Budget Deficit, Domestic Debt and Economic Growth in Selected West African Countries: Evidence from Short-Run and Long-Run Dynamics

[1]**Dr. Gimba Obadiah Jonathan.,**   [2]**Otuwose Aboki**

[1]**Department of Economics, Federal University of Lafia, Nasarawa State, Nigeria Faculty of Social Science Complex**

[2]**Assistant Lecturer, Department of Economics College of Education Akwanga, Nasarawa State, Nigeria Faculty of Art and Social Science Complex**

ABSTRACT

The budget deficit is another key issue in the economic policies of West Africa. The budget deficit impacts economic growth and macroeconomic stability. The purpose of this study was to examine the impact of budget deficits and domestic debt on economic growth in Nigeria, Ghana, Côte d'Ivoire, Senegal, and Mali, from 1982 to 2023. The countries were chosen depending on the magnitude of their economies, fiscal structure, and the fact that they are representative of both Francophone and Anglophone countries. The countries represent 67.41% of the population of West Africa and contribute more than 70% of the GDP. The analysis was done through the Panel Autoregressive Distributed Lag (PARDL) method, which includes cross-section dependence, unit root, and cointegration tests. The results showed that budget deficits have no impact on economic growth, while domestic debt has a positive impact. The recommendations are that budget deficit should be financed through productive expenditure, the domestic debt market should be developed, and tax mobilization should be improved.

Keywords: Budget deficit, domestic debt, economic growth, PARDL

INTRODUCTION

The issue of budget deficit has become a major concern globally, particularly after the COVID-19 pandemic, which prompted unprecedented deficit financing through massive government interventions. Governments responded with large stimulus packages, sharply increasing public expenditure amid significant revenue shortfalls (Song & Zhou, 2020). Emerging and developing economies faced pronounced budget deficits driven by declining revenues, rising expenditure, and growing public debt (IMF, 2020).

In West Africa, persistent budget deficits are compounded by structural weaknesses, volatile revenue bases, and heavy reliance on primary commodity exports. Nigeria, the region's largest economy, recorded a budget deficit of ₦5.60 trillion in 2021, with total public debt reaching ₦46.25 trillion by 2023, straining fiscal resources (Sissoko & Kone, 2013). Ghana's domestic debt-to-GDP ratio rose from 76.7% in 2022 to 81.3% in 2023, reflecting reliance on domestic borrowing to finance deficits (August, Mensah, & Badu, 2015). Côte d'Ivoire's domestic debt increased from 50.8% of GDP in 2022 to 55% in 2023 amid strong growth, while Mali's domestic debt rose to 51.7% of GDP in 2022, up from an average of 38.3% over the previous decade (Raga, Sherillyn, & Derrick, 2022; World Bank, 2023). Senegal also saw domestic debt increase to 49% of GDP in 2023 from 46.2% in 2022 (Telesetsky, 2023).

These trends highlight the challenges of persistent budget deficits and rising domestic debt in sustaining economic growth. This study therefore seeks to: (i) assess the short-run and long-run effects of budget deficit on economic growth in selected West African countries, and (ii) examine the relationship between domestic debt and economic growth in the region.

LITERATURE REVIEW

Theoretical Framework

Budget deficit and Economic Growth in Selected West African Countries is anchored on both Endogenous Growth Theory and Exogenous Growth Theory to explain the impact of budgetary balance on economic growth. The Endogenous Growth Theory posits that economic growth is primarily driven by internal factors such as capital formation, human capital, and technological innovation, implying that fiscal policies can influence long-term growth through investment in infrastructure, education, and research. On the other hand, Exogenous Growth Theory, particularly the Solow-Swan model, suggests that economic growth is influenced by external factors such as technological progress, which is independent of fiscal policy.

Empirical Review

Ashakah at al. (2025) examined the effects of external debt, debt servicing, and economic growth in selected ECOWAS countries, using panel data from 1986 to 2024. The study employed an ex post facto longitudinal panel design and regression analysis to assess how external debt stock and debt servicing influence real gross domestic product (RGDP) across the sampled countries. The findings revealed that external debt has a mixed impact on economic growth, with debt servicing costs exerting a significantly negative effect on RGDP growth, suggesting that high servicing obligations constrain growth. The study identified volatile external financing conditions and weak reserves accumulation as major challenges to leveraging debt for growth. The study recommended improving debt management strategies, enhancing foreign reserves buffers, and strengthening fiscal governance to mitigate the adverse effects of debt servicing on economic performance.

Penzin & Akanegbu (2024) investigated the relationship between public debt and economic growth in the West African Monetary Zone (WAMZ) using both panel and time-series techniques over data covering multiple member states. The study employed an Autoregressive Distributed Lag (ARDL) model and panel regression to capture linear and long-run relationships between public debt and growth. The findings revealed that public debt influences economic growth differently depending on its composition and threshold levels, with debt below certain sustainable thresholds having less detrimental effects, while higher debt ratios were associated with slower growth outcomes. Weak revenue mobilisation and limited fiscal space were identified as key constraints to effective public debt management. The study recommended that WAMZ members adopt stricter fiscal rules, enhance revenue collection systems, and improve debt monitoring mechanisms to ensure that public borrowing supports sustainable growth.

Sadiq and Bello (2024) examined the combined effects of budget deficit, domestic debt, and economic growth in selected West African countries, namely Nigeria, Ghana, Guinea, and Liberia, covering the period 1994 to 2022. The study employed a panel cointegration and error correction model to analyze both long-run relationships and short-run adjustments. The findings revealed a long-run relationship among budget deficit, domestic debt, and economic growth, with domestic debt contributing positively to growth, while excessive budget deficits were found to hinder growth in the long run. The study identified poor revenue mobilization and weak institutional capacity as key constraints to effective fiscal management. The study recommended broadening the tax base, improving public financial management, and maintaining sustainable deficit thresholds to balance growth objectives with fiscal sustainability

Adeniyi and Lawal (2023) investigated the impact of domestic debt on economic growth in West African Monetary Zone countries using data spanning from 1990 to 2019. The study adopted a panel fixed-effects regression technique, complemented by robustness tests. The results showed that domestic debt has a positive and statistically significant impact on economic growth, particularly when borrowed funds are channeled toward infrastructure and human capital development. However, the study also revealed that excessive domestic borrowing can crowd out private sector investment by raising interest rates. The major challenge identified was the over-reliance on short-term domestic debt instruments. The study recommended restructuring domestic debt toward longer-term instruments and improving debt management strategies to enhance growth outcomes.

Solomon and Anselm (2023) examined the relationship between fiscal deficits and inflation in Ghana using the ARD. The results showed a negative but insignificant relationship between both GDP growth and inflation, and government expenditure and inflation. This suggests fiscal deficits alone may not drive inflation. The study recommended enforcing the Fiscal Responsibility Act and enhancing monetary-fiscal policy coordination. A key limitation is its focus on inflation without directly addressing economic growth in West Africa.

Daba and Gebremeskel (2023) investigated the impact of budget imbalances on economic growth in Sub-Saharan Africa using an ARDL panel data approach. The findings show that fiscal deficits in Sub-Saharan Africa boost short-term economic growth by stimulating demand and investment but harm long-term growth due to macroeconomic instability. The study recommends reducing deficits through better revenue generation, efficient spending, and strategic investment. But the key limitation is the lack of focus on individual West African countries.

Maïga et al. (2023) assessed fiscal policy and growth in Mali from 1990–2021 using the ARDL model. Results suggest income tax and government spending positively influence growth. Recommendations focus on redirecting spending toward investment rather than consumption. Efficient allocation of fiscal resources is emphasized for growth. Yet, the single-country focus restricts regional relevance. Broader fiscal challenges like debt sustainability are underexplored.

Babatunde and Adebayo (2023) analyzed fiscal deficits and growth in Nigeria and Ghana using the ARDL approach. Findings show that persistent deficits hinder long-run growth through rising debt, inflation, and reduced investment. Policy advice includes fiscal discipline, enhanced tax systems, and expenditure control. Emphasis is placed on domestic resource mobilization and economic diversification. However, the two-country scope limits broader regional inference. Differences across West African economies reduce its general applicability.

Eze and Okoro (2022) examined the relationship between budget deficit and economic growth in selected ECOWAS countries, including Nigeria, Ghana, and Côte d'Ivoire, using annual data from 1995 to 2020. The study employed a Panel Autoregressive Distributed Lag model to capture both short-run and long-run dynamics. The findings revealed that budget deficit exerts a positive effect on economic growth in the short run, supporting the Keynesian view that deficit-financed government spending can stimulate output. However, in the long run, persistent fiscal deficits were found to negatively affect economic growth due to rising debt servicing obligations and macroeconomic instability. The study identified weak fiscal discipline and inefficient public expenditure management as major challenges. The study recommended strengthening fiscal responsibility frameworks and ensuring that deficit financing is directed toward productive capital investments to sustain long-term growth.

Workneh (2021) examined the impact of triple deficits on economic growth in Sub-Saharan Africa using the three-gap model and panel VAR analysis. The study identified budget imbalances as the most significant constraint on growth, undermining fiscal policy effectiveness and increasing dependence on external borrowing. The study recommended promoting economic diversification, boosting export-driven foreign exchange earnings, and improving domestic resource mobilization. A key limitation is the study's broad regional focus, which lacks specific insights for West African countries.

Fanneh and Ceesay (2021) explored the relationship between fiscal deficits and economic growth in The Gambia using the ARDL Bound Test approach. The study found that fiscal deficits positively influence growth in the short term but have a negative impact in the long run due to rising debt and inefficient resource allocation. Policy recommendations included reducing recurrent expenditures, channeling deficit financing into productive sectors, and improving fiscal discipline and domestic revenue mobilization. A key limitation is its single-country focus, limiting the generalizability of findings across West Africa.

Sall and Diallo (2020) used a DSGE model to assess how fiscal deficits affect macroeconomic stability in Senegal. They found that persistent deficits heighten macroeconomic volatility and raise borrowing costs. The study stresses the need for fiscal discipline and better budget control mechanisms. Key recommendations include fiscal consolidation, improved tax administration, and reduced external borrowing. While insightful, the single-

country focus limits generalizability across West Africa. This makes it less applicable to the multi-country analysis of this study.

Abisola (2020) investigated the link between budget deficits, savings, and GDP growth in Nigeria using multiple regression. The study found a positive correlation, suggesting deficits can coexist with growth if savings increase. It recommends boosting savings via interest rate policies and reducing public spending. The analysis emphasizes investment-led strategies for fiscal stability. However, its limited variable scope omits broader fiscal indicators like debt structure. This narrows its relevance to the comprehensive panel approach of this study.

Adesina and Olayinka (2019) applied the ARDL method to study fiscal deficits and growth in Nigeria. Results showed a short-run positive impact of deficits, but long-term negative effects due to rising debt burdens. The study recommends aligning fiscal policies with sustainable growth goals. The analysis highlights the temporal duality of fiscal deficits. Yet, the study lacks regional diversity and doesn't consider cross-country interactions.

Tung (2018) examined fiscal deficits and growth in Vietnam using an Error Correction Model. The study confirmed a long-run negative link between persistent deficits and macroeconomic stability. Policy recommendations include revenue reforms and prudent debt management. Emphasis is placed on public financial efficiency and long-term investment planning. Despite its relevance, the non-African context presents institutional and structural differences. Thus, its direct application to West African economies may be limited.

METHODOLOGY

Choice of Variables

The variables selected for this study; Gross Domestic Product Growth Rate (GDPgr), Domestic Debt (DD), Foreign Debt (FD), Gross Capital Formation (GCF), Labour Force (LF), Budget Deficit (BD), and Consumer Price Index (CPI) are crucial for analyzing the dynamics between budget deficit, domestic debt and economic growth in selected west African countries. GDP growth rate measures the pace of economic expansion, while domestic and foreign debt capture the government's borrowing behavior and its implications for fiscal health. Gross capital formation reflects investment in physical assets that drive long-term productivity. The labor force represents the economically active population, essential for assessing employment trends. Budget deficit indicates the shortfall between government revenue and expenditure, highlighting fiscal imbalances. CPI measures inflation, revealing changes in the cost of living. Collectively, these variables provide a robust framework for evaluating how debt and fiscal management affect economic performance. All data can be obtained from the World Bank Indicator 2023 Statistical Bulletin, ensuring the reliability and timeliness of the study's empirical foundation.

Model Specification

The next stage of the empirical analysis involved examining the long-run relationship between budget deficit and GDP using the panel cointegration technique. When two or more series are individually integrated, but a linear combination of them exhibits a lower order of integration, the series are considered cointegrated. The panel cointegration approach was therefore employed to test for the existence of a stable long-run relationship among the integrated variables. Four panel cointegration test statistics proposed by Westerlund (2007), each with a bootstrapping option, confirmed the presence of cross-sectional dependence and established long-run relationships among the variables.

The primary model equation can be specified as follows:

General Function Form:

$$Y = f(K, L) \tag{3.1}$$

Cobb-Douglas Production Function:

$$Y = AK^{\alpha}L^{1-\alpha} \tag{3.2}$$

Page 6281

Y represents economic output, or real gross domestic product (RGDP),

K denotes capital,

L signifies labor,

A is a constant representing technology or productivity,

Alpha α is the output elasticity of capital.

Building on these theories, the study employed the following econometric model to examined the relationship between fiscal balance and economic growth:

$$GDPgr_{it} = f\,(DD_{it},\, FD_{it}, GCF_{it},\, LF_{it},\, BD_{it},\, INF\,) \qquad (3.3)$$

Mathematically, this equation was specified in econometrics form as

$$GDPgr_{it} = \beta_0 + \beta_1 DD_{it} + \beta_2 FD_{it} + \beta_3 GCF_{it} + \beta_4 LF_{it} + \beta_5 BD_{it} + \beta_6 INF_{it} + \mu_{it} \qquad (3.4)$$

Where GDPgr$_{it}$ is gross domestic product growth rate, DD$_{it}$ is Domestic debt, FD$_{it}$ is Foreign Debt, GCF$_{it}$ is gross capital formation, LF$_{it}$ is labour force, BD$_{it}$ is budget deficit, and INF$_{it}$ is inflation, while β_0 is an intercept, $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6$ are the coefficient of $DD_{it},\, FD_{it}, GCF_{it},\, LF_{it},\, BD_{it},\, INF$.

For this paper, the model is transformed into a log-linear form, which is expressed below.

$$GDPgr_{it} = \beta_0 + \beta_1 logDD_{it} + \beta_2 logFD_{it} + \beta_3 logGCF_{it} + \beta_4 logLF_{it} + \beta_5 logBD_{it} + \beta_6 INF_{it} \qquad (3.5)$$

Where GDPgr = gross domestic product growth rate; Log (DD) = logarithm of Domestic Debt; Log (FD) = logarithm of Foreign Debt; Log (GCF) = gross capital formation; Log (LF)= logarithm of labour force, Log (BD) = logarithm of budget deficit and INF = Inflation

Method of Analysis

To analyze the data, the study used several advanced panel data techniques

Cross-Sectional Dependence Test

It is generally accepted that disturbances in panel data due to cross-sectional dependence tend to occur more frequently when the number of cross-sections is large. Nonetheless, substantial evidence indicates that cross-sectional dependence is commonly present in panel data models. Ignoring diagnostic tests for cross-sectional dependence can have serious implications, as unaccounted-for residual dependence may lead to inefficient estimators and invalid statistical inferences. In view of this, it became necessary to determine whether the variables were cross-sectionally dependent or independent. To test for the presence of cross-sectional dependence, the study made use of the cross-sectional dependence test proposed by Pesaran (2004).

$$CD = \sqrt{\frac{2T}{N(N-1)}}\left(\sum_{i=1}^{N-1}\sum_{j=i+1}^{N} P_{ij}\right) \qquad (3.6)$$

Panel Unit Root Tests

In long-run estimation analysis, the stationarity of variables is crucial in order to avoid spurious regression results. Panel unit root tests were therefore conducted to determine whether the variables were stationary at levels or required differencing. This was necessary because empirical analysis may be rendered invalid when regressors are non-stationary. To address this issue, the study employed the second-generation unit root test

proposed by Pesaran (2000) to examine the presence of unit roots in a cross-sectionally dependent panel data set. The test statistic was formulated as follows:

$$CIPS\,(N, T) = \, N^{-1} \sum_{i=1}^{N} ti\,(N, T) \tag{3.7}$$

Where ti (N, T) is the cross-sectionally augmented Dickey-Fuller statistic for the ith cross-section unit.

Panel Cointegration

The next stage of the empirical analysis involved examining the long-run relationship between budget deficit, domestic debt and GDP using the panel cointegration technique. When two or more series were individually integrated, but a linear combination of them exhibited a lower order of integration, the series were considered cointegrated. The panel cointegration technique was therefore employed to test for the existence of a stable long-run relationship among the integrated variables. Four panel cointegration test statistics proposed by Westerlund (2007), each incorporating a bootstrapping option, were used to establish the presence of cross-sectional dependence as well as long-run relationships among the variables.

The error-correction model was expressed as follows:

$$\Delta RGDP_{it} = C_i + \alpha_{i,1}\Delta RGDP_{i,t-1} + \alpha_{i,2}\Delta RGDP_{i,t-2} \ldots + \alpha_{i,p}\Delta RGDP_{i,t-p} + \beta_{i,1}\Delta DD_{i,t-1} + \beta_{i,p}\Delta FD_{i,t-p} + \cdots +$$
$$\beta_{i,p}\Delta IV_{i,t} + \mu_{i,t} \tag{3.8}$$

Where $\boldsymbol{\alpha_i}$ provides an estimate of the speed of error correction toward the long-run equilibrium; $y_{i,t-1} = -(\beta_i/\alpha_i) \times x_{i,t}$ for that series i.

The two-panel statistics are as follows:

$$P_r = \frac{\hat{a}_i}{SE\,(\hat{a}_i)} \tag{3.9}$$

$$P_\alpha = T\hat{a} \tag{3.10}$$

$SE\,(\hat{a}_i)$ Is the conventional standard error of $\hat{a}_i$, while $\hat{a}_i$ is the estimated value of the error correction parameter. The two-group mean statistics are as follows:

$$G_r = \frac{1}{N}\sum_{i=1}^{N}\frac{\hat{a}_i}{SE\,(\hat{a}_i)} \tag{3.11}$$

$$G_a = \frac{1}{N}\sum_{i=1}^{N}\frac{T\hat{a}_i}{\hat{a}_i\,(1)} \tag{3.12}$$

Where $\hat{a}_i\,(1) = 1 - \sum_{j=1}^{pi}\hat{a}_{ij}$ and $SE\,(\hat{a}_i)$ is the conventional standard error of $\hat{a}_i$.

Panel Autoregressive Distributed Lag Model

The panel ARDL model was employed to analyse both the short-run and long-run relationships among the variables. The ARDL framework offers several econometric advantages over traditional panel models, as it effectively addresses issues of endogeneity, heteroscedasticity, autocorrelation, and multicollinearity. In addition, the panel ARDL model captures both short-run dynamics and long-run relationships within a single equation and is applicable when the variables are stationary at level I(0), at first difference I(1), or a combination of both I(0) and I(1). The panel autoregressive distributed lag model was formulated as shown below:

$$y_{it} = a_i + \sum_{j=1}^{P}\lambda_{ij}\,y_{i,t-j} + \sum_{j=0}^{q}\delta_{ij}\,x_{i,t-j} + V_{it} \tag{3.13}$$

Where x_{it} is a vector of explanatory variables (regressors) for group i, a_i represents fixed effects, λ_{ij} are the coefficients of the lagged dependent variables, and δ_{ij} are coefficient vectors.

$$\Delta GDPgr_{it} = a_i + \sum_{j=1}^{P} \lambda_{ij}\,\Delta GDPgr_{i,t-j} + \sum_{j=0}^{q} \delta_{ij}\,\Delta InDD_{i,t-j} + \sum_{j=0}^{q} \delta_{ij}\,\Delta InFD_{i,t-j} + \sum_{j=0}^{q} \delta_{ij}\,\Delta InGCF_{i,t-j} +$$

$$\sum_{j=0}^{q} \delta_{ij}\,\Delta InBD_{i,t-j} + \sum_{j=0}^{q} \delta_{ij}\,\Delta InLF_{i,t-j} + \sum_{j=0}^{q} \delta_{ij}\,\Delta INF_{i,t-j} + V_{it} \quad (3.14)$$

Presentation of Results

Descriptive Statistics

Table 4.1: Descriptive Statistics

	GDPGR	GCF	FD	DD	BD	CPI	LF
Mean	3.837381	8.871277	22.97248	1137.326	-1637.496	10.55556	17498767
Median	4.000000	8.450000	23.06985	14.84000	-40.00000	5.785228	6535326.
Maximum	20.29000	218.7544	25.14010	35000.00	983.4940	122.8745	1.10E+08
Minimum	-10.90000	-65.82722	21.18613	0.990000	-80049.22	-6.242506	2019255.
Std. Dev.	3.817705	21.98534	1.029779	4443.388	8310.773	15.25571	25840074
Skewness	-0.010295	3.912308	0.140991	5.148184	-7.040000	3.161185	1.992524
Kurtosis	5.912251	41.76532	1.828421	32.03563	56.76457	18.20684	5.781509
Jarque-Bera	74.21425	13684.78	12.70597	8304.477	27027.66	2373.177	206.6522
Probability	0.000000	0.000000	0.001742	0.000000	0.000000	0.000000	0.000000
Observations	210	210	210	210	210	210	210

Source: Authors' Computation using E-view 13

Table 4.1 presents the descriptive statistics of the study variables. Domestic debt (DD), budget deficit (BD), labor force (LF), and consumer price index (CPI). The GDPGR shows considerable volatility, with values ranging from -10.9 to 20.29 and a standard deviation of 3.82, indicating fluctuations in economic performance. High standard deviations for GCF, DD, BD, CPI, and LF suggest wide dispersion, likely due to economic shocks or policy changes. Skewness analysis shows most variables (GCF, DD, CPI, LF) are positively skewed, implying occasional extreme highs, while BD is highly negatively skewed, reflecting periods of large deficits. Kurtosis values above 3 for most variables (except FD) indicate leptokurtic distributions with heavy tails, pointing to frequent extreme outcomes. Jarque-Bera test results confirm non-normality across all variables (p-values = 0.000). However, based on the Central Limit Theorem, this non-normality does not affect the reliability of econometric estimates like those in ARDL models, which rely on mean values.

Cross-Sectional Dependence Test

Table 4.2: Cross-Sectional Dependence (CD) Test Result

Variable	CD	P-values	N g	T
GDPGR	3.120	0.002	5	42
DD	10.430	0.000	5	42

FD	14.500	0.000	5	42
GCF	-0.290	0.768	5	42
CPI	8.600	0.000	5	42
BD	6.700	0.000	5	42
LF	19.290	0.000	5	42

Source: Author's Computation using Stata 17 Version.

Table 4.2 reveals strong cross-sectional dependency (CSD) among key variables, domestic debt, foreign debt, budget deficit, labor force, GDP, and consumer price index, across Nigeria, Ghana, Côte d'Ivoire, Senegal, and Mali, indicating deep economic interconnections. This means fiscal or policy shocks in one country, especially Nigeria, can significantly influence others, highlighting the need for coordinated fiscal and monetary policies within ECOWAS or the West African Monetary Zone. Notably, gross capital formation shows no CSD, suggesting that investment is largely driven by domestic factors like governance and institutional quality, rather than regional influences. The CPI's strong CSD points to shared inflationary pressures, often driven by global price shocks or trade links, emphasizing the need for harmonized monetary strategies. Labor force interdependence reflects regional migration and labor market integration, influencing employment and productivity across borders.

Panel Unit Root Test

Table 4.3: Panel Unit Root Test Result

CADF Test			
	Levels	**First Diff**	**Remark**
Entire sample			
Real gross domestic product (RGDP)	-4.09	-9.77	I(0)
Domestic debt (DD)	0.42	-7.17	I(1)
Foreign debt (FD)	2.08	-3.48	I(1)
Gross capital formation (GCF)	-4.70	-8.41	I(0)
Budget deficit (BD)	1.68	-3.47	I(1)
Consumer price index (CPI)	-8.43	-10.5	I(0)
Labour force (LF)	-1.09	-2.03	I(0)
Critical Values 10% 5% 1%	-2.210	-2.330	-2.550

Source: Author's Computation using Stata.

Note: variables are all in linear log transformation

Table 4.3 presents the panel unit root test results using the CADF approach, highlighting mixed stationarity among the variables. Real GDP (RGDP), gross capital formation (GCF), and consumer price index (CPI) are

stationary at level [I(0)], implying stable, mean-reverting behavior over time. Conversely, domestic debt (DD), foreign debt (FD), and budget deficit (BD) are non-stationary at level but become stationary after first differencing [I(1)], indicating they follow stochastic trends with lasting effects from shocks. The labor force (LF) shows borderline stationarity at first difference, significant only at the 10% level. These results imply that the dataset contains a mix of I(0) and I(1) variables, necessitating econometric techniques like ARDL to avoid spurious regressions and accurately capture the dynamic relationships between fiscal variables and economic growth.

Panel Co-integration Test

Table 4.4: Cointegration Test Result

Statistic	Value	Z-value	P-value
Gt	-2.852	-0.933	0.175
Ga	-12.950	0.243	0.596
Pt	-6.458	-1.429	0.077
Pa	-11.764	-0.449	0.327

Source: Author's computation using Stata 17 Version

The panel cointegration results reported in Table 4.4 provide weak and inconclusive evidence of a stable long-run relationship among budget deficit, domestic debt, and economic growth in the selected West African countries. Using the Westerlund (2007) framework, the Gt (–2.852, p = 0.175) and Ga (–12.950, p = 0.596) statistics fail to reject the null hypothesis of no cointegration, suggesting that long-run equilibrium relationships are not consistently present at the individual country level. This indicates that fiscal variables do not adjust uniformly toward a common long-run path across countries.

At the panel level, the Pt statistic (–6.458, p = 0.077) shows only marginal significance at the 10% level, implying limited evidence of cointegration when countries are pooled together. However, this weak significance does not provide strong statistical support for a robust long-run relationship. The Pa statistic (–11.764, p = 0.327) further reinforces the conclusion that cointegration across the panel is generally weak and unstable.

The mixed nature of these results suggests that long-run relationships between fiscal variables and economic growth in West Africa are fragile and highly country-specific. Differences in fiscal institutions, debt management practices, economic structures, and exposure to external shocks likely weaken the existence of a common long-run equilibrium. In addition, frequent policy shifts, fiscal reforms, and macroeconomic instability in the region may disrupt the long-term adjustment process.

Overall, the weak cointegration evidence implies that while some degree of long-run interaction may exist at the aggregate panel level, the relationship between budget deficit, domestic debt, and economic growth is neither strong nor uniform across countries. This justifies the use of dynamic modeling approaches that account for heterogeneity and short-run adjustments, and it suggests that fiscal policy effects on growth in West Africa are largely context-dependent rather than governed by a stable long-run equilibrium.

Panel Autoregressive Distributed Lag (ARDL) Test

Table 4.5: (Dynamic) Common Correlated Effects Estimator - Mean Group (CS-ARDL)

GDPGR	Coef.	Std.Err.	z	P>z	[95%Conf.	Interval]
Short Run Est.						

Mean Group:						
L.GDPGR	0.085	0.155	0.550	0.583	-0.219	0.390
DD	0.183	0.121	1.500	0.133	-0.055	0.421
FD	-0.519	1.313	-0.400	0.693	-3.094	2.055
GCF	0.076	0.043	1.760	0.078	-0.008	0.160
CPI	-0.017	0.027	-0.640	0.524	-0.069	0.035
BD	0.006	0.027	0.230	0.820	-0.047	0.060
LF	-0.000	0.000	-1.150	0.252	-0.000	0.000
Adjust. Term						
Mean Group:						
lr_GDPGR	-0.915	0.155	-5.890	0.000	-1.219	-0.610
Long Run Est.						
Mean Group:						
lr_BD	0.002	0.027	0.070	0.941	-0.052	0.056
lr_CPI	0.015	0.058	0.270	0.790	-0.098	0.129
lr_DD	0.196	0.099	1.970	0.049	0.001	0.390
lr_FD	-0.806	1.498	-0.540	0.591	-3.741	2.129
lr_GCF	0.101	0.052	1.950	0.051	-0.000	0.202
lr_LF	-0.000	0.000	-1.290	0.197	-0.000	0.000

Source: Author's computation using Stata 17 Version

Table 4.5 presents CS-ARDL results examining the fiscal-growth relationship in West Africa. In the short run, only gross capital formation (GCF) shows a marginally positive effect on GDP growth (p=0.078), while domestic debt (DD) and foreign debt (FD) are insignificant. The significant error correction term (-0.915, p=0.000) signals rapid adjustment to long-run equilibrium. In the long run, DD positively influences growth (p=0.049), and GCF remains marginally significant (p=0.051), while FD remains negative but insignificant. Budget deficit and CPI show no significant effects. Overall, domestic debt and capital formation emerge as key long-run growth drivers in the region.

DISCUSSION OF RESULTS

This study investigated the relationship between budget deficit, domestic debt and economic growth in five West African countries and offered valuable insights that both affirmed and challenged prevailing views on fiscal policy in developing contexts. The panel unit root tests revealed a mixed order of integration among the variables. Fiscal indicators such as domestic debt, foreign debt, and budget deficits were non-stationary at levels but became stationary after first differencing. This suggested that these variables followed persistent paths, reflecting structural features such as policy rigidity and recurring fiscal imbalances, findings that aligned with

the work of Sore, Ayana, and Demissie (2024). In contrast, real GDP and the consumer price index were stationary at levels, indicating relatively stable macroeconomic fundamentals.

The cointegration results provided weak evidence of long-run equilibrium relationships. Only one of the four Westerlund test statistics was marginally significant, indicating a limited long-term association between fiscal deficit variables and economic growth. This outcome mirrored the findings of Daba and Gebremeskel (2023), who observed similar inconsistencies in long-run fiscal growth dynamics across African countries. These weak linkages may reflect diverse institutional environments and varying capacities for fiscal governance within the region.

Short-run estimates from the CS-ARDL model indicated limited immediate effects of fiscal deficit variables. Budget deficits were neutral in their impact on economic growth, suggesting that any short-term stimulus effects were likely offset by crowding-out pressures or inefficiencies in fiscal spending. Although domestic debt exhibited a positive coefficient in the short run, it was not statistically significant, implying that the immediate growth effects of debt-financed expenditure were constrained by the efficiency of fund allocation. Foreign debt displayed a negative coefficient but was also statistically insignificant, pointing to the dampening effects of exchange rate risks and debt servicing obligations.

In the long run, domestic debt showed a statistically significant positive relationship with economic growth. This finding supported the view that, when prudently managed, domestic borrowing could serve as an effective instrument for financing growth-enhancing investments, particularly in infrastructure and human capital development. However, the magnitude of the effect was modest, suggesting that debt accumulation alone was insufficient without complementary improvements in governance and investment efficiency. Gross capital formation also exhibited a marginally significant long-run effect, underscoring the importance of sustained investment in productive capacity, in line with established development theory. Budget deficits, however, remained statistically insignificant even in the long run, reinforcing concerns regarding their limited growth-inducing potential in these economies.

The error correction term was highly significant and indicated a rapid speed of adjustment towards long-run equilibrium. This suggested that deviations from equilibrium were corrected swiftly, reflecting relatively stable long-term dynamics. Nevertheless, the rapid convergence implied that the effects of fiscal deficit shocks dissipated quickly, thereby limiting the scope for enduring policy impacts in the absence of structural reforms.

Finally, the panel results likely masked important country-specific differences. Nigeria and Ghana, for example, with relatively more developed domestic debt markets, may have experienced stronger positive linkages between debt and economic growth. In contrast, countries such as Mali, characterised by persistent budget deficits and weaker institutional frameworks, may have recorded less favourable outcomes. Differences in institutional capacity in Côte d'Ivoire and Senegal may also have shaped the effectiveness of fiscal interventions, consistent with the observations of Solomon and Anselm (2023), Fanneh and Ceesay (2021), and Workneh (2021).

RECOMMENDATIONS

Based on the findings of budget deficit, domestic debt and economic growth, the study recommends the following:

i. Nigeria should focus less on deficit size and more on how deficits are used, ensuring that borrowed funds are channeled into growth-enhancing sectors such as infrastructure and productive industries. Given the positive impact of domestic debt, the government should strengthen the domestic debt market and reduce reliance on short-term borrowing, while improving tax mobilization to limit persistent fiscal deficits. To promote long-term economic stability and growth, create focused domestic debt management plans that prioritize profitable projects while keeping debt levels manageable.

ii. In Ghana, budget deficits should be better aligned with productive public spending, as deficit financing has not translated into growth. The positive role of domestic debt suggests the need to improve domestic

debt management and extend debt maturities. Strengthening tax compliance and broadening the tax base would also reduce excessive dependence on borrowing.

iii. Côte d'Ivoire, fiscal deficits should be carefully managed and directed toward growth-supporting investments, particularly in infrastructure and productive sectors. Since domestic debt contributes positively to growth, authorities should continue developing the regional domestic debt market, while enhancing domestic revenue generation to maintain fiscal sustainability.

iv. Given the insignificant effect of budget deficits, Senegal should improve the efficiency of public spending rather than increasing deficits. The positive growth impact of domestic debt indicates the need to promote longer-term domestic borrowing instruments, alongside efforts to widen the tax base and reduce fiscal pressures.

v. In Mali, budget deficits should be strictly controlled and used for essential productive expenditures. Since domestic debt supports economic growth, the government should strengthen domestic borrowing frameworks, while improving tax administration to enhance revenue and reduce overdependence on debt.

REFERENCE

1. Abisola, A. (2020). The relationship between budget deficits, savings, and GDP growth in Nigeria. Nigerian Journal of Economic Policy, 27(1), 45–62.
2. Adesina, A. A., & Olayinka, T. M. (2019). Fiscal deficits and economic growth in Nigeria: An ARDL bounds testing approach. African Journal of Economic Policy, 26(3), 78–94.
3. Adeniyi, O. A., & Lawal, A. I. (2023). Domestic debt and economic growth in West African Monetary Zone countries. Journal of African Macroeconomic Review, 15(2), 45–62.
4. Ashakah, M., Bello, S., & Toure, A. (2025). Impact of external debt and debt servicing on economic growth in selected ECOWAS countries. International Journal of Banking, Finance and Research, 11(7), 188–206.
5. August, A. A., Mensah, I., & Badu, Y. A. (2015). Public debt, fiscal policy and economic growth: Empirical evidence from Ghana. Accra: Institute for Fiscal Studies.
6. Babatunde, A., & Adebayo, F. (2023). Fiscal deficits and economic growth in Nigeria and Ghana: Evidence from the ARDL approach. West African Journal of Monetary and Economic Integration, 23(2), 112–130.
7. Daba, T., & Gebremeskel, D. (2023). Fiscal imbalance and economic growth in Sub-Saharan Africa: Panel ARDL approach. African Development Finance Journal, 9(1), 34–50.
8. Eze, C. N., & Okoro, C. E. (2022). Budget deficit and economic growth in selected ECOWAS countries. African Journal of Economic Policy, 29(1), 73–91.
9. Fanneh, M., & Ceesay, A. (2021). Fiscal deficits and economic growth in The Gambia: Evidence from ARDL bound test approach. The Gambian Journal of Development Studies, 7(2), 65–82.
10. Francis, T. (2022). Fiscal responses to COVID-19 in Latin America: Challenges and opportunities. Journal of Emerging Market Economies, 14(3), 215–230.
11. International Monetary Fund (IMF). (2020). Sub-Saharan Africa: Regional economic outlook, April 2020 – COVID-19: An unprecedented threat to development. Washington, DC: International Monetary Fund. https://www.imf.org/en/Publications/REO
12. Maïga, E., Bamba, S., Keïta, A., Traoré, F., & Mouleye, I. (2023). Fiscal policy and economic growth in Mali: An ARDL approach (1990–2021). Mali Economic Policy Review, 15(1), 21–39.
13. Penzin, D. J., & Akanegbu, B. N. (2024). Public debt thresholds and economic growth in the West African Monetary Zone. Journal of Economic Asymmetries, 29, e00346.
14. Raga, S., Sherillyn, R., & Derrick, M. (2022). Debt dynamics in West Africa: Challenges and policy options. Overseas Development Institute Working Paper.
15. Sadiq, M. U., & Bello, A. A. (2024). Fiscal deficit, domestic debt and economic growth in selected West African countries. International Journal of Economics and Management Research, 9(3), 112–128.
16. Sall, M., & Diallo, I. (2020). Fiscal deficits and macroeconomic stability in Senegal: A DSGE model analysis. Journal of African Macroeconomics, 11(3), 98–115.

17. Sissoko, Y., & Kone, A. (2013). Fiscal sustainability and public debt dynamics in Nigeria. African Development Review, 25(4), 451–465.

18. Solomon, T., & Anselm, D. (2023). Fiscal deficits and inflation in Ghana: ARDL analysis and policy implications. Ghanaian Economic Review, 14(1), 40–57.

19. Song, Z., & Zhou, L. (2020). Fiscal interventions and macroeconomic stability during COVID-19: Global perspectives. IMF Economic Review, 68(4), 750–779.

20. Sore, M., Ayana, D., & Demissie, S. (2024). Fiscal deficits and economic growth in Sub-Saharan Africa: Evidence from GMM estimation. African Journal of Economics and Finance, 18(2), 77–94.

21. Telesetsky, A. (2023). Natural resources, external debt, and fiscal stability in Senegal. African Journal of Economic Policy, 30(1), 88–104.

22. Tung, L. H. (2018). Fiscal deficits and economic growth in Vietnam: An Error Correction Model approach. Asian Economic Studies, 12(4), 201–219.

23. Workneh, A. (2021). Triple deficits and economic growth in Sub-Saharan Africa: A panel VAR approach. African Journal of Development Research, 10(2), 101–118.

24. World Bank. (2023). Mali economic update: Strengthening resilience in uncertain times. Washington, DC: World Bank. https://www.worldbank.org/en/country/mali/publication/economic-update