Military expenditure and economic growth in West and Central Africa: Empirical insights from a dynamic panel framework

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Abstract

Purpose: This study investigates the nexus between military expenditure and economic growth in eight West and Central African countries (2000–2023). It addresses the ongoing debate about whether government spending on defense stimulates growth by enhancing security or stifles it by crowding out investments in social services and productive sectors.

Design/methodology/approach: A quantitative panel data analysis was conducted using the Panel Dynamic Ordinary Least Squares (DOLS) technique.

Findings: The military expenditure (% of GDP) showed a positive but statistically insignificant long-run relationship with economic growth. By implication, the military expenditure and economic growth nexus may be influenced by other, unobserved factors. Gross fixed capital formation and labour force participation were significant positive drivers of growth, with labour being the strongest contributor. Inflation exerted a negative, statistically insignificant effect on growth.

Limitations and Research implications: The statistical insignificance of military spending and inflation weakens causal inferences. Small sample size limits generalizability. Omitted variables (e.g., institutional quality, conflict intensity) may bias results. Key factors such as level of corruption, rule of law, and the nature of security threats will likely bias the results.

Practical Implications: Governments may cautiously increase military spending to leverage its positive (though weak) association with growth, but must avoid diverting funds from critical social sectors. Policymakers should prioritize human capital development (labour force quality) and physical infrastructure (capital formation), the primary growth engines identified. Central banks should tighten monetary policy (e.g., raise interest rates) to curb inflation's growth-dampening effects.

Originality/value: This study provides novel empirical evidence on military-growth dynamics in understudied West/Central African economies. Challenges conventional "crowding-out" assumptions by revealing a non-harmful (though non-robust) link between defense spending and growth. Offers region-specific policy pathways for balancing security needs with human/physical capital investments.

Keywords: Fiscal Policy, Inflation rate, Labour Force Participation, Military Expenditure, GDP Growth

Introduction

Military spending has been on the rise across many West African nations, largely in response to growing security threats, terrorism, and political instability (Sarwar & Idrees, 2021). However, its impact on economic growth remains widely debated (Okunlola et al., 2024; Saba & Ngepah, 2021). Economic growth, from a broader perspective, encompasses the productive capacity and resilience of an economy and is influenced by the performance of individual

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sectors and the policy choices made by governments. One critical tool in shaping macroeconomic outcomes, including growth, is fiscal policy, particularly through the instrument of public expenditure (Onifade et al., 2020). Public spending has long been employed by governments as a mechanism to stabilize the economy, stimulate demand, and enhance social welfare. According to Ahuja and Pandit (2020), budgetary expansion or contraction plays a key role in moderating private sector activity and aggregate demand. In line with Keynesian theory, public expenditure can contribute to economic growth by improving welfare outcomes and supporting redistribution efforts (Selvanathan et al., 2021). Yet, how military spending, as a specific form of public expenditure, influences growth, particularly in developing economies such as those in West Africa and Central Africa, remains an empirical question requiring closer investigation.

Theoretically, a range of theories and models have proposed varying relationships between government spending and economic growth (Selvanathan et al., 2021). For example, proponents of neoclassical economics believe that expansionary fiscal policy has no positive effect on economic activity (Sosvilla-Rivero et al., 2025). According to these scholars, government expenditure aimed at stimulating the economy can lead to undesirable results because it crowds out private investment and consumption (Nwoye et al., 2024; Kidochukwu et al., 2022). The harmful effects occur because economic agents can anticipate future fiscal policy repercussions and adjust their consumption and saving habits accordingly (Sosvilla-Rivero et al., 2025). Similarly, Keynesian theory posits that wasteful government expenditure can hinder economic growth by crowding out the private sector's funds, leading to increased inflationary pressures, facilitating debt accumulation, and creating fiscal imbalances (Maheswaranathan & Jeewanthi, 2021). Nevertheless, Keynesians believe that government expenditure can be an impetus for fiscal stimulus by stimulating aggregate demand. Therefore, state intervention is seen as desirable for economic activity in times of weak demand but is perceived as discouraging it in times of high demand, as it leads to both domestic and external imbalances (Okunlola et al., 2024). In the short term, public expenditure is capable of stimulating aggregate demand and stimulating economic development. The justification of government spending is based on the argument that policies directed to the provision of public goods, such as building roads, electricity supply, transportation facilities, telecommunication resources, education facilities, and health centres, generate externalities that improve enterprise productivity, resulting in stimulating economic development (Suriadi et al., 2023).

Keynesian economics proponents believe that government intervention holds the potential to stimulate the economy through efficient expenditure and to complement efficient demand through increased investment that is disaggregated and sector-specific, extending to sectors such as healthcare, education, defense, and agriculture (Maheswaranathan & Jeewanthi, 2021). Expenditure in the military sector can be beneficial to the economy by stimulating aggregate demand or enhancing security; however, it can also have harmful effects by crowding out private investment (Saeed, 2025). The differentiated fiscal distribution to different sectors creates differentiated impacts on such sectors. The skewed fiscal distribution in favour of defense spending tends to detract from public social services, which can negatively impact other essential sectors that require substantial financial expenditure. Notably, high military spending can be counterproductive to economic efficiency (Karadam et al., 2021); nevertheless, the importance of stability in driving economic development must be considered.

In West and Central Africa, as well as other developing economies, the state often serves as the principal investor, responding to rising demands for security and essential public goods such as defense, transport infrastructure, communications, energy, education, and health services that underpin private sector productivity (Ahamed, 2021). We examine the period 2000–2023 because this span captures region wide democratisation waves (e.g. Senegal, Ghana, Benin), the 2008 global financial crisis, the 2014–2016 commodity price downturn that affected several oil exporters (including Nigeria, Ghana, and Côte d'Ivoire) and the COVID 19 shock (Mwape et al., 2024; Darkwa & Attuquayefio, 2019), each reshaping fiscal priorities and forcing trade-offs between military and social sector spending. This current study, therefore, asks: How do military expenditure (as a share of GDP), gross fixed capital formation, labour force participation, and inflation jointly influence long-run economic growth in West and Central African nations? To answer this question, the current study sought to: quantify the long-run impact of defence spending alongside three other key macroeconomic drivers; compare the relative contributions of capital accumulation and labour mobilisation; and assess the extent to which inflation moderates these relationships.

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Notably, several empirical studies have scrutinized the interaction between military spending and economic growth globally, but a consensus has yet to be reached. For instance, Khidmat et al. (2018) in 12 Southeast Asian economies (1990–2015) found that defense spending initiates growth. Karadam et al. (2021) found heightened negative shocks of military spending on growth. While Desli and Gkoulgkoutsika (2020) detected positive linkages between military spending and growth. However, most of these studies implicitly engage with Keynesian or crowding-out hypotheses, but rarely differentiate between capital and recurrent military spending, or control explicitly for security threats. Moreover, while the System-General Method of Moments and the Auto Regressive Distributed Lag model each offer strengths, no study to date has applied the Panel Dynamic Ordinary Least Squares (DOLS) model to a pan-West African sample that accounts for both institutional quality and evolving security challenges. Hence, this study estimated a Panel DOLS model on annual data for Benin, Burkina Faso, Côte d'Ivoire, Cameroon, Gabon, Ghana, Nigeria, and Senegal between 2000 and 2023.

Literature Review

Several empirical studies have scrutinized the interaction between military spending and economic growth in Sub-Saharan Africa (SSA), but a consensus has yet to be reached. Gnidehou and Faton (2025) sought to examine the role of institutional quality in the relationship using the System-Generalized Method of Moments. They found that military spending has a positive and statistically significant impact on growth, with improved institutional quality further enhancing this impact. In contrast, Efayena et al. (2024) employed DOLS (2000-2021) to demonstrate a negative effect of military spending on the economic growth of 33 SSA nations. Similarly, Azam (2020) employed the panel Auto Regressive Distributed Lag/Pool Mean Group method with robust least squares and fixed effects for the years 1988 to 2019 across 35 non-OECD countries, concluding that military spending has a considerable negative effect on economic growth. Furthermore, Saba and Ngepah (2019) employed the System-Generalized Method of Moments to analyze a balanced panel of 34 African countries for the period 1990-2015, demonstrating that military expenditure has a negative impact on growth on the continental scale, with considerable differences noted among regional economic communities in situations of state fragility. In SSA, both the Generalized Method of Moments and DOLS models often indicate a negative impact on growth; however, the role of institutional quality (Gnidehou & Faton, 2025) has the potential to reverse this result.

A series of country-level studies in Africa's largest economy, Nigeria reports mixed positive and negative effects, model specification, and the nature of security expenditures. Contrary to Saeed (2025) global Two-Stage Least Squares (2SLS), Limited Information Maximum Likelihood (LIML), and System-General Method of Moment estimate where a 1%-point rise in military expenditures decreases growth by 1.10 % points, Nwoye et al. (2024), using Autoregressive Distributed Lag (ARDL) between 1981 and 2021, identified government security capital expenditure to have a positive and significant effect (in both the short and long term) in Nigeria. This comparison revealed that recurrent internal security spending is negative (albeit,

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insignificant) in the short term and positive (albeit, insignificant) in the long term. The study by Olayiwola and Oloruntuyi (2024) equally revealed that defense spending negatively affects income growth in both the short and long term. Okwoche (2022), with the Toda-Yamamoto–Dolado-Lütkepohl causality tests, found strong Granger causality running from growth to military spending but weak reverse causality. Nwidobie et al. (2022), based on Autoregressive Distributed Lag (ARDL) for 1982–2020, uncovered negative short-run but positive long-run effects of military spending on output. With hindsight, Nigerian Autoregressive Distributed Lag (ARDL) studies are likely to find a spillover positive long-run impact of capital security spending but a negative short-run impact of recurrent spending, while Instrumental Variable (IV)- and Generalized Method of Moments (GMM)-based approaches are likely to uncover negative impacts in general.

Even so, non-African studies offer methodological benchmarks along with ambiguous findings. Almajdob and Marikan (2021) applied Fully Modified Ordinary Least Squares to four Arab Spring countries and found a positive impact of military expenditure on growth. Syed (2021) employed Autoregressive Distributed Lag (ARDL) bounds testing on China, India, and Pakistan (1990-2018) and provided short-run explanatory power of military spending on per capita GDP with causality from MILEX to GDP. Mohanty et al. (2020), using the Autoregressive Distributed Lag (ARDL) and Toda-Yamamoto causality approach for India (1970– 2016), likewise discovered a significant and positive growth effect. Khidmat et al. (2018) in 12 Southeast Asian economies (1990–2015) using random and fixed effects found that defense spending initiates growth. By contrast, Karadam et al. (2021) examined 103 countries (1988-2019) using Panel Smooth Transition Regression (PSTR) and found that heightened negative shocks to military spending were associated with slower growth in country groups with high income levels, but had a milder impact in country groups with low income levels. Outside Africa, Fully Modified Ordinary Least Squares and Autoregressive Distributed Lag (ARDL) approaches often detect positive growth linkages, whereas more advanced causality techniques reveal heterogeneous and sometimes negative impacts (Desli & Gkoulgkoutsika, 2020), depending on the country context.

Most of these studies implicitly engage with Keynesian or crowding-out hypotheses, but rarely differentiate between capital and recurrent military spending, or control explicitly for security threats. Moreover, while the System-Generalized Method of Moments, Dynamic Ordinary Least Squares, and Autoregressive Distributed Lag (ARDL) each offer strengths, no study to date has applied Panel DOLS to a pan-West-African sample that accounts for both institutional quality and evolving security challenges.

Methodology

The variables used in this study align with the constructs and objectives of the study, including military expenditure (proxied by military spending as a share of GDP) and economic growth (proxied by the GDP growth rate). The control variables used are gross fixed capital formation, labour participation rate, and inflation rate. Data were collected from the World Development Indicators (2023) for eight West African (6) and Central African (2) countries, chosen based on the availability of data for all the indicators used in the study. These eight nations form a cohesive group for examination because they share a common set of institutional, geographic, and economic characteristics that influence their development paths in similar ways. The dataset used spans the years 2000 to 2023.

The theoretical model used for this study is the augmented Cobb-Douglas production function that makes an assumption that the aggregate output of an economy during a specified time frame is a function of the accumulation of capital, labour force, and aggregate factor productivity, and can be defined in equation (1):

$$Y_t = AL_t^{\alpha} K_t^{\beta} \quad (1)$$

where, represent total output: labour and capital, respectively. 'A' represents total factor productivity, ∝ and β are the respective partial elasticities of labour and capital. Gross fixed capital formation and labour force participation rate are employed as proxies for capital and labour, respectively, in the original Cobb-Douglas production function (Saini, 1974). The reason that the variables should be added to the growth equation is as follows: it is no case that more capital accumulation and a larger workforce are key determinants of economic growth and affluence. Capital investment in machinery and equipment increases total factor productivity, including workers' productivity and ability development, thereby leading to economic growth. In addition to labour and capital, this paper augmented the model according to the literature, using military spending as a proportion of GDP as the primary variable of interest, and the inflation rate as a control variable, with the considerable impact of economic growth taken for granted. The model thus has military spending as a proportion of GDP and inflation rate as another input. According to expenditure-growth literature, equation (2) is estimated in this current study as:

$$GDPGR_{\text{it}} = \delta + \pi(MILEX / GDP)_{it} + \varphi(\text{controls})_{it} + \alpha_i + \beta_t + \varepsilon_{it} \quad (2)$$

Where is represented by GDP growth rate of country i in period t; MILEX/GDP is military expenditure as a share of GDP (percent);   refers to the control variables (gross fixed capital formation, labour force participation rate, and inflation rate), and is the error term. The parameter α is a complete set of fixed effects for countries that absorb the effect of any time-invariant country determinant, and β is a complete set of fixed effects for years. The MILEX variable, as in standard expenditure-growth models, is assumed endogenous. Past research informs the control variables utilised in examining the relationship between military spending and growth (Efayena et al., 2024; Saeed, 2023; Iheonu & Ichoku, 2022; Saba & Ngepah, 2019). Furthermore, theoretically, the coefficients of defence spending as a percentage of GDP, gross fixed capital formation, and labour force participation rate are expected to have a positive impact on economic growth. Whereas the coefficient of inflation rate is anticipated to have an uncertain effect on growth. This research used a panel data model in line with Baltagi (2011) in equation (3):

$$y_{\text{it}} = \alpha_i + \beta x_{tt} + \mu_{it} \quad (3)$$

The current study initially tested for a unit root. Unit root tests, such as those proposed by Im et al. (2003), Levin et al. (2002), Choi (2001), and Maddala and Wu (1999), are frequently applied in panel data models. Levin et al. (2002) allow for constant, time-varying residual variances and higher-order autocorrelation structures to be freely varying across countries. Im et al. (2003) test involves conducting individual unit root tests for homogeneous series lengths for each nation. The specifications of heterogeneity are employed for the Maddala and Wu (1999) tests. While Choi's (2001) test is on the union of p-values for the unit root test on the panel. The choice of Panel data underscores an understanding that the data for West and Central Africa is a mix of shared regional pressures and intensely unique national experiences.

All cointegration and unit-root tests were conducted in EViews 12 due to its convenience in handling unbalanced panels and heterogeneity in cross-sections, as well as its user-friendly interface that simplifies specification, estimation, and diagnostic testing. Firstly, we carried out the Levin et al. (2002) homogeneous unit root test, known as the 'LCC,' and then performed the Panel cointegration test by Pedroni (2001) after ensuring that the variables were stationary. The Pedroni test permits more than one explanatory variable—it allows the cointegration vector to vary across different parts of the panel. It also allows the heterogeneity of flaws along cross-sectional units (Asteriou & Hall, 2007). Pedroni cointegration test is as equation (4):

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$$Y_{i,t} = \alpha_i + \delta_i + \sum_m^M = 1\beta_{mi} X_{mi,t} + \mu_{i,t} \quad (4)$$

where, t=1 ,... T; i=1,... N; m=1,... M. 'T' is the total number of observations made over time, 'N' is the total number of individual units in the panel, and 'M' gives the number of regression variables.

Upon reaching the cointegration result between the variables, this article applied the DOLS methodology. The benefit of the DOLS is that it can reduce problems of endogeneity, serial correlation, and simultaneity with differenced leads and lags (Efayena et al., 2024; Efayena & Olele, 2021; and Maji et al., 2019). In this way, the DOLS can generate unbiased estimates (Bellocchi et al., 2021). Furthermore, the Panel DOLS estimator was chosen because it is the most straightforward, effective, and reliable method to achieve the primary objective of this research, which is to objectively estimate the nexus between military expenditure and economic growth while accounting for the endogeneity present in this relationship. Future research can benefit from examining dynamic short-run impacts using System-GMM or non-linearities using Panel Smooth Transition Regression (PSTR). The DOLS test is expressed in equation (5) as:

$$y_{it} = \alpha_i + \beta x_{it} + \sum_{\alpha_k}^{K_i} = K_i \gamma_{ik} \Delta x_{it} + \mu_{it} \quad (5)$$

Variables Description

Table 1 provides a detailed summary of variable descriptions and the sources of data.

Table 1

Variables Description and Measurements

Variable	Acronym	Description	Measurement	Source
GDP growth rate	GDPGR	This is the amount of value created in an economy within a time period	Annual (%)	World Bank, 2024
Military expenditure as % of GDP	MILEX	This is percentage of government overall expenditure on defence	Annual (%)	World Bank, 2024
Gross fixed capital formation	GFCF	It reflects the greater part of investment incurred in the economy. It is comprised of resident producers' investment, excluding disposals, in fixed assets over a period.	Annual (%)	World Bank, 2024
Labour force participation rate	LFPR	This is the percentage of population 15 and over that is economically active	Annual (%)	World Bank, 2024
Inflation rate	INFR	This is evidenced by the year-on-year growth of the GDP implicit deflator reflects the economy-wide rate of price change	Annual (%)	World Bank, 2024

Source: Researcher's Compilation, 2025

Results and Discussion

Cross Sectional Dependence

There is a requirement to first impose the tests of cross-sectional dependence on the paper data in such a way that the cross-section in panel data analysis is independent, thereby obtaining consistent coefficient estimates (Pesaran, 2004). The current study employed the cross-section dependence (CD), which can handle a smaller cross-section (N) and a larger time series (T), as seen in this study, where N = 8 and T = 24. When T > N, it is possible to bypass the test as observed with the aid of the Lagrange multiplier (LM) test developed by Breusch and Pagan (1980). Alternatively, when T < N, the LM test statistic lacks desirable properties, as it suffers from large size distortions (Pesaran, 2004). Cross-section dependence test statistics are given in Table 2.

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Table 2
Cross-Sectional Dependence Tests

Tests	Statistic	P-value
Breusch-Pagan LM	39.84517	0.0683
Pesaran Scaled LM	1.582877	0.1134
Pesaran CD	2.395482	0.0166

Source: Researcher's Computation, 2025.

Table 2 shows the cross-sectional dependence tests, where the model has a statistic value of 39.84517 and a p-value of 0.0683 under the Breusch-Pagan LM test. The Breusch-Pagan LM test is found to be statistically significant at the 10%. This denotes the presence of minute cross-sectional dependence in the model. Such presence may be attributed to a high level of economic and political integration in the West African sub-region, especially when it involves military interventions and missions. For instance, the ravaging military challenges and threats in Niger have attracted the intervention of ECOWAS. Additionally, the paper proceeded to examine the stationarity of the variables as another form of pre-estimation tests.

Unit Root Test

Table 3 shows the Levin-Lin-Chu unit root test, which indicates that all the variables are integrated of order 1 (I(1)). These outcomes reject the stationarity in levels and support the presence of stationarity in the first difference.

Table 3
Levin-Lin-Chu Panel Unit Root Test

Variable	Method	Level	First Diff.
		Stat. (Prob.)	Stat. (Prob.)
GDPGR	LLC	-0.55976 (0.5360)	-3.92354*(0.0000)
MILEX	LLC	-0.01134 (0.5045)	-5.91828*(0.0000)
GFCF	LLC	-0.22765 (0.5900)	-6.76040*(0.0000)
LFPR	LLC	-0.20482(0.5811)	-3.88320*(0.0001)
INFR	LLC	-0.73285 (0.2318)	-5.78357*(0.0000)

*Note: *Indicates stationary at the 1% level*
Source: Researcher's Computation, 2025

Panel Cointegration Tests

Given that the variables under investigation have been identified as I(1), it becomes essential to examine whether these variables are cointegrated. To achieve this objective, this paper

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employs the Pedroni (1999; 2004) test. Hence, the result of Pedroni Cointegration Test is presented in Table 4.

Table 4

Pedroni Residual Cointegration Test

	t-Statistic	Prob
Panel v-Statistic	-0.664103	0.7467
Panel rho-Statistic	-1.206634	0.1138
Panel PP-Statistic	-7.955292*	0.0000
Panel ADF-Statistic	-2.779399**	0.0027

*Note: *, **Indicates stationary at the 1% and 5% level.*

Source: Researcher's Computation, 2025

Table 4 Pedroni cointegration test revealed that all the variables included in the model exhibit cointegration. This is supported by the significant values of the Panel PP-Statistic, and Panel ADF-Statistic, at the 1 and 5 percent level. Additionally, the significant Panel PP and ADF statistics overwhelmingly support the existence of a long-run cointegrating relationship among the variables, despite the non-significant results from the Panel v-Statistic and Panel rho-Statistic tests.

Panel Dynamic Ordinary Least Squares (DOLS)

Once the presence of long-run relationships was confirmed, we proceeded to estimate the long-run coefficients using the DOLS as presented in Table 5. This method takes into consideration endogeneity and serial correlation.

Table 5

Panel DOLS Result

Variable	Coefficient	Std. Error	t-Statistic	Prob.
MILEX	1.226488	3.531154	0.347333	0.7320
GFCF	0.349960	0.119312	2.933155	0.0082
LFPR	0.362596	0.156506	2.316815	0.0312
INFR	-0.302275	0.242564	-1.246164	0.2271
R-squared	0.952437			
Adjusted R-squared	0.930371			
S.E. of regression	1.633842			
Long-run variance	0.364641			

Dependent Variable: GDPGR

Source: Authors Computation, 2025

Table 5 DOLS Results revealed that two of the four explanatory factors included in the current study have a statistically significant long-term impact on economic growth. However, the non-significant effect of MILEX may be attributed to the fact that the relationship between military spending and growth is not straightforwardly linear. For example, theories like the "Military Keynesianism" (positive effect) and the "Guns vs. Butter" model (negative effect) suggest the existence of an optimal level. While the non-significant effect of inflation within the study period means that the inflation rate is not a decisive factor for long-run growth, likely due to its moderation and the credibility of monetary policy. Gross fixed capital creation and labour force participation rate play major roles in explaining economic growth in selected West and Central African nations between 2000 and 2023. Furthermore, military spending as a percentage of

GDP, gross fixed capital formation, labour force participation rate, and inflation rate are all consistent with the current study's long-run a priori expectations.

The R-squared value of 0.952437 indicates that the model fits well, as the explanatory variables account for more than 95% of the variation in economic growth. Even after removing the effect of unimportant estimators, the adjusted R-squared value of 0.930371indicates that the model remains quite good. Hence, the study's findings can be relied upon to inform policy recommendations. The long-run variance of 0.364641 was estimated for the long-term variability of the residuals. A low long-term variance revealed that the residuals (or errors) in the model remain constant over time, implying that the model is dependable for predicting the long-term relationship between military expenditure and economic growth.

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Post-Estimation Test Results

The current study conducted a few diagnostic tests to assess the model's stability and applicability, as well as the validity of the results. The results are presented in Table 6. Table 6 displays the diagnostic test findings, including the Correlogram Q-Statistics used to test for serial correlation in the model's residuals. The F-statistic value of 6.273825, with a probability of 0.436501, indicates that there is no evidence of serial correlation in the residuals at conventional significance levels. Serial correlation, if present, may bias the results and render the model inaccurate. However, because the p-value is significantly higher than the typical thresholds (0.05 or 0.01), we are unable to reject the null hypothesis that there is no serial association. This result indicated that the model's residuals are independent over time, demonstrating that the DOLS estimates are consistent and that the findings about the relationship between military spending and economic growth are reliable. The Jarque-Bera statistic of 0.052394, with a corresponding probability of 0.974143, indicates that the residuals are normally distributed. The Jarque-Bera test's null hypothesis assumes that the residuals are regularly distributed. Given the p-value is significantly more than 0.05, we do not reject the null hypothesis. Normality in the residuals is crucial for verifying the assumptions underlying the DOLS regression, specifically ensuring that the computed coefficients are both efficient and unbiased.

Table 6

Diagnostic Test Results

Tests		Outcomes Coefficient	Probability
Correlogram Q-Statistics (Serial correlation)	F-stat.	6.273825	0.436501
Normality Test	Jarque-Bera	0.052394	0.438083

Source: Researcher's Computation, 2025

The DOLS estimates in Table 5 produce several noteworthy findings. First, military expenditure as a share of GDP exerts a positive long-run effect on economic growth (coefficient = 1.226; p = 0.732). In practical terms, a 1%-point increase in military spending is associated with a 1.23 % increase in annual GDP growth. This result aligns with prior studies highlighting defence outlays as growth-enhancing, such as Nwoye et al. (2024), Okwoche (2022), Syed (2021), Temitope and Olayinka (2021), and Mohanty et al. (2020), but contrasts with work that finds neutral or negative effects (Olayiwola & Oloruntuyi, 2024; Karadam et al., 2021; Desli & Gkoulgkoutsika, 2020; Saba & Ngepah, 2019; Onuoha & Agbede, 2019; Khidmat et al., 2018).

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Second, gross fixed capital formation ($\beta = 0.350$; $p = 0.008$) and labour force participation ($\beta = 0.363$; $p = 0.031$) both display positive and statistically significant long-run impacts on growth. Labour highlights the central role played by human capital and labour participation in SSA development (Efayena et al., 2024). Inflation, on the other hand, has a negative coefficient ($\beta = -0.302$), though statistically insignificant, indicating that price instability has a marginal dampening impact between 2000 and 2023.

Side-by-side comparison of these empirical results with theoretical expectations highlights key nuances. Neoclassical crowding-out theory predicts that high government expenditure, especially on defense, will crowd out private investment and thereby hinder growth (Sosvilla-Rivero et al., 2025; Nwoye et al., 2024). Keynesian and military-Keynesian models, on the other hand, contend that properly targeted public spending can boost aggregate demand and create positive externalities (Selvanathan et al., 2021; Maheswaranathan & Jeewanthi, 2021). Our finding of a positive military-growth relationship implies that, for the West and Central African experience, military expenditure may likely spur growth through infrastructure spillovers, improved security, and technology transfers, providing evidence for the Keynesian view and contradicting the simplistic crowding-out view.

Building on current theory, our findings address a context-specific form of military Keynesianism in West and Central Africa, where defense spending and security investment create multiplier effects by stimulating the manufacturing, transport, and services sectors (Sarwar & Idrees, 2021). That capital formation and labour mobilisation contribute positively and strongly suggests that military expenditure alone is insufficient for sustainable development. Instead, defence spending complements, and can be complemented by, spending on education, health, and infrastructure in pursuit of development synergies (Onifade et al., 2020; Selvanathan et al., 2021). Although the direct impact of inflation is modest, its tendency to undermine real returns to public and private investment alike makes the appeal of macroeconomic stability in conjunction with fiscal stimulus (Ahuja & Pandit, 2020) even more compelling.

Notwithstanding these findings, our analysis has several limitations. First, the exclusion of security-threat indicators (i.e., measures of conflict intensity or terrorism) may obscure indirect channels through which military expenditure influences growth. Second, measurement error and classification problems with government budget data might bias our military-expenditure variable. Third, our DOLS methodology, although endogeneity-robust, imposes linear long-run relationships and cannot uncover potential threshold or nonlinear growth impacts of defense expenditure. Lastly, our 2000–2023 sample may not be able to capture longer-run structural breaks or post-pandemic dynamics; future research can attempt to extend the sample or utilize other estimators, such as PSTR, to capture regime shifts (Karadam et al., 2021).

The policy implications of our findings are that military spending, when coupled with civilian infrastructure and human capital expenditures, can be a worthwhile economic policy instrument, rather than just a security expenditure. Our findings' defense-growth coefficient implies that investment in dual-use infrastructure, such as transport corridors, logistics hubs, and telecommunications networks, generates spillover gains to industry and trade (Sarwar & Idrees, 2021; Nwoye et al., 2024). Likewise, the strong contribution of labour force participation highlights the need to incorporate vocational and technical education into military programmes for the skills development of soldiers as well as civilian workers (Efayena et al., 2024). The minor negative inflationary impact also underscores the necessity for close coordination between finance ministries and central banks to guarantee price stability and safeguard the real value of public expenditures (Ahuja & Pandit, 2020). Approximated cross-sectional dependencies suggest that benefits from ECOWAS-driven cooperation, combined exercises, standardized equipment protocols, and shared procurement can reduce costs, increase interoperability, and anchor security expenditures within an integrated regional development strategy.

Conclusion

This study examined the long-term relationship between military expenditure and economic growth across eight West and Central African nations from 2000 to 2023, utilizing a Panel DOLS framework to address endogeneity and serial correlation. The analysis demonstrates that, while defence spending moves in the expected positive direction, it is the accumulation of physical capital and the active engagement of the labour force that emerge as the principal engines of growth in the sub-region. Labour force participation was the key individual factor, stressing the pivotal role of human capital in maintaining economic growth. These results place the contribution of defence-related expenditure more prominently in the light of the overall budgetary context: far from being a constraint, properly managed defence budgets can reinforce, and even enhance, the impact of infrastructure, education, and training investments. By clarifying the relative weight of these macro-drivers, this study provides a nuanced perspective on the literature regarding public expenditure and growth in developing economies.

From these insights, it follows that policymakers should pursue a balanced fiscal strategy in which defence allocations are designed not in isolation but as part of an integrated development plan. In practice, this will involve aligning defence procurement with plans for infrastructure, such as transport networks, logistical centres, and communications that bring both civilian and security dividends, and devoting a portion of training capacities to security and more general workforce skills improvement. At the same time, a well-supported price environment, underpinned by sound monetary policy, will guarantee real returns on every government investment. To better capitalize on these findings, future research can also distinguish between military expenditure as a capital versus a current component, include direct security threats or proxies for the intensity of conflict, and test for possible nonlinear or threshold effects using alternative estimator methods, such as Panel Smooth Transition Regression. Finally, by integrating security expenditure into an integrated tapestry of human capital development, infrastructure outlays, and macroeconomic resilience, African governments have the potential to redefine defence budgets as authentic sources of long-term prosperity.

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