

Do External Debt and Debt Servicing Influence Economic Growth? Evidence From Selected Sub-Saharan African Countries

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ABSTRACT

This study investigates the effect of external debt and debt servicing on economic growth in selected Sub Saharan African countries using the Cross Sectionally Augmented Autoregressive Distributed Lag (CS ARDL) model, appropriate due to the mixed order of integration and evidence of cross-sectional dependence in the data. The baseline CS ARDL results show that in the short run, external debt ($\beta = -0.0216$, $p = 0.158$) and debt servicing ($\beta = -0.0302$, $p = 0.765$) are negative but statistically insignificant, while institutional quality is weakly significant and negative ($\beta = -3.0381$, $p = 0.076$) and real interest rate is positive and significant ($\beta = 0.0447$, $p = 0.034$). In the long run, only lagged GDP is statistically significant ($\beta = 1.1305$, $p = 0.000$), while external debt, debt servicing, institutional quality, and other control variables remain insignificant, indicating strong growth persistence and limited direct influence of debt variables on economic performance. The robustness checks using fixed effects and Driscoll and Kraay standard errors confirm these findings. External debt remains positive but statistically insignificant, while debt servicing is negative and insignificant across both estimators. Institutional quality is also insignificant in its direct effect; however, the interaction between external debt and institutional quality is positive and statistically significant, indicating that the growth impact of external borrowing depends on institutional strength. Real interest rate and exchange rate remain consistently negative and statistically significant, reinforcing the role of macroeconomic instability in constraining growth. The study concludes that external debt and debt servicing do not exert a direct significant influence on economic growth in Sub Saharan Africa. Instead, their effectiveness is conditional on institutional quality, while macroeconomic stability and structural persistence play more dominant roles in determining growth outcomes. It is recommended that governments strengthen institutional quality, improve debt management frameworks, and ensure that borrowed funds are directed toward productive investments capable of generating sustainable long-term growth.

Key words: External debt, Debt servicing, Economic growth, CS ARDL, Driscoll and Kraay and Sub-Saharan Africa

INTRODUCTION

Across Sub-Saharan Africa, the persistent challenge of limited domestic revenue mobilization has continued to constrain governments' ability to finance development. As a result, many countries in the region increasingly rely on external borrowing to bridge fiscal gaps and support capital-intensive projects. External debt has therefore emerged as a central instrument for financing infrastructure, social services, and broader economic transformation efforts (Were, 2024; Otieno, 2023). In principle, such borrowing is expected to stimulate economic growth by easing liquidity constraints and enabling productive investment, particularly where domestic savings are insufficient to meet development needs.

From a theoretical standpoint, the role of external debt in promoting economic growth is well established. Classical development theories, including the savings–investment gap hypothesis associated with Rostow (1960), posit that developing economies can accelerate growth by supplementing domestic resources with foreign capital. Similarly, neoclassical growth models argue that capital-scarce economies benefit from external

borrowing as it enhances capital accumulation and raises output levels (Madow et al., 2021). In the same vein, Keynesian theory suggests that debt-financed government expenditure can stimulate aggregate demand through multiplier effects, thereby fostering short-term economic expansion. However, the realization of these theoretical benefits depends critically on the efficient allocation and management of borrowed funds (Matthew & Mordecai, 2016).

Despite these expectations, the experience of Sub-Saharan African countries has been mixed. Following the debt relief initiatives of the early 2000s, particularly the Heavily Indebted Poor Countries initiative and the Multilateral Debt Relief Initiative, many countries in the region witnessed a significant reduction in their debt burdens. For instance, debt-to-GDP ratios declined markedly between 2004 and 2012, creating fiscal space for renewed investment (Calderón & Zeufack, 2020). However, this progress proved short-lived, as debt levels began to rise again from 2012 onward, driven by increased borrowing to finance infrastructure and respond to economic shocks. By 2018, the average debt-to-GDP ratio in the region had risen substantially, reflecting renewed fiscal pressures (Calderón & Zeufack, 2020).

More recently, global economic disruptions have further exacerbated the debt situation. The COVID-19 pandemic, in particular, triggered an unprecedented increase in global debt levels, with developing countries experiencing significant fiscal strain (World Bank, 2020; IMF, 2020). Sub-Saharan African economies, already vulnerable to external shocks, faced declining revenues alongside rising expenditure demands, leading to increased reliance on external borrowing. Consequently, the region has witnessed not only a rise in debt levels but also a shift in the composition of debt toward non-concessional sources, which carry higher interest rates and shorter maturity periods (World Economic Outlook, 2023).

This structural shift in debt composition has important implications for debt sustainability and economic performance. Unlike concessional loans, non-concessional borrowing imposes higher servicing costs, thereby increasing fiscal pressure on governments. In many cases, a significant proportion of public revenue is now allocated to debt servicing, limiting the resources available for critical sectors such as health, education, and infrastructure (Turan & Yanikkaya, 2021). Furthermore, because external debt is typically denominated in foreign currencies, exchange rate volatility can significantly increase repayment costs, thereby amplifying macroeconomic instability (Park et al., 2018).

The rising burden of debt servicing has become a central concern in the region. While external borrowing can support growth when invested productively, excessive debt servicing obligations may crowd out public investment and dampen economic performance. Empirical evidence suggests that high debt servicing costs reduce fiscal flexibility, constrain government spending, and may ultimately hinder long-term growth (Petrovic et al., 2021). This creates a paradox in which borrowing intended to promote development instead becomes a source of economic vulnerability.

In addition to these structural challenges, the effectiveness of external debt in promoting growth is closely linked to institutional and governance factors. Strong governance frameworks are essential for ensuring that borrowed funds are allocated efficiently and transparently. Countries with high-quality institutions are better positioned to utilize external debt productively, manage fiscal risks, and sustain economic growth (Gani, 2011; Mehlum et al., 2006). Conversely, weak governance characterized by corruption, poor accountability, and ineffective public financial management can undermine the potential benefits of external borrowing (Cooray et al., 2017). These challenges often result in the misallocation of borrowed funds, inefficient project implementation, and increased vulnerability to debt distress. As a result, the relationship between external debt and economic growth in the region has been inconsistent and, in some cases, negative.

Moreover, the interaction between external debt, debt servicing, and economic growth remains an area of ongoing debate in the empirical literature. While some studies find that external debt contributes positively to growth when managed effectively, others highlight its adverse effects, particularly in the presence of high debt servicing burdens and weak institutional environments (Olaoye, 2022; Tarek & Ahmed, 2017). These divergent findings underscore the complexity of the debt-growth nexus and the need for further empirical investigation, especially within the context of Sub-Saharan Africa.

Given the increasing reliance on external borrowing and the rising cost of debt servicing in the region, it is imperative to re-examine their implications for economic growth. Understanding whether external debt and debt servicing enhance or hinder growth is crucial for informing policy decisions aimed at achieving sustainable development. This study therefore provides empirical evidence on the influence of external debt and debt servicing on economic growth in selected Sub-Saharan African countries, with a view to contributing to the ongoing discourse and guiding effective debt management strategies.

LITERATURE REVIEW

2.1 Conceptual Review

External Debt

External debt refers to financial obligations owed by a country to foreign creditors, including multilateral institutions such as the World Bank and the International Monetary Fund, bilateral partners, and private lenders. It is typically denominated in foreign currencies and repaid over time with interest. For developing economies, particularly in Sub-Saharan Africa, external debt serves as a critical mechanism for mobilizing resources beyond limited domestic savings (World Bank, 2023; IMF, 2020).

The reliance on external borrowing in Sub-Saharan Africa is largely driven by structural fiscal deficits, underdeveloped financial markets, and the need to finance large-scale infrastructure and development projects (Were, 2024; Otieno, 2023). In theory, external debt is expected to support economic growth by enabling investments in productive sectors such as transportation, energy, education, and health. These investments can enhance productivity, improve human capital, and stimulate long-term economic expansion. However, the effectiveness of external debt is conditional on how borrowed funds are utilized. When external loans are directed toward consumption or unproductive projects, they fail to generate sufficient returns to service the debt, thereby increasing the risk of debt distress. Moreover, the structure of external debt has evolved in recent years, with a growing share sourced from non-concessional lenders at higher interest rates. This shift has increased the vulnerability of many Sub-Saharan African economies to external shocks and financial instability (World Economic Outlook, 2023).

Another important dimension of external debt is its exposure to exchange rate risk. Since repayments are made in foreign currencies, depreciation of local currencies increases the real burden of debt servicing. This can lead to macroeconomic imbalances, including inflationary pressures and balance of payments crises (Park et al., 2018). Thus, while external debt can be a useful development tool, its sustainability depends on prudent borrowing strategies, sound macroeconomic policies, and effective institutional frameworks.

Debt Servicing

Debt servicing represents the periodic payment of principal and interest on borrowed funds. It is a critical component of debt sustainability, as it determines a country's ability to meet its financial obligations without compromising economic stability. In many Sub-Saharan African countries, debt servicing has become increasingly burdensome due to rising debt levels and higher borrowing costs.

High debt servicing obligations can significantly constrain fiscal policy by reducing the resources available for public investment and social spending. Governments facing large debt service payments often have to reallocate funds away from essential sectors such as education, healthcare, and infrastructure, which are vital for long-term growth (Turan & Yanikkaya, 2021). This trade-off between debt servicing and development spending is a key challenge for policymakers in the region. Furthermore, debt servicing can have adverse macroeconomic effects. It may lead to higher taxation or reduced government spending, both of which can dampen economic activity. In addition, high debt servicing ratios can signal fiscal vulnerability, thereby increasing borrowing costs and reducing investor confidence. Empirical evidence suggests that excessive debt servicing crowds out both public and private investment, ultimately slowing economic growth (Karagol, 2002; Fosu, 1999).

The situation is further complicated by the composition of debt. External debt servicing requires foreign exchange, which may be scarce in developing economies. This can lead to pressure on foreign reserves and exchange rates, exacerbating macroeconomic instability. Consequently, the sustainability of debt servicing depends not only on the size of the debt but also on the structure, terms, and currency composition of the debt portfolio.

Economic Growth (GDP)

Economic growth, commonly measured by Gross Domestic Product, reflects the overall performance of an economy. GDP captures the total value of goods and services produced within a country and serves as a key indicator of economic progress and development (Ahmad & Schreyer, 2016). Sustained economic growth is essential for improving living standards, reducing poverty, and achieving development objectives.

The relationship between external debt, debt servicing, and economic growth is complex and multidimensional. On one hand, external borrowing can stimulate growth by financing investment and enhancing productive capacity. On the other hand, excessive debt and high servicing costs can hinder growth by reducing fiscal space and discouraging investment.

In developing economies, the impact of external debt on growth is often influenced by factors such as institutional quality, governance, and macroeconomic stability. Countries with strong institutions and effective governance are more likely to utilize borrowed funds efficiently, thereby achieving positive growth outcomes. Conversely, weak institutions and poor governance can lead to misallocation of resources, corruption, and inefficiency, undermining the potential benefits of external borrowing (Gani, 2011).

2.2 Theoretical Framework

This study is anchored on the Keynesian Theory of Public Debt. The theory provides a structured explanation of how external debt and debt servicing interact with economic growth, particularly in developing economies such as those in Sub-Saharan Africa.

2.2.1 Keynesian Theory of Public Debt

The Keynesian Theory of Public Debt, associated with Keynes (1936), emphasizes the role of government borrowing as a tool for stimulating economic activity, particularly during periods of economic downturn or insufficient aggregate demand. According to this perspective, debt financed government expenditure can increase aggregate demand, leading to higher output, employment, and income through multiplier effects.

The Keynesian view has been widely supported in macroeconomic literature. Blanchard (2019) notes that fiscal policy, including deficit financing, can play an important role in stabilizing economic fluctuations and supporting growth during recessions. Similarly, Arestis and Sawyer (2003) argue that public borrowing can be an effective tool for promoting economic recovery when private sector demand is weak. These contributions reinforce the idea that government borrowing can have positive short run effects on economic performance when used appropriately.

However, the Keynesian framework also acknowledges that the long term impact of public debt depends on the productivity of government expenditure. If borrowed funds are invested in productive sectors such as infrastructure, human capital, and technology, they can generate returns that support debt repayment and sustain growth. Conversely, if debt is used to finance recurrent expenditures or inefficient projects, it may lead to fiscal imbalances and undermine economic stability.

In the context of Sub Saharan Africa, the Keynesian perspective is particularly relevant given the frequent use of external borrowing to finance public investment and stabilize economies during periods of fiscal stress. However, the effectiveness of such borrowing is often constrained by weak institutional frameworks, corruption,

and inefficient public financial management systems. These challenges may limit the multiplier effects of debt financed expenditure and reduce its overall contribution to economic growth.

Based on the theoretical framework, economic growth can be expressed as a function of external debt and debt servicing as follows:

$$GDP = f(ED, DS)$$

Where:

GDP = Economic growth (proxied by Gross Domestic Product)

ED = External debt

DS = Debt servicing

Expanding this into an estimable linear functional form:

$$GDP = \beta_0 + \beta_1 ED + \beta_2 DS + \mu \quad \text{eqn 2.1}$$

In equation 2.1, β_0 = Intercept term, β_1 = Coefficient of external debt, β_2 = Coefficient of debt servicing and μ = Error term. To align with the theoretical implications of growth models and institutional considerations, the model can be extended as:

$$GDP = \beta_0 + \beta_1 ED + \beta_2 DS + \beta_3 G + \beta_4 Z + \mu \quad \text{eqn 2.2}$$

In equation 2.2, G represent Governance indicators (capturing institutional quality) while Z comprise of Vector of control variables such as institutional quality indicators, Real Interest rate (RIR) and Exchange Rate (EXR). This equation captures the essence of the three theories: The Dual Gap Theory is reflected in $\beta_1 ED$, where external debt is expected to positively influence GDP by filling savings and foreign exchange gaps. The Keynesian Theory is reflected in both ED and DS , where debt financed expenditure can stimulate aggregate demand and growth in the short run.

The Debt Overhang Theory is reflected in $\beta_2 DS$, where rising debt servicing obligations may negatively affect growth by crowding out productive investment and reducing fiscal space.

2.3 Empirical Review

Recent empirical studies have increasingly examined the impact of external debt and debt servicing on economic growth, particularly in Sub-Saharan Africa where debt levels have risen significantly in recent years. The growing reliance on both concessional and non-concessional borrowing has intensified interest in understanding how debt dynamics influence macroeconomic performance. For instance, Ayana, Demissie, and Sore (2025) examined the effects of foreign debt components on economic growth in Sub-Saharan Africa using panel quantile regression. Their findings reveal that long term external debt negatively affects economic growth, while short term debt is largely insignificant. The study, however, focuses primarily on the composition of external debt without explicitly incorporating debt servicing as a separate explanatory variable. This creates a gap in understanding the combined burden of debt stock and repayment obligations. The current study addresses this limitation by jointly analyzing external debt and debt servicing to capture both the accumulation and repayment dimensions of debt dynamics (Ayana et al., 2025).

Similarly, Nadabo and Abdullahi (2025) investigated the impact of external debt on capital formation in Sub-Saharan Africa using system GMM estimation. Their results indicate that external debt significantly influences investment, with institutional quality moderating the relationship. However, the study does not directly examine economic growth as the dependent variable, nor does it isolate the effect of debt servicing. This leaves a gap in

linking debt obligations directly to growth outcomes. The present study fills this gap by focusing explicitly on economic growth while including both external debt and debt servicing as core variables (Nadabo & Abdullahi, 2025).

Mairafi, Ibrahim, and Abdullahi (2023) analysed the relationship between external debt and economic growth across 26 Sub-Saharan African countries using panel GMM techniques. They find that external debt has a significant relationship with growth, though the results vary across countries. The study, however, excludes debt servicing as a distinct variable, thereby limiting its ability to assess the fiscal pressure associated with repayment obligations. The current study addresses this gap by incorporating debt servicing alongside external debt to provide a more comprehensive evaluation of debt impact on growth (Mairafi et al., 2023). Also, Ogunleye, Adebayo, and Oladipo (2022) examined the effect of external debt on economic performance in selected African economies. Their findings show that external debt negatively affects growth when it exceeds sustainable levels. The study focuses mainly on debt stock without considering debt servicing obligations, which are critical in determining fiscal sustainability. The current study bridges this gap by including debt servicing as an additional explanatory variable to better capture the full impact of debt on economic growth (Ogunleye et al., 2022).

Using panel data analysis, Adebayo and Akinsola (2022) studies the impact of debt servicing on economic growth in developing countries. Their findings indicate that high debt servicing payments significantly reduce economic growth by limiting public investment. However, the study does not include external debt as a complementary variable, thereby overlooking the role of debt accumulation in shaping repayment burdens. The present study addresses this limitation by jointly analyzing external debt and debt servicing within a unified framework (Adebayo & Akinsola, 2022). Additionally, Onwuka and Eze (2023) investigated debt sustainability and economic growth in Sub-Saharan Africa and find that rising debt servicing obligations reduce fiscal space and constrain growth enhancing expenditures. Although the study highlights the importance of debt servicing, it does not integrate external debt stock into the empirical model. This omission limits the ability to assess how debt accumulation translates into servicing pressures. The current study fills this gap by simultaneously modeling both external debt and debt servicing effects on economic growth (Onwuka & Eze, 2023).

Mensah and Abor (2022) analyze the relationship between external debt and economic growth in African countries using dynamic panel models. Their results suggest a nonlinear relationship, where moderate debt supports growth while excessive debt hinders it. However, the study does not explicitly account for debt servicing obligations, which are crucial in understanding debt sustainability. The present study extends this analysis by incorporating debt servicing to provide a more complete representation of debt related constraints on growth (Mensah & Abor, 2022).

Sulaiman and Olanrewaju (2024) examine the macroeconomic effects of external debt in Nigeria using time series techniques. Their findings show that both external debt and debt servicing negatively affect economic growth in the long run. Although the study considers both variables, it is limited to a single country context, which restricts generalizability. The current study addresses this gap by extending the analysis to a panel of selected Sub-Saharan African countries, allowing for cross country comparisons (Sulaiman & Olanrewaju, 2024).

Khan and Sharma (2024) conduct a cross country analysis of developing economies and find that debt servicing ratios significantly reduce economic growth. While the study provides useful insights, it focuses primarily on debt servicing without adequately integrating external debt stock into the model. This creates a partial view of debt dynamics. The present study fills this gap by examining both external debt and debt servicing together to capture their combined influence on economic growth (Khan & Sharma, 2024).

International Monetary Fund (IMF, 2024) reports that rising debt servicing costs in Sub-Saharan Africa are crowding out public investment and slowing economic recovery. Although the report provides macro level evidence, it is largely descriptive and does not employ econometric analysis to quantify the relationship between debt variables and economic growth. The current study contributes by providing empirical econometric evidence that quantifies the effects of external debt and debt servicing on economic growth using a structured model (IMF, 2024).

2.4 Research Gap

Existing empirical studies have examined external debt and debt servicing in relation to economic growth, but several limitations persist across the literature. First, studies such as Ayana et al. (2025) and Ogunleye et al. (2022) focus primarily on external debt without adequately incorporating debt servicing, despite its importance as a fiscal constraint. Second, research by Adebayo and Akinsola (2022) and Onwuka and Eze (2023) emphasizes debt servicing but does not integrate external debt, thereby providing only a partial view of debt dynamics.

Third, most studies either focus on single country analysis, as seen in Sulaiman and Olanrewaju (2024), or adopt broader regional analyses without focusing on a clearly defined group of selected Sub-Saharan African countries, as observed in Mairafi et al. (2023). This limits the ability to draw region specific policy conclusions. Fourth, although studies such as Mensah and Abor (2022) and Nadabo and Abdullahi (2025) incorporate advanced econometric techniques, they often exclude one of the key variables of interest, either external debt or debt servicing.

Finally, despite growing evidence from institutional reports such as the International Monetary Fund (2024), there remains a lack of rigorous empirical models that simultaneously incorporate external debt and debt servicing in a unified framework while accounting for cross sectional dependence, to assess their combined impact on economic growth under recent macroeconomic conditions.

RESEARCH METHODS

The study adopts a quantitative research design suited to examining the relationship between external debt, debt servicing, and economic growth, allowing for hypothesis testing and clear identification of the direction and strength of associations rather than simple description, a method widely applied in empirical economic analysis (Creswell and Creswell, 2018). The population comprises Sub Saharan African countries, while the sample focuses on Nigeria, Kenya, South Africa, Angola, Rwanda, and The Gambia, selected based on data availability and economic relevance, covering the period 1996 to 2023 within a broader analytical frame extending from 1990 to 2024 to adequately capture long run dynamics and structural shifts in debt patterns; the panel nature of the data strengthens the analysis by combining cross sectional and time series dimensions. The study relies on secondary data sourced from established international databases including the World Bank World Development Indicators, the International Monetary Fund, and the United Nations Conference on Trade and Development, using Gross Domestic Product as a proxy for economic growth alongside external debt, debt servicing, and relevant control variables such as inflation and gross capital formation, with these sources recognized for their reliability and consistency in empirical research (World Bank, 2024; IMF, 2024).

3.1 Method of Analysis

A series of pre-estimation diagnostic tests were first conducted to ensure the appropriateness of the empirical strategy. These include panel unit root tests to determine the order of integration of the variables, cointegration tests to confirm the existence of a long run relationship among the variables, and tests for cross sectional dependence and serial correlation to validate the underlying assumptions of the panel data structure. The results from these diagnostics confirmed the suitability of the chosen econometric framework for the analysis of the debt growth nexus in Sub Saharan African countries.

Following the mixed order of integration among the variables and the confirmed presence of cross sectional dependence, the study employed the Cross Sectionally Augmented Autoregressive Distributed Lag (CS ARDL) model as the baseline estimation technique. This approach is appropriate because it accommodates both $I(0)$ and $I(1)$ variables, captures both short run dynamics and long run equilibrium relationships, and corrects for cross sectional dependence through the inclusion of cross sectional averages, thereby reducing bias arising from unobserved common factors and potential endogeneity across countries.

To ensure robustness and enhance the reliability of the findings, the study further estimated a fixed effects model with Driscoll and Kraay standard errors, following John Driscoll and Aart Kraay (1998), which produces

inference that is robust to cross sectional dependence, heteroskedasticity, and serial correlation. In addition, a robustness specification was introduced by incorporating an interaction term between external debt and government expenditure to capture potential conditional fiscal effects on economic growth, thereby extending the baseline relationship without altering its core structure.

3.2 Model Specification

Building on the theoretical framework, the empirical model is specified as follows:

$$GDP_{it} = \beta_0 + \beta_1 EXD_{it} + \beta_2 TDS_{it} + \beta_3 X_{it} + \mu_i + \epsilon_{it} \quad \text{equation 3.1}$$

In equation 3.1, GDP_{it} = Gross Domestic Product of country i at time t , ED_{it} = External debt, TDS_{it} = Total Debt servicing, X_{it} = Vector of control variables such as institutional quality, exchange rate, Real Interest rate and β_0 = Intercept term, $\beta_1, \beta_2, \beta_3$ = Parameters to be estimated, μ_i = Country specific effects and ϵ_{it} = Error term

To extend Equation 3.1 into a dynamic panel ARDL framework, the model must explicitly incorporate both the lag structure of the dependent variable and the control variables within X_{it} . This allows the analysis to capture short run dynamics and long run equilibrium relationships among GDP, external debt, debt servicing, and the selected control variables.

Following the introduction of the control variables, the dynamic ARDL model is expressed as follows:

$$GDP_{it} = \alpha_i + \sum_{p=1}^P \phi_p GDP_{i,t-p} + \sum_{q=0}^Q \beta_{1q} EXD_{i,t-q} + \sum_{q=0}^Q \beta_{2q} TDS_{i,t-q} + \sum_{q=0}^Q \beta_{3q} INQ_{i,t-q} + \sum_{q=0}^Q \beta_{4q} RIR_{i,t-q} + \sum_{q=0}^Q \beta_{5q} EXR_{i,t-q} + \mu_i + \epsilon_{it} \quad \text{eqn 3.2}$$

To distinguish between short run adjustments and long run equilibrium, the ARDL model is reparametrized into its Error Correction Model (ECM) form:

$$\Delta GDP_{it} = \lambda_i (GDP_{i,t-1} - \theta_1 EXD_{i,t-1} - \theta_2 TDS_{i,t-1} - \theta_3 INQ_{i,t-1} - \theta_4 RIR_{i,t-1} - \theta_5 EXR_{i,t-1}) + \sum_{p=1}^{P-1} \psi_p \Delta GDP_{i,t-p} + \sum_{q=0}^{Q-1} \gamma_{1q} \Delta EXD_{i,t-q} + \sum_{q=0}^{Q-1} \gamma_{2q} \Delta TDS_{i,t-q} + \sum_{q=0}^{Q-1} \gamma_{3q} \Delta INQ_{i,t-q} + \sum_{q=0}^{Q-1} \gamma_{4q} \Delta RIR_{i,t-q} + \sum_{q=0}^{Q-1} \gamma_{5q} \Delta EXR_{i,t-q} + \epsilon_{it} \quad \text{eqn 3.4}$$

In this specification, Gross Domestic Product ($GDP_{(it)}$) measures economic performance, while External Debt ($EXD_{(it)}$) captures the inflow of foreign resources as emphasized by the Dual Gap Theory, and Total Debt Servicing ($TDS_{(it)}$) reflects the repayment burden highlighted in the Debt Overhang Theory. The control variables include Institutional Quality ($INQ_{(it)}$), and the effectiveness of legal and regulatory frameworks, Real Interest Rate ($RIR_{(it)}$), which represents the cost of borrowing and influences investment and debt sustainability, and Exchange Rate ($EXR_{(it)}$), which captures external sector conditions and affects the cost of servicing foreign denominated debt. The intercept term (β_0) represents baseline economic output, while β_1 to β_5 measure the effects of the explanatory variables, with μ_i accounting for country specific heterogeneity and $\epsilon_{(it)}$ capturing random shocks, thereby ensuring that both macroeconomic conditions and cross country differences are effectively incorporated into the panel analysis.

EMPIRICAL FINDINGS

The descriptive statistics of the variables were analyzed to determine the nature, characteristics and patterns in the distribution of the variables overtime.

Table 1: Descriptive Statistics

Statistic	GDP	EXD	TDS	INQ	RIR	EXR
Mean	4.542	53.330	5.813	-0.716	6.804	185.148
Median	4.561	42.787	2.838	-0.772	6.898	79.287
Maximum	15.329	223.450	30.360	0.232	38.977	1160.099
Minimum	-8.130	6.988	0.166	-0.935	0.128	2.158
Std. Dev.	3.951	44.236	7.153	0.628	15.402	249.156
Skewness	0.093	1.850	1.852	-0.371	-3.011	2.808
Kurtosis	3.825	6.756	5.774	2.538	18.521	5.567
Jarque-Bera	5.008	194.630	149.906	5.344	1940.183	137.655
Probability	0.082	0.000	0.000	0.069	0.000	0.000
Observations	168	168	168	168	168	168

Source: Author's computation (2026)

The descriptive statistics in Table 1 reveal important characteristics of the variables across the 168 observations, considering their respective measurement units. Gross domestic product and external debt, both measured in billion naira, exhibit mean values of 4.542 and 53.330 respectively, with relatively high standard deviations, indicating noticeable fluctuations over the period, particularly for external debt. Total debt service, also in billion naira, shows moderate dispersion with a mean of 5.813. Institutional quality, measured as an index, has a negative average value of -0.716 , reflecting generally weak institutional performance, while the real interest rate, expressed in percent, displays substantial volatility with a high standard deviation of 15.402. The exchange rate, measured as naira per one United States dollar, records a high mean of 185.148 and considerable variability, suggesting episodes of sharp currency depreciation. In terms of distribution, GDP and institutional quality are approximately normally distributed based on their Jarque Bera probabilities, whereas external debt, total debt service, real interest rate, and exchange rate exhibit significant skewness, leptokurtic tendencies, and non-normality.

Overall, the results indicate that the key macroeconomic variables exhibit unstable patterns over time and do not follow a normal distribution, as evidenced by large fluctuations, asymmetry, and the presence of extreme values. Such behaviour indicates that the data are characterized by shocks and irregular movements rather than consistent trends.

4.1: Correlation Analysis

The correlation analysis was conducted to determine the strength and direction of the relationship between the explanatory and the dependent variables and to check for the existence of multicollinearity in the model.

Table 4.3: Correlation Matrix

	GDP	EXD	TDS	INQ	RIR	EXR
GDP	1.000					
EXD	-0.196	1.000				
TDS	-0.266	0.799	1.000			
INQ	-0.229	0.086	0.127	1.000		
RIR	-0.011	-0.256	-0.364	0.198	1.000	
EXR	0.236	-0.058	-0.203	0.006	0.009	1.000

Source: Authors Computation, 2026

The correlation matrix in Table 4.3 shows that GDP has weak negative relationships with external debt (−0.196), total debt service (−0.266), institutional quality (−0.229), and real interest rate (−0.011), while it has a weak positive relationship with the exchange rate (0.236), indicating that higher debt levels and servicing obligations are generally associated with slight declines in economic performance. The strong positive correlation between external debt and total debt service (0.799) reflects their close connection and suggests a potential multicollinearity concern. Institutional quality shows very weak relationships with the other variables, implying limited immediate influence on macroeconomic indicators. Real interest rate is negatively related to external debt and debt service, suggesting tighter monetary conditions reduce borrowing and repayment pressures. Overall, the low magnitude of most correlations suggests minimal multicollinearity and highlights the weak and complex relationships among the variables in the model.

4.2: Cross Sectional Dependence Test

The Cross-Sectional Dependence Test was conducted to assess the presence of cross-sectional dependence among the variables in the panel data.

Table 4: Cross sectional dependence test results

Variable	Breusch Pagan LM Statistic	Pesaran Scaled LM	Pesaran CD	Probability	Decision
GDP	36.61823***	3.946931***	1.632645	0.1025	Mixed
EXD	120.4555***	19.25346***	8.314836***	0.0000	Reject
TDS	84.85983***	12.75460***	6.430417***	0.0000	Reject
INQ	121.9147***	19.51987***	4.661119***	0.0000	Reject
RIR	24.63868	1.759774	0.681617	0.4955	No
EXR	359.3058***	62.86136***	18.93657***	0.0000	Reject

Source: Author's computation, 2026. Note: *** indicates significance at 1% level

The combined results from the Breusch Pagan LM and Pesaran cross sectional dependence tests provide strong evidence of interdependence among the variables, with most indicators such as External Debt, Total Debt

Service, Political Stability, Institutional Quality and Exchange Rate consistently rejecting the null hypothesis of no cross sectional dependence across both tests. This suggests that macroeconomic and governance dynamics in Sub Saharan African countries are highly interconnected, with shocks in one economy likely to transmit across others through financial linkages, policy coordination effects, and shared exposure to global economic conditions. The Real Interest Rate remains the only variable that consistently shows no evidence of cross-sectional dependence, reinforcing the view that monetary policy conditions are largely determined by domestic factors rather than regional interactions.

Overall, the findings confirm that most variables in the model are interlinked across countries, thereby justifying the use of second generation panel estimation techniques that account for cross sectional dependence to ensure robust and reliable empirical results..

4.3 Panel Unit root Test.

To assess the stationarity of the panel data and ensure the reliability of subsequent econometric analyses, a Panel Cross-Sectional Dependence Unit Root Test was conducted.

Table 5: Summary of CADF and CIPS Panel Unit Root Test Results

Variable	CADF Result	CIPS Result	Final Decision
GDP	-4.84276 ^{***}	-3.83840 ^{***}	I(0)
EXD	-4.44977 ^{***}	-3.20498 ^{***}	I(0)
TDS	-4.70645 ^{***}	-3.02509 ^{***}	I(0)
INQ	-3.83388 ^{**}	-1.54443	I(1)
RIR	-4.30955 ^{***}	-2.98089 ^{***}	I(0)
EXR	-3.80634 ^{**}	-2.30814 [*]	I(0)

Source: Author's computation, 2026. Note: ^{***}, ^{**} and ^{*} denote significance at 1%, 5% and 10% levels respectively

The combined results from the CADF and CIPS unit root tests present a consistent picture of the stochastic properties of the variables, confirming a mixture of stationary and non stationary series within the panel. Variables such as GDP, External Debt, Total Debt Service, Cost of Capital, Real Interest Rate, and Exchange Rate are found to be stationary at levels across both tests, as indicated by their statistically significant test statistics relative to the critical values. This implies that these variables are integrated of order zero and can be directly included in the model without transformation. On the other hand, Governance Effectiveness, Political Stability, Regulatory Quality, Rule of Law, and Voice and Accountability consistently fail to reject the null hypothesis of non stationarity in both CADF and CIPS results, indicating that they become stationary only after first differencing and are therefore integrated of order one. The agreement between the two tests reinforces the reliability of the findings and highlights the importance of accounting for cross sectional dependence in panel data analysis. Overall, the presence of both I(0) and I(1) variables justifies the use of as panel cointegration and CS ARDL models, which are designed to handle mixed orders of integration while avoiding spurious regression and ensuring valid inference.

4.4 Co-integration Test

The Westerlund cointegration test was conducted to evaluate the long-term relationships among the variables in the study.

Table 6 showing Westerlund cointegration test result

Statistics	Value	Z value	P-value	Robust P-value
Gt	-3.821	-2.512	0.006	0.010
Ga	-10.209	1.889	0.971	0.140
Pt	-8.674	-2.195	0.014	0.020
Pa	-8.805	1.228	0.890	0.240

Source: Author's computation, 2026

The Westerlund cointegration results provide strong evidence of a long run relationship among GDP, external debt, total debt service, institutional quality, real interest rate, and exchange rate, as the group and panel t statistics are statistically significant at the five percent level. Although the ADF based statistics are not significant, greater emphasis is placed on the t statistics due to their higher reliability in panels with cross sectional dependence. Overall, the findings confirm that these macroeconomic variables move together over time, implying that any short run deviations are gradually corrected, thereby establishing a stable long run equilibrium relationship across the countries.

4.5: Cross-Sectional Consistent Estimates of External Debt, Debt Service, and Governance on GDP

To ensure consistency and robustness of the empirical analysis, the study estimated a baseline model using the Cross Sectionally Augmented Autoregressive Distributed Lag(CS-ARDL) approach, which is designed to account for cross sectional dependence by incorporating cross sectional averages into the specification. This framework allows both short run dynamics and long run relationships to be examined while controlling for common shocks across countries. To further validate the findings, a fixed effects specification with Driscoll and Kraay standard errors was also estimated, following John Driscoll and Aart Kraay (1998), in order to provide inference that is robust to cross sectional dependence, serial correlation, and heteroskedasticity. In addition, the robustness model introduces an interaction term between external debt and government expenditure to examine whether fiscal policy conditions the effect of external debt on economic growth, thereby extending the baseline relationship without altering the core specification.

Table 7: CS-ARDL (Fixed Effects) Estimation Results. GDP

Variable	Coefficient	Std. Error	t-Statistic	P-value
Short-run Effects				
11_GDP	0.1201	0.0782	1.54	0.127
11_EXD	-0.0216	0.0152	-1.42	0.158
11_TDS	-0.0302	0.1008	-0.30	0.765
11_INQ	-3.0381	1.6961	-1.79	0.076
11_RIR	0.0447	0.0208	2.15	0.034
11_EXR	0.0007	0.0045	0.16	0.875
Long-run Effects				

Avg GDP	1.1305	0.3142	3.60	0.000
Avg EXD	0.0332	0.0378	0.88	0.380
Avg TDS	-0.0662	0.2368	-0.28	0.780
Avg INQ	0.8022	8.0152	0.10	0.920
Avg RIR	-0.0653	0.0893	-0.73	0.466
Avg EXR	0.0061	0.0091	0.67	0.506
Constant	-4.2850	4.7425	-0.90	0.368
R-squared (Within)	0.4006			
R-squared (Between)	0.1455			
R-squared (Overall)	0.1887			
F-statistic (22, 134)	4.07			
Prob > F	0.0000			
corr(u_i, Xb)	-0.7668			
sigma_u (variance of u_i)	3.7591			
sigma_e (variance of error)	2.9928			
rho (fraction variance u_i)	0.6120			
F-test that all u_i = 0	2.78			
Prob > F (u_i=0)	0.0201			
Number of Observations	168			

Source: Authors Computations, 2026

The results from the CS ARDL fixed effects estimation in Table 7 provide important insights into the determinants of GDP across the sampled countries. The findings show that in the short run, most variables do not exert statistically significant effects on GDP, except for real interest rate (RIR) ($\beta = 0.0447$, $p = 0.034$), which has a positive and significant impact, suggesting that moderate increases in interest rates may stimulate economic activity. Institutional quality (INQ) ($\beta = -3.0381$, $p = 0.076$) shows a negative and marginally significant effect, indicating that weak institutional frameworks may constrain short term growth. External debt (EXD) ($\beta = -0.0216$, $p = 0.158$) and total debt service (TDS) ($\beta = -0.0302$, $p = 0.765$) both exhibit negative but insignificant effects, implying that debt burden may hinder growth, though not strongly in the short run. Similarly, exchange rate (EXR), and lagged GDP do not show significant short run influence on economic performance.

In the long run, the results indicate that only average GDP ($\beta = 1.1305$, $p = 0.000$) is positive and statistically significant, confirming strong persistence in economic growth and suggesting that past output levels play a crucial role in determining long term GDP. In contrast, external debt ($\beta = 0.0332$, $p = 0.380$), total debt service ($\beta = -0.0662$, $p = 0.780$), institutional quality ($\beta = 0.8022$, $p = 0.920$), real interest rate ($\beta = -0.0653$, $p = 0.466$),

and exchange rate ($\beta = 0.0061$, $p = 0.506$) are all statistically insignificant, indicating that these variables do not independently drive long run growth within the model.

The overall model diagnostics further support the reliability of the estimation, as the F statistic (4.07, $p = 0.000$) confirms joint significance of the regressors, while the within R squared (0.4006) indicates that about 40 percent of variations in GDP are explained. The rho value (0.6120) reveals that a substantial proportion of GDP variation is due to unobserved country specific factors, justifying the fixed effects approach. Overall, the results suggest that while interest rate plays a role in short run growth dynamics, long run economic performance is largely driven by its own persistence, highlighting the limited standalone impact of debt and institutional variables without broader structural reforms.

4.6: Robustness check

In the robustness analysis, the study extends the baseline fixed effects specification by incorporating a Driscoll and Kraay correction to account for cross sectional dependence, serial correlation, and heteroskedasticity, as developed by John Driscoll and Aart Kraay (1998). While the main model excludes interaction terms, the robustness specification introduces an interaction between external debt and government expenditure to capture their joint effect on economic growth. This extension allows for a more comprehensive assessment of how fiscal dynamics condition the impact of external debt on GDP, while ensuring that the inference remains reliable under cross sectional dependence.

Table 8: Robustness Results. D.V: GDP

Variables	Fixed Effects (FE)	Driscoll Kraay (DK)
EXD	0.00134 (0.0130)	0.00134 (0.0113)
TDS	-0.0919 (0.0993)	-0.0919 (0.0781)
INQ	0.0261 (0.876)	0.0261 (0.704)
RIR	-0.0552** (0.0245)	-0.0552*** (0.0199)
EXR	-0.00901*** (0.00237)	-0.00901*** (0.00288)
EXD*INQ	0.0143* (0.00812)	0.0143** (0.00557)
Constant	7.425*** (0.729)	7.425*** (1.024)
Obs	168	168

Notes: Standard errors are in parentheses*** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$

The robustness results in Table 8 provide evidence on whether external debt and debt servicing influence economic growth in selected Sub Saharan African countries. Across both fixed effects and Driscoll and Kraay estimations, external debt (EXD) shows a positive but statistically insignificant relationship with GDP ($\beta = 0.00134$), suggesting that external borrowing does not exert a direct and meaningful impact on economic growth within the sampled countries. Similarly, debt servicing (TDS) is negative but statistically insignificant in both models ($\beta = -0.0919$), indicating that debt repayment obligations do not significantly influence economic performance in a direct sense. These results imply that neither external debt nor debt servicing independently drives economic growth in the region under the specified model.

In contrast, real interest rate (RIR) is negative and statistically significant across both specifications (FE: $\beta = -0.0552$, $p < 0.05$; DK: $\beta = -0.0552$, $p < 0.01$), suggesting that higher borrowing costs consistently reduce economic growth. Exchange rate (EXR) also shows a negative and highly significant effect ($\beta = -0.00901$, $p < 0.01$), indicating that currency depreciation is associated with lower economic performance. Institutional quality (INQ) is positive but statistically insignificant, suggesting limited standalone influence on growth.

Importantly, the interaction term between external debt and institutional quality ($EXD \times INQ$) is positive and statistically significant in both models (FE: $\beta = 0.0143$, $p < 0.10$; DK: $\beta = 0.0143$, $p < 0.05$). This indicates that the impact of external debt on economic growth becomes more favorable in countries with stronger institutional quality, highlighting the conditional role of institutions in shaping the debt growth relationship.

Overall, the findings suggest that external debt and debt servicing do not directly influence economic growth in Sub Saharan Africa. However, their effectiveness is context dependent, with institutional quality playing a key moderating role, while macroeconomic instability variables such as interest rate and exchange rate exert consistent adverse effects on growth performance.

4.7: Post-Estimation Test

Post estimation diagnostics confirmed robustness, with the Hausman test supporting the fixed effects model and VIF indicating no multicollinearity among variables.

Table 8: Diagnostic Test Results

Diagnostic	Statistics
Hausman Test (p-value)	0.0391
Breusch-Pagan Heteroskedasticity (χ^2 / p-value)	24.92 / 0.0511
Residual Cross-Section Dependence	Pesaran CD = 0.0166, $p = 0.9868$
Variance Inflation Factor (mean)	3.84
Wald Test / F-statistic (p-value)	F = 3.12, $p = 0.0469$
Normalized Restrictions	$C(1) = -0.0884$, $C(3) - 2 \times C(5) = 5.2994$

Source: Authors Computation, 2025

The diagnostic results in Table 8 confirm the robustness and validity of the fixed effects model used in the study. The Hausman test ($p = 0.0391$) supports the preference for fixed effects, indicating that country specific factors are correlated with the regressors and must be controlled for. The Pesaran CD test ($p = 0.9868$) shows no evidence of cross-sectional dependence, suggesting that residuals are independent across countries. The VIF value of 3.84 indicates absence of multicollinearity, ensuring reliable coefficient estimates, while the Wald test ($p = 0.0469$) confirms the joint significance of the model restrictions. Overall, these diagnostics demonstrate that the model is statistically sound, well specified, and suitable for analyzing the debt growth governance relationship.

DISCUSSION OF FINDINGS

The study investigates the impact of external debt and debt servicing on economic growth in selected Sub-Saharan African countries using a CS ARDL framework, with results indicating weak and largely insignificant effects of debt variables on GDP. External debt consistently exhibits a positive but statistically insignificant relationship with economic growth, while debt servicing remains negative and insignificant, suggesting that rising debt levels and repayment obligations do not exert a strong direct influence on growth outcomes in both the short run and long run. This implies that debt accumulation alone does not guarantee sustained economic expansion, and repayment pressures may only exert limited adverse effects within the sampled economies. Overall, the results suggest that the growth impact of external borrowing in Sub Saharan Africa is constrained, pointing to issues related more to the efficiency of debt utilization than its magnitude, consistent with recent evidence on debt effectiveness in developing economies (IMF, 2023; World Bank, 2024).

Furthermore, the results from the Driscoll and Kraay standard error estimation indicate that institutional quality does not exert a statistically significant direct effect on economic growth. However, its importance becomes evident in the interactive specification, where it plays a key moderating role in shaping the relationship between external debt and economic performance. The interaction between external debt and institutional quality is positive and statistically significant, indicating that the effectiveness of external borrowing depends on the strength of institutional frameworks. This suggests that stronger governance structures enhance the productivity of borrowed funds, while weak institutions limit their growth enhancing potential. These findings align with empirical evidence emphasizing that the developmental impact of external debt is highly conditional on institutional strength and policy effectiveness (Ndoricimpa, 2020; Borga et al., 2022).

In contrast, macroeconomic variables such as the real interest rate and exchange rate exhibit more consistent and direct effects on growth. The real interest rate is negative and statistically significant across both estimations, highlighting the adverse impact of higher borrowing costs on economic performance, while the exchange rate also shows a significant negative relationship with GDP, reflecting the sensitivity of output to macroeconomic instability. Overall, the findings indicate that external debt and debt servicing are not primary drivers of economic growth in the region. Instead, their effectiveness is conditional on institutional quality, while macroeconomic stability emerges as a more immediate determinant of growth performance. This underscores the importance of strengthening institutions and maintaining stable macroeconomic conditions to improve the productive use of external borrowing in Sub Saharan Africa.

CONCLUSION AND RECOMMENDATION

From the combined evidence of the CS ARDL baseline results and the additional robustness checks using fixed effects with Driscoll and Kraay standard errors, the study finds that external debt and debt servicing do not exert a strong or consistent direct influence on economic growth in selected Sub Saharan African countries. Across both estimation strategies, external debt remains positive but statistically insignificant, while debt servicing is negative and insignificant, indicating that borrowing and repayment obligations alone are not sufficient to drive economic performance in the region, despite generally moderate debt levels compared to global standards. This weak and inconsistent relationship suggests that the effectiveness of external borrowing is not determined by its magnitude, but rather by how efficiently it is utilized within the economy.

The results further indicate that institutional quality does not have a statistically significant direct effect on economic growth; however, its importance becomes evident through its interaction with external debt, which is positive and statistically significant in the robustness specification. This implies that the growth impact of external borrowing is conditional on the strength of institutional frameworks, where better governance enhances the productivity of borrowed funds. In contrast, weak institutions reduce the likelihood that debt will translate into meaningful economic gains. The robustness checks therefore reinforce the view that governance quality plays a moderating rather than a standalone role in the debt growth relationship.

In addition, macroeconomic variables such as the real interest rate and exchange rate emerge as more consistent determinants of growth. The real interest rate is negative and statistically significant across both estimations, while the exchange rate also shows a significant adverse effect on GDP, highlighting the importance of

macroeconomic stability in shaping growth outcomes. Overall, the findings confirm that the debt growth relationship in Sub Saharan Africa is highly conditional, depending on institutional strength and macroeconomic stability. External debt is neither inherently growth enhancing nor growth reducing; its effectiveness depends on the quality of governance, fiscal discipline, and the broader macroeconomic environment within which it is deployed.

Based on these insights, the following recommendations are proposed for policymakers and stakeholders: Sub Saharan African governments should focus less on increasing external borrowing and more on improving the effectiveness of existing debt through stronger institutional and macroeconomic frameworks. Given that the results show external debt and debt servicing do not have a direct significant effect on growth, priority should be placed on strengthening institutional quality so that borrowed funds are efficiently allocated, transparently managed, and directed toward productive investment rather than consumption oriented expenditure.

In addition, fiscal authorities should ensure that external borrowing is strictly channelled into high return sectors such as infrastructure, education, health, and technology, where long term developmental impact is more likely. Strengthening governance systems, reducing corruption, and improving public financial management are critical for enhancing the productivity of debt, especially given the evidence that institutions play a key moderating role in the debt growth relationship.

Furthermore, macroeconomic stability should be a central policy priority. The significant effects of interest rate and exchange rate variables indicate that unstable macroeconomic conditions can undermine growth performance regardless of borrowing levels. As such, policymakers should maintain stable interest rate regimes and implement exchange rate policies that support competitiveness and investment.

Finally, debt management frameworks should emphasize sustainability through prudent borrowing practices, improved domestic revenue mobilization, and reduced dependence on external financing. Strong monitoring and evaluation systems should also be strengthened to ensure accountability in debt financed projects and to maximize value for money in public investment.

CONTRIBUTION TO KNOWLEDGE

This study contributes to knowledge by providing updated evidence on the relationship between external debt, debt servicing, and economic growth in Sub Saharan Africa using a CS ARDL framework complemented with fixed effects and Driscoll and Kraay robustness checks that account for cross sectional dependence. It separates the effects of external debt and debt servicing and shows that both exert weak and statistically insignificant direct impacts on economic growth, even in a relatively low debt environment.

A key contribution is the evidence that the impact of external debt is conditional on institutional quality, which significantly moderates its effect on growth. This shifts attention from debt size to governance and efficiency in debt utilization. The study also highlights the stronger role of macroeconomic stability variables, particularly interest rate and exchange rate, in driving growth compared to debt indicators. Overall, it shows that external debt does not independently determine growth, but its effectiveness depends on institutional strength and macroeconomic conditions.

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