t-1} + \sum_{i=0}^n \Delta\beta_{3i}LDD_{t-1} + \sum_{i=0}^n \Delta\beta_{4i}LDS_{t-1} \\ & + \sum_{i=0}^n \Delta\beta_{5i}LGE_{t-1} + \sum_{i=0}^n \Delta\beta_{6i}LPOG_{t-1} + \sum_{i=0}^n \Delta\beta_{7i}RIR_{t-1} + \phi ECT_{t-1} + \mu_t \end{aligned} \tag{8}$$

β_0 denotes the constant term, $\beta_1; \dots; \beta_7$ and $\eta_1; \dots; \eta_7$ represent the short-run and long-run coefficients respectively, and μ_t denotes the error term

To implement the ARDL bounds testing approach, this study follows the following steps. In the first step, we test for cointegration among variables with the purpose of determining whether there exists a long-run relationship. The presence of the long-run relationship among variables is tested using the F-statistic and t-statistic. From the calculated F-statistic, the null hypothesis of no cointegration, that is, $(H_0: \beta_1 = \beta_2 = \beta_3 = \beta_4 = \beta_5 = \beta_6 = \beta_7 = 0)$, is evaluated against the alternative hypothesis of cointegration, that is, $(H_a: \beta_1 \neq \beta_2 \neq \beta_3 \neq \beta_4 \neq \beta_5 \neq \beta_6 \neq \beta_7 \neq 0)$. The computed F-statistic results are compared to the critical values in Pesaran et al. (2001). If the computed values of F-statistic exceed the upper critical bound values, the null hypothesis is rejected and vice versa. However, if the F-statistic values fall within the bounds, then it denotes inconclusive test results. In the second step, we employ ARDL bounds testing procedure to test for relationships. During this step, the optimal lag length for the ARDL model is chosen using appropriate lag selection criteria based on the Schwartz Information Criterion (SIC). If the results of the cointegration test on equation (8) show cointegration among variables, then we can proceed to express the error correction model (ECM) as:

$$\Delta G_t = \beta_0 + \sum_{i=1}^n \Delta \beta_{1i} G_{t-1} + \sum_{i=0}^n \Delta \beta_{2i} LEXD_{t-1} + \sum_{i=0}^n \Delta \beta_{3i} LDD_{t-1} + \sum_{i=0}^n \Delta \beta_{4i} LDS_{t-1} + \sum_{i=0}^n \Delta \beta_{5i} LGE_{t-1} + \sum_{i=0}^n \Delta \beta_{6i} LPOG_{t-1} + \sum_{i=0}^n \Delta \beta_{7i} RIR_{t-1} + \phi ECT_{t-1} + \mu_t \quad (9)$$

Where ϕ represents the coefficient of the ECT (error correction term) which captures the long-run adjustment to the equilibrium after any deviations, while μ_t is the residual error term. The importance of the ECT coefficient lies in its sign and size, which represents the speed of adjustment and validity of the results. Consequently, the coefficient of the error correction term (ϕ) should be negative, less than or equal to 1 and statistically significant as emphasized by Enders (2004).

4. EMPIRICAL ESTIMATION AND RESULTS

4.1. Descriptive statistics

The summary statistics in Table 3.4 reveal some key characteristics of the variables. It is shown that all variables have the same number of observations. No variables with zero standard deviations with a maximum from Real interest rate and the minimum from population growth rate as shown in table 4.1.

Table 4.1: Descriptive statistics

<i>Variables</i>	<i>Mean</i>	<i>Median</i>	<i>Max</i>	<i>Mini</i>	<i>Std. Dev.</i>	<i>Sum</i>	<i>Obs</i>
DUM2000	0.6316	1.0000	1.0000	0.0000	0.4889	24.00	38
LDD	1.5796	1.3913	2.8565	0.6419	0.5839	60.02	38
LDS	0.3381	0.6416	1.6023	-1.4616	0.9421	12.84	38
LEXD	3.6834	3.8334	4.6684	2.4138	0.6309	139.96	38
LGE	2.3303	2.2744	2.8209	1.8848	0.2711	88.55	38
LI	2.9549	3.0351	3.4489	2.1338	0.3046	112.28	38
LPOG	1.1268	1.1204	1.2501	0.9938	0.0675	42.81	38
LTDS	2.4095	2.4420	4.3989	0.3083	1.2279	91.56	38
RIR	4.3052	10.8011	22.9956	-53.4443	20.4704	163.59	38
LTO	3.5595	3.5762	4.0300	3.2328	0.1811	135.25	38
G	6.0265	5.9708	11.5232	0.3901	2.3543	229.00	38

Source: Author's computations

4.2. Unit Root Test

Since the study used time series data, a unit root test for stationarity in each variable before estimating any equation was conducted. It is considered a problem if there is a unit root and you go ahead to use the data without transforming it to stationarity. Granger and Newbold (1973) asserted that estimations based on non-stationary variables may lead to spurious results which produce high R² value and t statistics, but without any coherent economic meaning. Since, the study is a macroeconomic study and there is such a possibility of these variables containing non-stationary problem, a unit root test was conducted. In order to perform the unit root test, the Augmented Dickey-Fuller (ADF) test was used since we needed to establish whether the variables are stationary at level or at 1st difference I (1) at 5 per cent significance level. If all the variables contain unit root at level I (0) and stationary at first difference or a mixture of the two, an ARDL methodology is adapted according to Pesaran and Shin (2001). The unit root test satisfies the requirement to perform an ARDL modeling as indicated in table 4.2.

Table 4.2: Unit root test

<i>Variable</i>	<i>Statistic</i>	<i>ADF Tests</i>			<i>Order of Integration</i>
		<i>Critical Values</i>			
		1%	5%	10%	
LTO	-2.14073	-3.62102	-2.94343	-2.61026	Non stationary in level I(0)
	-7.05666	-3.62678	-2.94584	-2.61153	Stationary at first difference I (1)
LDD	-0.01463	-3.62102	-2.94343	-2.61026	Non stationary in level I(0)
	-6.89575	-3.62678	-2.94584	-2.61153	Stationary at first difference I (1)

Variable	Statistic	ADF Tests			Order of Integration
		Critical Values			
		1%	5%	10%	
LEXD	-1.41212	-3.62102	-2.94343	-2.61026	Non stationary in level I(0)
	-4.83922	-3.62678	-2.94584	-2.61153	Stationary at first difference I (1)
LDS	-0.98729	-3.62678	-2.94584	-2.61153	Non stationary in level I(0)
	-11.2038	-3.62678	-2.94584	-2.61153	Stationary at first difference I (0)
G	-5.04759	-3.62102	-2.94343	-2.61026	stationary in level I(0)
RIR	-3.0412	-3.62102	-2.94343	-2.61026	Stationary at first difference I 0)
DUM2000	-1.29368	-3.62102	-2.94343	-2.61026	Non stationary in level I(0)
	-6.00000	-3.62678	-2.94584	-2.61153	Stationary at first difference I (1)
LGE	-2.41096	-3.62102	-2.94343	-2.61026	Non stationary in level I(0)
	-6.78502	-3.6329	-2.94584	-2.61287	Stationary at first difference I (1)
LI	-3.39249	-3.62102	-2.94343	-2.61026	stationary in level I(0)
LPOG	-3.33104	-3.62678	-2.94584	-2.61153	stationary in level I(0)

All variables were tested for stationarity before running ARDL to determine their order of integration. There was a mixture of I(0) and I(1) that renders the ARDL appropriate .

4.3.Short run model

The short run outcome of the model is shown in table 4.3. The short-run model within an Autoregressive Distributed Lag (ARDL) framework, often represented as an Error Correction Model (ECM), captures the speed at which variables return to their long-run equilibrium after a shock, using an error correction term. Real Interest Rate (RIR), Public debt (LEXD and LDD)-growth nexus and the estimated ARDL equation passes all the diagnostic tests of stability. The estimation results from the model reveal that domestic debt (LDD) and its lagged values have a positive sign and significant at 5 percent in line with Taylor and Lokina (2024) whose findings reveal a significant positive long-term relationship between the two variables, with the direction of causality running from economic growth to domestic debt. A one percent increase in domestic public debt will increase the economic growth by 3.07 percent in economic growth.

The external debt (LEXD) and its lagged variable have mixed signs in the short run, the external debt has a negative sign and is significant at 1 percent while the external debt variable lagged once (LEXD_{t-1}) has a positive sign and significant at 1 percent. A 1 percent increase in External debt results in 9.2 percent decrease in economic growth

while a 1 percent increase in the lagged once of the external debt will result in a 10.7 percent increase in economic growth. While policy responses that increase public debt may be effective in the short run and help boost growth, increased debt to GDP ratios may either partly (or fully) negate the effects of the fiscal stimulus in the medium-term, which could slow down the recovery from the pandemic.

Table 4.3: ARDL Error Correction Model

<i>Dependent Variable: D(G)</i>			
<i>Selected Model: ARDL(1, 2, 2, 2, 2, 2, 2, 2, 1)</i>			
<i>Sample: 1986 2023</i>			
<i>ECM Regression</i>			
<i>Variable</i>	<i>Coefficient</i>	<i>t-Statistic</i>	<i>Prob.</i>
C	166.647	13.242	0.000
D(DUM2000)	-4.026	-4.751	0.001
D(DUM2000(-1))	-4.846	-5.674	0.001
D(LDD)	3.070	4.087	0.004
D(LDD(-1))	2.999	3.101	0.015
D(LEXD)	-9.189	-16.790	0.000
D(LEXD(-1))	10.723	13.824	0.000
D(LGE)	18.638	15.509	0.000
D(LGE(-1))	-1.493	-2.070	0.072
D(LI)	12.938	7.146	0.000
D(LI(-1))	-12.208	-6.430	0.000
D(POG)	-6.635	-8.534	0.000
D(POG(-1))	-14.776	-8.605	0.000
D(RIR)	-0.106	-8.560	0.000
D(RIR(-1))	-0.255	-10.435	0.000
D(LTO)	-19.040	-9.437	0.000
D(LTO(-1))	14.925	9.096	0.000
D(LDS)	2.132	9.114	0.000
ECT _{t-1}	-0.758	-13.248	0.000
R-squared	0.977	Mean dependent var	0.038
Adjusted R-squared	0.952	S.D. dependent var	2.749
S.E. of regression	0.602	Akaike info criterion	2.128
Sum squared resid	6.160	Schwarz criterion	2.964
Log likelihood	-19.303	Hannan-Quinn criter.	2.420
F-statistic	39.624	Durbin-Watson stat	2.427
Prob(F-statistic)	0.000		

*, **, *** denotes statistical significance at 10%, 5% and 1% respectively

Source: authors' Computations

The government expenditure (LGE_t) and its lagged variable (LGE_{t-1}) have mixed signs in the short run, the LGE_t and its lagged once have a positive and negative values respectively and significant at 5 percent and 10 percent respectively. A 1 percent increase in the LGE_t will increase economic growth by 18.6 percent while increase by 1 percent in the lagged variable LGE_{t-1} reduces the economic growth by 1.49 percent. Government expenditure, particularly when financed by borrowing, can stimulate economic growth in the short term but may lead to increased public debt and potentially hinder long-term growth.

The Gross capital formation or investment (LI) has mixed signs. The LI is positive and significant at 1 percent level while the lagged variable LI_{t-1} is negative and statistically significant at 1 percent. When Investment increases by 1 unit, the output or economic growth will increase by 12.9 units and when the lagged variable is increased by 1 unit, output or growth will decrease by 12.2 units. Government investment can stimulate economic growth, especially when focused on infrastructure, but it also leads to increased public debt, which can have both short-term and long-term economic consequences. Multipliers of total government spending are above the unit and government investment multipliers are higher than consumption ones. Although all fiscal policy shocks reduce the public debt to GDP ratio, government investment is the most effective tool for promoting public debt sustainability.

The Population growth rate ($LPOG$) and its lagged variable are both negative and significant at 1 percent. A 1 unit increase in Population growth and its lagged variable will result in a decrease in growth by 6.6 and 14.8 respectively. Population growth can have a complex impact on both economic growth and public debt, potentially leading to both positive and negative outcomes. A larger population can lead to a larger workforce, potentially boosting productivity and economic output. Increased demand for goods and services can also stimulate economic activity. Rapid population growth can strain resources and infrastructure, potentially leading to lower per capita income and slower economic growth. Increased competition for resources and jobs can also negatively impact economic outcomes. A larger population can lead to increased demands for public services (healthcare, education, and infrastructure), potentially straining government budgets and increasing public debt. A larger workforce can also contribute to higher tax revenues, potentially offsetting some of the increased costs associated with a larger population.

A rapidly ageing population can also put a strain on public finances, particularly social security and healthcare systems, leading to higher public debt. The relationship between population growth, economic growth, and public debt is complex and depends on various factors, including the rate of population growth, the level of economic

development, and government policies. While a larger population can potentially boost economic growth, it also poses challenges to public finances and resource management. Governments need to implement policies that promote sustainable economic growth and manage public debt effectively in the face of population changes.

The Real Interest Rate (RIR) and its lagged variable are both negative and significant at 1 percent. A 1 unit increase in RIR and its lagged variable will result in a decrease in growth by 0.106 and 0.255 units respectively. Higher real interest rates can dampen economic growth by increasing borrowing costs for businesses and consumers, while increased public debt can lead to higher interest rates as investors demand a premium for holding government bonds. Higher real interest rates mean businesses and individuals face higher costs when borrowing money for investments or consumption. Businesses may postpone or cancel investment projects due to higher borrowing costs, leading to slower economic growth. Consumers may reduce spending and save more when interest rates rise, further dampening economic demand. Central banks often raise interest rates to curb inflation, which can lead to a temporary slowdown in economic growth as demand is reduced. When governments borrow more, they increase the demand for loans, potentially pushing up interest rates. As public debt rises, investors may demand a higher return (interest rate) to compensate for the increased risk of default or inflation. Higher interest rates mean governments must pay more to service their existing debt, potentially crowding out other government spending. High debt levels can make economies more vulnerable to economic shocks and may lead to financial crises.

From the analysis, trade openness has mixed signs. The LTO is negative and statistically significant at 1 percent level. A 1 unit increase in LTO will result in a 19.04 units in economic growth while a 1 unit increase in LTO_{t-1} will result in a 14.93 unit increase in economic growth. According to Onafowora and Owoye (2019), high trade openness enhances economic growth by integrating the economy into the global market, but it can also exacerbate vulnerabilities if accompanied by rising external debt levels. The relationship between trade openness, economic growth, and public debt is complex and can vary depending on factors like the level of development and the specific policies in place, but generally, trade openness and economic growth are positively linked, while high public debt can negatively impact growth.

The relationship between trade openness, economic growth, and public debt is not always straightforward and can depend on various factors. High levels of public debt can make a country less attractive for foreign investment, which can hinder trade and economic growth. Trade openness can also provide opportunities for countries to earn foreign exchange, which can help manage debt levels. Effective debt management

policies and trade liberalization are crucial for achieving sustainable economic growth. The relationship between trade openness and economic growth can be particularly important for Uganda, as trade can help integrate into the global economy and attract investors. Law *et al.* (2021) suggested that the short-run impact of debt on GDP growth is positive, but the impact decreases as debt levels rise, with negative effects at very high debt ratios.

Increased trade openness means a country is more involved in international trade which leads to economic growth. This is through increasing competition, promoting innovation, and allowing for specialization and efficient use of resource. Uganda having embraced trade liberalization has often seen increased economic growth. High levels of public debt, shown by public debt to GDP, can negatively impact economic growth. High debt can lead to higher interest payments, potentially crowding out private investment and can make a country more vulnerable to economic shocks.

The debt service (LDS) is positive and statistically significant at 1 percent level. A 1 unit increase in LDS will result in a 2.133 unit increase in economic growth. The impact of debt service can be positive on growth when borrowed funds are used for productive investments that generate returns exceeding the cost of borrowing, fostering economic expansion and enabling timely debt repayment. However High debt service costs can negatively impact economic growth and public debt sustainability by diverting resources from investment and potentially leading to fiscal constraints, while also increasing the risk of debt distress. High debt levels hamper economic growth and curtail public and private investment. They also divert crucial resources away from delivering social services, resulting in disproportionate spending on debt at the expense of vital sectors such as infrastructure, labor productivity, human capital, and public health.

In the Autoregressive Distributed Lag (ARDL) model, the speed of adjustment refers to how quickly a model corrects itself towards a long-run equilibrium after a short-run disequilibrium, typically measured by the coefficient of the error correction term (ECT). In this study, the error correction model (ECT) is -0.758. an error correction model (ECM), where the ECT captures the speed at which variables return to their long-run equilibrium after a shock. The ECT is typically a lagged term representing the difference between the current value of the dependent variable and its long-run equilibrium value. The coefficient of the ECT indicates the speed of adjustment: a larger negative coefficient suggests a faster speed of adjustment towards equilibrium.

A negative and statistically significant ECT coefficient is expected, indicating that deviations from the long-run relationship are corrected over time. A positive ECT coefficient would suggest the model is diverging from equilibrium, which is not

a desirable outcome. Understanding the speed of adjustment is crucial because it helps determine how quickly a model can recover from shocks or deviations from equilibrium. In this study, the ECT coefficient is -0.758, it means that 75.8% of the previous period's deviation from equilibrium is corrected in the current period.

4.4. The long run model

The long-run model of the Autoregressive Distributed Lag (ARDL) model, often used in economics to analyze time series data, focuses on the stable, long-term relationship between variables, allows for the estimation long run equilibrium relationships between variables, even when those variables are non-stationary. The long run model for this study is shown in table 4.3. Most of the variables are significant apart from DUM2000 and LI. The impact of Domestic Debt (LDD) in the long run is negative and statistically significant at 10 percent level. A 1 unit increase in domestic debt results in a 4.97 reduction in the economic growth.

Table 4.4: Long run ARDL Model

<i>ARDL Long Run Form and Bounds Test</i>			
<i>Dependent Variable: D(G)</i>			
<i>Selected Model: ARDL(1, 2, 2, 2, 2, 2, 2, 2, 2)</i>			
<i>Sample: 1986 2023</i>			
<i>Included observations: 36</i>			
<i>Variable</i>	<i>Coefficient</i>	<i>t-Statistic</i>	<i>Prob.</i>
DUM2000	2.740	1.170	0.276
LDD	-4.971	-2.085	0.071
LEXD	-21.502	-2.654	0.029
LGE	15.370	2.556	0.034
LI	3.263	0.334	0.747
LPOG	6.083	2.137	0.065
RIR	0.270	2.696	0.027
LTO	-54.853	-2.354	0.046
LDS	7.169	1.966	0.085
R-squared	0.879	Mean dep	6.240
Adj R-squared	0.615	S.D. dep	2.187
S.E. of regression	1.358	Akaike info	3.652
Sum sqred resid	20.272	Schwarz	4.752
Log likelihood	-40.745	Hann-Quin .	4.036
F-statistic	3.326	DW stat	1.753
Prob (F-static)	0.021		

Note. ***, **, * indicates significance at 1%, 5% and 10% respectively

Source: Author's computations

In the long run, high levels of domestic debt can negatively impact economic growth by crowding out private investment, leading to reduced capital accumulation and potentially lower productivity, as well as potentially leading to higher interest rates and increased debt servicing costs. When a government borrows heavily to finance its operations, it increases the demand for loans, which can drive up interest rates. Higher interest rates make it more expensive for businesses to borrow money for investment, potentially leading to a decline in private investment and capital accumulation. Lower private investment can lead to a smaller capital stock, meaning there are fewer resources available to produce goods and services, which can result in lower productivity and economic growth.

Uganda has accumulated high levels of debt and a larger portion of government revenue is allocated to servicing the debt, paying interest and principal, leaving less available resources for other important areas like infrastructure, education, and healthcare. In 2022 the domestic debt servicing stood at 80% while in 2023 it stood at 73%.

High debt levels can make a country more vulnerable to economic shocks, as it may struggle to repay its debt during an economic downturn. This debt overhang theory, Debt overhang refers to a situation where an organization's existing debt is so large that it hinders future investment and growth, even if new investments would be profitable suggests that when a country has a high debt burden, it may divert a significant portion of its resources towards servicing debt, leaving fewer resources available for productive investments, which can lead to lower economic growth rates. This theory suggests that an increase in public debt is offset by an increase in private savings, as individuals anticipate future tax increases to service the debt, leading to a net zero effect on economic growth. According to Butt (2009), as long as countries use the borrowed funds for productive investment and do not suffer from macroeconomic instability, policies that distort economic incentives or sizable adverse shocks, growth should increase and allow for timely debt repayment

The External debt (LEXD) is statistically significant at 5 percent level and negative. A 1 unit increase in LEXD results in 21.5 unit decrease in economic growth. In the long run, high external debt can negatively impact economic growth due to factors like debt overhang, reduced investment, and the need to allocate resources towards debt repayment, potentially hindering capital accumulation and overall productivity.

There is a negative and statistically significant at 5 percent level, relationship between economic growth and trade openness (LTO). A 1 percent increase in LTO leads to 54.8 reduction in economic growth as shown in Table 4.4. While trade openness is often associated with positive economic growth, some studies suggest that in the

long run, it can have negative effects, potentially leading to macroeconomic instability and reduced domestic competitiveness. Increased trade openness can lead to greater exchange rate fluctuations, which can exacerbate inflation and create macroeconomic uncertainty.

Fluctuations in exchange rates can make it difficult for businesses to plan and invest, potentially hindering long-term economic growth. Openness can lead to balance of payments crises, which can further destabilize the economy. Increased competition from imports can lead to a decline in domestic output, making domestic markets less competitive. Uganda specializes in low-quality products and rely heavily on exporting primary products is vulnerable to terms of trade shocks, which can negatively impact economic growth. Trade openness can exacerbate income inequality, as some sectors and workers may be more vulnerable to competition from imports. Increased trade can lead to environmental degradation, which can have long-term negative impacts on economic growth. Other factors include market imperfections, differences in technology, and endowments can lead to adverse effects of trade liberalization on individual countries. Passive trade liberalization, where Uganda simply opens her economy without implementing necessary reforms, may not lead to positive economic outcomes.

Many studies highlight the positive effects of trade openness on economic growth, including increased efficiency, access to technology, and specialization. The impact of trade openness on economic growth can depend on a variety of factors, including the level of development, the type of goods traded, and the policies implemented by the government. According to Esaku (2021), the empirical evidence on the relationship between trade openness and economic growth is mixed, with some studies finding positive effects and others finding negative or no effects.

The effect of real Interest Rate on economic growth is positive and statistically significant at 5 percent. A 1 unit increase in RIR will result in 0.27 units in economic growth. In the long run, a positive real interest rate generally accompanies economic growth because it reflects the value of future consumption and investment, incentivizing savings and investment that drive economic expansion. People generally prefer consuming goods and services today rather than in the future. This time preference means that a positive real interest rate is needed to compensate individuals for delaying consumption and saving for the future. A positive real interest rate encourages investment, as it signals that future returns on investment are expected to be higher than the cost of borrowing. Investment in capital goods and infrastructure is a key driver of economic growth. A positive real interest rate encourages savings, which are essential for financing investment and capital formation, further boosting economic growth.

In a balanced growth path, the difference between the real interest rate and the growth rate is positive and equal to the rate of time preference. High productivity growth can lead to high interest rates because households save less today, knowing they won't need to supplement future income. This low level of current savings provides fewer funds for investment, causing firms to invest in only the most profitable projects, raising the rate of interest that can be paid. The real interest rate is the nominal interest rate adjusted for inflation. A positive real interest rate means that the purchasing power of savings is increasing over time, which is a key factor in encouraging savings and investment. Jean-Marie (2011) showed that a positive real interest rate is associated with higher levels of savings, which in turn spur economic growth.

The impact of Debt Service (LDS) in the long run is positive and statistically significant at 10 percent level. A 1 unit increase in LDS results in a 7.169 increase in the economic growth. In the long run, high levels of domestic debt can negatively impact economic growth by crowding out private investment, leading to reduced capital accumulation and potentially lower productivity, as well as potentially leading to higher interest rates and increased debt servicing costs.

When a government borrows heavily to finance its operations, it increases the demand for loan funds, which can drive up interest rates. Higher interest rates make it more expensive for businesses to borrow money for investment, potentially leading to a decline in private investment and capital accumulation. Lower private investment can lead to a smaller capital stock, meaning there are fewer resources available to produce goods and services, which can result in lower productivity and economic growth. In the long run, debt service can be positive for economic growth, especially in resource-scarred economies, as it can lead to increased capital accumulation and productivity growth through debt financing, if done properly. Debt can be a tool for developing countries to finance projects that boost economic growth, such as infrastructure, education, and healthcare. When debt is used to invest in productive assets, it can lead to a larger capital stock, which is crucial for long-term economic growth. Investments financed through debt can also improve productivity by enabling the adoption of new technologies and better management practices.

Debt servicing can help developing countries restore credibility to existing and new creditors, which can lead to further investment and development. It's important to ensure that debt levels remain sustainable, meaning the country can continue to service its debts without causing significant economic or social problems. Some economic theories, like the Keynesian approach, suggest that government debt can stimulate demand and investment, leading to higher economic growth. Others argue that excessive debt can lead to economic instability and hinder long-term growth by

crowding out private investment and increasing the risk of default. Debt relief can free up resources for public investment, potentially boosting growth, but the impact depends on how the freed-up resources are used. The effect of Population Growth (LPOG) in the long run is positive and statistically significant at 10 percent level. A 1 unit increase in LPOG results in a 6.83 increase in the economic growth. In the long run, population growth can be positive for economic growth as a larger population can lead to more skilled workforce, increased innovation, and a larger consumer base, all of which can drive economic expansion.

A growing population can provide more people to work, potentially boosting productivity and output. It can also provide a pool of potential workers can also allow for specialization and division of labor, leading to greater efficiency and innovation. A larger population means more potential scientists, inventors, and engineers, which can lead to more research and development, ultimately driving technological progress and economic growth. In addition it provides larger market for goods and services, which can encourage businesses to invest and expand, leading to further economic growth. When fertility rates decline, the proportion of the working-age population increases, creating a a country that can raise its level of savings and investment. Economic growth, when inclusive and sustained, can strengthen political and social stability, leading to overall social and economic development.

4.5. Residual and stability diagnostics tests

In ARDL (Autoregressive Distributed Lag) models, residual and stability diagnostics tests are crucial to ensure the model’s validity and reliability. Residual diagnostics check for issues like serial correlation, heteroscedasticity, and non-normality, while stability diagnostics assess the model’s parameter stability over time. Diagnostic tests were conducted to examine the healthy conditions of the series; the serial correlation and Heteroscedesticity Test were examined. The results displayed table 4.5, table 4.6 and table 4.6, that model for the analyses are free from serial correlation, are homoscedastic and normally distributed residuals. Therefore the model reflects the stability and satisfies the diagnostic tests. The Breusch-Godfrey LM test and correlograms examine whether the residuals are correlated over time, which violates the assumption of independence. If serial correlation is present, the model’s estimates may be biased and inefficient.

Table 4.5: Breusch-Godfrey Serial Correlation

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	0.213435	Prob. F(2,3)	0.8191
Obs*R-squared	4.235225	Prob. Chi-Square(2)	0.1203

Source: Author’s computations

The heteroscedasticity test checks if the variance of the residuals is constant across different values of the independent variables, which is another assumption of the ARDL model. If heteroscedasticity is present, the standard errors of the coefficients may be unreliable.

Table 4.6: Heteroskedasticity Test: Breusch-Pagan-Godfrey

Heteroskedasticity Test: Breusch-Pagan-Godfrey			
F-statistic	1.101199	Prob. F(28,5)	0.5102
Obs*R-squared	29.25585	Prob. Chi-Square(28)	0.3996
Scaled explained SS	0.653083	Prob. Chi-Square(28)	1

Source: Author's computations

The Ramsey Regression Specification Error Test (RESET test) is a statistical test used in econometrics to assess the validity of functional form assumptions in regression models, specifically checking for potential misspecification by examining whether including higher-order terms or interactions improves the model fit. The RESET test helps determine if the relationship between the dependent and independent variables is truly linear or if a non-linear form might be more appropriate. **The powers of the fitted values are not significant which confirms that** the original model's functional form is adequate, and a linear relationship is plausible

Table 4.7: Ramsey Reset Test

Omitted Variables: Squares of fitted values			
	Value	df	Probability
t-statistic	0.678753	4	0.5345
F-statistic	0.460705	(1, 4)	0.5345

Source: Author's computations

The stability of the long-run coefficient is tested by the short-run dynamics. The cumulative sum of recursive residuals (CUSUM) and the CUSUM of square (CUSUMSQ) tests are applied to assess the parameter stability as recommended by Pesaran and Pesaran (1997). The cumulative sum test identifies systematic changes in the regression coefficients, while the cumulative sum of squares test detects sudden changes from the constancy of the regression coefficients. Figure 4.1 and Figure 4.2 plot the results for CUSUM and CUSUMSQ tests respectively. The results indicate the absence of any instability of the coefficients because the plots of the CUSUM and CUSUMSQ statistics fall inside the critical bands of the 5 per cent confidence intervals

of parameter stability. Therefore, there exists stability in the coefficients over the sample period for Uganda. The CUSUM (cumulative sum) test checks for structural breaks in the intercept and means of regressors, while the CUSUMSQ (cumulative sum of squares) test detects changes in the slope coefficient or variance of the error term, both used to assess model stability.

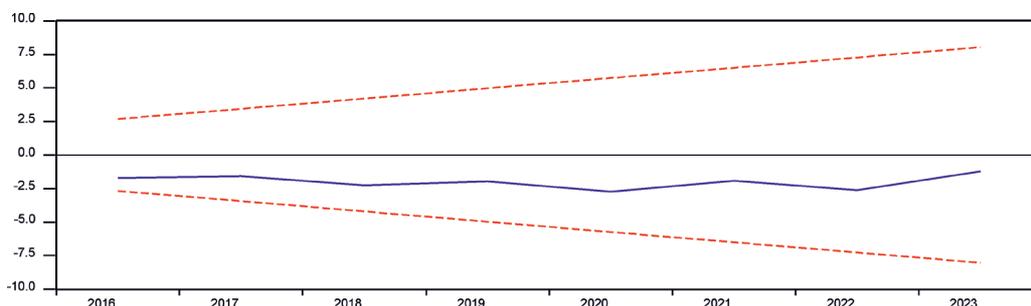


Figure 4.1: CUSUM Test

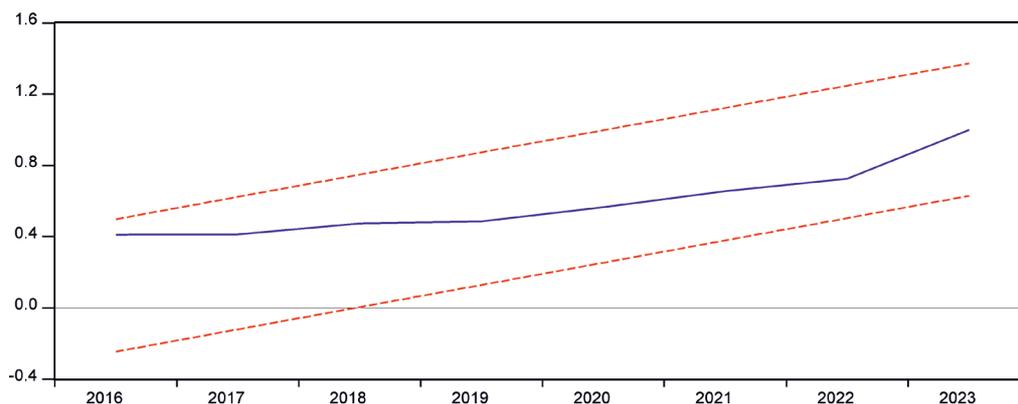


Figure 4.2: CUSUM of Square Test

5. CONCLUSION

Conclusion and Recommendations

The study concludes that domestic and external debts in Uganda in the long run were negatively affecting economic growth. Probably because high domestic and external debt-to-GDP ratios are negatively impacting long-term economic growth by reducing investment, increasing interest rates, and ultimately hindering productivity and capital accumulation.

Uganda is diverting a significant portion of resources towards servicing debt, leaving fewer resources available for productive investments like infrastructure, education, and

research and development. This is likely to lead to lower economic growth rates. To finance the high debt, is likely to borrow heavily, increasing interest rates and this leads to crowding out private investment, as businesses find it more expensive to borrow and invest. High debt levels lead to higher interest rates as lenders demand a higher return to compensate for the risk of lending to a government with a high debt burden. This further discourages investment and economic activity and leads to a reduction in national savings, as resources are diverted to debt servicing rather than investment or consumption.

This can lead to lower capital accumulation and reduced long-term growth. To service debt, government may need to cut spending on social programs like healthcare, education, and infrastructure, which can hinder long-term human capital development and economic growth. High debt levels can erode investor confidence, leading to a flight of capital and further economic instability.

Recommendations include fiscal prudence, debt restructuring, and promoting sustainable economic growth through investments in productive sectors and reforms. Governments should prioritize reducing both domestic and external debt levels to GDP ratios, aiming for sustainable levels and implement sound fiscal policies, including controlling government spending and increasing tax revenues, to ensure long-term fiscal stability.

The government should negotiate with creditors to restructure debt, potentially extending maturities or reducing interest rates, to ease repayment burdens and avoid defaulting on debt obligations which can lead to economic instability. Focus should be on investments in infrastructure, education, and human capital, which can boost long-term productivity and economic growth. Also a country should reduce reliance on specific sectors or external factors by diversifying the economy and promoting exports and strengthen governance structures, reduce corruption, and promote a stable and predictable business environment to attract investment. Another recommendation should be to create an environment conducive to private sector investment and entrepreneurship, as the private sector is a key driver of economic growth and strengthen the economy's resilience to external shocks and **focus** on tradable sectors.

In addition in the long run, Government spending, Population growth, Real interest rate and debt servicing support the economic growth positively. The trade openness support growth negatively. Therefore, increasing demand, expanding the labor pool, lowering borrowing costs, and ensuring sustainable financial stability, respectively. Government spending, especially on infrastructure, education, and healthcare, can boost economic activity by creating demand for goods and services, leading to job creation and increased production. Government investment in public

goods and services (like roads, dams, bridges, and education) can improve productivity and competitiveness, fostering long-term economic growth. A growing population, especially a working-age population, can lead to a larger labor force, which can increase the potential output of the economy.

A larger population also means more consumers, which can drive demand and stimulate economic activity. A lower real interest rate (the nominal interest rate adjusted for inflation) makes it cheaper for businesses and consumers to borrow money, which can lead to increased investment and consumption. Lower interest rates can encourage businesses to invest in new capital and technologies, leading to increased productivity and innovation. Efficient debt servicing, meaning timely and effective repayment of debt, ensures that a country can maintain its financial stability and access to future financing. A country with a strong track record of debt repayment is perceived as less risky by investors, which can lead to lower borrowing costs and increased investment. While trade openness is often associated with positive economic growth, the negative impact certain economies, particularly those specializing in low-quality products or facing macroeconomic instability is the reason for negative association.

In the short run, domestic debt, government expenditure, Gross capital formation, assets of the economy and debt servicing are positively related to economic growth while external debt, population growth rate, trade openness and real interest rate affect economic growth negatively. In the short run, high external debt, rapid population growth, increased trade openness, and rising real interest rates can negatively impact economic growth due to increased debt servicing costs, strain on resources, and potential disruptions to investment and consumption.

High external debt can lead to increased debt servicing costs, interest payments and principal repayments, which can divert resources away from productive investments and social programs, thereby hindering economic growth. Large external debt can also make a country more vulnerable to external shocks and crises, further impacting economic stability and growth. Excessive reliance on external debt can also lead to a situation where a country is unable to repay its debts, leading to a debt crisis and economic instability.

A high population growth rate can strain an economy's resources, potentially leading to lower per capita income and slower economic growth. Rapid population growth can also put pressure on infrastructure, housing, and other essential services, further hindering economic development. While trade openness can lead to economic growth in the long run, in the short run, it can cause disruptions to domestic industries as they face increased competition from foreign firms. Increased imports can lead to a decline in domestic production and employment, potentially slowing down economic

growth in the short term. Higher real interest rates make borrowing more expensive, which can discourage investment and consumption, thus slowing down economic growth. Higher interest rates can also lead to a decrease in the value of a country's currency, which can further impact economic growth.

They can stimulate aggregate demand and investment, leading to increased production and economic activity. Domestic debt can increase government spending and investment, which can boost economic activity. This increased spending can lead to higher demand for goods and services, stimulating production and employment. However, it's important to note that excessive debt can lead to long-term negative consequences, such as crowding out private investment and potentially hindering future growth, which is exactly the finding of this study. Government spending on infrastructure, education, and other public goods can create jobs, stimulate economic activity, and increase productivity. This can lead to higher GDP growth in the short term, especially when coupled with increased investment.

Gross Capital Formation (I) which includes investment in fixed assets like machinery, buildings, and infrastructure, is a major driver of economic growth. Increased investment in these assets enhances the productive capacity of the economy, leading to higher output and economic growth. While debt servicing (interest payments on debt) can be a burden in the long run, in the short run, it can stimulate economic activity. If the government uses the borrowed funds to invest in productive projects, the increased economic activity can offset the costs of debt servicing. However, if debt servicing becomes too high, it can lead to reduced investment and economic growth, a major finding of this study.

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