External Debt and Ugandan Economy: A Vector Error Correction Mechanism

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ABSTRACT

This study investigated the impact of external debt on Uganda's economic growth, utilizing a time series dataset covering 1986-2022. The dataset employed in this study was obtained from the World Bank Development Indicators. A Vector Error Correction Mechanism (VECM) was used as the econometric framework to model the relationships examined in this research. The VECM estimates indicated that external debt has an insignificant impact on economic growth at a 5% significance level. Conversely, public capital investment and exchange rates exhibited significant, and indirectly related to economic growth. The findings suggest that external borrowing has not contributed significantly to Uganda's economic growth. Furthermore, the ineffective utilization of public capital investment has had a detrimental impact on the country's economic growth. Additionally, the real depreciation of the domestic currency was found to boost exports, leading to an increase in aggregate output. Moreover, the study revealed a significant positive relationship between trade openness and economic growth, suggesting that trade liberalization has contributed to increase in aggregate output. The study's findings lead to the conclusion that Uganda's economic growth has been hindered by the inefficient use of external loans for public investment purposes. Accordingly, policymakers are advised to prioritize the allocation of foreign loans towards productive capital investments and the development of physical infrastructure, with the aim of stimulating aggregate output and promoting economic growth in Uganda.

Keywords: Economic growth, external debt, public capital investment, exchange rate and trade openness Vector Error Correction Mechanism (VECM)JEL Classification: F44, H63, O40

INTRODUCTION

The need to borrow is the concept of the neoclassical economy with the fundamental reasons that lack of saving and investment, coupled with a high demand for capital accumulation encourage most of the deficit spending (Fatukasi, et al., 2021). This notion has encouraged most of the developing countries to see borrowing especially that of external borrowing as a means to finance capital project and achieve economic growth and other macroeconomic objectives. For instance, Nigerian debt profile for 2022 is 63.24 billion dollars, Uganda ($12.39 billion), Kenyan ($ 683.0 million), Rwanda ($ 5,389.00 million), Ghana ($ 29.2 Billion) and South Africa ($164.6 billion) (World Bank, 2023).

A prevalent notion in economic literature is that governments often face resource constraints, making it challenging to attain macroeconomic objectives without external support. This limitation necessitates seeking financial assistance through various means, such as loans or foreign direct investment, to supplement domestic resources. This idea has driven many nations to international and local financial institutions to seek loans (Falade, 2021). Borrowing is considered as one of the major sources of financing government-stated goals and other identified objectives which is incurred when there is a shortage of funds to complement the

limited available resources (Falade, 2021). Both developed and developing countries embrace public debt as a means of funding macroeconomic core objectives since the difference between most governments' receipts and spending might not always equal zero annually.

For developed countries like the Euro Area and European Union countries, the issue of public debt consideration became more considerate for the government during the 2008-2009 financial crisis that led to economic recession. According to Dar and Amirkhalkhali (2014), the issue of debt problems affecting European Union countries could be traced to the financial crisis that erupted in 2008, which is now affecting their fiscal sustainability. For instance, it was revealed that government debt within the Euro area countries has increased from an initial 69% of GDP in 2000 to 86.4% of GDP in 2019 (Albu & Albu, 2021). Also, in June 2021, the United States national debt was USD 28.53 trillion, up from USD 26.48 trillion in December 2020 (World Bank, 2023). Given this, Attard (2019) reveals that the external debt-to-GDP ratio in the US has started increasing at an annual rate of 2.1% since 2008. Also, African nationals are not left behind on the premise of insufficient funds to finance developmental projects. According to Falade (2021), there is a need to borrow substantial amounts to finance economic growth and development to an optimal level in developing countries, because most of these countries are characterized by local financial markets with insufficient resources to promote the development and expansion of the economy.

Furthermore, as of 1970, Uganda's external debt stock stood at $ 151.67 million (International Monetary Funds, 2016). From the 1970s to 1980, the Uganda government acquired marginal foreign debt since it was primarily confessional debt from bilateral and multilateral sources, which has a longer repayment horizon as well as lower interest rates that constitute about 78.5% of the total debt stock (World Bank, 2023). Aside from lower interest, the country can service its public debt. Also, during the 1970s-1980, the average growth rate stood at 18.5% in each year. Meanwhile, Uganda's economy faced significant challenges in the late 20th century. The decline in international coffee prices severely impacted the country's foreign exchange earnings, exacerbating its debt servicing difficulties. By 1990, the economy's growth rate had slowed to 6.47%, representing a meager 0.11% annual increase (Ssempala et al., 2020). The government's efforts to rebuild the war-torn economy led to increased reliance on external financing, resulting in a substantial rise in debt. By June 1993, Uganda's outstanding and disbursed debt stood at US$2.64 billion, with arrears of US$253 million (World Bank, 2023). Although this represented a reduction from the US$586.3 million in arrears in June 1982, it still posed significant challenges to the government's ability to manage its foreign reserves.

Uganda's debt burden remained a major obstacle to economic recovery, with debt outstanding and disbursed estimated at 105% of GDP and a debt service ratio of nearly 80%. This precarious situation underscored the need for sustainable economic strategies to promote growth and stability. For instance, by 1992, Uganda's external debt had spiked to US$2.6 billion, with over 60% owed to multilateral institutions (World Bank, 2023). The debt service burden was substantial, with payments to multilateral creditors alone accounting for 31% of the total in 1991/92. The country's arrears had also swelled to US$2.253 billion, equivalent to 117% of projected foreign exchange earnings. Furthermore, the debt service ratio remained persistently high, exceeding 34% over the next five years.

In addition, when nations justify the need to borrow by considering the determinants of debt, there is also a need to consider the sustainability of such loan because it is a two-edged sword, that can improve economic welfare when used within the threshold, but also disastrous to economic growth when used recklessly (Falade, 2021). However, the high rate of external debt seems to be affecting other areas of government’s responsibilities in Uganda.

Uganda's debt burden has been a growing concern. By December 2016, the country's outstanding debt had reached UGX 11,712 billion, equivalent to US$3.25 billion. This substantial debt has resulted in a significant portion of the country's budget being allocated towards debt interest payments and servicing for the past three financial years. Consequently, essential social development sectors like health, education, and water supply have received relatively less funding. If this trend continues, Uganda may be at risk of a debt crisis.

Meanwhile, the ineffectiveness of external loan usage by the government might be attributed to all forms of corruption, embezzlement, diversion of fund, inefficient loan utilization, inadequacy in policy implementation,

incompetency by policy makers on policy implementation and other issues. Also, notably of the past Uganda's external debt for 2021 was $19.2 billion, representing an 11.68% increase from 2020. Uganda's external debt for 2020 was $17.2 billion, representing a 23.16% increase from 2019.

In the literature, studies by Ajayi and Oke (2012), Mukui (2013), Babu et al. (2014), Panagiotis (2018) and Albu and Albu (2021) confirmed that public external debt is inversely related with economic growth. Also, other studies by Oke and Suleiman (2012), Pham (2018) and Liston (2020) found that public external debt is positively related with growth. However, some of these studies were conducted in some well-developed economies; as such, the findings may not replicate the Ugandan situation, and what seems similar in these studies is that many of them were conducted a few years ago as they do not reflect the current situation. Given this, this study examined the effect of external debt on economic growth in Uganda from 1986 to 2022, using a Vector Error Correction Mechanism.

LITERATURE REVIEW

The Post-Keynesian theories of public debt are premised on the fact that the government must increase its debt in as much as growth is deficient within the economy. The recent surge in public debt, coupled with rising inflation in developed nations, has sparked renewed debate about the economic implications of government borrowing. As government expenditure continues to grow at an alarming rate, with a significant portion allocated to non-developmental purposes, the controversy surrounding public debt has resurfaced (Sachs, 1989).

The question of whether public debt constitutes a burden on the economy and how to measure this burden remains a topic of discussion. Buchanan's (1958) critique of modern theories on public debt challenged the notion that government borrowing has no adverse effects on the economy and that its financial burden cannot be passed on to future generations. Subsequent studies, including those by Meade and Musgrave (1958), supported Buchanan's argument. However, Bowen (1960) pointed out the limitations of Buchanan's theory, suggesting that the true burden of debt lies in the immediate sacrifice of private consumption goods by the community when borrowed funds are spent. According to Pigou, the burden of debt is not shifted to subsequent generations if the project is financed through consumption. However, if this is not the case, a significant portion of the burden may be transferred to future generations.

Empirical studies on public debt and economic growth have generated mixed findings. A recent study by Albu and Albu (2021) explored the relationship between public debt and economic growth, focusing on the Euro-Area countries. The researchers employed a wavelet approach technique to analyze the data. The wavelet approach result showed that Euro-Area countries have entered high levels of public debt which showed a sign of inverse and significant effect on economic output. For non-linear analysis, the result established that debt growth has entered a threshold in which it affected economic growth. This study was conducted in developed countries; as a result, this conclusion could not be applied to other developing nations.

Research conducted by Nur et al. (2019) investigated the relationship between public debt and economic growth. The study aimed to identify the threshold at which public debt hinders growth and assess the validity of the 90% threshold proposed by Reinhart and Rogoff. A systematic review of 33 articles from the SCOPUS database was conducted using the PRISMA framework. The findings suggested that public debt can have either a positive or negative impact on economic growth, depending on the debt's usage and the country's financial development. The study concluded that there is no consensus on the effect of public debt on economic growth, and the 90% threshold is not universally applicable, particularly in upper-middle-income economies. This study only concentrated on the review of existing literature which had been conducted for quite a long time. The study's findings may not apply to current situations given the spike in public debt in rich and emerging countries due to the problem of time lag in response to macroeconomic indices.

A study focusing on Greece found a significant link between debt levels and population growth, but noted that further increases in the debt-to-GDP ratio after 2000 had no discernible impact on economic growth (Panagiotis, 2018). This study concluded that economic growth influences population growth, and that

excessive external debt does not stimulate growth. However, its findings may not be generalizable to developing economies.

Other studies have explored the relationship between public debt and economic growth in different contexts. An analysis of Euro Area data from 1961 to 2013 using the Autoregressive Distributed Lag (ARDL) model found a significant positive relationship between public debt and economic growth in the short run, but an inverted relationship in the long run (Gómez-Puig and Sosvilla-Rivero, 2017). This suggests that excessive public debt may harm economic growth in the long run. A separate study examining the implications of growing public debt on government effectiveness and trade balance from 1996 to 2016 found a U-shaped relationship between public debt and GDP (Mindaugas and Janina, 2018). The analysis, which covered 152 countries, also revealed that trade openness has a direct positive impact on GDP. The study concluded that rising public debt in the selected countries is driven by debt growth and trade balance.

Research on the impact of external debt on economic growth has yielded mixed results. A study on Uganda by William George Kirunda (2019) employed various econometric techniques, including Johansen Co-integration, Error Correction Model, and Granger causality test, to analyze data from 1985 to 2017. The findings revealed a negative and statistically significant relationship between external debt and economic growth, with external debt serving as a significant predictor of economic growth.

In contrast, a study by Pham (2018) on six ASEAN nations (Vietnam, Philippines, Singapore, Indonesia, Malaysia, and Thailand) using the General Method of Moments (GMM) estimation technique found a positive relationship between public debt and real GDP per capita. The study also identified foreign direct investment (FDI) as a significant driver of economic growth, while the effective exchange rate had an inverse but non-significant effect. However, the applicability of Pham's findings to emerging economies like Uganda is limited due to differences in economic contexts between ASEAN and sub-Saharan African countries. Moreover, the study's timeframe (1995-2015) does not capture recent developments in Uganda's public debt landscape. Also, researchers have investigated the relationship between debt and economic growth in various African countries. Ssempala et al. (2020) analyzed Uganda's experience from 1980 to 2016 using the Autoregressive Distributed Lag (ARDL) model. The results showed that total debt service has a long-term negative impact on GDP, while public debt has a positive effect in the long run but a negative effect in the short run. The study attributed Uganda's declining economic growth to persistent domestic borrowing.

A similar study in Kenya by Liston (2020) employed Granger causality, Vector Error Correction Model (VECM), and ARDL methodologies to examine the relationship between public debt and economic growth. The results revealed a directional relationship between GDP and public debt, as well as a one-way relationship between public debt and investment. Additionally, the ARDL model showed that public debt has a significant direct effect on GDP in both the short and long run.

Meanwhile, Mduduzi (2019) investigated the relationship between government debt and economic growth in 10 Southern African Development Community (SADC) countries from 1995 to 2017. Using the Fixed Effects Two-Stage Least Squares (FE-2SLS) model, the study found that government debt has a non-significant negative impact on GDP. However, trade openness, inflation, and military spending were found to have a significant negative impact on GDP. Several studies have examined the relationship between public debt and economic growth in various African countries. One study found a significant positive impact of investment and population growth on GDP, but no effect of increasing government debt on growth.

In Zambia, Saungweme and Odhiambo (2019) used a dynamic multivariate autoregressive-distributed lag (ARDL) model to analyze data from 1970 to 2017. The results showed no significant relationship between public debt and economic growth, and no causality between public debt service and economic growth. A study in South Africa by Mhlaba et al. (2019) employed the ARDL method to examine quarterly data from 2002 to 2016. The results revealed a significant indirect relationship between public debt and economic growth. Similarly, Owusu-Nantwi and Erickson (2016) used a vector error correction model to evaluate the causal relationship between public debt and economic growth from 1970 to 2012. The results showed a statistically significant long-term relationship between public debt and economic growth, as well as a short-term bidirectional causal relationship.

Furthermore, a comprehensive study by Mohammed et al. (2015) analyzed the relationship between economic growth and debt in 48 Sub-Saharan African countries using panel data from 1995 to 2012. The results revealed a significant economic relationship between public debt and national output in eight of the countries examined. The findings supported the Laffer Curve debt theory, which suggests that excessive debt can hinder economic growth. The study also identified a link between public debt factors and national productivity, consistent with economic theory. Furthermore, the research highlighted the importance of considering the potential impact of policy implementation on economic expansion. The study's conclusions emphasized that government power to stimulate growth is limited, and excessive borrowing can harm the economy. In a separate study, Zouhaier and Fatma (2014) investigated the relationship between external public debt and economic growth in 19 developing countries. The results showed that external public debt, as a percentage of GDP and GNI, had a negative and statistically significant impact on economic growth. Additionally, the study found that external public debt had a detrimental effect on investment in the countries examined.

Research has consistently shown that external debt can have a detrimental impact on economic growth. A study by Ajayi and Oke (2012) examined the effect of external debt on economic growth in Nigeria, using time series data on debt service payments, interest rates, external reserves, and Gross National Product. The ordinary least squares (OLS) method of estimation revealed that external debt burden has a significant adverse effect on national output. Similar findings were reported by Mukui (2013), who investigated the impact of external public debt on economic growth in Kenya. Using a linear model to analyze data from 1980 to 2011, the study found that external public debt and debt servicing had a negative effect on economic growth. A study by Babu et al. (2014) corroborated these findings, examining the effect of external debt on economic growth in the East African Community (EAC). Using a panel fixed-effects model based on the Solow growth model, the study analyzed annual data from 1970 to 2010. The results showed a negative and significant effect of external debt on GDP per capita growth rate.

Theoretical Underpinning and Methodology

Post–Keynesian Theories of Public Debt

This study adopted the theory of debt overhang as propounded by Krugman (1988) and extended by Sachs (1989). According to Krugman (1988), a country is said to experience debt overhang when such a country's present debt is large in which additional debt obtained affects growth. In the words of Sachs (1989), debt overhang crowd-out investment. The theory assumes that if there is a higher probability that future debt is likely to be higher than the sustainability of the said debt, it would discourage investment (domestic and foreign investments) due to the high rate of tax from industries. According to Sachs (1989), the substantial foreign debt burden carried by developing countries hinders economic growth through multiple mechanisms. Research by Checherita and Rother (2015) identified several key channels through which high public debt affects economic growth, including: total factor productivity; private saving; sovereign long-term nominal and real interest rates; and public investment.

Excessive debt can compromise macroeconomic stability by increasing budget deficits. When debt servicing is financed through higher taxation rather than increased budget deficits, tax rates tend to rise (Falade et al., 2018). The debt overhang hypothesis suggests that high levels of indebtedness, both domestic and foreign, can deter investment and hinder economic growth. This is because higher tax rates are often implemented to repay debt. Sachs (1989) outlined the underlying framework of this theory, which can be summarized as follows:

$debt = f\ (debts, tax, excv, int, invst\ )$ ..... …… ..... *(1)*

The schema is as follow;

$debt\uparrow \rightarrow debts\uparrow \rightarrow, tax\uparrow \rightarrow \rightarrow int\uparrow\ excv\uparrow \rightarrow invst\downarrow$ .... ……. ……*(2)*

Where; *debt* = Public debt, *debts* = Debt Service (proxy for debt sustainability), *tax* = Tax Rate, *excv* = Exchange Rate, *int* = Real Interest Rate and *invst*= total investment rate,

National debt leads to a crowding-out effect and reduces consumers' welfare through heavy taxation, high-interest rate payments, and heavy burdens for the next generation (Samuelson, 1976; Buchanan, 1958; & Meade 1958). However, Panagiotis (2018) showed that debt overhang reduces interest rates in the short-term but has no direct effect on the real interest rates, while inflationary tendencies and nominal interest rates affect the sustainability of debt in the long run. Since there is a need for the government to perform its social and constitutional responsibilities and the resources needed in developing countries to accelerate economic development and growth to an optimal level are in short supply, public debt becomes a concern for government and policymakers.

Models Specification

To achieve the objective of this study, Agbemavor (2015) model was adopted. The model shows the significant effect of external debt on economic growth. Hence, the model is expressed as:

$GRT_t = f\ (EXDG, CAP, LAB, EXP)$ ….. …….. …….(3)

In, explicit form, equation (3) is written as:

Where GRT, EXDG, CAP, LABP, and EXP represent growth rate, external debt percentage contribution to GDP, capital (proxied by gross investment as a % of GDP), labour force and export respectively.

Modifying equation 3 to achieve the study objective, we have

$GRT_t = f(EXG, PCAP, EXR, OPEN)$….. ……. …… (4)

Where;

Economic growth (GRT), External debt (EXG), Public capital investment (CAP), Exchange rate (EXR) and Trade openness (OPEN)

Model 3 was modified for four reasons, (i) LAB and EXP were removed because they are not essential determinant variables for the study objectives (ii) PCAP was included in the model because is an essential determinant for external debt as noted by the adopted theoretical framework (i.e government borrows for investment purpose), (iii) exchange rate was included in the model because external loan is given in foreign currency (i.e dollars), it is converted to local currency (i.e. Ugandan Shilling) (iv) OPEN was included in the model because the theory adopted is a neoclassical theory that assumes liberation of the entire economy before receiving external aid.

The econometric form of equation 4 for objective is given below as follow

$GRT_t = \alpha_0 + \alpha_1 EXG_t + \alpha_2 PCAP_t + \alpha_3 EXR_t + \alpha_4 OPEN_t + \mu_t$ (5)

A-priori Expectation : $\alpha_1 > 0, \alpha_2 > 0, \alpha_3 < 0, 0 > \alpha_4 < 0$

Table 1: Measurement of Variables

Variable	Unit	Measurement	Source
GRT	Percentage	Annual percentage growth rate of GDP at market prices based on constant local currency.	World Development Indicator, World Bank (2023)
EXG	Percentage	The value of funds borrowed from external source as a percentage of GDP at constant price Gross capital formation as a percentage	World Development Indicator, World Bank (2023) World Development

PCAP	Percentage	of GDP	Indicator, World Bank (2023)
EXR	Rate	Monthly average official exchange rate of Ugandan Shilling relative to US dollar (UGX/$)	International Monetary Fund (2023)
OPEN	Percentage	The sum of imports and exports of goods and services divided by GDP in constant prices	World Development Indicator, World Bank (2023)

Empirical Analysis

Table 2 shows the descriptive statistics of variables of interest in this study, namely, economic growth (GRT), external debt (EXDG), public capital investment (PCAP), exchange rate (EXR), and trade openness (OPEN). The mean result indicates that the exchange rate (EXR) had a greater influence on economic growth (GRT) throughout the period of consideration than any other identified variable. Its impact on economic growth is high volatility nature; hence, worsens economic growth. A similar trend was identified for median value, showing that high volatility and external debt affect aggregate output. According to the standard deviation, an exchange rate (EXR) showed the most variance among the independent variables. Its consequence is that non allowing the market force to determine the exchange rate price affects external debt, which worsens growth. Skewness estimations demonstrated that the variables employed had an uneven distribution; while *Jarque-Bera* also validated the model's normality distribution.

Table 2: Descriptive Statistics

	GRT	EXG	PCAP	EXR	OPEN
Mean	6.247714	47.18657	0.432571	1888.415	27.67060
Median	6.330000	46.54000	0.300000	1780.540	27.13806
Std. Dev.	2.228815	25.36173	0.447906	1079.322	4.727384
Skewness	0.437103	0.343985	-2.035534	0.252006	0.114012
Jarque-Bera	1.462161	1.099470	45.70271	1.278970	0.974655
Probability	0.481389	0.577103	0.123211	0.527564	0.614266
Observations	35	35	35	35	35

Source: Authors' computation using E-view-9

According to the ADF and PP results in Table 3, the economic growth (GRT), external debt (EXG), public capital investment (PCAP), exchange rate (EXR), and trade openness (OPEN) were stationary at first-level difference. The implication of the result is that the variables employed in the model have a strong statistical power to make inferences about the study's objective at an integrated order of 1.

Table 3: Results of Unit Root Test

Augmented Dickey Fuller (ADF)					Philip Perron(PP)			
Variable	Test Statistic	5% critical value	Level	S/NS	Test Statistic	5% critical value	Level	S/NS
GRT	/4.625021/	/2.951125/	I(1)	S	/4.650116/	/2.951125/	I(1)	S
EXG	/3.506394/	/2.954021/	I (1)	S	/3.534063/	/2.954021/	I (1)	S

PCAP	/6.888466/	/2.960411/	I(1)	S	/4.265518/	/2.951125/	I(1)	S
EXR	/4.322651/	/2.954021/	1(1)	S	/4.238955/	/2.954021/	1(1)	S
OPEN	/6.253106/	/2.957110/	I (1)	S	/6.878133/	/2.954021/	I (1)	S
Note; S presents Stationary; NS represents non-Stationary								

Source: Authors' computation using E-view-9

Trace statistic and the Max-Eigen statistic confirmed the presence of two co-integrating equations (see table 4). This finding supports the existence of a long-run relationship between the variables, thereby justifying the use of a Vector Error Correction (VEC) model.

Table 4: Johansen Co-Integration Test

Traces Statistics				
r = 0	*r = 1*	*r = 2*	*r = 3*	*r = 4*
87.09127 (69.81889) {0.0011*}	47.88356 (47.85613) { 0.0497*}	24.31471 (29.79707) { 0.1875}	7.636210 (15.49471) {0.5051}	0.068785 (3.841466) {0.7931}
Max-Eingen Statistics				
r = 0	*r = 1*	*r = 2*	*r = 3*	*r = 4*
39.20770 (33.87687) { 0.0105*}	29.56885 (27.58434) {0.0205*}	16.67850 (21.13162) { 0.1877}	7.567425 (14.26460) {0.4244}	0.068785 (3.841466) { 0.7931}
** denotes rejection of the null hypothesis at the 0.05 level, Critical value at 5% level in ( ) , &Prob in { }*				

Source: Authors' computation using E-view-9

The lagged error correction showed a disequilibrium in the model, implying that disequilibrium was corrected in the model annually. External debt coefficients for both lagged one and lagged two periods were non-significant but showed a positive sign respectively. This indicates that the majority of the foreign loans obtained were not economically used for their purposes.

The results presented in Table 5 indicate that the coefficient for external debt (EXDG) is positive but statistically insignificant at the 5% level. This suggests that external debt has a minimal effect on economic growth (GRT). The findings imply that Uganda's external debt comprising funds sourced from international lenders, commercial banks, and foreign governments has not played a substantial role in boosting national output.

Several factors may account for this lack of significance. First, a large proportion of these external loans are not channeled into infrastructure development but are instead allocated to recurring expenditures. For instance, in Uganda, despite the high volume of external borrowing ostensibly earmarked for infrastructure, recurrent expenditures continue to exceed capital investment. Moreover, corruption plays a critical role in weakening the impact of external debt, as significant portions of borrowed funds are misappropriated rather than directed toward productive physical investments. This outcome aligns with findings by Dar and Amirkhalkhali (2014) and Mduduzi (2019), who all observed a negative and statistically insignificant relationship between external debt and economic growth. In contrast, Panagiotis (2018) and Ssempala et al. (2020) reported a direct and significant link. Such inconsistencies across studies may be attributed to cross-country differences, varying levels of financial development, and methodological approaches.

Table 5 also reveals that public capital investment (PCAP) is statistically significant at the 5% level, albeit with an indirect impact on economic growth. This indicates that Uganda's external debt-to-GDP ratio is not effectively translating into productive capital formation, thereby hampering growth. The negative coefficient contradicts theoretical expectations and can be explained by the fact that much of the borrowed capital is diverted for personal gain rather than investment. Studies, such as those by Mahfuzul and Igwike (2015), Gómez-Puig and Sosvilla-Rivero (2017), and Mduduzi (2019), similarly identified a significant inverse relationship between external debt and growth.

The exchange rate coefficient (EXR) reported in Table 5 is statistically significant at the 0.5% level. The negative association implies that a 1% depreciation in the exchange rate led to increase of 29.8% and 18.2% in Uganda's economic growth rate over the study period. This result is consistent with theoretical expectations, confirming that exchange rate depreciation stimulates economic activity. It suggests that when external borrowing is effectively directed toward physical investment, it can expand the domestic market. Real depreciation enhances export competitiveness while discouraging imports, thereby increasing demand for domestically produced goods and ultimately boosting aggregate output.

This negative correlation is consistent with findings by Babu et al. (2015), Mindaugas and Janina (2018), Ssempala et al. (2020), and Saungweme and Odhiambo (2019), who concluded that real currency depreciation supports economic growth by making exports more attractive and imports more costly. Conversely, studies conducted outside Uganda including those by Mhlaba et al. (2019), and Nur, et al. (2019) found that exchange rate appreciation negatively impacts global production, thereby limiting local market expansion due to increased international competition.

Lastly, based on the p-value, which is below the 5% threshold, the coefficient for trade openness (OPEN), as shown in Table 5, is positive and statistically significant. This indicates that when external borrowing is directed toward investments in physical capital, it fosters the expansion of local markets and contributes to economic liberalization. Increased trade openness leads to a higher outflow of finished goods, more efficient input utilization, and overall economic development. These results are consistent with those reported by Babu et al. (2015), and Nur et al. (2019).

Table 5: Vector Error Correction

CointEq1:	-1.133339	R^2 *:* 0.764678		
	(0.53473)	*AdjR^2squared:* 0.613206		
	[-2.11947*]	*F-statistic : 1.100176*		
Δ(GRT(-1))	Δ(EXG(-1)	Δ(PCAP(-1))	Δ(EXR(-1))	Δ(OPEN(-1))
0.239955	0.035439	-2.512009	-0.298546	0.283114
(0.09570)	(0.05611)	(0.86629)	(0.03017)	(0.11799)
[2.50736*]	[0.63154]	[-2.89973*]	[-9.89545*]	[2.39947*]
Δ(GRT(-2))	Δ (EXG(-2))	Δ(PCAP(-2))	Δ(EXR(-2))	Δ(OPEN(-2))
-0.047227	0.022534	-1.663545	-0.18220	0.242754
(0.25994)	(0.05333)	(0.31201)	(0.03022)	(0.19183)
[-0.18169]	[0.42256]	[-5.33174*]	[-6.02291*]	[1.26547*]
Standard errors in ( ) & t-statistics in [ ], t-value ($t_{0.05}$= 2.042, & $t_{0.1}$ = 1.697				
** & * rep. statistically significant at the 0.05 and 0.1 level				

Source: Authors' computation using E-view-9

Impulse Response Function Result

The impulse response analysis is depicted in figure 1, illustrating the dynamic responses of variables to exogenous shocks. Multiples charts were used to present the impulse response function. The Cholesky decomposition method, adjusted for degrees of freedom, was used to analyze the responses over a 5-year horizon.

Cholesky of the impulse response is adjusted for 5 years period. The impulse response result graphs show the response of economic growth (GRT), external debt (EXG), public capital investment (PCAP), exchange rate (EXR), and trade openness (OPEN) for the period of five (5). The response of public capital investment (CAP) and external debt (EXG) to other variables in the model in the next five (5) will be positive. Implying that the effective use of borrowed funds on public investment in the next years is essential to sustain growth. Also, the response of exchange rate (EXR) and trade openness (OPEN) on economic growth (GRT) exhibit both positive and negative signs. For exchange rate, this implies that high volatility of the exchange rate is likely to cause havoc on growth; while excessive imported goods than export may worsen economic growth in the next five years.

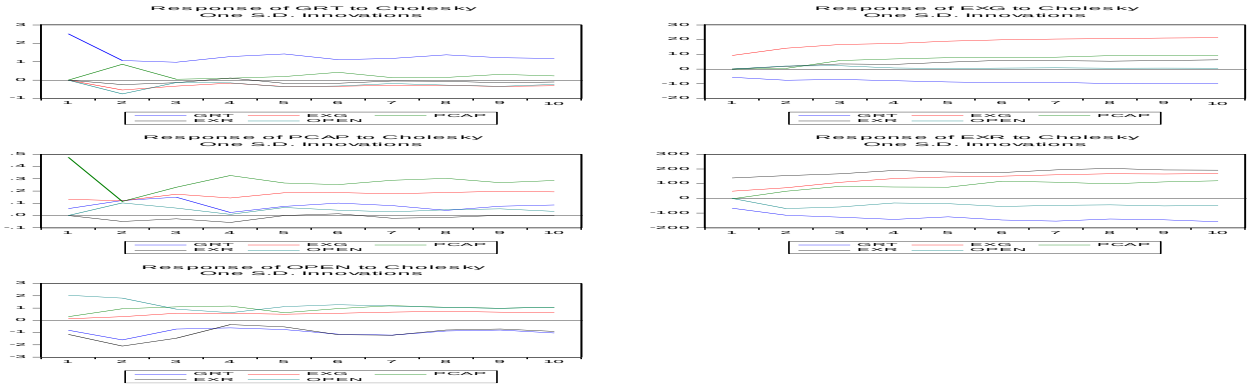

Fig. 1: Impulse Response Function of the Variables Utilized in the Study

CONCLUSION AND RECOMMENDATIONS

The analysis revealed that external debt (EXG) does not have a statistically significant effect on economic growth at the 5% significance level. Conversely, public capital investment (PCAP) and the exchange rate (EXR) demonstrated a significant but indirect relationship with economic growth (GRT), while trade openness (OPEN) showed a positive correlation with growth. These findings imply that Uganda's economic development is being constrained by the inefficient allocation of external borrowing, particularly the limited investment of these funds in productive public infrastructure. Based on this analysis, several policy recommendations emerge.

The Ugandan government should ensure that foreign loans acquired from international sources are strategically invested in physical infrastructure projects that support long-term growth. The study highlights that misdirected use of external debt, especially, when diverted from capital investment undermines economic performance. Therefore, foreign borrowing must be accompanied by clearly defined capital expenditure plans that prioritize infrastructure over recurrent spending, in order to prevent debt servicing from adversely affecting economic growth. There is substantial concern that the current rate at which heavily indebted African nations are servicing external debt may hinder the region’s economic progress. For external financing to be effective, issues such as corruption, mismanagement, and inefficient utilization of loans must be addressed decisively.

Furthermore, the central bank should move toward a more liberal exchange rate regime by allowing market forces of demand and supply to determine exchange rates. This would support domestic currency stabilization and promote local production. Finally, the government must implement import-substitution and export-promotion strategies to ensure that domestic production surpasses import levels. This approach will foster self-reliance, encourage the consumption of locally produced goods, and reduce dependency on foreign products.

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