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Budget Deficit and Economic Development in East Sahara Africa

Ugorji, C.N.[1*], Prof Nkechukwu, G.C.[2], Okoye, L.[3], Onyeogo, S.[4]
[1]Department of Banking and Finance, Nnamdi Azikiwe University, Awka, Nigeria
[2,3&4]Department of Banking and Finance, Chukwuemeka Odumegwu Ojukwu University, Igbariam, Nigeria
Correspondence: Cn.ugorji@unizik.edu.ng

ABSTRACT: This study investigates the nexus between budget deficits and economic development in East Sahara Africa, focusing on Kenya, Tanzania, and Uganda over the period 2000–2023. Budget deficits, which occur when government expenditures exceed revenues, have been a recurring feature of fiscal management in the region, often influenced by electoral cycles, external shocks, and structural public finance challenges. Using secondary data from the World Bank's World Development Indicators, the study adopts an ex post facto design to analyze the effects of budget deficits, total debt service and external debt stocks on GDP growth rate in East Sahara African countries. Panel stationarity tests such as the Levin, Lin & Chu t* and ADF - Fisher Chi-square were applied to ensure robustness across the time period. The findings revealed that budget deficits have a non-significant negative impact on economic development. Total debt service have a negative significant effect on economic development in East Sahara African countries ($p<.05$). External debt stock has a negative non-significant effect on economic development in East Sahara African countries ($p>.05$). The research concludes that budget deficits are not inherently harmful but must be strategically managed to support development. It recommends that governments in East Sahara Africa should ensure that any fiscal deficits are strategically directed toward productive, growth-enhancing investments, such as infrastructure, health, and education, rather than recurrent or consumption-based expenditures. Secondly, governments should adopt policies that improve debt sustainability by expanding domestic revenue mobilization, renegotiating high-interest debt, and minimizing reliance on short-term or non-concessional loans. Thus, governments in east Saharan Africa should link external borrowing to clearly defined development projects with measurable returns and robust monitoring mechanisms. This enhances the productivity of debt and reduces fiscal vulnerability. The study contributes to the literature on fiscal policy in developing regions and reinforces the importance of aligning fiscal strategies with regional integration goals under the East African Community (EAC) framework to ensure macroeconomic stability and investor confidence.

Keywords: Budget deficits, Economic development, East Saharan Africa

1. INTRODUCTION

Fiscal policy is a pivotal tool through which governments steer the direction of national economies (Daoui, 2023). It also refers to the government's use of its budget to influence economic activities, which can result in a budget deficit, surplus, or a

balanced budget (Efuntade, 2020). A budget deficit occurs when government expenditures significantly exceed its revenues, requiring financing through net borrowing (Efuntade, 2020). Hence, it has gained significant attention, particularly in developing regions where public finance stability is important for development (Silahtaroğlu et al., 2021; Sore et al., 2024).

In East Sahara African countries, budget deficits have become a recurring theme, driven by factors such as electoral expenditure, poor revenue mobilization, external shocks, and structural weaknesses in public finance management systems (Magehema, 2015). Budget deficit poses a dual-edged sword: while it can stimulate economic activity in the short term, especially when directed towards productive investments, it may also inhibit long-term development if it leads to unsustainable debt accumulation. Many African nations operate within a fiscal deficits environment (Olaoye et al., 2024; Ifeoma, 2011; Ekwunife, Nduka & Ogini, 2022). According to Lau and Yip (2019), over the past eleven years, since the global financial crisis of 2008, the budget deficit especially in sub Saharan Africa has been a major concern.

Since the global financial crisis, budget deficit has emerged as the primary economic constraint in Africa (Makin, 2018). This view is consistent with Silahtaroğlu et al. (2021) who opined that a key marker of global financial crises for the past ten years has been the budget deficit. East Sahara Africa, encompassing a set of emerging economies in East Africa, exemplifies this concern. East Sahara Africa, as used in this study, refers to a subset of countries in East Africa that exhibit common macroeconomic and fiscal characteristics. Specifically, this study focuses on Tanzania, Kenya, and Uganda, three emerging economies within the East African Community (EAC). The budget deficit (BD) for the countries Kenya, Tanzania, and Uganda showed an approximate figure of 1.64%. This indicates that these countries generally operate with a fiscal deficit. For example, Uganda had an average of approximately -3.10%, indicating a consistent budget surplus over the period. In contrast, Kenya's average BDEF is around 1.72%, with moderate variability, while Tanzania's mean is near 0.11%, with some fluctuations.

Tanzania achieved macroeconomic stability in the late 1990s, with inflation dropping from about 30 percent in the 1980s to single digits, and GDP growth averaging around 7 percent since 1992 (Lema & Sitima, 2025). Despite several reforms, Tanzania's financial sector has achieved notable stability and resilience, with robust growth and improved loan quality (IMF, 2025; AfDB, 2024).

Private sector credit access has significantly expanded, showing strong growth in recent years (TICGL, 2025a), with rates reaching approximately 22% in mid-2023 and total credit increasing to around 38.76 trillion TZS by April 2025. While lending rates remain relatively high, the lending rate as at March 2025 was 15.50%, interest rate spreads have fluctuated, showing a narrowing trend in early 2025 (to 5.63 percentage points in January 2025) but widening again by March 2025 (to 7.69 percentage points), which can indicate higher bank profit margins but also higher borrowing costs for the public (TICGL, 2025b; TICGL, 2025c).

Kenya experienced strong economic growth averaging 6.6 percent in the first post-independence decade, since 2002, Kenya's economic performance has generally improved, with the economy recording an average growth rate of 5% in the decade leading up to 2020 (Tule et al., 2020). Recent statistics show GDP increasing by 7.59% in 2021, 4.86% in 2022, and 5.56% in 2023 (Worldometer, 2024). The economy maintained a steady pace, growing by 4.9% year-on-year in the first quarter of 2025, driven by growth in sectors such as agriculture, manufacturing, ICT, and financial and insurance services (CNBC Africa, 2025; Xinhua, 2025; Trading Economics, 2025).

In recent years, improved coordination of fiscal and monetary policies has supported a gradual economic transformation (Tule et al., 2020; Anusi & Nduka, 2022). Uganda has maintained low and stable inflation since the 1990s, with headline inflation averaging 2.5 percent in 2020/2021, due to sound macroeconomic management (BoU, 2020). Effective coordination between fiscal and monetary policies has been central to sustaining macroeconomic stability and supporting long-term growth (BoU, 2020). However, persistent budget deficits in the countries raises questions about their implications for economic development, particularly concerning infrastructure and investment levels, inflation control, and poverty alleviation (Rahman & Siddiquee, 2024; Sore et al., 2024).

Economic development, in contrast, refers to the broad-based improvement in economic indicators such as income levels, employment, infrastructure, health, and education outcomes (Asiedu et al., 2020). It encompasses structural transformation that enhances the quality of life for citizens (Todaro & Smith, 2009). In East Sahara Africa, economic development is critical given the region's significant population pressures, infrastructural deficits, and high poverty rates. The nexus between budget

deficit and economic development is a key area of empirical and theoretical investigation. Prior studies, such as Efuntade (2020) in Nigeria; Biplob (2019) in Bangladesh; and, Abdirahman (2019) in Uganda examine the nexus from divergent theoretical perspectives. Ndirangu (2017) conducted a panel data study specifically on the East African Community (EAC) countries, i.e., Burundi, Kenya, Rwanda, Tanzania, and Uganda, to investigate how fiscal deficits impact economic development. Similarly, Masinde et al. (2022) utilized a panel causality analysis to evaluate macroeconomic factors that determine fiscal policy, including deficits, across five EAC nations. Keynesian economists' postulates that budget deficits, particularly in times of economic downturns, can spur economic activity by increasing aggregate demand. Under this lens, public sector investment can complement private investment, thereby accelerating growth and development (Magehema, 2015; Okeke, Bebedeth & Okoro, 2025; Nduka, Ananwude & Osakwe, 2019). In contrast, neoclassical economists argue that deficits may crowd out private investment due to higher interest rates, reducing national savings and, by extension, future capital formation. This theory posits a negative long-term relationship between deficits and economic development unless mitigated by efficient fiscal management (Magehema, 2015; Ighomereho & Ezeabasili, 2013; Rahman & Siddiquee, 2024; Sore et al., 2024).

Studies in Africa reveal a mixed findings, for instance, Lema and Sitima (2025) finds that the relationship between budget deficit and economic development in East African countries such as Kenya, Uganda, Rwanda, Tanzania, and Burundi is largely dependent on how the borrowed funds are utilized. If the deficit finances development-oriented projects, particularly in infrastructure, health, and education, positive growth effects are likely. However, if the funds are channelled toward recurrent expenditures and political spending, the consequences may be deleterious, leading to inflationary pressures, increased debt service burden, and diminished fiscal space for productive investment. Kurantin (2017) documents Ghana's experience with budget deficits, highlighting their detrimental effects on macroeconomic stability and sustainable development. The study identifies a trend of increased borrowing for recurrent expenses, especially during electoral periods, which contributes to unsustainable debt accumulation and hinders developmental progress. Aworinde's (2013), study covered several African countries including East Sahara Africa (ESA). His findings underscore the complexity of the "twin

deficits" hypothesis, linking budget deficits with current account deficits and inflation, both of which have profound implications for macroeconomic stability and development. His work reveals that in many East African economies, fiscal deficits have had a statistically significant impact on inflation and external imbalances, thereby influencing growth negatively when mismanaged. Thus, ESA faces particular challenges in managing its fiscal affairs due to structural economic vulnerabilities (Lema & Sitima, 2025). These include heavy reliance on primary commodity exports, narrow tax bases, weak institutions, and limited access to capital markets. These factors not only constrain revenue mobilization but also amplify the risks associated with deficit financing. For example, currency depreciation, common in many ESA economies, increases the local currency cost of external debt servicing, further straining fiscal budgets and reducing the space for development spending. In the context of East African countries like Tanzania, Kenya, and Uganda, understanding the dynamic interplay between policies such as government revenue and expenditure pattern including debt management and how such influence the growth and development of EAC is paramount (Nyabakora, 2023; Chukwujekwu & Ezeabasili, 2019).

However, despite the prevalence of budget deficits across the region, the developmental implications of these fiscal imbalances remain underexplored. Few studies have examined the specific impact on economic development, within these East African economies. This study bridges the gap by focusing on Kenya, Tanzania, and Uganda which exemplify the region's developmental dynamics. Against this backdrop, the current study sought to examine the nexus of budget deficit and economic development.

The implications of persistent budget deficits ultimately affect economic development (Okoruwa & Imoke, 2025). Economic development is central to the welfare and long-term stability of African countries. In East Africa, which includes such as Kenya, Tanzania, Uganda, Rwanda, and Burundi, persistent budget deficits exacerbate macroeconomic imbalances (Carmel et al., 2025). This structural imbalance has undauntedly remained a defining feature of economic policy in these nations (Murungi et al., 2023). Evidence shows that budget deficits have not only increased over time but have also coincided with rising public debt levels, weakening macroeconomic indicators, and growing dependency on external financing (Mawejje & Odhiambo, 2022). Such deficits often lead to underinvestment in critical sectors such as

education, healthcare, and infrastructure. This slows human capital formation and impedes efforts to diversify economies away from subsistence agriculture and informal employment. Moreover, social services such as water and sanitation, which are essential for inclusive development, often suffer due to recurrent fiscal pressures (Oxford Analytica, 2025).

It is essential to contextualize the budget deficit–development relationship within the regional integration agenda of East Sahara Africa (Carmel et al., 2025). In East Sahara African (ESA) countries such as Kenya, Tanzania, and Uganda, the structural gap between government expenditures and revenues has led to chronic fiscal imbalances, forcing governments to rely heavily on borrowing to finance development and recurrent expenditure (Murungi et al., 2023). Over time, these deficits have contributed to a rapid accumulation of public debt and an increase in external debt stocks, placing substantial pressure on national budgets (Mawejje & Odhiambo, 2022).

In East Sahara African countries, including Kenya, Tanzania, and Uganda, persistent budget deficits pose a significant challenge, worsening the economic vulnerabilities and increasing reliance on external debt (Carmel et al., 2025; Mawejje & Odhiambo, 2022). This has led to underinvestment in critical development sectors such as education, healthcare, and infrastructure (Oxford Analytica, 2025). The various countries pursue different strategies to deal with this. Kenya, for instance, is pursuing a fiscal consolidation strategy to reduce its debt-to-GDP ratio through tax base expansion, rationalizing exemptions, improving compliance, and enhancing the efficiency of public spending, with a targeted 4.5% fiscal deficit cap for FY 2025/26 and a surge in development expenditure (World Bank, 2025). Tanzania is focusing on strengthening domestic revenue mobilization by broadening its tax base and improving tax administration, aiming to reduce its fiscal deficit to 2.5% of GDP by 2024/25, while also prioritizing spending in social sectors to boost human capital (TICGL, 2025; World Bank, 2023). Similarly, Uganda's fiscal strategy, outlined in its "10-Fold Growth Strategy" and NDP IV, emphasizes enhanced domestic revenue mobilization, strict expenditure prioritization for human capital and infrastructure, and active management of public debt within sustainable thresholds (Parliament of Uganda, 2025; Ministry of Finance, Planning and Economic Development, Uganda).

However, despite these, rising total debt service obligations continue to consume a significant share of government revenue, crowding out vital development expenditures and undermining inclusive growth initiatives (Oxford Analytica, 2025). Concurrently, increasing external debt stocks expose these economies to external shocks, exchange rate volatility, and rising debt servicing costs, further diverting resources and complicating efforts to achieve sustainable development and poverty reduction (Mawejje & Odhiambo, 2022; Magehema, 2015; Aworinde, 2013). While fiscal deficits are not inherently negative and can serve as a counter-cyclical tool, their developmental impact critically depends on the quality of spending and the efficiency of public financial management within these East Sahara African countries (Aworinde, 2013).

The existing literature shows a clear gap: of limited empirical research that investigates the effects of budget deficits, total debt service (% of GNI), and external debt stocks (% of GNI) on economic development. Prior studies often focus on individual countries, use outdated data, or do not include the above specific proxies to measure budget deficits. This lack of region-specific evidence limits policymakers' ability to design targeted and effective fiscal strategies. This study, therefore, seeks to fill this gap by examining the relationship between budget deficits, total debt service, and external debt stocks and their collective impact on economic development in Kenya, Tanzania, and Uganda from 2000 to 2023. As these can constrain economic development, particularly in contexts of weak social protection systems (Kurantin, 2017; Ugochukwu, Ezeabasili & Ostar, 2020).

The objective of the study is to examine the nexus of the budget deficit and economic development in East Sahara Africa. Specifically the study intends to examine the effect of budget deficit, total debt service and external debt stocks on GDP growth rate in selected East Sahara African countries. Hypothetically,

Ho_1: The budget deficit has no significant effect on the economic development of selected East Sahara African countries.

Ho_2: Total debt service have no significant impact on the economic development of selected East Sahara African countries.

Ho_3: External debt stocks has no significant effect on the economic development of selected East Sahara African countries.

LITERATURE REVIEW

Budget Deficit

A budget deficit occurs when a government's expenditures exceed its revenues over a specified period, typically a fiscal year (Biplob, 2019). This fiscal gap is typically financed through borrowing either domestically, externally, or by monetizing debt through the central bank. In developing regions such as East Sahara Africa, persistent budget deficits are often symptomatic of deeper structural weaknesses in public finance management, inefficiencies in tax collection, and external vulnerabilities including reliance on commodity exports (Kurantin, 2017; Ogunewe, Ananwude & Nduka, 2020). A deficit policy plays a crucial role in helping countries achieve macroeconomic stability, reduce poverty, redistribute income, and promote sustainable growth. As a result, many governments use their budgets as an effective tool to achieve these economic objectives. Large or accumulating budget deficits are not inherently harmful if they are used effectively to stimulate economic growth.

According to Aniefor, Nduka, Ananwude & Ezeaku (2021) budget deficits have become a significant economic challenge for many countries, particularly developing nations, which often lack an efficient private sector. This leads to increased government activities and a larger share of the economy being driven by government expenditure and investment (Mawejje & Odhiambo, 2022). On the revenue side, these governments typically lack sufficient revenues to cover their vast expenses, resulting in persistent budget deficits. If governments rely on domestic banking resources to finance these deficits, it can lead to inflation, as higher government spending initially boosts total demand.

However, increased government expenditure may not lead to an increase in supply due to structural issues within the economy, exacerbating inflation. Consequently, this inflationary pressure affects both the internal and external sectors of the economy, with rising imports and declining exports.

Budget deficits are classified into two primary types: cyclical deficits and structural deficits. Cyclical deficits arise due to economic fluctuations, such as downturns that reduce tax revenues and increase social spending. Structural deficits, by contrast, persist regardless of the economic cycle and are indicative of a fundamental mismatch between revenue and expenditure frameworks (Magehema, 2015; Okoro & Offor, 2019).

The causes of budget deficits in East Sahara African countries are multifaceted. Key among them are weak revenue collection

systems, limited tax bases, extensive subsidies, inefficient public enterprises, and election-related fiscal expansions. Governments in the region often rely on domestic borrowing, which can crowd out private investment by driving up interest rates. External borrowing, while sometimes cheaper, raises concerns about debt sustainability and exposes countries to currency risk (Aworinde, 2013; Nwanolue, Ezeabasili, & Obiora, 2018; Okoro & Anichebe, 2019; Monogbe, Omotayo, Achugbu & Nduka, 2016). Some states also resort to seigniorage or printing money, leading to inflation and currency depreciation (Magehema, 2015; Ifeoma, 2011; Okoro & Ekwunife, 2022).

Government Revenue

Government revenue refers to the total amount of financial resources received by a government from various external sources (Efuntade, 2020). It plays a crucial role in sustaining public administration, delivering essential services, and supporting economic development. These revenues are the backbone of national budgets and are essential for a country's fiscal stability. Every functional government requires a reliable and consistent stream of revenue to fulfil its obligations and carry out its policies. One of the most significant sources of government revenue is taxation. Taxes can be broadly categorized into direct and indirect taxes. Direct taxes include income tax, corporate tax, and property tax, which are paid directly by individuals and organizations. Indirect taxes, such as value-added tax (VAT), excise duties, and customs duties, are applied to goods and services and are usually collected at the point of sale. Taxation not only provides revenue but also helps in wealth redistribution and controlling inflation. In addition to taxes, governments receive money through loan repayments. These repayments come from individuals, companies, or other nations that have borrowed money from the government in the past.

Governments also generate direct income from state-owned enterprises (SOEs) and assets. These include profits from utilities, natural resource exploitation, transportation services, and public institutions such as postal or broadcasting services. This type of income is especially significant in countries with strong public-sector industries or valuable natural resources. Interest income is another component, derived from the government's financial investments or lending activities. Funds placed in domestic and international financial instruments can yield returns that supplement national revenue. These revenues are usually lower in proportion compared to taxes but can still

contribute meaningfully. Grants, both local and international, further enhance government revenue. Local grants may come from regional governments or non-governmental organizations. International grants are typically provided by foreign governments, international development agencies, or global financial institutions such as the World Bank or the International Monetary Fund.

Government Expenditure

Government expenditure refers to the total amount of money spent by public authorities to provide goods and services, maintain infrastructure, and promote economic and social development (Efuntade, 2020; Nduka, Atueyi, Osakwe & Mbanefo, 2021). This spending plays a vital role in shaping the direction of national growth, ensuring public welfare, and maintaining the daily operations of government institutions. A well-planned expenditure strategy contributes to both short-term economic stimulation and long-term structural stability. Government spending is typically divided into recurrent and capital expenditures.

a. Recurrent expenditure includes the day-to-day operational costs such as salaries of public employees, maintenance of existing infrastructure, administrative expenses, and regular provision of services like education and healthcare.
b. Capital expenditure, on the other hand, involves investments in long-term assets such as roads, hospitals, schools, and energy infrastructure. These investments aim to improve a country's productive capacity and lay the foundation for sustainable development.

One major area of government expenditure is infrastructure. Governments allocate substantial funds to the construction and maintenance of roads, bridges, ports, and public buildings. This kind of spending boosts employment, improves logistics, and supports commerce. Similarly, expenditures in the health sector ensure the provision of public hospitals, immunization programs, and emergency response systems. A healthy population contributes more effectively to the economy, making health investment a priority for most governments.

Public funds are also directed toward education. Building schools, training teachers, and providing educational materials require significant financial commitment. Governments view education as a long-term investment that fosters human capital development and reduces inequality. In addition to health and education, administrative functions also consume part of the budget. These include operational

costs of government ministries, law enforcement, and the judiciary.

National security is another important area where governments invest heavily. Military, police, border control, and emergency services all require consistent funding to function effectively. Ensuring safety and political stability is essential for attracting foreign investment and maintaining public trust. Subsidies and grants form another category of expenditure. Governments may subsidize sectors such as agriculture, fuel, or electricity to reduce costs for citizens and encourage production. Public grants are often allocated to local governments, research institutions, or non-governmental organizations to carry out development work. Such expenditures aim to stimulate growth in key areas and provide social support to vulnerable populations.

Debt servicing is an unavoidable part of most national budgets. It involves the repayment of interest and principal on previous borrowings. Excessive debt servicing can limit a country's ability to fund development initiatives, especially if the debt burden is high. Effective financial management and budgetary discipline are needed to maintain a healthy balance between debt obligations and development goals.

Tanzania's macroeconomic performance since the early 2000s has been marked by mixed outcomes. While the country achieved macroeconomic stability in the late 1990s characterized by a reduction in inflation from nearly 30 percent in the 1980s to single digits, the 2000s revealed persistent challenges. Inflation averaged around 7 percent during this decade and declined further to 3.45 percent in 2019, reflecting continued efforts in prudent fiscal management (Gabagambi, 2013; Adedeji & Ezeabasili, 2018). However, despite these improvements, signs of fiscal and external sector slippage became evident after the 2002/2003 fiscal year, as fiscal deficits, inflation, and trade balance figures all worsened compared to the mid-1990s. A notable issue in Tanzania's financial system is the limited access to credit by the private sector, as banks heavily favor investment in government securities. This is compounded by persistently high interest rate spreads. While lending rates declined from 37 percent in 1996 to 15.5 percent in 2012, the savings deposit rate remained significantly lower at 2.9 percent, indicating inefficiencies in financial intermediation (BOT, 2013). Nonetheless, the country has benefited from structural reforms and improved investment climate, resulting in increased foreign direct investment inflows. Thus, Tanzania has experienced relatively high and sustained

economic growth since 1992, with average real GDP growth rates around 7 percent (Wuyts & Kilama, 2014).

Kenya's economic history reflects sharp contrasts across decades. The first decade following independence in 1963 witnessed robust growth, with real GDP averaging 6.6 percent annually between 1964 and 1973. This performance was driven by sound economic policies, strong agricultural productivity, and regional trade integration. However, the momentum declined in subsequent decades due to external shocks and internal policy missteps. Between 1974 and 1983, GDP growth slowed to 5.2 percent, and by the third decade (1984–1993), it had further declined to 4.2 percent. The fourth decade (1990–2002) marked a period of severe economic deterioration, with GDP growth dropping to an average of 2.2 percent. The decline was attributed to expansionary fiscal policies, inefficient public enterprises, deteriorating export performance, and poor macroeconomic governance. Nevertheless, Kenya has undergone significant economic restructuring in recent years, where the coordination of fiscal and monetary policies has played a vital role in stabilizing and revitalizing the economy (Tule et al., 2020; Ezeabasili & Amaefuna, 2024).

Uganda's macroeconomic environment has been characterized by strong policy coordination, particularly between fiscal and monetary authorities. The Bank of Uganda emphasizes that a complementary policy approach is essential for long-term growth (BoU, 2020). Since the early 1990s, inflation has shown a downward trend, falling below 10 percent in 1996 and stabilizing below 5 percent in recent years. In the 2020/2021 financial year, headline inflation averaged just 2.5 percent, largely due to favorable food crop prices. Uganda's disciplined approach to macroeconomic management has contributed to a stable inflationary environment, which in turn supports broader development goals. The country's policy framework illustrates the importance of coherent and mutually reinforcing fiscal and monetary strategies in sustaining economic stability.

Total Debt Service

Total debt service, which represents the sum of principal repayments and interest payments on external debt, reflects a country's financial obligations to its creditors. It serves as a critical indicator of external debt sustainability and macroeconomic stability, particularly in developing regions such as Sub-Saharan Africa (SSA). Persistent debt servicing

pressures can limit the fiscal space available for essential public investments and may hinder long-term economic development (Heintz & Ndikumana, 2011). The capacity of a government to manage debt obligations without compromising growth-enhancing expenditures remains a central concern in the economic literature.

The relationship between total debt service and economic growth has garnered significant scholarly attention. O'Neill et al. (2017) argue that excessive debt service obligations often crowd out critical public sector spending, particularly in infrastructure, education, and health. As these sectors are fundamental to sustained economic progress, reallocating resources to meet external debt payments can weaken development outcomes. Nguyen et al. (2017) observed that SSA countries with high debt service ratios tend to experience reduced fiscal flexibility, which limits their ability to respond effectively to economic shocks or implement countercyclical measures.

Kagochi (2019) emphasized the financial strain that high debt service imposes on the private sector. As governments divert resources toward external obligations, domestic credit availability tends to decline.

This reduces private investment, hampers entrepreneurial activities, and curtails job creation. Bandura (2022) suggests that such patterns reflect a form of debt overhang, where the anticipated future debt burden discourages current investment by reducing the returns to capital accumulation. Ibrahim et al. (2022) highlight the threshold effect in the debt-growth relationship. Moderate levels of debt service may not necessarily impair economic growth, especially if borrowed funds are invested productively. However, beyond a critical level, debt service becomes detrimental by weakening fiscal stability and creating structural imbalances. This aligns with earlier findings from Ghura (1995), who demonstrated that heavy external debt servicing commitments have historically undermined macroeconomic stability across SSA economies by triggering fiscal adjustments that reduce productive expenditures. Mignamissi et al. (2023) underscore the role of institutional quality in shaping the debt service-growth dynamic. Strong governance frameworks enhance debt management efficiency, improve fiscal discipline, and promote transparency in the use of borrowed resources.

Conversely, weak institutions increase the likelihood of misallocation, inefficiency, and corruption, exacerbating the adverse effects of debt servicing on economic growth. The interplay between global interest rates and

total debt service has also been examined. Oner (2010) pointed out that rising international borrowing costs can significantly elevate debt service burdens in low-income countries. Exchange rate volatility further amplifies these costs, as local currency depreciation increases the real value of external debt obligations. These dynamics collectively illustrate how total debt service, if not properly managed, can serve as both a financial constraint and a developmental bottleneck in SSA.

External Debt Stock

External debt stocks refer to the total outstanding amount of debt owed by a country to foreign creditors, measured as a percentage of Gross National Income (GNI) (Tarus & Manyala, 2018). This variable reflects the long-term accumulation of external borrowing and is a critical indicator of a country's financial obligations and exposure to external vulnerabilities. In Sub-Saharan Africa (SSA), reliance on external borrowing to finance development initiatives has raised concerns about sustainability, debt management, and the broader implications for economic growth (Heintz & Ndikumana, 2011). The efficiency of the financial system also determines how external debt stocks affect the economy. Tajudeen et al. (2017) emphasized that liberalizing interest rates without strengthening financial institutions leads to volatility and credit rationing. They argued that real interest rate liberalization, if not accompanied by adequate supervision and capital market reforms, could produce suboptimal outcomes for economic growth.

External debt accumulation is a double-edged policy tool (Isibor et al., 2023; O'Neill et al., 2017). On one hand, it can provide the necessary capital for public investment in infrastructure and social services. However hand, excessive reliance on foreign debt can expose countries to repayment risks, currency depreciation, and financial crises. The ability of a country to translate borrowed funds into productive investment determines whether external debt is a catalyst for or a constraint on growth. Nguyen et al. (2017) emphasized that the composition and terms of external debt significantly affect its impact on economic development. Concessional loans with favorable interest rates and repayment terms are more likely to support growth than commercial loans that carry higher servicing costs. Their findings also suggest that misaligned debt structures increase fiscal vulnerabilities and constrain the policy space needed for developmental spending.

The relationship between external debt and growth in SSA exhibits a non-linear pattern. Moderate levels of external borrowing can

stimulate economic activity when used efficiently (Ibrahim et al., 2022; Ethel, 2022; Okoro, 2016). However, beyond a certain threshold, the negative effects of debt accumulation become more pronounced. These include rising debt service obligations, deteriorating credit ratings, and reduced investor confidence. Their research confirms the presence of a debt overhang effect, where future growth prospects are dampened by the anticipation of debt-related fiscal adjustments. Kagochi (2019) focused on the role of external debt in distorting financial sector development. High levels of external debt often crowd out domestic investment as governments prioritize repayment over private sector support. This misallocation can erode financial intermediation and limit access to capital for entrepreneurs and small businesses (Ubahi, Patience & Okoro, 2025). The long-term effect is a sluggish private sector and weaker economic resilience.

Economic Development

Economic development is a multidimensional process involving sustained increases in per capita income, improvements in literacy, life expectancy, and reductions in poverty and inequality. It goes beyond mere GDP growth to include structural changes in the economy, human capital enhancement, institutional reform, and equitable distribution of resources (Todaro & Smith, 2009).

Key indicators of development include GDP and GNP growth rates, GDP per capita, income distribution, literacy levels, access to healthcare and sanitation, infrastructure quality, and employment levels. Development is also measured through indices such as the Human Development Index (HDI), which incorporates life expectancy, education, and income levels (Magehema, 2015).

In the context of East Sahara Africa, the pursuit of economic development is constrained by high population growth rates, weak infrastructure, limited industrialization, and dependence on agricultural exports. These challenges necessitate strategic public investment often financed through budget deficits in education, healthcare, transportation, and energy sectors (Kurantin, 2017).

Interplay between Budget Deficit and Economic Development

The relationship between budget deficits and economic development is complex and context-dependent. In theory, deficit financing can stimulate growth by funding development-oriented projects such as infrastructure, education, and health. When used efficiently, these investments can crowd in private capital, boost productivity, and

create jobs. However, persistent and poorly managed deficits can lead to inflation, reduce investor confidence, and increase public debt, thereby constraining future development (Aworinde, 2013; Magehema, 2015). This dynamic interplay is influenced by the sources and uses of deficit financing. If a government borrows to finance capital investments that enhance long-term productivity, the result may be positive economic development. Conversely, deficits used to fund consumption or recurrent expenditures, such as wages or subsidies, are unlikely to yield developmental gains and may instead exacerbate macroeconomic instability (Kurantin, 2017). Additionally, the impact of budget deficits on inflation, interest rates, and exchange rates can significantly influence development outcomes. Inflation erodes the real value of incomes, especially among low-income groups, undermining poverty reduction efforts. High interest rates discourage private investment, while currency depreciation increases the cost of servicing external debt (Magehema, 2015; Obidike, Onyeka & Nduka, 2022).

Channels of Transmission

Several channels mediate the impact of budget deficits on economic development:

i. Investment Channel: Budget deficits financed through domestic borrowing can crowd out private investment by increasing interest rates. However, when directed toward capital formation, they can crowd in investment and stimulate growth (Aschauer, 1989; Magehema, 2015).
ii. Inflationary Channel: Monetization of deficits often leads to inflation. In East African economies, inflation has been shown to erode public trust in government fiscal policy and deter long-term investment (Abdirahman, 2019).
iii. External Sector Channel: Budget deficits can cause current account imbalances, especially when financed by foreign borrowing. Persistent external deficits lead to increased foreign debt and vulnerability to exchange rate volatility (Aworinde, 2013).
iv. Public Debt Channel: Rising deficits lead to debt accumulation. In low-income countries, the capacity to service this debt without undermining essential public services is limited, affecting development trajectories (Magehema, 2015).
v. Institutional Quality Channel: The developmental impact of deficits also depends on governance. Corruption, weak institutions, and lack of fiscal transparency reduce the efficiency of public spending and limit the positive

effects of deficit-financed projects (Kurantin, 2017).

2.2 Theoretical Review

2.2.1 Keynesian Theory

Keynesian economics posits that budget deficits can be beneficial during periods of economic slack. In such scenarios, government spending compensates for insufficient private sector demand, stimulating production, employment, and income. This theory supports counter-cyclical fiscal policies, especially in low-income countries grappling with underutilization of resources (Magehema, 2015). Public investment in infrastructure and social services, financed through deficit spending, is believed to create a multiplier effect, leading to increased consumption and private investment. Thus, when managed prudently, budget deficits can catalyze economic development, particularly in regions like East Sahara Africa where infrastructure deficits are pronounced (Kurantin, 2017).

2.2.2 Ricardian Equivalence Theory

The Ricardian Equivalence hypothesis, attributed to David Ricardo and later formalized by Robert Barro, argues that budget deficits do not affect aggregate demand. This is because rational consumers anticipate future taxes to repay public debt and increase their savings accordingly. Therefore, any stimulus from deficit spending is offset by reduced private consumption (Aworinde, 2013). Critics argue that this theory is less applicable in developing economies, where consumers are liquidity-constrained and capital markets are imperfect. In East Africa, low financial literacy and weak banking systems hinder the intertemporal smoothing of consumption, limiting the practical relevance of Ricardian Equivalence (Magehema, 2015).

2.2.3 Neo-Classical Theory

Neo-classical economists argue that budget deficits negatively affect economic growth, primarily through the crowding-out effect on private investment. When the government increases borrowing, it places upward pressure on interest rates. As interest rates rise, borrowing becomes more expensive for the private sector, reducing the availability of funds for business projects and entrepreneurial activities. This situation discourages private sector borrowing and investment, ultimately slowing economic productivity and innovation. Government spending, according to this school of thought, often lacks efficiency and tends to be influenced by political agendas.

Such spending can result in the misallocation of resources, where funds are directed toward less productive or politically motivated

initiatives rather than economically optimal uses (Kurantin, 2017). The neoclassical perspective also links fiscal deficits with negative outcomes across several macroeconomic indicators. These include higher inflation, lower levels of private spending, and deterioration in the current account balance.

Fiscal deficits, from the neoclassical view, shift the tax burden to future generations. This intertemporal shift leads individuals to increase their current consumption, based on the assumption that they will face lower taxes today than in the future. In an economy assumed to be operating at full employment, increased consumption tends to reduce the overall savings available in the financial system. As savings decline, interest rates must increase to restore equilibrium in capital markets.

Higher interest rates, in turn, deter private investment and reduce domestic production. In addition, the upward pressure on prices contributes to higher inflation, compounding the economic challenges associated with fiscal deficits. The outcome, according to neoclassical theory, is a decline in economic growth, driven by reduced private-sector activity and inefficient public sector spending.

2.3 Empirical Review

Kryeziu and Hoxha (2021) evaluated "Fiscal Deficit and its effects on economic growth: Empirical evidence". Utilizing panel data covering the period from 1995 to 2015, and comprising a total of 257 observations, the analysis employs a multiple linear regression model estimated through the least squares method. To validate the robustness of the model, diagnostic tests were conducted, including the Durbin-Watson test for detecting serial correlation and the Breusch-Pagan test for identifying heteroskedasticity. The diagnostic results indicate that the model does not suffer from either serial correlation or heteroskedasticity, thereby affirming its statistical reliability. The findings reveal that the deficit-to-GDP ratio is statistically significant and positively associated with economic growth, suggesting that increases in the fiscal deficit may contribute to higher growth levels within the Eurozone context. From a policy perspective, the study recommends that Eurozone countries maintain control over elevated and persistent fiscal deficits.

Efuntade (2020) investigated "The effect of budget deficit on economic growth in Nigeria", from 2009 to 2019 They focused on factors such as excess public expenditure, public revenue reduction, inflation rate, unemployment rate, and real GDP. . The

Error Correction Model (ECM) was employed for data analysis. The findings revealed a long-run relationship (co-integration) among the variables. It was found that excess public expenditure and public revenue reduction significantly impacted Nigeria's economic growth, while inflation and unemployment rates did not show a positive relationship with growth in the long run. The study concluded that excess public expenditure has a notable effect on economic growth, depending on the specific variable. The study recommended that the government focus on improving the efficiency and effectiveness of public financial management. Additionally, the study suggested that Nigeria's governments should reduce public borrowing, as it negatively affects economic growth in the long run.

Biplob (2019) studied "Does budget deficit impede economic growth? Evidence from Bangladesh". The study examined the effects of budget deficits on Bangladesh's economic growth from 1981 to 2017. Using the autoregressive distributed lag (ARDL) model, it assesses both short- and long-term relationships and elasticities, while the vector error correction model (VECM) is used to explore causal directions between variables. The ARDL results show that budget deficits have a positive impact on economic growth in both the short and long run. Additionally, government spending boosts GDP, but only in the long term. These findings align with the Keynesian view that budget deficits can stimulate economic growth by encouraging private investment.

Kurantin (2017) studied "The effects of budget deficit on economic growth and development: The experience of Ghana (1994–2014)". They used panel data from 1994 to 2014, the study models key variables such as inflation, GDP, real interest rates, gross investment, and real exchange rates to assess the effects of persistent budget deficits. The results indicate that ongoing deficits negatively affect economic growth and development. The paper recommends policy reforms aimed at reducing unsustainable deficits to prevent crowding out private investment and to place the economy on a stable, long-term growth path.

Studies in Kenya

Rahman and Siddiquee (2024) evaluated the "Growth effects of budgetary fiscal variables in a panel of middle-income countries". They used a balanced panel of 32 middle-income nations to evaluate the growth-enhancing and growth-retarding effects of various budgetary fiscal variables for the years 2000–2017 employing panel econometric methods, both static and dynamic. This study finds that larger tax and non-tax revenues retard economic growth; higher allocation to public

capital expenditure has a positive and significant effect on growth; fiscal deficit has neutral-growth effects; and controlling broad money supply corrects for biases in the orthogonal specification.

Sore et al. (2024) conducted a study "On the fiscal deficit and economic growth in sub-Saharan Africa: A new evidence from system GMM". This study used a two-step GMM approach to analyze the short- and long-term impacts of fiscal deficits on the economic growth of 42 Sub-Saharan African countries from 2011 to 2021. The panel data is sourced from the reliable World Development Index. Unit root tests (Levin-Lin-Chu and Hadri LM) confirm that the data does not exhibit a random walk. The results show that while fiscal deficits positively impact economic growth in the short term, they have negative long-term effects. Specifically, a one percentage point increase in the fiscal deficit leads to a 0.036% short-term growth increase but a 0.013% long-term growth decrease, holding other factors constant. The study also finds that real exchange rates and inflation hinder short-term growth, while gross fixed capital formation and real interest rates are key drivers of long-term economic growth in SSA. The study recommends that SSA nations manage fiscal deficits carefully and invest more in capital development in the long run.

Koech (2023) evaluated the "Relationship between budget deficit and economic growth in Kenya". The author used a correlational study design. Monthly data was gathered for the study between July 1999 and December 2022. The time series data collection forms were used and E-views version 11 used for data analysis, with a vector error corrected model. The results showed that taxes had a negative impact on Kenya's economic expansion. As a result, higher taxes hindered Kenya's economic expansion. It has been established that domestic borrowing and Kenya's economic growth are significantly correlated. Economic growth is inversely correlated with external borrowing. There is a statistically significant correlation between official development and economic growth. It can be deemed to be double edged where increased taxation was associated with changes in its administrative costs and spillage of revenue collected. There is need for evaluation of internal borrowing costs by the government since increased borrowing costs of treasury bills and treasury bonds whose risk of default is low.

Murungi and Okiro (2018) conducted a study on "Impact of government debt on economic growth in Kenya: A critical literature review". The data was obtained from Kenya National Bureau of Statistics and the Central Bank of Kenya. The results demonstrate that governments borrow to close budget gaps.

Domestic debt is more expensive to sustain since its interest rates are greater than external debt. The report pointed out that domestic debt reduction might be accomplished with funds from the privatization program of public businesses or by using externally borrowed resources, typically on favorable terms, to pay down more expensive domestic debt. The report suggests that the government create a system for tracking all contingent liabilities and create and put into practice a policy for managing those obligations. Additionally, the government should keep up with broader reforms that support Treasury bond purchases and attract institutional investors like insurers and pension funds to buy Treasury bonds.

Studies in Tanzania

Lema and Sitima (2025) studied "Fiscal and monetary policies effect on economic growth for selected east African countries: An ARDL panel analysis". This study investigates the influence of fiscal and monetary policies on economic growth in selected East African countries specifically Tanzania, Kenya, and Uganda. Utilizing panel data spanning from 1990 to 2023, the analysis applies an Autoregressive Distributed Lag (ARDL) model. The results indicate that, across all three countries, government expenditure positively influences GDP growth in the long run, while lending interest rates exert a negative and statistically significant impact. In the case of Tanzania, inflation is found to have a positive long-run effect on GDP, whereas government spending negatively affects GDP in the short run. For Kenya, taxation has a negative long-run impact, but in the short run, government expenditure, taxation, and money supply all contribute positively to economic growth. In Uganda, long-run government spending supports GDP growth, while in the short run, both government expenditure and inflation exert negative effects.

Sampa (2020) conducted a study titled "An Empirical Assessment of the Impact of External Debt on Economic Development in Tanzania". The used time series data on external debt and economic performance from 1978 to 2018, from the Bank of Tanzania, the World Bank, and the IMF. The study employed OLS to assess the relationships between variables. The analysis of the past 50 years in the nation revealed that more than 70% of the debt level was financed outside. Midway through 2019, the external debt reached 77%. (USD 21 billion). The analysis also showed that the debt's concessionally had a beneficial, noteworthy impact on economic expansion. According to the research, Tanzania should keep ensuring its debt is manageable and primarily concessional.

Studies in Uganda

Ssempala et al. (2020) evaluated "Uganda's experience with debt and economic growth: an empirical analysis of the effect of public debt on economic growth-1980-2016". The study covered 1980 to 2016 and the time series analysed with ARDL bounds testing methodology. The results demonstrate that public debt has a negative short-term impact on economic growth but a mixed long-term effect on the economy. The economy benefits when gross debt as a percentage of GDP is high, but total debt service has a negative impact. The findings also demonstrate that state debt has a negative short-term effect on Uganda's economic expansion. Over time, nevertheless, it is found that the influence is positive. This result is in line with previous findings and the assumptions of the research, which showed that public debt has a negative impact on GDP and investment. The study's conclusion has several policy ramifications due to recent discoveries, particularly those related to debt. Due in part to the adverse effects of such public borrowing on investment, Uganda is anticipated to have worsening economic growth at the current rate of borrowing. Therefore, the study suggests implementing rules designed to make efficient use of borrowed money, especially for initiatives with a high likelihood of releasing the nation's output potential.

Abdirahman (2019) investigated the "Effect of inflation on budget deficit in Uganda (1991-2016)". The period spanned from 1991 to 2016, focusing on factors such as budget deficit rate, interest rate, inflation rate, foreign exchange, foreign direct investment, and gross domestic product. The quantitative data from Uganda was analysed with a co-integration design applied to identify long-term relationships between the variables. The short-term effects of inflation on the budget deficit were analyzed using the Error Correction Model (ECM). The findings indicated a long-term relationship among the variables and a negative, significant short-term relationship between inflation and the budget deficit. The study concluded that the impact of inflation on the budget deficit depends on how funds used to finance the deficit are allocated. If used for development purposes, inflation could have a positive effect on the budget deficit, whereas if used for recurrent expenditures, it could have a negative impact. The study recommends that Uganda should broaden and efficiently manage its tax base to better finance its expenditures and reduce budget deficit occurrences. Additionally, the government should create more revenue sources, reduce reliance on developed countries, and foster an environment conducive to investment. The study also suggests supporting the growth of key sectors like agriculture and

manufacturing by encouraging investments through improved access to bank financing. This would help mitigate budget deficit issues, as noted in similar studies, including one by Ala Virao and Athawale (2015) on the impact of inflation on budget deficits in Iran.

Magehema (2015) examined "The effect of budget deficit on economic development in East African countries". The study employed a sample from East African countries and concluded that the impact of budget deficits depends on the use of funds were positive for development expenditures and negative for recurrent spending.

3 METHODOLOGY

The study adopted an ex post facto design to capture both cross-sectional and temporal variations across East Sahara African countries. The study focused on 3 East Saharan African countries: Kenya, Tanzania, and Uganda over 24 years (2000-2023). These countries belong to the East African Community (EAC), however with differing macroeconomic policy responses, making them suitable for a panel econometric investigation. This study utilizes a panel dataset comprising 3 East Sub-Saharan African (SSA) countries spanning the period 2001-2023. Secondary data were collected from the World Bank's *World Development Indicators* (WDI). The dataset includes budget deficit (% of GDP), total debt service, and external debt stocks of selected East Sahara African countries. The GDP growth rate (% annual) is used as a proxy for economic development.

3.5 Variables Description

Table 3.1 Operationalisation of variables

Acronym	Variable Name	Measurement	Apriori
GDPG	GDP Growth Rate	Annual percentage change in GDP	**N/A**
BDEF	Budget Deficit	Budget balance as % of GDP	+/-
TDS	Total Debt Service	Total debt repayments (% of GNI)	-
EDS	External Debt Stocks	Outstanding external debt (% of GNI)	+

Source: Word Bank Development Indicator Database (2025)

Methods of Data Analysis

The study employed panel data regression technique to account for country-specific

effects and causality. Descriptive statistics such as the mean, median, standard deviation, skewness, and kurtosis were computed, providing a snapshot of the variables in the region. Testing for stationarity was crucial to avoid spurious regression results, and thus, the Augmented Dickey-Fuller (ADF) test and Levin-Lin-Chu (LLC) panel unit root test were applied to ensure the data was stationary.

Model Specification

This study adapted the model by Efuntade (2020), he used it to analyse budget deficit and economic growth in Nigeria.

The model is shown below as follows:

$Y_{it} = \alpha_{it} + \beta_1 EPE_{it} + \beta_2 PPR_{it} + \beta_3 INFR_{it} + \beta_4 UMR_{it} + \varepsilon_{it}$ ..... Eq. 1

Where:

Y - Gross Domestic Product
EPE - Excess Public Expenditure
PRR - Public Revenue Reduction
INFR - Inflation Rate
UMR - Unemployment Rate

The modified model is shown below as follows:

$GDPG_{it} = \alpha_{it} + \beta_1 BDEF_{it} + \beta_2 TDS_{it} + \beta_3 EDS_{it} + \varepsilon_{it}$.....Eq. 2.

Where:

GDPG - Gross Domestic Product Growth Rate
BDEF - Budget Deficit
TDS - Total Debt Stock
EDS - External Debt Stock

4. RESULTS AND DISCUSSION OF FINDINGS

4.1 Descriptive Statistics

Table 4.1: Descriptive statistics of the model variables

	GDPG	BDEF	TDS	EDS
Mean	5.383775	43.72091	1.592246	36.13962
Median	5.402527	0.000000	1.256768	37.46116
Maximum	10.78474	103.0784	4.964634	70.75517
Minimum	-0.272766	0.000000	0.231874	11.17634
Std. Dev.	2.052852	46.64068	1.185223	13.47139
Skewness	-0.411380	0.123926	1.065565	0.257937
Kurtosis	3.827842	1.033293	3.443877	2.874885
Jarque-Bera	4.086771	11.78810	14.21623	0.845341
Probability	0.129589	0.002756	0.000818	0.655294

Sum	387.6318	3147.906	114.6417	2602.053
Sum Sq. Dev.	299.2084	154450.1	99.73750	12884.96
Observations	72	72	72	72

Source: E-Views 11.

Key: GDPG- GDP growth (annual %); BDEF-Budget Deficit % of GDP; TDS- Total debt service (% of GNI); EDS- External debt stocks (% of GNI).

The descriptive statistics presented in Table 4.1 provide insight into the distribution, central tendency, etc. of the variables used in the study: GDPG, BDEF, TDS, EDS. The mean GDP growth rate is 5.3838 (5.38%), indicating that, on average, the selected East Sahara African countries experienced moderate annual economic expansion over the study period. The median GDPG value is 5.4025 (5.40%), slightly higher than the mean, suggesting a marginally left-skewed distribution. The standard deviation of 2.0529 reflects moderate variability in growth performance across countries and years. The maximum GDPG value of 10.7847 represents a period of strong economic performance, while the minimum value of -0.2728 reflects at least one episode of contraction. The skewness of -0.4114 confirms mild left-skewness, while the kurtosis of 3.8278 suggests a leptokurtic distribution, indicating occasional extreme values. The Jarque-Bera statistic of 4.0868 with a p-value of 0.1296 does not provide sufficient evidence to reject the null hypothesis of normality, implying that GDP growth is approximately normally distributed.

The mean budget deficit is 43.7209 (43.72% of GDP), indicating that the region experienced substantial deficits on average, reflecting ongoing fiscal imbalances. The median value of 0.0000 shows that in many instances, the countries either recorded fiscal balance or small surpluses/deficits, but the high mean is driven by a few years of exceptionally high deficits. The standard deviation is 46.6407, denoting extremely high dispersion, which points to large fluctuations in fiscal policy across time and countries. The maximum value of 103.0784 suggests years of severe fiscal shortfall, while the minimum of 0.0000 highlights periods of balance. Skewness is positive but close to zero (0.1239), indicating a relatively symmetric distribution. However, the kurtosis of 1.0333 is below the normal value of 3, suggesting a platykurtic (flat-topped) distribution. The Jarque-Bera statistic of 11.7881 ($p = 0.0028$) confirms a statistically significant deviation from normality, likely due to years of extreme budget deficit.

The mean total debt service is 1.5922 (1.59% of GNI), suggesting that debt repayment

obligations were relatively low over the study period for the selected countries. The median value of 1.2568 (1.26%) is lower than the mean, indicating a right-skewed distribution, likely driven by a few high-debt service years. The standard deviation is 1.1852, pointing to moderate variation across the sample. The maximum TDS value of 4.9646 reveals periods of relatively high debt servicing pressure, while the minimum value of 0.2319 indicates years of very low repayment obligations. Skewness is strongly positive at 1.0656, and the kurtosis of 3.4439 indicates a leptokurtic distribution with fat tails. The Jarque-Bera statistic of 14.2162 with a p-value of 0.0008 suggests that the distribution significantly deviates from normality, driven by the high-skew and heavy tails.

The average external debt stock is 36.1396 (36.14% of GNI), indicating that the economies studied carried a moderate to high level of external debt during the period. The median value is slightly higher at 37.4612 (37.46%), suggesting a fairly symmetrical distribution. The standard deviation is 13.4714, reflecting considerable variability in external debt exposure across the countries. The maximum EDS value of 70.7552 highlights periods of heavy reliance on foreign debt, while the minimum value of 11.1763 corresponds to more fiscally conservative periods. Skewness is modestly positive (0.2579), and the kurtosis value of 2.8749 is close to the normal value of 3, implying a nearly normal distribution. The Jarque-Bera statistic of 0.8453 with a p-value of 0.6553 confirms that the distribution of external debt stocks does not significantly depart from normality.

Unit Root Test

The Stationarity analysis is fundamental to econometric modelling particularly when utilizing time series or panel data, as it ensures that the statistical properties of the series such as mean, variance, and autocorrelation remain constant over time. Non-stationary variables may lead to spurious regressions and misleading statistical inferences. The Levin, Lin & Chu t* and ADF - Fisher Chi-square test were used to assess the stationarity of the variables. The results are summarized in Table 4.2.

Table 4.2: Stationarity test statistics of the model variables

Variable	Test	Statistic	p-Value
D(GDPG)	Levin, Lin & Chu t*	-7.6951	0.0000
	Im, Pesaran and Shin W	-7.2079	0.0000
	ADF - Fisher Chi-square	50.4366	0.0000
	PP - Fisher Chi-square	203.4680	0.0000
D(BDEF)	Levin, Lin & Chu t*	-4.4270	0.0000

Variable	Test	Statistic	p-Value
	Im, Pesaran and Shin W	-3.1216	0.0009
	ADF - Fisher Chi-square	20.6014	0.0022
	PP - Fisher Chi-square	40.5030	0.0000
D(TDS)	Levin, Lin & Chu t*	-1.7235	0.0424
	Im, Pesaran and Shin W	-2.8439	0.0022
	ADF - Fisher Chi-square	18.8687	0.0044
	PP - Fisher Chi-square	52.4911	0.0000
D(EDS)	Levin, Lin & Chu t*	-1.2841	0.0996
	Im, Pesaran and Shin W	-1.5723	0.0579
	ADF - Fisher Chi-square	11.3575	0.0779
	PP - Fisher Chi-square	27.0625	0.0001

Source: E-Views 11.

The Levin, Lin & Chu t* statistic for GDP growth (D(GDPG)) is -7.69510, with a p-value of 0.0000, which is less than 0.05. This leads to the rejection of the null hypothesis of a unit root, indicating that GDPG is stationary at first difference. Similarly, the ADF - Fisher Chi-square statistic for GDPG is 50.4366, with a p-value of 0.0000, which also confirms stationarity of the series. The Levin, Lin & Chu t* statistic for the Budget Deficit (D(BDEF)) is -4.42704, with a p-value of 0.0000, indicating that we reject the null hypothesis and conclude that the budget deficit is stationary at first difference. In line with this, the ADF - Fisher Chi-square statistic is 20.6014, with a p-value of 0.0022, which supports the conclusion that BDEF is stationary after differencing.

For Total Debt Service (D(TDS)), the Levin, Lin & Chu t* statistic is -1.72346, with a p-value of 0.0424, which is less than 0.05, suggesting that the series is stationary at first difference. The ADF - Fisher Chi-square value of 18.8687, with a p-value of 0.0044, further confirms this result.

The Levin, Lin & Chu t* statistic for External Debt Stocks (D(EDS)) is -1.28410, with a p-value of 0.0996, which is greater than 0.05, suggesting that EDS may be non-stationary at first difference under this test. However, the ADF - Fisher Chi-square statistic for EDS is 11.3575, with a p-value of 0.0779, which is slightly above 0.05, indicating a marginal or borderline non-stationary result. Notably, the PP - Fisher Chi-square statistic is 27.0625, with a p-value of 0.0001, strongly indicating stationarity.

Correlation Matrix

Table 4.3: Correlation analysis of the model variables

	GDPG	BDEF	TDS	EDS
GDPG	1.0000	-0.1242	-0.4234	-0.1641
BDEF	-0.1242	1.0000	0.2342	0.0494

TDS	-0.4234	0.2342	1.0000	0.3405
EDS	-0.1641	0.0494	0.3405	1.0000

Source: E-Views 11

Table 4.2 presents the correlation coefficients among the model variables: GDPG, BDEF, TDS, EDS.

GDPG exhibits a moderate negative correlation with BDEF (-0.1242), suggesting that higher budget deficits are associated with lower GDP growth. It also has a negative correlation with TDS (-0.4234), indicating a slight inverse relationship between GDP growth and TDS. There is a weak negative correlation between GDPG and EDS (-0.1641), suggesting that increases in EDS are associated with lower GDPG. BDEF and TDS are positively correlated (0.2342), implying that higher budget deficits may contribute to higher debt servicing obligations. TDS and EDS show a moderate positive correlation (0.3405), indicating that as external debt stocks increase, so does the cost of servicing that debt. BDEF and EDS are only weakly correlated (0.0494), suggesting a negligible linear relationship between budget deficits and external debt stock levels in the sample.

4.2 Test of Hypotheses

Table 4.4: OLS regression output for the test of the hypotheses

Dependent Variable: GDPG
Method: Panel Least Squares
Date: 06/05/25 Time: 19:13
Sample: 2000 2023
Periods included: 24
Cross-sections included: 3
Total panel (balanced) observations: 72

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	6.693410	0.672721	9.949753	0.0000
BDEF	-0.001200	0.004973	-0.241236	0.8101
TDS	-0.708451	0.207887	-3.407862	0.0011
EDS	-0.003574	0.017803	-0.200742	0.8415

R-squared	0.180415	Mean dependent var	5.383775
Adjusted R-squared	0.144257	S.D. dependent var	2.052852
S.E. of regression	1.899019	Akaike info criterion	4.174505
Sum squared resid	245.2267	Schwarz criterion	4.300986
Log likelihood	-146.2822	Hannan-Quinn criter.	4.224858
F-statistic	4.989614	Durbin-Watson stat	1.770995
Prob(F-statistic)	0.003461		

Source: E-Views 11

The R-squared value of 0.1804 indicates that 18.04% of the variation in GDPG is explained by the independent variables in the model. The Adjusted R-squared (0.1443), accounts for the number of predictors, indicating that 14.43% of the variation in the GDPG is explained. The F-statistic (4.9896) is significant with a p-value of 0.0035 < 0.05, indicating that the regression model is statistically significant. This means the independent variables collectively have a significant impact on GDPG.

Test of Hypothesis One

H_1: The budget deficit has a significant effect on economic development in East Sahara African countries.

The negative coefficient (-0.0012) suggests that an increase in BDEF slightly decreases the GDPG. The t-statistic (-0.2412) and p-value (0.8101) show that BDEF is not significant, meaning it does not have a meaningful effect on the model specification. Hence the null hypothesis is accepted:

The budget deficit has no significant effect on economic development in East Sahara African countries.

Test of Hypothesis Two

H_2: Total debt service have a significant impact on economic development in East Sahara African countries.

The negative coefficient (-0.7085) suggests that an increase in TDS slightly decreases the GDPG. The t-statistic (-3.4079) and p-value (0.0011) show that TDS is significant, meaning it does have a meaningful effect on the model specification. Hence the alternate hypothesis is accepted: Total debt service have a significant impact on economic development in East Sahara African countries.

Test of Hypothesis Three

H_3: External debt stocks has a significant effect on economic development in East Sahara African countries.

The negative coefficient (-0.0036) suggests that an increase in EDS slightly decreases the GDPG. The t-statistic (-0.2007) and p-value (0.8415) show that EDS is not significant, meaning it does not have a meaningful effect on the model specification. Hence the null hypothesis is accepted: External debt stocks has no significant effect on economic development in East Sahara African countries.

Robustness Analysis

Dependent Variable: GDPG
Method: Panel Generalized Method of Moments
Date: 07/04/25 Time: 12:13
Sample: 2000 2023
Periods included: 24
Cross-sections included: 3
Total panel (balanced) observations: 72

2SLS instrument weighting matrix
Instrument specification: C BDEF TDS EDS
Constant added to instrument list

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	6.693395	0.672721	9.949727	0.0000
BDEF	-0.001200	0.004973	-0.241234	0.8101
TDS	-0.708445	0.207887	-3.407833	0.0011
EDS	-0.003574	0.017803	-0.200731	0.8415

R-squared	0.180413	Mean dependent var	5.383778
Adjusted R-squared	0.144254	S.D. dependent var	2.052851
S.E. of regression	1.899021	Sum squared resid	245.2271
Durbin-Watson stat	1.770995	J-statistic	7.36E-27
Instrument rank	4		

Source: E-Views 11

The values of R-squared (0.180413) and Adjusted R-squared (0.144254) indicate that approximately 18.04% of the variation in GDP growth is explained by the independent variables (Budget Deficit, Total Debt Service, and External Debt Stock). The coefficient for Budget Deficit is negative, suggesting that an increase in budget deficit is associated with a very slight decrease in GDP growth. However, this effect is not statistically significant. This finding is consistent with the previous result that budget deficits have a negative impact on economic development. The coefficient for Total Debt Service is negative and statistically significant (p-value = 0.0011). It suggests that a one-unit increase in Total Debt Service is associated with a decrease of approximately 0.708 units in the GDP growth rate, holding other factors constant. This supports the previous result of a negative effect of total debt service on economic development in East Sahara African countries. The coefficient for External Debt Stock is negative, implying a very slight negative relationship with GDP growth. However, with a p-value of 0.8415 (much greater than 0.05), this effect is not statistically significant. This also aligns with the previous finding that "External debt stock has a negative non-significant effect on economic development." This suggests that the mere volume of external debt, distinct from the cost of servicing it, does not have a statistically discernible impact on economic growth in the studied region.

4.3 Discussion of Findings

4.3.1 Budget Deficit and Economic Development

The results of the current study reveal that the budget deficit (BDEF) has a negative but statistically insignificant effect on GDP

growth in East Sahara African countries. This suggests that, while rising deficits may be associated with reduced growth, the relationship is weak and lacks significance within the model specification. This finding aligns with Rahman and Siddiquee (2024), who found that fiscal deficits have a *neutral* impact on economic growth in middle-income countries. Similarly, Kurantin (2017), focusing on Ghana, concluded that persistent deficits hinder growth, but the effect depends on how the deficit is managed.

In contrast, studies like Kryeziu and Hoxha (2021) and Biplob (2019) reported a *positive and significant* relationship between fiscal deficits and growth, particularly in the Eurozone and Bangladesh, respectively. Their findings are consistent with the Keynesian view that deficit-financed public Spending can stimulate economic activity, especially when targeted at investment-driven sectors. Likewise, studies in the regional context by Magehema (2015) and Efuntade (2020) emphasize that the effect of budget deficits depends on the *quality of expenditure*. Deficit spending that supports capital formation and infrastructure can be growth-enhancing, while deficits used for recurrent or consumption expenditures tend to be growth-retarding. However, the non-significance of the budget deficit in this study supports the position of Sore et al. (2024), who found that deficits may have short-term positive but long-term negative effects, especially in Sub-Saharan Africa.

4.3.2 Total Debt Service and Economic Development

The findings show that total debt service (TDS) has a negative and statistically significant effect on GDP growth. This means that as debt servicing burdens increase, economic growth declines confirming that the rising cost of repaying public debt crowds out productive investment. This is consistent with Lema and Sitima (2025), who found that monetary factors such as interest rates and debt-related constraints negatively affect long-term economic growth in Kenya, Tanzania, and Uganda. Likewise, Sore et al. (2024) emphasize that while fiscal deficits may be manageable in the short term, rising debt service costs undermine long-term development potential. Efuntade (2020) also supports this view, noting that excessive public borrowing and the resulting debt service obligations are detrimental to Nigeria's growth prospects. Rahman and Siddiquee (2024) found that although fiscal deficits may be neutral, high debt service ratios and excessive non-capital expenditures hinder economic progress in middle-income countries.

4.3.3 External Debt Stocks and Economic Development

The study finds that external debt stocks (EDS) exert a negative but statistically insignificant effect on economic growth. This suggests that although there is a slight inverse relationship, the stock of external debt alone may not be a strong determinant of GDP performance in the short run. This result aligns partially with Magehema (2015), who found that the impact of external borrowing depends heavily on how the funds are utilized. Debt channeled into infrastructure, education, and health can stimulate growth, while poorly managed debt contributes to fiscal instability. Similarly, Abdirahman (2019) reinforces this view in the context of Uganda, arguing that the impact of debt depends on whether it finances development or recurrent expenditures. Lema and Sitima (2025) highlight that in Uganda and Tanzania, inflation and poor debt management can erode the benefits of public borrowing. However, Biplob (2019) supports the Keynesian idea that debt can positively influence growth when managed efficiently. The insignificance of the budget deficit and external debt stock variables could also reflect lags in the impact of public investments, the structure of aid and concessional borrowing, or the limited capacity of governments to translate borrowing into measurable growth within a single period.

5. CONCLUSION

This study examined the relationship between budget deficit indicators (BDEF), total debt service (TDS), and external debt stocks (EDS) on economic development in selected East Sahara African countries (Kenya, Tanzania, and Uganda). This study utilized panel data over the period 2000 to 2023 obtained from the World Bank Development Indicator Database. The study applied econometric techniques such as unit root, correlation and OLS. The empirical findings revealed that budget deficit has a negative but statistically insignificant effect on GDP growth. Total debt service has a significant negative effect on economic development; while, External debt stocks exhibit a negative but insignificant relationship with economic growth. These support importance of effective fiscal discipline and debt sustainability in achieving long-term economic development. The study makes the following recommendations for policymakers, governments and regulators in the region:

1. Strategic Allocation of Deficit Spending: Governments in East Sahara Africa should ensure that any fiscal deficits are strategically directed toward productive, growth-enhancing investments, such as

infrastructure, health, and education, rather than recurrent or consumption-based expenditures. This improves the development impact of deficit financing and minimizes economic inefficiencies.

2. Reduce Over-Reliance on Costly Debt: Given the significant negative effect of total debt service on economic growth, governments should adopt policies that improve debt sustainability by expanding domestic revenue mobilization, renegotiating high-interest debt, and minimizing reliance on short-term or non-concessional loans. Transparent debt management strategies are essential for reducing the crowding-out effect on public investment.
3. Improve the Effectiveness of External Borrowing through Development Planning: Although external debt stocks were not found to be statistically significant, their growing size may pose future risks. Therefore, it is recommended that governments link external borrowing to clearly defined development projects with measurable returns and robust monitoring mechanisms. This enhances the productivity of debt and reduces fiscal vulnerability.

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