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DOMESTIC DEBT AND ECONOMIC GROWTH IN SELECTED SUB-SAHARAN AFRICAN COUNTRIES

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Abstract

This study analyses the relationship between domestic debt, and economic growth in selected sub-Saharan African countries using annual data spanning the period of 1995-2023. Specifically, the study investigates the long and short run effects of domestic debt on economic growth in selected sub-Saharan African countries. The study employs the Panel Auto-Regressive Distributed Lag (ARDL) technique. The result reveals that there exists a negative relationship between domestic debt and economic growth in the short run and a positive relationship in the long run in the selected Sub–Saharan African countries. The study recommends that governments in selected Sub-Saharan African countries should strengthen fiscal consolidation and private sector stimulation. Also, government in selected sub-Saharan African countries should invest in high-return infrastructure projects.

Keywords: Domestic Debt, Economic Growth, Panel ARDL, Cointegration, Error Correction, Sub-Saharan Africa

INTRODUCTION

The growing reliance on domestic debt instruments represents a departure from historical patterns characterized by heavy dependence on external sources of funding. Historically, Sub-Saharan African nations have often relied on international aid, foreign direct

investment, and concessional loans to finance their development initiatives. However, as noted by Onwioduokit (2012), the volatility of global financial markets, coupled with fluctuating commodity prices and geopolitical uncertainties, have underscored the vulnerability of such external financing mechanisms. In response, policymakers have increasingly turned their attention to domestic debt markets as a more stable and sustainable source of funding. By tapping into domestic savings pools, mobilizing resources from local investors, and leveraging the depth and breadth of their domestic financial systems, countries in the region aim to bolster their fiscal resilience and reduce their exposure to external shocks.

However, the growing reliance on domestic debt instruments is not without its challenges and complexities. While domestic debt offers advantages in terms of stability and control, it also poses risks related to debt sustainability, interest rate volatility, and crowding out private sector investment. Furthermore, the effective management of domestic debt requires robust institutional frameworks, prudent fiscal management practices, and transparent regulatory oversight. Failure to address these challenges could undermine the efficacy of domestic debt as a financing tool and potentially exacerbate macroeconomic imbalances (Onwioduokit, 2007).

The debt structure of a nation exerts a serious influence on numerous facets of its economy, spanning from capital accumulation to economic growth, and from income to employment stability. This complex interplay presents both challenges and opportunities for economic management by authorities. Borrowing allows governments to finance crucial development projects, stimulate economic activity, and invest in infrastructure, education, and healthcare systems. Such investments can catalyze growth, enhance productivity, and foster long-term prosperity. Moreover, judicious debt utilization can facilitate the acquisition of technological expertise, attract foreign investment, and bolster the competitiveness of domestic industries. Consequently, debt can be wielded as a potent tool for achieving developmental objectives and overcoming socio-economic challenges (Onwioduokit, 2012).

No contention arises when a country resorts to borrowing, provided the borrowed funds are channelled into productive endeavors that facilitate the eventual servicing and liquidation of the debt. Borrowing emerges as a second-best alternative to money creation during periods of unemployment, serving as a vital instrument for economic management. Domestic loans serve as a mechanism for bridging domestic savings gaps, especially amid dwindling government revenues from domestic sources, exacerbated by volatile prices of primary commodity exports and diminishing foreign exchange earnings. Governments grappling with substantial recurrent budget deficits may find themselves compelled to address these gaps by tapping into domestic savings, often through the issuance of domestic debt. However, figure 1 showed the domestic debt of the selected sub Saharan African countries.

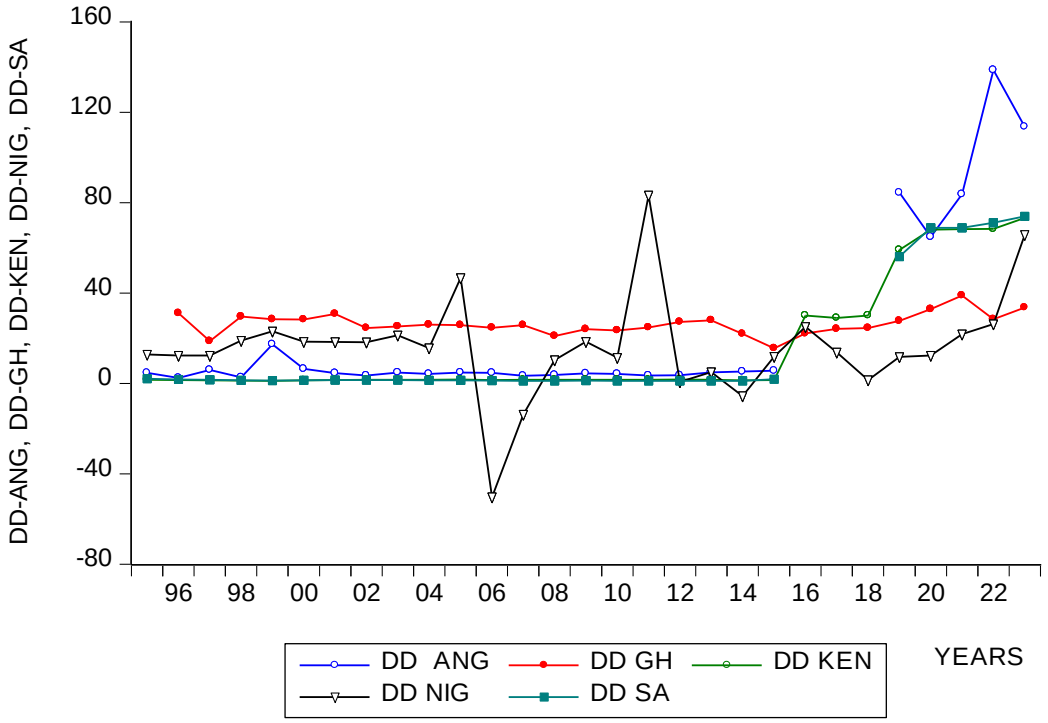

Figure 1: Domestic Debt in selected sub-Saharan African countries

Source: Computed by the researcher

From the figure 1, Nigeria has experienced a significant increase in domestic debt from 1995 to date. Nigeria experienced a significant decline in its domestic debt in 2006, and several factors contributed to this trend. One of the primary reasons for this decline was the implementation of prudent fiscal policies by the government. These policies aimed to reduce borrowing and control spending, leading to a decrease in domestic debt. Thereafter between 2010 and 2013, Nigeria experienced a significant increase in its domestic debt levels. Furthermore, in 2020, Nigeria's domestic debt stood at approximately 21.4 trillion naira ($55.6 billion USD), with the majority of it being federal government debt. This represented a significant increase from previous years, primarily due to the economic impact of the COVID-19 pandemic and a decline in oil prices, which had previously been a major source of government revenue.

In 2022, the Nigerian government began exploring options for debt restructuring and management to address the rising levels of domestic debt. This included negotiating with creditors to extend the repayment terms for existing loans and exploring alternative sources of financing, such as international loans and grants. The government also implemented measures to improve its debt management practices and reduce the risk of future debt accumulation. Despite these measures in 2023 domestic debt kept on increasing.

From the figure 1, Angola experienced a period of relatively low domestic debt from 1995-2013. Historically, oil exports have been a major source of income for the Angolan government. However, fluctuations in global oil prices have severely impacted the country's revenue stream. The decline in oil prices since 2014 has led to a substantial reduction in government income, forcing Angola to borrow domestically to finance its budget deficits till 2023.

Also, Ghana's domestic debt has exhibited significant volatility since 1995. The global financial crisis of 2008 also hit Ghana hard. The country saw a decline in export revenues, reduced remittances from abroad, and decreased foreign aid inflows. As a result, there was increased pressure on the local currency and a rise in public debt levels.

In 2014, Ghana encountered another economic downturn characterized by fiscal imbalances and external vulnerabilities. The country sought assistance from the IMF through an Extended Credit Facility arrangement to restore macroeconomic stability. In 2020, Ghana's domestic borrowing increased significantly due to various factors, including the COVID-19 pandemic and a decline in international commodity prices, particularly cocoa. In 2022, the Ghanaian government began exploring options for debt restructuring and management to address the rising levels of domestic debt till 2023.

However, Kenya's domestic debt has exhibited significant volatility since 1995. In 2011, the fluctuation in international interest rates influences borrowing costs amongst other effects. In 2017 Kenya heavily relied on domestic borrowing to finance its budget deficit. However, over-reliance on domestic borrowing since 2018-2023 has caused adverse effects in the long run in the economy. This led to crowding out private sector investment, higher interest rates, inflationary pressures, and increased debt servicing costs. These consequences affected the sustainability of her economic growth.

From the figure above, from 1995-2016, South Africa experienced lack of significant volatility in domestic debt. This can be attributed to the country's prudent fiscal management practices. In 2016, the country experienced an economic slowdown and recession that plagued the country, leading to decreased government revenue and increased borrowing requirements. Furthermore, between 2020-2023, the country experienced more increase in domestic debt. Specifically, The COVID-19 pandemic further exacerbated this situation, causing widespread job losses and business closures, which reduced tax revenues while increasing social welfare spending.

Despite these theoretical underpinnings, the impact of debt borrowing in sub–Saharan Africa has not been markedly significant. The implications of domestic debt on economic growth outcomes necessitate careful examination. While domestic debt issuance may provide

governments with the necessary fiscal space to invest in critical infrastructure, human capital development, and productive sectors, its adverse effects on private sector investment and macroeconomic stability could potentially offset these growth-enhancing benefits. The crowding-out effect of domestic borrowing on private investment, coupled with potential distortions in resource allocation and productivity growth, underscores the need for a detailed understanding of the relationship between domestic debt dynamics and overall economic performance. However, figure 2 showed the economic growth of the selected sub Saharan African countries.

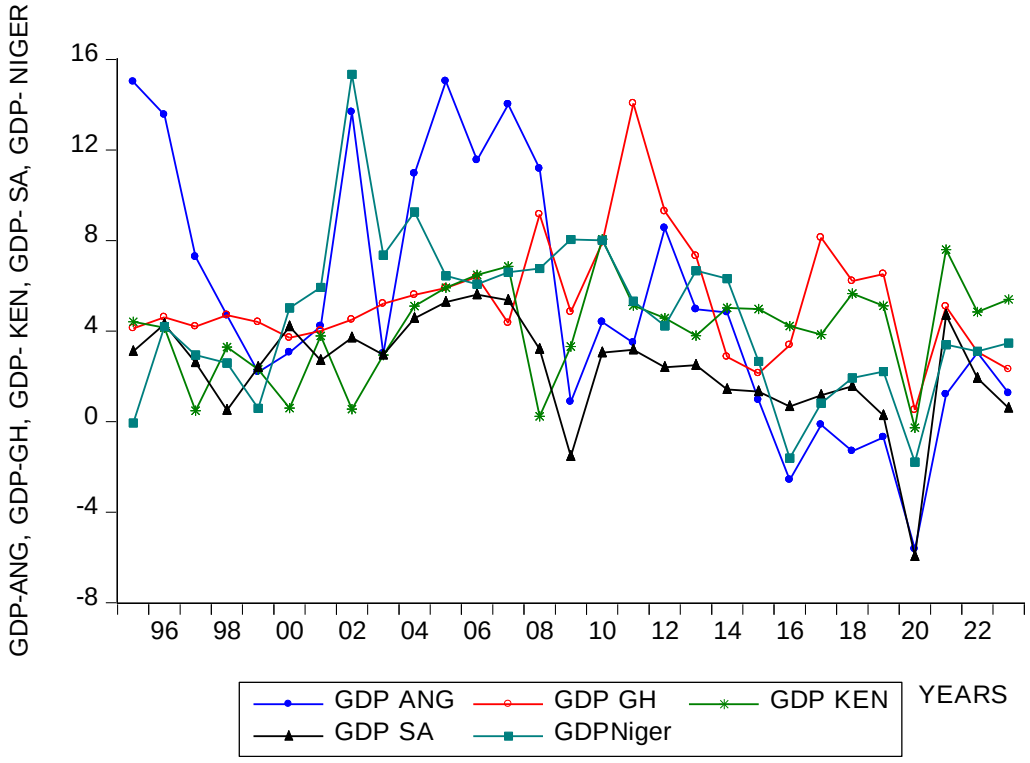

Figure 2: Gross Domestic product in selected sub-Saharan African countries

Source: Computed by the researcher

From the figure 2, Angola's economic growth rate fell sharply during the period from 1992 -1993, plummeting to a negative growth rate averaging 16%. This decline coincided with the country's return to full-blown civil war, which severely impacted the economy. Furthermore, from 2016-2020, Angola, like many other countries, experienced periods of negative GDP growth. However, from 2021- 2023, Angola's economy revived, showing positive GDP growth.

Ghana experienced volatility in its GDP, but there was a significant rise in its Gross Domestic Product (GDP) from 2010-2013, showcasing impressive economic growth during this period. In 2014, Ghana faced challenges as global oil prices plummeted due to oversupply and weakening demand. The following year, in 2015, Ghana continued to grapple with volatile oil

prices. The uncertainty surrounding market dynamics further strained the country's economy, prompting the government to implement austerity measures to mitigate the effects of reduced oil revenues on public finances. From 2016- 2023, Ghana did not experience negative economic output.

Kenya's economy has shown steady growth over the past few years, with GDP growth averaging around 6% annually from 2015-2023. The country has made significant progress in diversifying its economy, moving away from reliance on traditional agricultural exports towards services, manufacturing, and tourism. In 2015, Kenya's GDP growth was estimated at 4.96%, growing to 5.4% in 2023.

In South Africa, the gross economic product has been generally positive, except in 2009 and 2020. The negative GDP growth in 2009 had several adverse effects on the South African economy, particularly in terms of unemployment. The economic contraction led to a rise in unemployment, especially among young people and those in low-skilled industries. Similarly, in 2020, South Africa experienced negative GDP growth, albeit to a lesser extent than in 2009. The COVID-19 pandemic significantly impacted the country's economy, particularly in the tourism and manufacturing sectors. The lockdown measures implemented to contain the spread of the virus exacerbated the decline in economic activity. However, the economy revived in 2021, and since then, the country has not experienced negative GDP growth.

The GDP volatility in Nigeria from 1995 to the present has been influenced by various factors. In 2004, Nigeria had the highest growth rate at 35%. This year witnessed a windfall of high oil prices, with total revenue rising to an estimated 40.6% of GDP, up from 36.5% in 2003. This increase enabled a rise in gross international reserves to $13.27 billion from $7.46 billion at the end of 2003, and the naira appreciated in all segments of the market, among other factors (AFDB/OECD, 2015). Nigeria, a prominent African economy, faced challenges leading to negative GDP growth in both 2016 and 2020. In 2020, Nigeria encountered another economic setback primarily caused by the COVID-19 pandemic, which disrupted global trade and led to a sharp decline in oil demand and prices. This had adverse effects on Nigeria's export earnings and fiscal stability. From 2021 to the present, Nigeria's economic growth rate has stabilized to an extent.

This study aims to elucidate the intricate relationship between domestic debt on economic growth in Nigeria, Ghana, Angola, South Africa and Kenya countries, spanning the period from 1995 to 2023. It seeks to unravel the nuanced relationships underlying these variables. Specifically, the research endeavors to discern both the long and short run effects of domestic debt on economic growth in Nigeria, Ghana, Angola, South Africa and Kenya countries.

This study contributes to the broader literature on domestic debt and macroeconomic performance, enriching the understanding of students and researchers on the role of domestic debt in shaping economic outcomes in emerging market economies. By focusing specifically on Nigeria, Ghana, Angola, South Africa and Kenya countries, this study addresses a critical gap in the literature and provides valuable insights into the unique challenges and opportunities facing the region in the context of domestic debt management and economic development. Also, the outcome of the study will also serve as guide while providing insight to other researchers on related topics and fields of academic endeavours.

In all, the significance of this study lies in its potential to inform policy decisions, promote financial stability, and catalyze sustainable development in selected sub-Saharan Africa, thereby contributing to the advancement of global efforts to achieve inclusive and resilient economic growth. Aside from this introductory section, Section 2 examines Theoretical and Related Empirical Literature, followed by Section 3, which outlines the Research Methodology. Section 4 presents the findings, while Section 5 encapsulates the Summary, Conclusions, and Recommendations.

LITERATURE REVIEW

Theoretical Literature

Neoclassical economists popularized the concept in the 1970s, arguing that increasing government sector investment, and as such debt, has the unintended consequence of replacing the private sector's anticipated borrowing and investment (Powell, 2019). Increases in budget deficits, according to Neo-Classical economists, lead interest rates to rise. As a result, government deficits "crowd out" private expenditure due to the higher interest rates, and consequently the private sector borrows less (Carrasco, 1998). According to Buiter (1976), crowding out may be either direct or indirect. Direct crowding out happens when government production consumes resources that could otherwise be used by the private sector, which constrains economic growth. Indirect crowding out occurs when government spending, taxes, and borrowing create disincentives to productive activity, especially in employment and investment (Balcerzak and Rogalska, 2014).

Lending the government by local banking institutions reduces available credit for private sector (Swianiewicz, 2004). Crowding out thus brings about a reduction in individual consumption since it increases the level of government expenditure causing a decline in individual spending pattern. According to classicists, public debt necessitates a shift of resources from private sectors to the government via additional tax levies.

The New Growth Theory

Proponents of the new growth theory, including Romer (1995), have advanced an extension of the neoclassical theory to offer insights into the dynamics of economic growth. Building upon the foundations of neoclassical economics, the new growth theory maintains that output expansion stems from a combination of factors, notably increases in labor quantity and quality through population growth and education, augmented capital accumulation through savings and investment, and advancements in technology.

In contrast to the neoclassical model, which emphasizes the role of capital accumulation in driving medium-term economic growth, the new growth theory introduces a nuanced perspective. While acknowledging the importance of capital accumulation, the new growth theory suggests that steady-state growth is ultimately constrained by the rate of growth of the labor force. This insight highlights the interplay between labor dynamics and capital accumulation in shaping long-term economic growth trajectories.

The neoclassical model typically employs an aggregate production function characterized by constant returns to scale in labor and reproducible capital. This functional form serves as a foundational framework for analyzing the determinants of economic growth within the neoclassical paradigm

$Y = F(K, L)$ Equation 2.1

Where, Y is output (or income), K is the stock of capital while L is the labour force. The function explains the output, Y under a given state of knowledge with a given range of available techniques and a given array of different capital, intermediate goods and consumption goods. With constant returns to scale, labour productivity measured by output per worker

$y = Y/L$ Equation 2.2

Will depend on the capital stock per worker (i.e. capital intensity, k =K/L).

In the new growth theory, the rate of technological progress is made an endogenous factor. Having the model,

$Y= F(K,N,A)$ Equation 2.3

Where, Y is output, K represents capital; N represents labour and A represents technology. The relationship between output and technology is not the same as between output and technology. It also depends on the technology used by the other firms whose benefits also accrues to it. The point of emphasis is on the level of domestically produced technology by the developing countries like Nigeria. Romer, one of the pioneers of endogenous growth theories have put forward the view that investment is a source of technological progress. This explains why some countries like Nigeria is struggling to maintain a sustained economic growth. The fact that

Nigeria is still depending on imported technology for its production has caused instability and inefficiency in the level of production.

Empirical Literature

Given the complex nature of the relationship between domestic debt and economic growth, the literature that attempted to capture its essence, especially, empirical literature in sub–Saharan African countries, are varied in their perspective of domestic debt and economic growth, including methodologies. Hence these studies were reviewed based on the selected sub-Saharan African countries.

(i) **Nigeria**

Muhammad *et.al*; (2009) ,Adofu and Abula (2010), Onyeiwu (2012), Izedonmi and Ilaboya (2012), Umaru *et.al* (2013), Hassan *et al*; (2015), Titus *et al.* (2016), James *et al.*, (2016), Onogbosele and Mordecai, (2016), Peter *et al.*, (2013), Okwu *et al.*, (2016), Igbodika *et al.*, (2016), Abula and Ben (2016), Lucky and Godday (2017), Elom-Obed *et al.*, (2017), Moses and Ebere (2019) ,Ayuba, and Khan (2019) , Adetokunbo and Ebere (2019) , Bossou and Duke (2020), Nzeh (2020), Didia and Ayokunle (2020), Olusegun *et al.*, (2020) ,Ekong *et al.*, (2021) ,Yusuf and Mohd (2021), Mboto *et al.*, (2022), Mudiare and Orubu**;** (2022); Agbogun and Ehiedu, (2022) , Aiyedogbon *et al.*, (2022).

(ii) **Ghana**

Barfour (1995), Claessens *et al*; (1997), Owusu-Nantwi and Erickson (2016), Anning *et al.*, (2016), Issahaku (2016), Ashley *et al.*, (2018), Forson (2019), Asravor *et al.*, (2023), Ogboghro (2023).

(iii) **Angola**

Christensen (2005), Reinhart and Rogoff (2010), Mbate (2013), Wright and Grenade (2014), Reis and Serafim (2018).

(iv) **South Africa**

Demirgüç-Kunt and Detragiache (2005), Cordella, *et al.*, (2005), Abbas and Christensen (2007), Bua, *et al.*, (2015), Greiner and Fincke (2015), Saungweme and Odhiambo (2021).

(v) **Kenya**

Maana, *et al.*,(2008), Ochieng (2013), Putunoi and Mutuku (2013), Matiti (2013), Njoroge (2015), Babu, *et al.*, (2015), Kangara (as cited in Mwakima, 2017), Murungi and Okiro (2018) , Erick, *et al.*, (2023).

RESEARCH METHODOLOGY

Research Design

This study is empirical in nature, using mainly secondary data. Therefore, an Ex-Post Facto design. This design was adopted because the study intends to use already established secondary data for the study. According to Salkind (2010), —Ex post facto study or after-the-fact research is a category of research design in which the investigation starts after the fact has occurred without interference from the researcher. Thus, the data for the study were collected from the official publication World Bank – World Development Indicators (WDI). The data were adopted for the estimation using basic mathematical, statistical and econometric tools, while sufficiently relying on relevant economic theories for reliable outcomes.

Population of the Study

The study focused on time series data for the period of 28 years and 140 observations on selected sub-Saharan Africa. Sub-Saharan Africa is made up of 48 countries, however, due to data unavailability, we were constrained to five countries, two from west Africa and one each from East Africa, Central Africa and the Southern Africa Republic. Furthermore, these countries were selected based on being oil producing countries, and natural resources.

Sample and Sampling Techniques

A purposive sampling technique was adopted to select two countries from one sub region and one (1) country each from the other three (3) regions of the SSAs. Thus, samples of five countries were used for the study.

Model Specification

The model specified in this study is based on the theoretical framework of this study. This study is primarily based on Keynesian theory.

Economic Growth$_i$=β0+β1·Domestic Debt$_i$+β2·Unemployment$_i$+β3·Fiscal Deficit$_i$+β4 Exchange Rate$_i$+β5·Money Supply$_i$+β6·Interest Rate$_i$+u$_i$ Equation 3.1

$GDP_{it} = \beta_0 + \beta_1 DD_{it} + \beta_2 UNEMP_{it} + \beta_3 FD_{it} + \beta_4 EXR_{it} + \beta_5 MS_{it} + \beta_6 INTR_{it} + u_{it}$ Equation 3.2

Where:

GDP_{it} *Economic Growth$_i$* is the dependent variable representing the economic growth rate in period *i*.

*β*0 is the intercept term.

*β*1 to *β*6 are the coefficients of the independent variables.

Other variables are as previously defined.

ui is the error term capturing unobserved factors influencing economic growth in period *i*.

This model allows us to analyze the impact of domestic debt and other important macroeconomic variables on economic growth in selected sub-Saharan countries. By estimating the coefficients (*β*1 to *β*6), we can assess the magnitude and significance of each variable's effect on economic growth while controlling for other factors.

Analytical technique

The analytical techniques employed for the purpose of this study is based on the specific objective of the study. The study adopted the panel autoregressive distributed lag (ARDL) model. As noted by Muchapondwa and Pamhidzai (2011) emphasized the panel ARDL model as a new cointegration procedure. This is because, the panel ADRL model allows for the estimation of both the short-run and long-run relationships between the variables.

One of the major advantages of the panel ARDL approach is that it accommodates a different number of lags on each variable. The panel ARDL model, can be reliably used on short sample periods. In fact, Pesaran and Shin (1998) illustrate that even if the sample size is small, the long-run parameters are super-consistent while the short run parameters are $\sqrt{T}$ consistent. Thus, equations (3.1 and 3.2) are formulated into a panel ARDL (*p*,*q*1,*q*2,*q*3,*q*4,q5,q6) equation where *p* represents the lags of the dependent variable and *q* represents the lags of the independent variables. The panel ARDL equation is represented as follows:

$$Y_{i,t} = \mathrm{a}i + \sum_{\mathrm{j}=1}^{\mathrm{p}} \mathrm{a}1, i\, jYi, t-j + \sum_{\mathrm{j}=0}^{\mathrm{q1}} \mathrm{a}_{2,}\, \mathrm{ijdd}_{\mathrm{t-j}} + \sum_{\mathrm{j}-0}^{\mathrm{q2}} \mathrm{a}_{3,\mathrm{ij}}\, uemp_{\mathrm{t-j}} + \sum_{\mathrm{j}-0}^{\mathrm{q3}} \mathrm{a}_{4,\mathrm{ij}}\, fd_{\mathrm{t-j}} + \sum_{\mathrm{j}-0}^{\mathrm{q4}} \mathrm{a}_{5,\mathrm{ij}}\, exch_{\mathrm{t-j}} + \sum_{\mathrm{j}-0}^{\mathrm{q5}} \mathrm{a}_{6,\mathrm{ij}}\, ms_{\mathrm{t-j}} + \sum_{\mathrm{j}-0}^{\mathrm{q6}} \mathrm{a}_{7,\mathrm{ij}}\, intr_{\mathrm{t-j}} + \mathrm{e}i_{\mathrm{t}} \qquad \text{Equation 3.3}$$

Where,

i = 1,2,3, . . .*N* and *t* = 1,2,3, . . .*T*, a*i* represents the fixed effects, a1 –a7 is the lagged coefficients of the independent variables and the regressors and e*it* is the error term which is assumed to be white noise and varies across countries and time. In a panel error correction (ECM) representation equation (3.1) is formulated as follows:

$$\Delta Y_{i,t} = ai + \sum_{j=1}^{p} a1, i\,j \Delta Yi, t-j + \sum_{j=0}^{q1} a_{2,}\,ij \Delta dd_{t-j} + \sum_{j-0}^{q2} a_{3,ij}\,\Delta uemp_{t-j} + \sum_{j-0}^{q3} a_{4,ij}\,\Delta fd_{t-j} + \sum_{j-0}^{q4} a_{5,ij}\,\Delta exch_{t-j} + \sum_{j-0}^{q5} a_{6,ij}\,\Delta ms_{t-j} + \sum_{j-0}^{q6} a_{3,ij}\,\Delta intr_{t-j} + \beta 1, i\,jYi, t-1 + \beta 2, i\,jddi, t-1 + \beta 3, i\,juempi, t-1 + \beta 4, i\,jfdi, t-1 + \beta 5, i\,jexchi, t-1 + \beta 6, i\,jmsi, t-1 + \beta 7, i\,jintri, t-1$$

Equation 3.4

Where,

Δ is the first difference of variables. Also, a_1 –a_6 are the short-run coefficients while β_1−β7 are the long-run coefficients. To estimate the short-run relationship, the short-term impact of debt on growth and price stability proxied by inflation is calculated by equation 3.5 for significant coefficients.

$$\frac{\sum_{j-1}^{q1} a_{2,ij}}{1-\sum_{j-0}^{p} a_{1,ij}}$$

Equation 3.5

Once, a long-run relationship is established between the dependent variables and the regressors, the panel ECM model (equation (3.3) can de expressed as follows:

$$\Delta Y_{i,t} = ai + \sum_{j=1}^{p} a1, i\,j \Delta Yi, t-j + \sum_{j=0}^{q1} a_{2,}\,ij \Delta dd_{t-j} + \sum_{j-0}^{q2} a_{3,ij}\,\Delta uemp_{t-j} + \sum_{j-0}^{q3} a_{4,ij}\,\Delta fd_{t-j} + \sum_{j-0}^{q4} a_{5,ij}\,\Delta exch_{t-j} + \sum_{j-0}^{q5} a_{6,ij}\,\Delta ms_{t-j} + \sum_{j-0}^{q6} a_{3,ij}\,\Delta intr_{t-j} + \theta i ECMi, t-1 + eit$$

Equation 3.6

Where,

θI represents the coefficient of the ECM which measures the speed of adjustment that is made every year towards long-run equilibrium.

ANALYSIS AND RESULTS

Data Presentation and Analysis

This study examines the relationship between domestic debt and economic growth in selected sub-Saharan countries, amongst other issues. We began our empirical assessment with some preliminary checks beginning with the descriptive statistics and pairwise correlation matrix. The outcomes are reported in the tables below.

Table 1: Descriptive Statistics for Pooled Countries

	DP	DD	EXCH	FD	INF	INTR	MS	UEMP
Mean	4.27	18.82	89.54	400.13	51.77	21.42	34.82	10.32
Median	4.20	9.50	68.25	4.24	10.96	16.45	32.45	5.73
Maximum	15.33	138.71	638.70	6404.70	4145.11	217.88	87.76	28.84
Minimum	-5.96	1.10	0.13	-861.40	-50.35	3.71	-0.79	2.17
Std. Dev.	3.59	24.28	128.03	1214.63	351.19	24.15	17.42	7.73
Skewness	0.57	2.20	2.46	3.34	11.44	5.06	0.67	0.62
Kurtosis	4.58	8.57	9.40	13.81	133.74	35.39	3.17	1.95
Jarque-Bera	22.33	281.35	380.80	914.64	102764.90	6714.97	10.69	15.45
Probability	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sum	597.77	2522.10	12535.81	54417.56	7247.73	2998.75	4874.21	1444.50
Sum Sq. Dev.	1787.89	78431.90	2278505.00	199000000.00	17143157.00	81078.75	42165.72	8296.65
Observations	140.00	134.00	140.00	136.00	140.00	140.00	140.00	140.00

Descriptive statistics in the table 1 showed a mean of 4.27 and median 4.20 for gross domestic product. Also, it showed a mean of 18.82 and median of 9.50 for domestic debt and a mean of 51.77 and median of 10.96 for inflation. Moreover, the statistics also showed that the data for exchange rate, fiscal deficit, interest rate and money supply are leptokurtic distribution because the kurtosis value is greater than three indicating a positive kurtosis, though positively and insignificantly skewed. This indicates a flatter than normal distribution and the variable has large tail. That is, it has longer and fatter tail, and its central peak higher and sharper. Moreover, the statistics also showed that the data for unemployment rate was platykurtic relative to normal, since their values for kurtosis is approximately less than 3. This suggests that the variables have short and thin tails, and their central peaks are lower and broader.

Table 2: Correlation Matrix for Pooled Countries

	DD	INF	GDP	INTR	FD	EXCH	MS	UEMP
DD	1.00	-0.06	-0.22	-0.15	-0.10	0.44	-0.06	0.05
INF	-0.06	1.00	0.23	0.75	-0.04	-0.07	-0.07	0.09
GDP	-0.22	0.23	1.00	0.29	0.16	-0.23	-0.30	-0.16
INTR	-0.15	0.75	0.29	1.00	-0.06	-0.09	-0.26	0.14
FD	-0.10	-0.04	0.16	-0.06	1.00	0.15	-0.20	-0.27
EXCH	0.44	-0.07	-0.23	-0.09	0.15	1.00	-0.31	-0.14
MS	-0.06	-0.07	-0.30	-0.26	-0.20	-0.31	1.00	0.53
UEMP	0.05	0.09	-0.16	0.14	-0.27	-0.14	0.53	1.00

Also, the correlation matrix showed that domestic debt correlated negatively with inflation rate, economic growth, interest rate and money supply.

On the other hand, the unit roots analyses for the two test statistics used – Levin, Lin and Chut and Im, Pesaran and Shin W-stat – showed similar outcomes with each other. The Im, Pesaran and Shin W-stat results showed stationarity at first difference I(1) only, except for GDP, exchange rate, money supply and inflation rate that were stationary at level I(0).

These outcomes further validated the use of Panel Autoregressive Distributed Lag (ARDL) cointegration technique in analyzing the data used for this study. The level of integration showed by the statistical significance further enhanced the level of certainty in the prediction that Panel Autoregressive Distributed Lag would yield reliable results from the analyses of the data used for this study.

Table 3: Cross-sectional dependence result

Test	Statistic	d.f.	Prob.
Breusch-Pagan LM	8.921077	10	0.5396
Pesaran scaled LM	-1.359289		0.1741
Pesaran CD	-0.036102		0.9712

Next was to check for cross-section dependence between the variables in the model through second-generation unit root tests. The purpose of a cross-sectional dependence (CSD) test in panel regression is to determine whether the residuals from a panel regression model exhibit cross-sectional dependence, meaning that the errors for one unit (e.g., country, firm, individual) are correlated with the errors of other units in the sample. Panel regression assumes independence across units, but in many cases, units may be correlated due to common shocks, spatial relationships, or other factors. If left unaddressed, CSD can lead to: inaccurate inference: standard errors may be biased, leading to incorrect conclusions about the significance of coefficients and inefficient estimation: Estimators may not be optimal, resulting in reduced precision. By testing for CSD, the study intends to: identify potential issues with the model and data and choose appropriate methods to account for CSD.

Therefore, the CD test, presented in the Table 3, shows that there is evidence of cross-dependence between the variables as the null hypothesis of no cross-dependence is strongly rejected. Hence, the unit root test concluded that the variables are stationary at level and first difference. Therefore, they can be used to estimate an ARDL model. Given the strong support of the stationarity in all the variables, the second stage of the analysis is to test for cointegration between the dependent variable and the regressors.

Table 4: ARDL long-run and error correction estimates on the effects of domestic debt and economic growth

Dependent Variable: Economic growth	
Regressors	**Coefficient (prob Level)**
Domestic debt	-0.699832 (0.0171)
Unemployment Rate	-0.408143 (0.000)
Inflation rate	-0.196144(0.7721)
Fiscal deficit	-0.001079 (0.4651)
Exchange rate	-0.006260 (0.1911)
Money supply	-0.696507 (0.0003)
Interest rate	-0.093137 (0.0191)
Error Correction Estimates	
∆ Domestic debt	0.054787 (0.2131)
∆ Unemployment Rate	-4.551399 (0.0090)
∆ Fiscal deficit	-0.112039 (0.2587)
∆ Exchange rate	-0.427529 (0.0804)
∆ Inflation rate	-0.050198 (0.0000)
∆ Money supply	-0.024265 (0.4476)
∆ Interest rate	-0.046413 (0.2575)
ECM (-1)	-0.060376 (0.0000)
R- square	0.628856
D.W	2.025627

As shown in the Table 4, the result for the ARDL showed that the coefficient of domestic debt exhibits a long run negative relationship with economic growth. The implication is that in long-run about 0.69 percent of domestic debt can reduce economic growth in the selected sub Saharan countries. Hence, this implies that over time, as the level of government borrowing (domestic debt) increases, it tends to negatively affect the growth rate of the economy. This relationship suggests that the accumulation of domestic debt can have detrimental effects on economic performance in the long run, potentially leading to slower growth, reduced investment etc. This is in consonance with the crowding out theory which suggest that when the government borrows a significant amount of funds, it competes with the private sector for capital. This competition increases interest rate, which makes it more difficult for businesses to finance expansion and investment. This can result in lower productivity growth, reduces innovation and overall slower economic growth in the long run.

However, unemployment rate aligned with theory and was statistically significant. The implication is that as the unemployment rate decreases, the growth rate of GDP tends to increase, and vice versa. This finding is in line with Keynes theory which is based on the idea that a rise in unemployment reduces income and thus consumption. Lower consumption reduces overall demand in the economy, which can lead to lower production, slower growth, and even further increases in unemployment as business scale back operations.

Also, high inflation rate erodes the purchasing power of consumers. This is in consonance with the purchasing power parity theory that suggest that high inflation reduces the real value of money and savings, decreasing consumers' ability to spend and invest. As a result, lower consumption leads to lower aggregate demand and slows economic growth.

Furthermore, the result of fiscal deficit aligned with the debt overhang theory. A rising fiscal deficit leads to an increase in debt, which the government must service with interest payments. This reduces the economy's long term growth potential, as the government is forced to allocate more resources to debt servicing rather than productive investments.

Consequently, the result showed that a depreciation of the domestic currency increases the cost of imports, leading to imported inflation. As prices for imported goods rise, this can push up overall price levels in the economy, contributing to higher inflation. If inflation remains high over time, it erodes purchasing power, reduces real incomes, and diminishes economic growth potential. Also, If the money supply grows faster than the economy's productive capacity, it can lead to inflationary pressures. In the long run, high inflation erodes purchasing power, reduces investment incentives, and distorts economic decision-making, all of which can hinder growth. These findings are in line with monetarist theory.

High interest rates can also negatively impact capital formation, which is critical for long-term economic growth. When interest rates are high, businesses may find it more difficult to finance investments in new machinery, equipment, or technology. This reduces the potential for improving productivity and increases the cost of expanding capacity, which ultimately slows growth. This finding is in line with the Solow Growth theory suggests that capital accumulation is a key driver of economic growth. If high interest rates reduce the ability of firms to invest in new capital, this will hinder the economy's ability to expand and improve productivity over time. A reduction in capital accumulation can lead to slower technological progress and diminished economic growth.

On the other hand, fiscal deficit, unemployment rate, exchange rate, money supply and interest rate actually reflected negatively with economic growth in the short run. The implication of the negative relationship between fiscal deficit and economic growth is in line with the Ricardian Equivalence theory. If government runs a fiscal deficit to finance increased

government to spending or reduced taxation, it will lead to an increase in the money supply, assuming that the central bank accommodates the fiscal policy buying government bonds on the open market. This increase in the money supply can lead to inflation, which can negatively affect economic growth. Also, the negative relationship between exchange rates and economic growth is in line with the Mundell-Fleming theory which explains that in the short run, changes in exchange rate can influence output through the IS curve (representing the goods market In the same vein, in the short run economic growth typically leads to a reduction in unemployment, and a rise in unemployment is often associated with slower or negative economic growth. This finding is in line with the Okun's theory which suggests that higher unemployment is associated with lower output, which in turn implies that a growing economy tends to reduce unemployment. Conversely, if the economy contracts, unemployment rises. Similarly, an increase in the interest rate is associated with a decrease in economic growth. This relationship can be explained by the Keynesian theory. Also, a short run negative relationship between inflation and economic growth is in line with the Phillip's curve theory.

Other vitals reported in Table 4 are the post-estimation statistics. For example, the adjusted coefficient of determination (Adj. R^2) reflected a good fit, showing that 62 percent, of the changes in the domestic debt of selected sub-Saharan countries are jointly explained by the variables in each of the models. More so, Durbin-Watson statistic indicated that the model is free from serial correlation. This result established the cointegration (long-run relationship) of the variables in the series, thereby further confirming stability and the reliability of the outcome of the analyses for policy suggestions cross dependence test decisions.

SUMMARY AND CONCLUSION

This study investigated the relationship between domestic debt and economic growth in selected sub-Saharan African countries using annual data spanning the period of 1995-2023. Specifically, the study sought to: analyze the long and short run effects of domestic debt on economic growth in selected sub-Saharan African countries. Apart from the use of some pre-analysis test statistics like the Levin, Lin and Chu t* and Im, Pesaran and Shin W-stat tests to assess the panel series properties of the variables, Panel ARDL was used to estimate the model as formulated in the work in tandem with the research objective and the related research question the findings from the study were meant to address. The study has revealed that there exists a positive relationship between domestic debt and economic growth in the short run and a negative relationship between domestic debt and economic growth in the long run in the selected sub–Saharan African countries.

It is pertinent to note that given the evidences on the relationship between domestic debt and economic growth in the selected Sub–Saharan African countries, domestic debt plays a crucial role in the economic performances of countries in Sub-Sahara Africa. As such, it is necessary that researchers in related disciplines embark on research activities to further investigate the optimal levels of domestic debt. Indeed, determining the threshold level of domestic debts on growth is an imperative for a deeper understanding of the domestic debt-growth nexus.

This study concludes that it is expedient for the government of the selected sub-Saharan African countries to ensure that the increase in domestic debt must be associated with effective fiscal policies that can help stabilize prices. Thus, the government of the selected sub-Saharan African countries reliance on borrowing from the banking sector, to finance its financial plan has slowed down the attainment of macroeconomic stability and sustainable economic growth. This has resulted in the crowding out of the private sector from the credit market, thereby slowing down investment and output growth.

RECOMMENDATIONS

Following the study's findings on the interaction between domestic debt and inflation in the selected sub-Saharan African countries, following specific recommendations are proposed for policy implementation:

(1) Fiscal Consolidation and Private Sector Stimulation: Given the negative long-term relationship between domestic debt and economic growth: Fiscal Consolidation: Implement measures to reduce debt reliance, including; Cutting Unnecessary Expenditures**:** Identify and reduce non-essential spending; Improving Tax Collection Efficiency: Strengthen tax administration to increase revenue; Enhancing Fiscal Discipline: Maintain rigorous oversight of public finances.

(a) Stimulating Private Sector Investment: Develop policies to encourage business investment, such as: Providing Business Incentives: Offer tax breaks or subsidies for investment in key sectors, improving Infrastructure: Enhance infrastructure to support business activities, and regulatory reforms; simplify regulations to create a more favorable business environment.

2. Strategic Short-Term Investments: Given the positive short-term relationship between domestic debt and economic growth:

(a) Invest in High-Return Infrastructure Projects: Focus on projects with significant economic returns, including:

i) Transportation: Develop roads, railways, and ports to facilitate trade and mobility.

ii) Energy: Invest in energy production and distribution to support industrial and residential needs.

iii) Telecommunications: Improve connectivity to enhance business and communication.

(b) Enhance Public Services: Use domestic debt to improve:

i) Healthcare: Expand healthcare facilities and services.

ii) Education: Enhance educational infrastructure and programs.

iii) Social Safety Nets: Strengthen social safety nets to support vulnerable populations.

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