JOURNAL OF POLITICAL DISCOURSE
ISSN Print: 2992-2763 – ISSN Online: 2992-4618 | Vol. 4, No. 1 / March, 2026
https://www.jopd.com.ng

CORRUPTION AND THE DEFENCE-GROWTH PARADOX IN NIGERIA: A COINTEGRATION AND VECTOR ERROR CORRECTION ANALYSIS

Sha'awanatu Ahmad Achida
Department of Politcal Science,
Faculty of Social and Management Science,
Sokoto State University, Sokoto
Emial: shaawaachida098@gmail.com
&
Nura Aliyu Kabuga
Department of Economics,
Faculty of Economics and Management Sciences,
Bayero University Kano, Nigeria
Corresponding author: nakabuga.eco@buk.edu.ng

Abstract
This paper examines the defence–growth paradox in Nigeria by analysing how corruption and institutional quality influence the relationship between defence expenditure and economic growth over the period 1996–2024. The defence–growth paradox refers to the situation in which increases in military expenditure do not translate into improved economic performance, particularly in economies characterised by governance weaknesses and institutional constraints. Using annual data, the analysis applies unit root tests, Johansen cointegration techniques, and a Vector Error Correction Model (VECM) to examine both long run relationships and short run dynamics among economic growth, military expenditure, corruption, government effectiveness, and domestic investment. The analysis is informed by the institutional economics perspective, which emphasises the role of corruption and governance quality in determining the economic effects of public expenditure. The results confirm the existence of a stable long run relationship among the variables included in the model. Military expenditure exerts a negative long run effect on Gross Domestic Product (GDP) per capita and does not Granger cause economic growth in the short run, providing evidence consistent with the defence–growth paradox in Nigeria. Improvements in transparency, measured through the corruption perception index, are positively associated with economic performance and exert a significant causal influence on growth. Government effectiveness also shows a statistically significant relationship with economic growth, although the estimated coefficients suggest that improvements in formal governance indicators do not necessarily translate into stronger economic performance in the presence of deeper institutional constraints. Domestic investment responds to changes in income and does not appear as an independent driver of economic growth within the model. The findings indicate that the economic consequences of defence expenditure depend strongly on institutional conditions. Weak oversight, corruption, and inefficiencies in public resource management may reduce the economic productivity of defence spending. In this context, improvements in governance, transparency, and accountability in defence sector management appear more closely associated with stronger long run economic performance than further increases in military expenditure.

Keywords: Corruption, Defence Expenditure, Economic Growth, Cointegration, Vector Error Correction Model (VECM), Nigeria

.

1. Introduction

The relationship between defence expenditure, corruption, and economic growth has received sustained attention in the development and political economy literature, particularly in countries confronting persistent security challenges alongside weak institutional capacity. Defence spending is frequently justified on the grounds of safeguarding national security and supporting economic stability. However, its growth implications remain ambiguous, especially in environments characterised by limited accountability and governance constraints (Dunne & Tian, 2013; World Bank, 2022). In such contexts, rising military expenditure does not necessarily translate into improved economic performance, giving rise to what has been described in the literature as the defence–growth paradox. Corruption plays a central role in this relationship by shaping how public resources are allocated and utilised, with direct consequences for economic performance and institutional credibility.

A substantial body of empirical evidence indicates that corruption constrains economic growth by diverting public resources away from productive uses, weakening incentives for private investment, and reducing the effectiveness of public institutions (Mauro, 1995; IMF, 2020). These effects are particularly evident in sectors involving large-scale procurement and limited transparency, such as defence. When corruption permeates military spending, resources intended to enhance security are often dissipated through inflated contracts, misappropriation, and inefficient procurement processes, thereby limiting the potential economic returns from defence expenditure (OECD, 2019; Transparency International, 2022). At the same time, the diversion of fiscal resources towards unproductive defence outlays constrains public investment in infrastructure, education, and health, which are critical for long-run growth (World Bank, 2022).

The consequences of corruption in defence spending extend beyond fiscal inefficiency. Weak oversight and rent-seeking behaviour within the defence sector can undermine operational effectiveness and compromise security objectives, which themselves are important for economic stability and investor confidence (Gupta, de Mello, & Sharan, 2001). Persistent insecurity, combined with declining public trust in government institutions, creates an environment that discourages domestic and foreign investment and heightens macroeconomic vulnerability. Under such conditions, defence spending may fail to deliver either security or growth benefits, reinforcing the defence–growth paradox observed in several developing economies (Dunne & Uye, 2010).

Nigeria provides a particularly relevant case for examining this paradox. Since the mid-1990s, and especially following the return to democratic governance in 1999, the country has experienced a sustained increase in military expenditure in response to terrorism, insurgency, and internal security pressures (Stockholm International Peace Research Institute [SIPRI], 2024). Defence spending has absorbed a sizeable share of public resources, often at the expense of capital expenditure, while economic growth outcomes have remained volatile and uneven. Over the same period, Nigeria has consistently recorded low scores on corruption and governance indicators, alongside recurrent allegations of irregularities in defence procurement and budget execution (World Bank, 2023; Transparency International, 2022). This combination of rising defence outlays, persistent corruption, and fragile institutional capacity raises important questions about the growth implications of military spending in such a context.

Despite the policy relevance of these issues, much of the existing empirical literature has examined defence spending and economic growth, or corruption and growth, as largely separate relationships. Studies that explicitly analyse how corruption mediates the defence–

growth relationship remain limited, particularly in country-specific contexts where institutional dynamics are central to fiscal outcomes. For Nigeria, where defence allocations are substantial and governance challenges are well documented, understanding the interaction between corruption and military spending is especially important for both academic inquiry and policy design.

This paper contributes to the literature in several important ways. First, it examines the joint interaction between defence spending and corruption in shaping economic growth in Nigeria, rather than analysing these variables as separate relationships as commonly observed in the existing literature. Second, the study integrates insights from institutional economics, particularly the view that corruption and weak governance distort the allocation and productivity of public expenditure. By incorporating corruption and government effectiveness into a multivariate time-series framework, the analysis provides a more comprehensive understanding of how institutional conditions mediate the economic consequences of defence spending. Third, the study offers country-specific evidence for Nigeria over the period 1996–2024, capturing the post-democratic era characterised by rising security expenditures, institutional reforms, and persistent governance challenges.

Using annual data, the study applies the Johansen cointegration approach to test for a long-run equilibrium relationship among economic growth, military expenditure, corruption, government effectiveness, and domestic investment. A Vector Error Correction Model is then employed to capture both short-run dynamics and long-run adjustments, while Granger causality tests assess the direction of influence among the variables. By explicitly linking defence spending, corruption, and institutional quality, the study provides policy-relevant insights into why rising military expenditure has not translated into sustained economic growth in Nigeria. The findings therefore contribute to ongoing policy debates on defence budgeting, governance reform, and the broader institutional conditions required to enhance the growth impact of public expenditure.

2. Literature Review

The literature on corruption, defence spending, and economic growth has expanded considerably within development economics and political economy. Existing studies examine these relationships from conceptual, empirical, and theoretical perspectives, which highlighted the role of institutional quality in shaping the economic consequences of public expenditure. This section reviews the relevant literature in three stages. First, the conceptual review clarifies the key concepts and theoretical arguments linking corruption, defence expenditure, and economic growth. Second, the empirical review examines existing evidence on these relationships across different countries and institutional contexts. Third, the theoretical framework outlines the main theoretical perspectives that guide the analysis in this study.

2.1 Conceptual Review

Corruption, defence spending, and economic growth are closely interconnected in economies where public expenditure decisions are made under institutional constraints. Corruption is commonly understood as the abuse of entrusted power for private gain, a definition that captures both its economic and governance dimensions (Mauro, 1995; World Bank, 2023). Early contributions emphasised corruption as behaviour that deviates from formal rules in pursuit of private benefit, thereby weakening institutional integrity and distorting public decision-making (Nye, 1967; Myrdal, 1972). Subsequent studies have established that corruption undermines growth by misallocating resources, discouraging investment, and

reducing productivity through its adverse effects on human capital formation and institutional effectiveness (Mo, 2001; IMF, 2020).

These growth-reducing effects are particularly evident in sectors characterised by large budgets, complex procurement processes, and limited transparency, such as defence. Military or defence spending is generally defined as government expenditure devoted to national defence, including personnel costs, equipment acquisition, infrastructure, and related research and development (SIPRI, 2024). While defence expenditure is often justified on security grounds, its economic implications remain contested. Classical Keynesian perspectives suggest that military spending can stimulate demand and employment in the short run, particularly in economies facing insecurity (Deger & Smith, 1983). In contrast, neoclassical and institutional perspectives emphasise the opportunity costs of defence spending, arguing that it may crowd out productive investment and social expenditure, thereby constraining long-term growth (Hewitt, 1991; Knight, Loayza, & Villanueva, 1996).

The coexistence of these opposing views has given rise to what is commonly referred to as the defence–growth paradox: the observation that increased military expenditure does not necessarily translate into higher economic growth, especially in developing countries with weak institutions. A growing body of research suggests that institutional quality, and corruption in particular, plays a decisive role in determining whether defence spending yields economic benefits or imposes growth costs (Gupta, de Mello, & Sharan, 2001; Dunne & Tian, 2013). When corruption permeates defence budgets, resources intended to enhance security are often dissipated through inflated contracts, misappropriation, and inefficient procurement, reducing both the security and economic returns to military expenditure (Transparency International, 2022).

Beyond fiscal inefficiency, corruption within defence spending can weaken governance more broadly by eroding accountability and reinforcing rent-seeking behaviour across the public sector (Hussaini & Kabuga, 2025). This institutional degradation undermines investor confidence and constrains domestic investment, further limiting the growth potential of defence expenditure. In such contexts, military spending may fail to provide the stable security environment necessary for economic activity, thereby reinforcing the paradox rather than resolving it.

Nigeria exemplifies these conceptual dynamics. Defence expenditure has expanded steadily since the mid-1990s in response to insurgency, banditry, and other internal security challenges, absorbing a substantial share of public resources (SIPRI, 2024). At the same time, Nigeria has consistently recorded weak performance on corruption and governance indicators, alongside persistent concerns about defence procurement practices and budget execution (World Bank, 2023; Transparency International, 2022). These conditions suggest that the economic consequences of defence spending in Nigeria are likely to be shaped less by the scale of expenditure and more by the institutional environment within which it is deployed.

Economic growth, conceptually defined as a sustained increase in output or income per capita over time, reflects improvements in productive capacity, institutional arrangements, and resource allocation (Solow, 1956; Barro, 1991). In developing economies, growth is closely linked to capital accumulation, investment efficiency, and institutional quality (Acemoglu & Robinson, 2012). Where corruption distorts public spending and weakens governance, growth outcomes are likely to be volatile and uneven, even in the presence of substantial public expenditure. Within this framework, analysing economic growth through GDP per

capita provides a consistent measure for assessing how defence spending and corruption interact to influence long-run development outcomes.

2.2 Empirical Literature Review

A substantial empirical literature has examined the relationships among corruption, military spending, and economic growth, though much of this work has tended to analyse these variables in isolation rather than within an integrated institutional framework. Early empirical studies consistently documented a negative relationship between corruption and economic growth. Using cross-country data, Mauro (1995) showed that corruption reduces investment and, through this channel, constrains long-run growth. Subsequent research reinforced these findings by demonstrating that corruption weakens institutional quality, discourages private investment, and lowers productivity (Knack & Keefer, 1995; Mo, 2001). Evidence from African economies further indicates that corruption not only depresses growth but also reallocates public spending away from social and developmental sectors, thereby worsening inequality and limiting long-term economic performance (Gyimah-Brempong, 2002).

Alongside this dominant strand, a smaller body of literature has advanced the "grease the wheels" hypothesis, which argues that corruption may ease bureaucratic rigidities in highly inefficient institutional settings. Early theoretical contributions by Leff (1964) and Huntington (1968) suggested that corruption could facilitate economic activity by bypassing excessive regulation. Empirical assessments of this argument, however, have yielded mixed and conditional results. Méon and Sekkat (2005) and Méon and Weill (2010) find that any growth-enhancing effects of corruption are limited to environments characterised by severe institutional dysfunction, while corruption remains broadly harmful where institutions function more effectively. More recent evidence suggests that even in weak institutional contexts, the long-run growth consequences of corruption are negative once broader efficiency and governance effects are taken into account (Dreher & Gassebner, 2013).

The empirical literature on military spending and economic growth is similarly divided. Drawing on Keynesian arguments, some studies suggest that defence expenditure can stimulate growth through demand expansion and employment creation, particularly in economies with idle capacity. Early work by Benoit (1978) and Ward et al. (1991) reported positive growth effects of military spending in certain developing country contexts, while Mueller and Atesoglu (1993) identified short-run demand effects in advanced economies. More recent studies indicate that such positive effects are contingent on stable macroeconomic conditions, complementary investment, and institutional capacity (Nugroho & Purwanti, 2021).

In contrast, a large body of empirical evidence highlights the growth-reducing effects of military expenditure, particularly in resource-constrained economies. Studies consistently document crowding-out effects, whereby defence spending diverts resources from productive investment in infrastructure, education, and health (Deger, 1986; Faini et al., 1984). Cross-country and country-specific analyses further show that high military expenditure is associated with lower growth where institutional quality is weak (Abu-Bader & Abu-Qarn, 2003; Wijeweera & Webb, 2009; Azam, 2020). Recent contributions continue to support this view, finding that defence spending tends to exert adverse growth effects in developing countries unless accompanied by strong governance and accountability mechanisms (Dunne, Smith, & Willenbockel, 2005).

More recent empirical work has explicitly integrated corruption into the defence–growth relationship, providing direct evidence on the defence–growth paradox. Gupta et al. (2001)

show that corruption distorts the composition of public expenditure by increasing unproductive spending while reducing growth-enhancing investment. Building on this, d'Agostino et al. (2012, 2016) find that in African economies, high military spending combined with corruption significantly depresses economic growth, with defence budgets serving as channels for rent extraction rather than effective security provision. Similar dynamics are identified in country-specific studies, including Egypt, where military expenditure is shown to hinder growth under weak governance conditions (Abdelbaki & El-Sherbiny, 2022).

Recent studies have further emphasised the role of institutional quality in mediating the economic effects of defence spending. Using panel data, Farzanegan (2022) finds that military expenditure is more likely to harm growth in countries characterised by persistent governance weaknesses. Empirical evidence also shows that corruption and governance quality jointly shape the growth effects of public spending, with weak institutions significantly reducing the productivity of fiscal outlays (Dzhumashev, 2014). Recent empirical work focusing on Nigeria also emphasises the importance of institutional and macroeconomic conditions in shaping the defence–growth relationship. For example, Kabuga and Husaini (2026) show that although defence expenditure and economic growth are linked through long-run structural dynamics, short-run growth effects remain weak and depend heavily on broader macroeconomic conditions and fiscal adjustments. In Sub-Saharan Africa, Asongu and Odhiambo (2022) provide evidence that governance and accountability are critical for public expenditure, including defence spending, to support sustained growth. Recent work further indicates that transparency-enhancing mechanisms, such as digital governance, can reduce corruption-induced distortions in defence budgets and improve resource allocation (N'di & Kakinaka, 2022).

Despite these advances, several gaps remain in the literature. First, relatively few studies examine corruption and military spending jointly within a single-country time-series framework, particularly in the Nigerian context. Second, much of the existing evidence relies on cross-country or panel data, which may obscure country-specific institutional dynamics and policy transmission mechanisms. Third, limited attention has been given to the post-1996 period in Nigeria, which captures democratic transition, major security challenges, and evolving anti-corruption reforms. In this context, addressing these gaps is important for understanding how defence expenditure interacts with corruption and governance conditions in shaping economic performance. This study therefore contributes to the literature by applying a cointegration and Vector Error Correction framework to examine the defence–growth relationship in Nigeria over the period 1996–2024.

2.3 Theoretical Framework

To provide a theoretical foundation for the empirical analysis, this section outlines the main theoretical perspectives linking corruption, defence spending, and economic growth. These perspectives explain how institutional quality influences the allocation and productivity of public expenditure, particularly in developing economies characterised by governance constraints.

This study is grounded in a set of complementary theoretical perspectives that explain how corruption and military spending interact to shape economic growth, particularly in developing economies characterised by institutional weaknesses. In this case, rather than treating corruption and defence expenditure as independent influences on growth, the framework emphasises their interaction and the role of governance in mediating their economic effects.

The theoretical debate on corruption is commonly framed around the "grease the wheels" and "sand in the wheels" hypotheses. The former suggests that in highly inefficient bureaucratic systems, corruption may temporarily facilitate economic activity by allowing firms and individuals to circumvent administrative bottlenecks (Leff, 1964; Huntington, 1968). While this perspective acknowledges short-term efficiency gains, it does not account for the broader institutional costs of corruption. In contrast, the "sand in the wheels" view argues that corruption undermines economic performance by increasing transaction costs, distorting incentives, and weakening public institutions (Myrdal, 1972; Mauro, 1995). Shleifer and Vishny (1993) further demonstrate that corruption is particularly damaging in public procurement, where it leads to resource misallocation and inefficiency. In the context of defence spending, which involves large contracts and limited transparency, the latter perspective is especially relevant.

The relationship between military spending and economic growth is similarly contested. Keynesian arguments suggest that defence expenditure can stimulate aggregate demand and employment, particularly in the short run or during periods of economic slack (Benoit, 1978). From this perspective, military spending may support growth by generating income and stabilising economic activity. However, the crowding-out hypothesis offers a contrasting view, arguing that defence spending diverts scarce public resources away from productive civilian investment in infrastructure, education, and health (Smith, 1980; Deger, 1986). In economies with limited fiscal space, such diversion can constrain long-run growth by reducing capital accumulation and human development.

These competing perspectives converge when institutional quality is taken into account. Neoclassical growth theory emphasises the role of capital accumulation and technological progress in driving long-term growth (Solow, 1956). Corruption and inefficient military spending can weaken these channels by discouraging investment and reducing the effectiveness of public expenditure. Endogenous growth theory extends this framework by highlighting the importance of human capital, innovation, and institutional arrangements in sustaining growth over time (Romer, 1990). From this standpoint, corruption and excessive defence spending may reduce incentives for innovation and limit investments in education and skills, thereby constraining growth from within the economy.

However, integrating these theoretical strands provides a coherent framework for analysing the defence–growth paradox. While military spending may generate short-run demand effects, its long-run growth consequences depend critically on the governance environment in which it is undertaken. In settings characterised by weak institutions and pervasive corruption, defence expenditure is more likely to be associated with inefficiency, rent extraction, and the crowding out of productive investment. Corruption further amplifies these effects by distorting procurement processes and weakening accountability, thereby limiting both the security and economic returns to defence spending.

Furthermore, when applied to Nigeria, this framework suggests that the growth impact of military expenditure cannot be assessed independently of corruption and institutional effectiveness. The interaction between defence spending and corruption is therefore central to understanding why rising military budgets have not necessarily translated into sustained economic growth. This theoretical framework directly motivates the empirical strategy adopted in this study, which examines both the long-run and short-run relationships among corruption, military spending, and economic growth within a cointegration and Vector Error Correction framework.

3. Methodology

This section outlines the methodological framework used to examine the relationship between defence spending, corruption, and economic growth in Nigeria. It describes the data sources, variable construction, and econometric techniques employed to analyse both the long-run and short-run dynamics among the variables. Given the time-series nature of the data, the analysis follows a multivariate approach based on unit root testing, Johansen cointegration, and Vector Error Correction modelling in order to capture equilibrium relationships and adjustment dynamics within the defence–growth framework.

3.1 Data and Variable Description

This study employs annual time-series data for Nigeria covering the period 1996–2024, a timeframe determined by the availability of internationally comparable governance and corruption indicators. The selected variables capture the interaction between defence spending, corruption, institutional quality, and economic growth within Nigeria's macroeconomic environment. Economic growth is proxied by Gross Domestic Product per capita (GDPPC) measured in constant US dollars. The data are obtained from the World Bank's World Development Indicators (WDI) and serve as a standard indicator of economic performance and living standards.

Corruption is measured using the Corruption Perceptions Index (CORRUP) compiled by Transparency International. The index ranges from 0 to 100, where higher values indicate lower perceived levels of corruption and greater institutional transparency. Military spending (MILSPEND) is measured as military expenditure expressed as a percentage of GDP, sourced from the World Development Indicators. This variable captures the fiscal burden of defence outlays and reflects the extent to which national resources are allocated to military activities.

Government effectiveness (GOVTEFF) is obtained from the Worldwide Governance Indicators (WGI) and reflects perceptions of the quality of public services, the effectiveness of policy implementation, and the credibility of government institutions. The original index ranges from −2.5 to +2.5. For ease of interpretation in the empirical analysis, the variable is rescaled to a 0–10 metric, where higher values indicate stronger government effectiveness. Domestic investment (DOMINV) is proxied by gross capital formation as a percentage of GDP, obtained from the World Development Indicators. This variable captures capital accumulation and investment activity within the economy, which are important drivers of long-run economic growth. Table 1 summarises the variables, measurements, and data sources used in the empirical analysis.

Table 1: Variables, Measurements, and Sources

Variable	Proxy	Measurement	Source
GDPPC	Economic growth	GDP per capita (constant US$)	World Bank WDI
CORRUP	Corruption	Corruption Perceptions Index (0–100)	Transparency International
MILSPEND	Defence spending	Military expenditure (% of GDP)	World Bank WDI
GOVTEFF	Government effectiveness	Government Effectiveness Index (rescaled from −2.5 to +2.5)	Worldwide Governance Indicators

DOMINV	Domestic investment	Gross capital formation (% of GDP)	World Bank WDI

Source: Authors' compilation based on World Bank *World Development Indicators*, Transparency International *Corruption Perceptions Index*, and *Worldwide Governance Indicators*, 2025.

3.2 Model Specification

Let the vector of endogenous variables in the system be defined as:

$$\mathbf{z}_t = \begin{bmatrix} y_t \\ m_t \\ c_t \\ g_t \\ d_t \end{bmatrix} = \begin{bmatrix} \ln(GDPPC_t) \\ MILSPEND_t \\ CORRUP_t \\ GOVTEFF_t \\ DOMINV_t \end{bmatrix}.$$

The joint dynamics of the system are initially represented by a vector autoregressive model of order k:

$$\mathbf{z}_t = \boldsymbol{\mu} + \sum_{i=1}^{k} \mathbf{A}_i \, \mathbf{z}_{t-i} + \mathbf{u}_t,$$

where μ is a vector of intercepts, A_i are coefficient matrices, and u_t is a vector of reduced-form innovations.

Given evidence that the variables are integrated of order one, the VAR is reparameterised into a Vector Error Correction form:

$$\Delta \mathbf{z}_t = \boldsymbol{\mu} + \boldsymbol{\Pi} \mathbf{z}_{t-1} + \sum_{i=1}^{k-1} \boldsymbol{\Gamma}_i \, \Delta \mathbf{z}_{t-i} + \mathbf{u}_t,$$

where

$$\boldsymbol{\Pi} = \sum_{i=1}^{k} \mathbf{A}_i - \mathbf{I}, \boldsymbol{\Gamma}_i = - \sum_{j=i+1}^{k} \mathbf{A}_j \, .$$

If $\mathrm{rank}(\Pi) = r$, with $0 < r < 5$, then

$$\boldsymbol{\Pi} = \boldsymbol{\alpha}\boldsymbol{\beta}',$$

where β contains the cointegrating vectors and α captures the speeds of adjustment.

The long-run growth relationship of interest is specified as

$$\ln(\mathrm{GDPPCt}) = \beta 0 + \beta 1 \mathrm{MILSPENDt} + \beta 2 \mathrm{CORRUPt} + \beta 3 \mathrm{GOVTEFFt} + \beta 4 \mathrm{DOMINVt} + \xi \mathrm{t}$$

where the coefficients reflect the long-run effects of defence spending, corruption, governance dysfunction, and domestic investment on economic growth. GDP per capita (GDPPC) is expressed in natural logarithmic form to stabilise variance and allow the estimated coefficients to be interpreted as elasticities.

3.3 Unit Root Tests

The time-series properties of the variables are examined using Augmented Dickey–Fuller (ADF) and Phillips–Perron (PP) unit root tests. The Augmented Dickey–Fuller (ADF) test regression is specified as:

$$\Delta x_t = \alpha + \beta t + \rho x_{t-1} + \sum_{i=1}^{p} \gamma_i \, \Delta x_{t-i} + \varepsilon_t,$$

where x_t denotes each variable in turn. The null hypothesis $H_0: \rho = 0$corresponds to the presence of a unit root. The PP test is used as a robustness check, allowing for general forms of serial correlation and heteroskedasticity in the error process. Variables that become stationary after first differencing are considered integrated of order one, denoted $I(1)$.

3.4 Johansen Cointegration Tests

Given that the variables are integrated of order one $I(1)$, the Johansen cointegration procedure is employed to test for the existence of long-run equilibrium relationships among them. Cointegration is assessed using the trace and maximum eigenvalue statistics, defined respectively as

$$\text{Trace}(r) = -T \sum_{i=r+1}^{5} \ln(1 - \hat{\lambda}_i), \text{MaxEig}(r, r+1) = -T \ln(1 - \hat{\lambda}_{r+1}),$$

where $\hat{\lambda}_i$ are the estimated eigenvalues and T is the sample size. Rejection of the null hypothesis of no cointegration implies the existence of a stable long-run relationship among the variables.

3.5 Vector Error Correction Model Estimation

Where cointegration is confirmed, the Vector Error Correction Model is estimated to capture both long-run equilibrium adjustment and short-run dynamics. The growth equation within the VECM is expressed as

$$\Delta y_t = \phi_0 + \lambda \, ECT_{t-1} + \sum_{i=1}^{k-1} \boldsymbol{\theta}_i' \, \Delta \mathbf{z}_{t-i} + \varepsilon_t,$$

where the error-correction term is defined as

$$ECT_{t-1} = y_{t-1} - \beta_0 - \beta_1 m_{t-1} - \beta_2 c_{t-1} - \beta_3 g_{t-1} - \beta_4 d_{t-1}.$$

The coefficient λ measures the speed of adjustment towards long-run equilibrium and is expected to be negative and statistically significant if deviations are corrected over time.

3.6 Granger Causality Analysis

Causality is examined within the VECM framework in both short-run and long-run forms. Short-run Granger causality from a variable x to y is assessed via Wald tests on the joint significance of the lagged differenced terms of x in the Δy_t equation:

$$H_0: \theta_{x,1} = \theta_{x,2} = \cdots = \theta_{x,k-1} = 0.$$

Long-run causality is assessed by the statistical significance of the adjustment coefficient on ECT_{t-1} in the relevant equation. Joint causality can be assessed by testing both the lagged differenced terms and the error-correction term jointly.

4. Results and Discussion

This section presents the empirical evidence on the relationship between defence spending and economic growth in Nigeria over the period 1996–2024, with corruption treated as a core institutional variable alongside government effectiveness and domestic investment. Using a multivariate time-series framework, the analysis progresses from descriptive statistics and unit root testing to cointegration analysis, Vector Error Correction modelling, and Granger causality testing in order to examine both the long-run and short-run dynamics among the variables. The empirical results are interpreted within Nigeria's macroeconomic and governance environment, with particular attention to the institutional conditions surrounding defence expenditure and public resource management.

4.1 Descriptive Statistics

Table 2 reports the descriptive statistics for GDP per capita (GDPPC), corruption (CORRUP), military spending (MILSPEND), government effectiveness (GOVTEFF), and domestic investment (DOMINV) for the period 1996–2024. These statistics provide an initial overview of the distribution and variability of the variables and offer a preliminary indication of the macro-institutional environment within which the defence–growth relationship is examined.

The descriptive statistics indicate noticeable variation across the variables over the sample period, particularly in military expenditure and governance indicators. This variation reflects the evolving security challenges, fiscal adjustments, and institutional conditions that have characterised Nigeria's post-democratic period.

Table 2: Descriptive Statistics

Variable	Mean	Std. Dev.	Min	Max
GDPPC	2.01	3.33	-4.16	12.28
CORRUP	21.1	6.06	6.9	36
MILSPEND	0.54	0.21	0.34	1.47
GOVTEFF	2.91	0.18	2.57	3.21
DOMINV	18.94	4.1	14.2	35.6

Source: Authors' computation based on Stata output, 2026.

The descriptive statistics indicate that economic growth has been highly volatile over the period, as GDP per capita averages 2.01 with a large standard deviation of 3.33 and a wide range from -4.16 to 12.28, indicating that growth outcomes over 1996–2024 were highly unstable and likely sensitive to macro shocks and institutional slippages. Corruption perceptions are persistently poor, with CORRUP averaging 21.1 and varying markedly from 6.9 to 36 with a standard deviation of 6.06, implying that periods of relatively improved perceptions were limited and reversible, and that the defence sector's large procurement footprint likely remained vulnerable to leakage, inflated contracting, and diversion of security funds. Against this backdrop, military spending shows a modest mean of 0.54 with limited dispersion between 0.34 and 1.47, while GOVTEFF averages 2.91 with a tight range of 2.57 to 3.21 and DOMINV averages 18.94 with substantial variation from 14.2 to 35.6, jointly suggesting that defence outlays were made in a persistently weak governance environment

that undermined investment and helps explain why higher military spending may not translate into higher long-run income, consistent with the defence–growth paradox in Nigeria.

4.2 Unit Root Test Results

Before estimating the long run relationship among the variables, it is necessary to examine their time series properties. Macroeconomic variables frequently exhibit non stationary behaviour, and failure to account for this property may lead to spurious regression results. To address this issue, the Augmented Dickey Fuller (ADF) and Phillips Perron (PP) unit root tests are applied to determine the order of integration of each series.

Table 3: Unit Root Tests (ADF and PP)

Variable	ADF Level	PP Level	ADF 1st Diff.	PP 1st Diff.	Order
ln(GDPPC)	−1.42	−1.37	−4.98***	−5.21***	I(1)
MILSPEND	−1.88	−1.91	−5.44***	−5.69***	I(1)
CORRUP	−1.21	−1.18	−4.36***	−4.58***	I(1)
GOVTEFF	−1.63	−1.55	−4.92***	−5.07***	I(1)
DOMINV	−1.74	−1.69	−5.11***	−5.33***	I(1)

Source: Authors' computation based on Stata output, 2026. Note: *** denotes significance at 1%, ** denotes significance at 5%, and * denotes significance at 10%.

Table 3 reports the results of the ADF and PP unit root tests for all variables included in the model. The tests are conducted at both level and first difference forms. The results show that none of the variables are stationary at levels, as the calculated test statistics are smaller in absolute value than the critical values. This indicates the presence of unit roots in the level series.

However, after first differencing, the null hypothesis of a unit root is rejected for all variables at the 1 percent significance level. Both the ADF and PP tests consistently confirm that the variables become stationary after first differencing. The results therefore indicate that GDP per capita, military expenditure, corruption, government effectiveness, and domestic investment are integrated of order one, I(1).

The consistency between the ADF and PP test results strengthens the reliability of the stationarity assessment. Since all variables are integrated of the same order, the Johansen cointegration approach can be appropriately applied to examine the existence of long run equilibrium relationships among the variables.

The confirmation that the variables follow an I(1) process is particularly important for the present study because it allows the analysis to explore whether defence spending, corruption, institutional quality, and economic growth move together over time within a stable long run framework. Establishing this integration property therefore provides the necessary foundation for the subsequent Johansen cointegration analysis and Vector Error Correction modelling.

4.3 Johansen Cointegration Results

Having established that all variables are integrated of order one, the Johansen cointegration procedure is employed to determine whether a stable long run equilibrium relationship exists among the variables in the system. The Johansen approach allows for the identification of multiple cointegrating vectors within a multivariate framework and is therefore appropriate for analysing the long run interaction between economic growth, military expenditure, corruption, government effectiveness, and domestic investment.

Table 4: Johansen Cointegration Test Results

Panel A: Trace Statistic

Hypothesis	Trace Stat.	5% Critical	Decision
r = 0	92.4***	69.8	Reject
r ≤ 1	48.7**	47.9	Reject
r ≤ 2	26.1	29.8	Do not reject

Panel B: Maximum Eigenvalue Statistic

Hypothesis	Max-Eigen	5% Critical	Decision
r = 0	43.7***	33.9	Reject
r ≤ 1	22.6*	27.6	Reject
r ≤ 2	13.2	21.1	Do not reject

Sources: Author's computation using Johansen cointegration test output, 2026.

Table 4 presents the results of both the Trace statistic and the Maximum Eigenvalue statistic. These two statistics test the null hypothesis of no cointegration against alternative hypotheses of increasing numbers of cointegrating relationships. The Trace statistic tests whether the number of cointegrating vectors is less than or equal to a given value, while the Maximum Eigenvalue statistic evaluates the null hypothesis of r cointegrating vectors against the alternative of r + 1.

The results indicate that the null hypothesis of no cointegration (r = 0) is rejected at the 5 percent significance level for both the Trace and Maximum Eigenvalue statistics. The Trace statistic also rejects the null hypothesis of at most one cointegrating vector (r ≤ 1), while the Maximum Eigenvalue statistic provides supporting evidence of at least one long run relationship among the variables. However, the null hypothesis of at most two cointegrating vectors (r ≤ 2) cannot be rejected. These results therefore confirm the presence of at least one stable long run equilibrium relationship linking economic growth, military expenditure, corruption, government effectiveness, and domestic investment.

The existence of cointegration implies that although the individual variables may exhibit non stationary behaviour in the short run, they move together over time and maintain a stable long run equilibrium relationship. In the context of this study, the result indicates that defence spending, institutional quality, and domestic investment are systematically linked to economic growth in Nigeria over the long term. This finding provides the statistical basis for estimating the Vector Error Correction Model (VECM), which captures both the short run dynamics and the speed at which deviations from the long run equilibrium are corrected.

More importantly, the presence of cointegration supports the underlying premise of the defence–growth paradox investigated in this study. The long run relationship among the variables suggests that the economic consequences of defence expenditure in Nigeria cannot be understood in isolation from corruption and governance quality. Instead, the results indicate that military spending, institutional conditions, and investment dynamics jointly determine long run economic performance.

4.4 Long-Run Cointegrating Equation

This subsection interprets the long-run coefficients derived from the estimated cointegrating relationship.

Table 5: Long-Run Cointegrating Equation (Dependent Variable: ln(GDPPC))

Variable	Coefficient	Std. Error	t-Statistic

MILSPEND	−0.084**	0.036	−2.33
CORRUP	0.021***	0.006	3.5
GOVTEFF	−0.067**	0.028	−2.39
DOMINV	0.031***	0.009	3.44
Constant	5.12		

Sources: Author's estimation from cointegrating equation, 2026

Table 5 presents the estimated long-run cointegrating equation derived from the Johansen cointegration procedure, with the natural logarithm of GDP per capita serving as the dependent variable. The estimated coefficients capture the long-run equilibrium relationship between economic growth, military expenditure, corruption, government effectiveness, and domestic investment in Nigeria.

The results reveal a statistically significant negative relationship between military expenditure and economic growth. The coefficient associated with military spending (MILSPEND) is -0.084 and significant at the 5 percent level. This implies that a one-percentage-point increase in military expenditure as a share of GDP is associated with an approximate 0.084 percent reduction in GDP per capita in the long run. This finding provides strong empirical support for the defence–growth paradox in Nigeria, indicating that higher defence spending does not translate into improved economic performance and may instead impose a long-term fiscal burden on the economy.

The institutional variables also emerge as important determinants of long-run economic performance. The coefficient on the corruption perception index (CORRUP) is positive (0.021) and statistically significant at the 1 percent level. Since higher CPI values indicate lower levels of corruption, the result implies that improvements in transparency and reductions in corruption are associated with higher levels of economic performance. Specifically, a one-point improvement in Nigeria's corruption perception score is associated with an approximate 2.1 percent increase in GDP per capita in the long run. This finding highlights the central role of institutional integrity in shaping economic outcomes.

Government effectiveness also emerges as a statistically significant determinant of economic growth in the long run. The estimated coefficient on GOVTEFF is negative (−0.067) and significant at the 5 percent level. Since higher values of the government effectiveness index represent stronger institutional capacity and policy implementation, the result suggests that improvements in measured government effectiveness do not immediately correspond with higher GDP per capita during the study period. This finding may reflect structural constraints within the Nigerian institutional environment. In contexts characterised by persistent corruption, weak enforcement mechanisms, and inefficiencies in public financial management, improvements in formal governance indicators may not automatically translate into more productive allocation of public resources. Consequently, governance reforms may take time before their economic benefits become fully realised.

Domestic investment (DOMINV) shows a positive and statistically significant relationship with economic growth. The estimated coefficient of 0.031 indicates that higher levels of capital formation contribute positively to long-run economic performance. However, the magnitude of this effect appears relatively modest compared with the influence of institutional variables. This pattern suggests that the productivity of investment in Nigeria may be constrained by broader institutional weaknesses, including governance inefficiencies and corruption.

The long-run estimates emphasise the role of institutional conditions in shaping the economic consequences of defence expenditure in Nigeria. The negative and statistically significant coefficient on military spending indicates that higher defence expenditure is associated with lower levels of GDP per capita over time. This relationship suggests that increases in defence budgets may impose an opportunity cost on economic growth when fiscal resources are directed toward military outlays rather than productive sectors of the economy. The significance of the institutional variables further indicates that the economic impact of public spending depends strongly on the governance environment within which these resources are managed. In an environment characterised by corruption, weak accountability, and limited transparency in public financial management, defence expenditure may become vulnerable to inefficiencies and misallocation of resources. Under such conditions, increases in defence spending may produce limited economic returns while reducing the resources available for sectors that support long-term economic development. This pattern provides empirical support for the defence–growth paradox in Nigeria.

4.5 Vector Error Correction Model Results

Following the confirmation of a long run cointegrating relationship among the variables, the Vector Error Correction Model (VECM) is estimated to capture both the short run dynamics and the speed at which the system adjusts towards long run equilibrium after short run disturbances. The VECM framework incorporates the error correction term derived from the cointegrating equation, allowing deviations from long run equilibrium to influence short run adjustments in the variables. Hence, the VECM captures short-run dynamics while enforcing long-run equilibrium adjustment.

Table 6: Vector Error Correction Model (Δln(GDPPC) Equation)

Variable	Coefficient	Std. Error	t-Statistic
ECT(−1)	−0.35***	0.09	−3.89
ΔMILSPEND(−1)	−0.012	0.018	−0.67
ΔCORRUP(−1)	0.009**	0.004	2.25
ΔGOVTEFF(−1)	−0.021**	0.01	−2.10
ΔDOMINV(−1)	0.017**	0.008	2.13

Source**:** Author's estimation from Vector Error Correction Model, 2026. Note**:** Dependent variable is Δln(GDPPC). *** p < 0.01, ** p < 0.05, * p < 0.10.

Table 6 presents the results of the VECM estimation for the growth equation, where the dependent variable is the first difference of the natural logarithm of GDP per capita. The most important parameter in the VECM specification is the error correction term, which measures the speed at which the system returns to long run equilibrium following a short run shock.

The estimated error correction coefficient is negative and statistically significant (−0.35), confirming the existence of a stable long run adjustment mechanism. The magnitude of this coefficient indicates that approximately 35 percent of deviations from the long run equilibrium level of GDP per capita are corrected within one year. This suggests that the Nigerian economy gradually adjusts towards its long run equilibrium path following short run disturbances in defence spending, institutional conditions, or investment activity.

The short run coefficients provide further insight into the dynamic interactions among the variables. Changes in military expenditure do not exert a statistically significant effect on economic growth in the short run. This finding suggests that variations in defence spending do not immediately translate into measurable changes in economic performance. The growth

consequences of defence expenditure appear to operate primarily through longer-term institutional and fiscal channels.

In contrast, institutional variables exhibit statistically significant short run effects. Improvements in transparency, as reflected in changes in the corruption perception index, are associated with positive short run adjustments in economic growth. On the other hand, government effectiveness also exhibits a statistically significant short-run relationship with economic growth. The coefficient on ΔGOVTEFF(-1) is negative (-0.021) and significant at the 5 percent level, indicating that short-term increases in the government effectiveness index are associated with temporary reductions in economic growth. This pattern may reflect institutional adjustment processes within the Nigerian economy. Improvements in administrative capacity or governance frameworks may involve policy restructuring, institutional reforms, or fiscal adjustments that do not immediately translate into higher economic output. In environments where corruption and weak institutional enforcement continue to affect the implementation of public expenditure, improvements in governance indicators may initially coincide with adjustment costs before producing longer-term economic benefits.

Domestic investment also displays a positive and statistically significant short run relationship with economic growth. This result suggests that increases in capital formation contribute to short term expansions in economic activity, although the magnitude of the effect remains smaller than the influence of institutional variables.

The VECM results support the central argument of this study. Military expenditure does not exhibit a statistically significant effect on economic growth in the short run, whereas institutional conditions and investment dynamics play a more influential role in shaping short-term economic performance. The statistically significant error correction term also indicates the presence of a stable long-run equilibrium relationship among defence spending, corruption, government effectiveness, and economic growth.

4.6. Granger Causality Analysis

To further examine the dynamic relationships among the variables, Granger causality tests are conducted within the Vector Error Correction Model framework. The Wald tests reported in Table 7 evaluate short-run causal relationships among economic growth, military expenditure, corruption, government effectiveness, and domestic investment.

Table 7: VECM Granger Causality Tests

Direction of Causality	χ^2	p-value	Inference
MILSPEND → GDPPC	1.42	0.49	No causality
CORRUP → GDPPC	6.38**	0.04	Causality
GOVTEFF → GDPPC	7.11**	0.03	Causality
GDPPC → DOMINV	8.92***	0.01	Causality

Source: Author's computation from VECM Granger causality tests, 2026.

Table 7 presents the results of the Wald tests for short run Granger causality. The results indicate that there is no statistically significant causal relationship running from military expenditure to GDP per capita. The test statistic for the null hypothesis that military spending does not Granger-cause economic growth cannot be rejected ($\chi^2 = 1.42$, $p = 0.49$). This suggests that changes in defence expenditure do not systematically precede changes in economic growth in the short run.

In contrast, institutional variables display statistically significant causal influence on economic performance. The results indicate the presence of Granger causality from corruption to GDP per capita at the 5 percent significance level ($\chi^2 = 6.38$, $p = 0.04$). Since higher values of the corruption perception index represent lower levels of corruption, this result implies that improvements in transparency tend to precede improvements in economic performance. Similarly, government effectiveness exhibits statistically significant causal influence on economic growth ($\chi^2 = 7.11$, $p = 0.03$). This result indicates that changes in institutional capacity and policy implementation tend to precede changes in economic performance in Nigeria. In other words, governance conditions play an important role in shaping macroeconomic dynamics. However, when considered alongside the negative coefficients obtained in the long-run and short-run estimations, the result suggests that improvements in formal governance indicators alone may not immediately generate higher economic growth when deeper institutional challenges such as corruption, weak enforcement mechanisms, and inefficiencies in public resource management persist.

The results also reveal a significant causal relationship running from GDP per capita to domestic investment ($\chi^2 = 8.92$, $p = 0.01$). This finding suggests that domestic investment in Nigeria tends to respond to improvements in economic performance rather than acting as an independent driver of growth. In other words, increases in income appear to stimulate investment activity through improved macroeconomic conditions and higher investor confidence.

The Granger causality results are consistent with the broader findings of the study. Military expenditure does not exhibit a causal influence on economic growth in the short run, indicating that changes in defence spending do not systematically precede changes in economic performance. By contrast, institutional variables, particularly corruption and government effectiveness, display significant causal relationships with economic growth. These results suggest that the economic impact of defence expenditure is closely linked to the institutional environment within which public resources are allocated and managed, providing further support for the defence–growth paradox in Nigeria.

4.6. Discussion of Findings

The empirical results provide important insights into the defence–growth paradox in Nigeria and the institutional mechanisms through which corruption shapes the economic consequences of defence spending. The defence–growth paradox refers to the situation in which increasing military expenditure does not translate into improved economic performance, particularly in developing economies characterised by governance weaknesses. The findings of this study indicate that corruption and institutional quality play a decisive role in explaining why rising defence expenditure in Nigeria has not produced sustained economic growth.

4.6.1 Defence Spending and the Defence–Growth Paradox

The results reveal a negative and statistically significant long-run relationship between military expenditure and economic growth in Nigeria. The results indicate that increases in military expenditure are associated with reductions in GDP per capita over time, suggesting that defence spending imposes an opportunity cost on economic growth when fiscal resources are diverted away from productive sectors. Such evidence supports the defence–growth paradox, indicating that higher military spending does not necessarily promote economic development.

This result aligns with a substantial body of empirical research reporting adverse growth effects of military expenditure in developing economies. Deger (1986) and Deger and Smith (1983) argue that defence spending in developing countries often diverts scarce resources away from productive sectors such as infrastructure, education, and health. Similarly, Dunne et al. (2005) find that military expenditure frequently crowds out investment in growth-enhancing sectors when fiscal capacity is limited. Cross-country evidence from Abu-Bader and Abu-Qarn (2003) and Azam (2020) also suggests that defence spending can constrain economic growth in countries with structural and institutional limitations.

Evidence from African economies further reinforces this interpretation. d'Agostino et al. (2012, 2016) report that military expenditure combined with corruption tends to reduce economic growth in Africa. Gnidehou and Faton (2025) similarly show that the economic effects of military spending depend strongly on institutional quality, with weak governance conditions limiting the potential benefits of defence expenditure.

From a theoretical perspective, this pattern corresponds with the crowding-out hypothesis of defence expenditure. According to this view, military spending absorbs fiscal resources that could otherwise support productive investment in physical and human capital (Deger & Sen, 1995). Within neoclassical and endogenous growth frameworks, long-run economic growth depends on capital accumulation, technological progress, and human capital development (Solow, 1956; Romer, 1990). When defence expenditure expands without generating productivity-enhancing spillovers, it may therefore reduce the resources available for these growth drivers.

4.6.2 Corruption as the Institutional Mechanism of the Defence–Growth Paradox

While the negative relationship between defence spending and growth reflects the defence–growth paradox, the results of this study suggest that corruption plays a central role in explaining this outcome. The positive coefficient associated with the corruption perception index (CPI) indicates that reductions in corruption are associated with higher levels of economic performance. This finding suggests that improvements in transparency and institutional accountability enhance the productivity of public expenditure and strengthen the conditions necessary for sustained economic growth. Since higher CPI values represent lower corruption levels, the results imply that reducing corruption contributes positively to long-run growth in Nigeria.

These findings correspond with the broader literature linking corruption to weaker economic performance. Mauro (1995) finds that corruption reduces investment and economic growth by distorting incentives and increasing transaction costs. Mo (2001) also reports that corruption weakens productivity and institutional effectiveness. Evidence from African economies provided by Gyimah-Brempong (2002) further indicates that corruption reduces economic growth while increasing inequality.

The interaction between corruption and public expenditure provides an important explanation for the defence–growth paradox. Dzhumashev (2014) reports that corruption reduces the efficiency of public spending by encouraging rent-seeking and misallocation of resources. Similarly, Asongu and Odhiambo (2022) find that governance quality strongly influences whether public spending contributes to economic development in Sub-Saharan Africa. Evidence from Nigeria also supports this argument. Empirical evidence from Nigeria further confirms the importance of institutional quality. Kabuga and Achida (2025) show that corruption weakens capital accumulation and constrains long-run economic growth, highlighting the importance of institutional reforms for improving the productivity of public

expenditure. Hussaini and Kabuga (2025) show that corruption significantly weakens the effectiveness of public investment in Nigeria.

These findings correspond with the "sand in the wheels" hypothesis of corruption, which argues that corruption reduces economic efficiency by increasing transaction costs and distorting incentives (Mauro, 1995; Shleifer & Vishny, 1993). In sectors such as defence procurement, where financial allocations are large and transparency is limited, corruption may significantly reduce the productivity of public spending. Under such conditions, increases in defence expenditure may generate limited security improvements while simultaneously diverting resources away from productive economic activities.

4.6.3 Governance Quality and Institutional Capacity

Government effectiveness also emerges as a significant institutional factor influencing economic performance. The negative coefficients associated with government effectiveness in both the long-run and short-run estimations suggest that improvements in measured governance capacity do not automatically translate into higher economic growth in the Nigerian context. This result may reflect structural institutional constraints that limit the economic impact of governance reforms. Although improvements in administrative capacity and policy frameworks are important for institutional development, their effectiveness may be weakened when corruption, weak enforcement mechanisms, and limited accountability continue to affect the management of public resources. In sectors such as defence procurement, where financial allocations are large and transparency is often limited, these institutional weaknesses may significantly reduce the productivity of public expenditure.

This interpretation aligns with the broader institutional economics literature, which emphasises that the effectiveness of public spending depends heavily on the quality of governance structures and accountability mechanisms (Acemoglu & Robinson, 2012). When institutional oversight is weak, increases in public expenditure may generate limited economic returns while simultaneously diverting resources away from productive sectors of the economy. Within the Nigerian context, these institutional dynamics provide an important explanation for why rising defence expenditure has not translated into sustained economic growth..

4.6.4 Domestic Investment and Economic Growth

Domestic investment also exhibits a positive relationship with economic growth, although the estimated effect is relatively modest compared with institutional variables. This result suggests that while capital accumulation contributes to economic performance, its effectiveness may depend on broader institutional conditions. This pattern corresponds with predictions from neoclassical and endogenous growth theories, which emphasise the role of capital accumulation and technological progress in long-run economic development (Solow, 1956; Lucas, 1988; Romer, 1990). Empirical studies such as Barro (1991) and Mankiw et al. (1992) also identify investment as a key determinant of economic growth.

However, the relatively small impact of domestic investment observed in this study may reflect structural inefficiencies within the Nigerian economy. When corruption distorts public spending decisions and governance structures are weak, investment may fail to generate its full productivity potential. Tanzi and Davoodi (1997) report that corruption reduces the productivity of public investment by encouraging inefficient project selection and inflated costs. These institutional constraints may therefore weaken the growth impact of investment.

4.6.5 Short-Run Dynamics and Institutional Influence

The Vector Error Correction Model results show that military expenditure does not exert a statistically significant influence on economic growth in the short run. Institutional variables, particularly corruption and government effectiveness, display stronger associations with short-term economic dynamics. The statistically significant error correction term indicates that deviations from the long-run equilibrium are gradually corrected over time, reflecting an adjustment process through which the economic system moves back toward equilibrium after short-run disturbances.

The Granger causality results lead to a similar conclusion. Defence spending does not display a causal relationship with economic growth in the short run. Corruption and government effectiveness, however, exhibit statistically significant causal links with economic performance. This pattern indicates that changes in institutional conditions tend to precede changes in economic outcomes.

The empirical evidence supports the defence–growth paradox in the Nigerian context. Military expenditure has increased in response to persistent security challenges, yet the expected economic gains from higher defence spending remain limited. Institutional constraints, particularly corruption and weak oversight of public resources, appear to reduce the economic efficiency of defence expenditure. Under these conditions, increases in defence budgets may place pressure on public finances while offering limited contribution to economic growth.

5. Conclusion and Policy Recommendations

5.1. Conclusion

This study examined the defence–growth nexus in Nigeria by analysing how corruption and institutional quality influence the relationship between defence expenditure and economic growth over the period 1996–2024. The analysis employed cointegration and vector error correction techniques to investigate both the long-run and short-run relationships while incorporating measures of corruption and government effectiveness.

The empirical results indicate the existence of a stable long-run relationship among defence expenditure, corruption, government effectiveness and economic growth. The findings suggest that the economic consequences of defence expenditure depend strongly on the institutional environment within which public spending occurs. Corruption and weak institutional oversight appear to reduce the potential economic returns associated with defence expenditure and may weaken its contribution to sustainable economic performance.

The analysis further shows that defence spending alone does not necessarily translate into improved economic outcomes. The effectiveness of defence expenditure depends on the quality of governance and the capacity of public institutions responsible for allocating, monitoring and managing public resources. Where governance structures remain weak, increases in defence spending may create fiscal pressures without generating corresponding improvements in economic performance.

These findings are consistent with evidence in the literature on the defence–growth relationship in developing economies, where institutional weaknesses and governance challenges shape the economic outcomes of public expenditure. The results therefore align with the defence–growth paradox observed in several developing countries, where substantial

defence spending coexists with limited economic gains due to inefficiencies in resource allocation and institutional constraints.

The evidence indicates that improvements in institutional quality may strengthen the economic effectiveness of defence expenditure. Strengthening governance structures, improving transparency and reducing corruption may therefore contribute to more efficient public resource allocation while supporting broader development objectives.

5.2 Policy Recommendations

The empirical findings of this study carry important implications for fiscal governance and defence sector management in Nigeria. The results suggest that addressing the defence–growth paradox requires policy efforts aimed at strengthening transparency, improving institutional oversight, and enhancing the economic efficiency of public spending.

1. Strengthening transparency in defence budgeting and procurement

The results indicate that corruption significantly weakens the economic impact of defence spending. The findings therefore point to the importance of improving transparency within defence budgeting and procurement processes. Policy measures such as independent procurement audits, competitive tendering mechanisms limited public disclosure of defence contracts where national security considerations permit, and digital monitoring of procurement procedures would help reduce opportunities for rent extraction and misallocation of resources.

2. Enhancing institutional oversight and accountability mechanisms

The evidence also suggests that weak institutional oversight contributes to inefficiencies in defence spending. This suggests that strengthening the oversight role of legislative committees, anti-corruption agencies, and independent auditing institutions would likely improve accountability within the defence sector. Similarly, regular expenditure reviews and performance audits could assist in ensuring that defence resources are allocated efficiently and remain aligned with national security priorities.

3. Integrating anti-corruption measures into defence sector governance

The relationship between corruption and economic performance suggests that anti-corruption measures remain important for improving the productivity of defence expenditure. Stronger institutional safeguards, improved financial reporting and more effective enforcement of anti-corruption regulations may reduce inefficiencies associated with defence spending.

4. Maintaining balanced allocation of public expenditure

Defence spending remains necessary for national security. However, balanced allocation of public resources across sectors that directly support economic development remains essential. Investments in infrastructure, education and technological development may complement defence expenditure and contribute to sustained economic growth.

5. Strengthening public financial management systems

Improved public financial management can enhance the effectiveness of fiscal policy implementation. Stronger budgeting institutions, improved administrative capacity and better expenditure tracking mechanisms may help ensure that public spending contributes more effectively to long-term development objectives.

6. Advancing broader institutional reforms

Broader institutional reforms aimed at strengthening governance, regulatory quality and transparency may improve the effectiveness of public expenditure across sectors. Such reforms can support a policy environment in which defence spending contributes more effectively to national development while maintaining fiscal sustainability.

References

Abdelbaki, H. H., & El-Sherbiny, A. E. M. (2022). The causal relationship between corruption, military expenditures and economic growth in Egypt. *The Egyptian Journal of Economic Studies*, *46*(4), 250–201. https://doi.org/10.21608/alat.2022.266256

Abu-Bader, S., & Abu-Qarn, A. S. (2003). Government expenditures, military spending and economic growth. *Journal of Policy Modeling, 25*(6–7), 567–583.

Acemoglu, D., & Robinson, J. A. (2012). *Why nations fail: The origins of power, prosperity, and poverty*. Crown Business.

Aidt, T. S. (2009). Corruption, institutions, and economic development. *Oxford Review of Economic Policy, 25*(2), 271–291.

Asongu, S. A., & Odhiambo, N. M. (2022). Governance, public spending and economic growth in Sub-Saharan Africa. *World Development, 149*, 105700. https://doi.org/10.1016/j.worlddev.2021.105700

Azam, M. (2020). Does military expenditure stifle economic growth? The empirical evidence fron non-OECD countries, *Heliyon, 6*(2020), e05853.

Barro, R. J. (1991). Economic growth in a cross section of countries. *The Quarterly Journal of Economics, 106*(2), 407–443.

Benoit, E. (1978). Growth and defence in developing countries. *Economic Development and Cultural Change, 26*(2), 271–280.

d'Agostino, G., Dunne, J. P., & Pieroni, L. (2012). Corruption, military spending and growth. *Defence and Peace Economics, 23*(6), 591–604.

d'Agostino, G., Dunne, J. P., & Pieroni, L. (2016). Government spending, corruption and economic growth. *World Development, 84*, 190–205.

Deger, S. (1986). Economic development and defence expenditure. *Economic Development and Cultural Change, 35*(1), 179–196.

Deger, S., & Sen, S. (1995). Military expenditure and developing countries. In K. Hartley & T. Sandler (Eds.), *Handbook of defense economics* (Vol. 1, pp. 275–307). Elsevier.

Deger, S., & Smith, R. (1983). Military expenditure and growth in less developed countries. *Journal of Conflict Resolution, 27*(2), 335–353.

Dreher, A., & Gassebner, M. (2013). Greasing the wheels? The impact of regulations and corruption on firm entry. *Public Choice* 155, 413–432 (2013). https://doi.org/10.1007/s11127-011-9871-2

Dunne, J. P. and Uye, M. (2010). Military Spending and Development. In Tan, Andrew (ed.) The Global Arms Trade. Europa / Routledge: London.

Dunne, J. P., & Tian, N. (2013). Military expenditure and economic growth: A survey. *The Economics of Peace and Security Journal, 8*(1), 5–11. https://doi.org/10.15355/epsj.8.1.5

Dunne, J. P., Smith, R. P., & Willenbockel, D. (2005). Models of military expenditure and growth: A critical review. *Defence and Peace Economics, 16*(6), 449–461.

Dzhumashev, R. (2014). Corruption and growth: The role of governance, public spending, and economic development. *Economic Modelling, 37*, 202–215.

Farzanegan, M. R. (2022). The Effects of International Sanctions on Iran's Military Spending: A Synthetic Control Analysis. *Defence and Peace Economics, 33*, 767–778.

Gnidehou, M. G., & Faton, C. Y. (2025). Military expenditure and economic growth in African countries: The role of institutional quality. *Discover Sustainability, 6*, 343.

Gründler, K., & Potrafke, N. (2019). Corruption and economic growth: New empirical evidence. *European Journal of Political Economy, 60*, 101810.

Gupta, S., de Mello, L., & Sharan, R. (2001). Corruption and military spending. *European Journal of Political Economy, 17*(4), 749–777. https://doi.org/10.1016/S0176-2680(01)00054-4

Gyimah-Brempong, K. (2002). Corruption, economic growth, and income inequality in Africa. *Economics of Governance, 3*(3), 183–209. https://doi.org/10.1007/s101010200045

Hewitt, D. (1992). Military expenditures worldwide: Determinants and trends, 1972–1988. *Journal of Public Policy, 12*(2), 105–152.

Huntington, S. P. (1968). *Political order in changing societies*. Yale University Press

Hussaini, M., & Kabuga, N. A. (2025). Impact of corruption on public investment outcomes in Nigeria. *Asian Journal of Economics, Business and Accounting, 25*(1), 197–221.

International Monetary Fund. (2020). *Fiscal monitor: Policies for the recovery*. IMF. https://www.imf.org

Kabuga, N. A. & Hussaini, M. (2026). Defence Spending and Economic Growth Nexus in Nigeria: A VECM Approach. *Jigawa Journal of Social and Management Sciences. XX*(X), XXX–XXX

Kabuga, N. A., & Achida, S. A. (2025). Corruption, rent-seeking and economic growth in Nigeria: Long-run and causal evidence. *KASU Journal of Economics and Development Studies, XX*(X), XXX–XXX

Knight, M., Loayza, N., & Villanueva, D. (1996). The peace dividend: Military spending cuts and economic growth. *IMF Staff Papers, 43*(1), 1–37. https://doi.org/10.2307/3867351

Leff, N. H. (1964). Economic development through bureaucratic corruption. *American Behavioral Scientist, 8*(3), 8–14. https://doi.org/10.1177/000276426400800303

Lucas, R. E. (1988). On the mechanics of economic development. *Journal of Monetary Economics, 22*(1), 3–42.

Mankiw, N. G., Romer, D., & Weil, D. N. (1992). A contribution to the empirics of economic growth. *Quarterly Journal of Economics, 107*(2), 407–437.

Mauro, P. (1995). Corruption and growth. *Quarterly Journal of Economics, 110*(3), 681–712.

Méon, P.-G., & Sekkat, K. (2005). Does corruption grease or sand the wheels of growth? *Public Choice, 122*(1–2), 69–97. https://doi.org/10.1007/s11127-005-3988-0

Méon, P.-G., & Weill, L. (2009). Is corruption an efficient grease? *World Development, 38*(3), 244–259. https://doi.org/10.1016/j.worlddev.2009.06.004

Mo, P. H. (2001). Corruption and economic growth. *Journal of Comparative Economics, 29*(1), 66–79.

Myrdal, G. (1972). *Asian drama: An inquiry into the poverty of nations*. Pantheon Books.

N'dri, L. M., & Kakinaka, M. (2022). Corruption, ICT and military spending in Sub-Saharan Africa. *Defence & Peace Economics, 34*(5), 603-617.

Nye, J. S. (1967). Corruption and political development: A cost–benefit analysis. *The American Political Science Review, 61*(2), 417–427. https://doi.org/10.2307/1953254

OECD. (2019). *Government defence integrity: Building trust and reducing corruption*. OECD Publishing. https://www.oecd.org

Romer, P. M. (1990). Endogenous technological change. *Journal of Political Economy, 98*(5), S71–S102.

Shleifer, A., & Vishny, R. W. (1993). Corruption. *Quarterly Journal of Economics, 108*(3), 599–617.

Smith, R. P. (1980). Military expenditure and investment in OECD countries. *Journal of Comparative Economics, 4*(1), 19–32. https://doi.org/10.1016/0147-5967(80)90018-4

Solow, R. M. (1956). A contribution to the theory of economic growth. *Quarterly Journal of Economics, 70*(1), 65–94.

Stockholm International Peace Research Institute. (2024). *SIPRI military expenditure database*. https://www.sipri.org

Tanzi, V., & Davoodi, H. (1997). Corruption, public investment, and growth. IMF Working Paper.

Transparency International. (2022). *Corruption perceptions index*. https://www.transparency.org

World Bank. (2022). *Combating corruption*. https://www.worldbank.org

World Bank. (2023). *Worldwide governance indicators*. https://info.worldbank.org/governance/wgi