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Effect of government expenditure on real economic growth in ECOWAS: assessing the moderating role of corruption and conflict

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This study investigated the effect of government expenditure on real growth in ECOWAS countries. This paper used panel cointegration techniques to examine the impact of government expenditure on economic growth for a sample of 15 ECOWAS countries between 1999 and 2021. The study uses the POLS, FMOLS, and DOLS techniques for estimating four models. The study supports the view that government expenditure positively affects real economic growth in ECOWAS countries. However, we also found that higher control of corruption improves the effectiveness and efficiency of government expenditure in promoting economic growth. Furthermore, a higher incidence of conflict minimizes the effectiveness and efficiency of government expenditure in promoting economic growth. The finding suggests that a well-managed government can contribute positively to economic growth. The finding that government expenditure positively affects real growth in ECOWAS countries suggests that a well-managed government can contribute positively to economic growth. This finding is helpful for policymakers in ECOWAS countries interested in improving their countries' economic growth.

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Introduction

The government's capacity to foster inclusive growth is significantly contingent on the size of the government (Ivanyina and Salerno, 2021). Broadly defined, governance encompasses the institutions, mechanisms, and practices by which governmental authority is exercised (IMF, 2017). The state is pivotal in advancing comprehensive and sustainable growth by delivering fundamental public services and goods. Scholarly discourse increasingly examines how poor governance undermines the role of the state and inversely disturbs lives and livelihoods (IMF, 2016; North et al., 2008; North, 1991). Poor governance can weaken fiscal performance by limiting revenue collection, distorting expenditure, and limiting the impacts of government expenditure on economic growth.

The relationship between government expenditure and the economy has been a subject of debate in economics and is considered complex. Various theories and models have proposed different relationships between government expenditure and economic growth. For example, Keynesians argue that government expenditure stimulates the economy by increasing aggregate demand. However, the Keynesian model also suggests that excessive and wasteful government expenditure can have negative effects on economic growth, such as crowding out the private sector, inflation, debt, and fiscal deficits (Davis and Daniel, 2006).

On the other hand, the impact of government expenditure on economic growth may not be automatic, as several factors can influence government expenditure and its translation into economic growth. Some factors that have been identified as moderating the role of government expenditure on economic growth are corruption and violent conflict. It should be noted that many countries in Africa have been characterized by excessive corruption and violent conflict, which have adversely affected their business activities and resulted in poor economic performance. These factors hinder the effectiveness of government resources. As government expenditure increases, so does the usage of government resources. Corruption has been shown in numerous empirical studies to affect government expenditure (Al Qudah et al., 2020; Banerjee et al., 2022; Cieřlik and Goczek, 2018; Oyadeyi, 2023a; Gründler and Potrafke, 2019; Malanski and Póvoa, 2021). It has been demonstrated to influence the efficiency of resource allocation in the economy, impacting new investment and stimulating real growth.

Research in the literature has shown that corruption typically hinders growth by impeding government and private sector investment spending, as well as reducing the effectiveness of public services (Afonso and Rodrigues, 2022; Cieřlik and Goczek, 2018; Malyniak et al., 2019). Although there is a general consensus that corruption harms growth, the literature is still divided on how corruption specifically influences growth and the extent of its direct and indirect effects on growth rate (Akrouf, 2020; Yusof et al., 2023; Amoh et al., 2022). Zakaria et al. (2023), Gorsira et al. (2020), and Falisse and Leszczynska (2021) argued that dishonest public servants are likely to allocate funds in a way that allows them to accept and conceal bribes. Some other studies have suggested that this preference for corruption may lead to a focus on large, specialized projects such as major weapons systems and civil engineering projects (such as missiles and bridges), as these projects are expensive and their exact market value is difficult to determine (Campos et al., 2021; Wang et al., 2022).

Studies have shown that corruption undermines transparency, accountability, and fairness in governance. While it may produce short-term gains or adjustments in spending, the long-term consequences can be severe and detrimental to a country's economic health and development. According to some studies, corruption leads to an increase in military spending as a percentage of GDP and overall government spending, surpassing

expenditures on health and education (Ali and Solarin, 2020; Dramane, 2021). Due to the lack of consensus on whether corruption influences the relationship between government spending and GDP growth—a challenge faced by many developing nations, including those in the Economic Community of West African States (ECOWAS)—this study contributes to the discussion by analyzing how corruption interacts with different spending categories to affect GDP growth.

Similarly, violent conflict has been identified as a factor that hinders the economic growth and development of any nation. Conflict results in a larger portion of government spending being allocated to security, diverting a significant amount of funds from productive sectors and diminishing real economic growth. Various studies have shown that conflict can have adverse effects on economic growth and development (Baddeley, 2011; Okunlola and Okafor, 2022). Additionally, violent conflict and political instability have been found to impact real growth (Mlachila and Ouedraogo, 2020). The escalation of violent conflict increases the government's cost of ensuring national security. This combination of violent conflict and corruption impedes the positive impact of government spending on real growth. Therefore, examining the moderating role of violent conflict and corruption on the impact of government expenditure on real growth would provide valuable insights into creating a favorable environment for effective governance and directing resources toward productive investments, ultimately leading to higher economic growth.

There are growing concerns about the impact of government expenditure on economic growth in ECOWAS countries (Olaoye et al., 2020). Despite the increase in government spending, there has not been a corresponding growth in the economy. ECOWAS's macroeconomic performance has consistently fallen short of expectations, despite the political obligations to strengthen the economies at the sub-regional level. The African Development Bank (ADB) has observed an annual increase in government spending, which can be attributed to factors such as a growing population, inflation, foreign aid, high insecurity levels, and ongoing progress.

This study contributes to the existing body of knowledge by analyzing how violence and corruption moderate government spending and actual economic growth in the ECOWAS area. It sheds light on the importance of creating an environment that promotes efficient governance and directs resources toward profitable ventures in order to enhance economic growth. The structure of the paper is as follows: Section "Introduction" provides an introduction, followed by a review of literature on the relationship between government spending and economic growth in select ECOWAS nations in the section "Literature review". The section "Methods" covers the methodology and data concerns, while the section "Empirical results and discussion" presents the empirical findings. The paper concludes in the section "Conclusion".

Literature review

The money spent by the government to run its operations and promote the development of the country is referred to as government expenditure (Fluvian, 2006; Drucker, 2007). For instance, Fluvian (2006) defines government expenditure as any expenditure associated with maintaining government regulatory plans. He also equates government expenditure to total administrative spending, which is a part of the overall federal government expenditure in Nigeria. According to Drucker (2007), government expenditure is a budget allocated for both capital and recurrent spending to maintain government administrative plans, and this seems to be a significant issue in Africa. Therefore, the

issue of governance effectiveness is to ensure that public resources are spent wisely while public goods and services are adequately provided.

Thus, government expenditure is a crucial tool that governments use to control the economy, as it plays a significant role in both developed and developing countries (IMF, 2014; Oyadeyi et al., 2024a). There has been a heated debate among economic experts about whether or not government authorities should intervene to address short-term changes in economic activities. Many scholars, including Solow, Baro, and Keynes, have made significant contributions to the field of economics. Classical economists argue against government intervention, while Keynesian thinking supports it. Classical and neoclassical economists consider monetary approaches insufficient due to the notable crowding-out effect.

The Keynesian school of thought opposed the classical school's perspective. According to Keynesian theory, government expenditure can have a positive impact on economic growth. Therefore, increasing government spending will likely lead to more job opportunities, higher profitability, and increased investment through the multiplier effect on total demand. The cost of maintaining the government then increases aggregate demand, which in turn boosts output based on expenditure multipliers. The introduction of new growth theories has further supported the argument that fiscal policies can enhance economic growth. These new growth hypotheses suggest that government intervention during the transition to equilibrium can have both temporary effects and potential long-term influences on economic growth. This differs from the neoclassical growth model proposed by Solow (1956), which did not explain how the cost of running the government could impact long-run economic growth.

From the perspectives of classical, neoclassical, and Keynesian economics, there are different opinions on government spending and economic expansion. Neoclassical economists, for instance, base their analysis on Solow's (1956) growth model or its version of ideal growth, as formalized by Cass (1965) and Koopmans and Tjalling (1965) following previous validation in Ramsey (1928). They believe that long-term government spending hinders economic growth. The neoclassicals argue that government spending leads to the crowding-out effect. When there is a budget deficit, the government may borrow money or increase taxes, which raises production costs, pushes up prices, and reduces demand. Additionally, public spending diminishes private investment. On the other hand, proponents of Keynesianism assert that government spending actually stimulates economic growth by increasing aggregate demand, promoting full employment, and other factors. They view government spending as an external force that alters total output.

However, the literature on the impact of government expenditure on global economic growth is increasingly contentious and concerning. Some studies (Solow, 1956; Huang, 2006; Magazzino, 2010; Dogan and Tang, 2006; Odubuasi et al., 2020; Ahuja and Pandit, 2022; Nguyen and Bui, 2022; Oyadeyi, 2023b; Tran, 2023) have found a strong and positive correlation between government spending and economic growth. On the other hand, several other studies (Gwartney et al., 1998; Schaltegger and Torgler, 2006; Mitchell, 2005; M'Amanja and Morrissey, 2005; Cammeraat, 2020; Ugochukwu and Oruta, 2021; Oyadeyi, 2023c; Shaddady, 2022) have reported a negative correlation between government spending and economic growth. Similarly, Poku et al.'s (2022) study has shown a positive short-term association between government spending and economic growth, while further research has found favorable associations between governance and long-term economic development (Nhlanguwini and Tleane, 2019; Aluthge et al., 2021; Oyadeyi, 2024a). Furthermore, Shafuda and

De's (2020) analysis suggested a long-term adverse relationship between government spending and economic growth. A recent survey by Ramli et al. (2022), however, found no cointegrating relationship between government spending and economic growth.

In their 2012 study, Maitra and Mukhopadhyay examined the impact of public spending on health and education sectors on the GDP (gross domestic product) of twelve Asian and Pacific nations over the past thirty years. They found a direct correlation between GDP spending on health and education, implying that investing in education increased GDP in some of these nations. Additionally, healthcare expenditures also contributed to GDP growth in certain other nations. Mokoena et al. (2020) investigated the relationship between public expenditure and economic growth in South Africa. The review incorporated Granger Causality tests, cointegration, VAR, and ADF tests. However, the study found no conclusive evidence of a causal relationship between government spending and economic growth. Shafuda and Kumar De (2020) also explored the impact of government spending on indicators of human capital development in Namibia, such as improved health outcomes, academic success, and national GDP growth. Utilizing time series data, the study revealed a strong long-term negative link between well-being and government spending. Furthermore, Odubuasi et al. (2020) employed regression analysis to examine the time series data in their study. Their research demonstrated that government spending on safety and infrastructure significantly influenced Nigeria's economic expansion. Conversely, public spending on education had a minimal and negative impact on Nigeria's economic growth.

Cammeraat (2020) investigated the link between social consumption strategies and economic development, inequality, and poverty across 22 European Association member states, utilizing regression models and a comprehensive index. Their findings revealed a negative correlation between poverty and inequality with overall government social spending, rather than GDP growth. Aluthge et al. (2021) explored the impact of government spending in Nigeria on economic growth, distinguishing between capital and recurrent expenditures using the autoregressive distributed lag (ARDL) model. They observed a significant positive effect of capital spending on economic growth, while the impact of recurrent expenditure was negligible. Similarly, Ugochukwu and Oruta (2021) analyzed government spending categories in Nigeria from 1981 to 2020, finding that certain components like health and education spending negatively affected economic development, whereas road construction and debt restructuring had minimal impact.

Ahuja and Pandit (2022) investigated the effect of income distribution disparity on economic growth in emerging economies, highlighting the positive impact of government spending on health and education, but the minimal effect of social security spending. Shaddady's study (2022) revealed a nonlinear relationship between government spending and growth in most EECA countries, resembling a credit-driven cycle. Nguyen and Bui (2022) discussed the adverse relationship between public expenditure, corruption management, and economic growth in Asian nations using the GMM technique.

Ramli et al. (2022) examined the relationship between Algeria's economic growth and government spending on human capital development, finding no long-term cointegrating relationship between the two variables, suggesting that economic growth cannot solely rely on government spending in the presence of corruption. Poku et al. (2022) highlighted the positive short-term correlation between government spending and economic growth, alongside the significant impact of foreign direct investment and gross capital formation in both the short and long terms.

Tran's (2023) analysis focused on the connection between public spending on education and economic growth in ASEAN countries from 1995 to 2018, using the vector autoregression (VAR) model. They concluded that government spending on education positively correlated with economic growth, emphasizing the role of educational quality in achieving long-term literacy rate goals. Overall, the literature review highlights varying perspectives on the relationship between government spending and economic growth, influenced by factors such as conflict and corruption.

The influence of corruption on the nexus between government expenditure and economic growth. Many studies have examined the impact of government expenditure on economic growth. However, there is still no consensus in the literature regarding the relationship between the two. Given the high level of corruption in the ECOWAS region, it is important to investigate how corruption affects this relationship. Several empirical studies have assumed that corruption can decrease the effectiveness of government spending on economic growth (Oyadeyi et al., 2024b; Dzhumashev, 2014; Keefer and Knack, 2007). In other words, corruption may have a significant influence on the impact of government spending on economic expansion. According to Hodge et al. (2011), in 81 nations, corruption can actually stimulate economic growth by reducing government spending. Hodge et al. (2011) were among the first to examine the role of corruption in the relationship between government spending and economic growth. They argue that both government spending and corruption hinder economic growth, but corruption can mitigate the negative effects of expenditure to some extent.

Nan (2022) suggests that in order to support economic growth, nations should effectively allocate funds and work to reduce corruption. However, empirical research has not adequately considered the role of corruption in the impact of government spending on economic growth. Specifically, d'Agostino et al. (2016) and Nan (2022) provide two uncommon empirical pieces of evidence that support the first claim made by Hodge et al. (2011). Nevertheless, these experimental investigations are limited in that they only conclude that corruption and government spending may interact when affecting economic growth. Additionally, corruption is one factor that can affect the relationship between government spending and economic growth. Corruption may weaken or undermine the positive effects of government spending on economic growth, acting as a negative moderator in this context (Nguyen and Bui, 2022). Based on the aforementioned, this study hypothesizes that corruption has a moderating effect on the relationship between government spending and economic growth in the ECOWAS.

H₁: The control of corruption improves the effect of government expenditure on economic growth.

The influence of conflict on the nexus between government expenditure and economic growth. Violent conflict is another element that might mitigate the effect of government spending on economic growth. Some ideas have been proposed to explain the origins and effects of armed conflicts. According to Kilcullen (2006), classical insurgency theory provides an understanding of armed conflict by positing that the primary cause of conflict is the emergence of alternatives that subvert the established order. The Global Protection Cluster Group (2010) states that armed conflict breeds destabilization, which in turn causes people to be internally displaced (IDP), meaning that citizens are compelled to flee their homes due to high risks (loss of life, property, investment, and output, among other things). In such circumstances, the state's officials cannot guarantee the inhabitants' existence with

sufficient protection. Therefore, among other issues, the impacted people must deal with a low standard of living, exposure to fatal infections, and a lack of ability to engage in productive activities.

Hence, the impact of violent conflict could increase government expenditure which may also hamper the economic growth of a nation. When conflict is present, government expenditure can increase due to the need for security and defense expenditure, increased government borrowing to fund reconstruction efforts, and decreased foreign investment. This diverts a huge chunk of government expenditure away from the productive sectors of education, health, research and development, and agriculture, among others. This implies that violent conflict could adversely moderate the impact of government expenditure on economic growth in ECOWAS countries, as most countries within this region have been characterized by continuous violent conflict. Therefore, it is imperative to hypothesize the moderating role of violent conflict on government expenditure and economic growth among ECOWAS countries.

H₂: Increased incidence of conflict reduces the effect of government expenditure on economic growth.

Methods

In this study, we utilize panel data analysis to explore the relationship between government expenditure and real growth in ECOWAS countries. Building upon previous research by Sadorsky (2012), Adeyemi (2012), and Oyadeyi et al. (2024c), our study estimates the impact of government expenditure on real growth using the production function as a foundation. Following the approach of Adeyemi (2012), total government expenditure serves as a proxy for government expenditure and allows us to examine its effect on economic growth. Therefore, our paper follows the methodology of Sadorsky (2012) and Adeyemi (2012) with some adjustments in order to study the effect of government expenditure on real growth in ECOWAS countries.

Within the production framework outlined in Eq. (1), output (Y) is described as a function of government expenditure (GE), capital (K), and labor (L):

$$Y_{it} = f(GE_{it}, K_{it}, L_{it}). \quad (1)$$

Y stands for income, GE is government expenditure, K and L represent capital and labour, respectively.

We then adapt Eq. (1) to become a linear model stated in the log form as follows:

$$GDP_{it} = f(GE_{it}, COR_{it}, FER_{it}, CONF_{it}, INTR_{it}). \quad (2)$$

In Eq. (2), GDP denotes gross domestic product which is the proxy for real economic growth, COR represents corruption, FER and $CONF$ stands for foreign exchange rate and violent conflict respectively and $INTR$ is the interactive terms.

Equation (2) can be further expanded as follows:

$$Y_{it} = \alpha_i + \delta_{it} + \beta_{1i}GE_{it} + \beta_{2i}FER_{it} + \beta_{3i}CON_{it} + \beta_{4i}COC_{it} + \beta_{5i}INTR_{it} + \epsilon_{it}. \quad (3)$$

where $t = 1, \dots, n$; t stands for the period and each country of the panel, while ϵ represents the stochastic error term. $i = 1, \dots, N$, represents each country in the panel. In addition, the parameters α_i and δ_i provide for a country-specific fixed effect and deterministic trend, respectively.

Equation (3) is based on the Keynesian model, which explains how government expenditure stimulates economic growth through aggregate demand. According to the Keynesian model, government expenditure determines the output level, employment, and inflation (Wray, 2007). This is the reason for including government expenditure (GE) in Eq. (3). Similarly, the use of foreign exchange rate (FER) is justified by the Mundell-Fleming

model, which explains how the exchange rate can influence an open economy's trade balance and growth rate. It demonstrates how the balance between the demand and supply of goods, money, and foreign assets can stimulate the output of an economy (Sarantis, 1986).

Furthermore, the Collier–Hoeffler theory of greed and grievance explains why violent conflict (CON) is crucial in a growth model. It highlights how violent conflict distorts economic growth by destroying physical and human capital. The main argument is that violent conflict diverts resources from productive to unproductive activities, discouraging investment and trade, and undermining social and political stability (Thies and Baum, 2020). Additionally, the extractive institution theory provides background information on the role played in the growth model.

Moreover, the Collier–Hoeffler theory of greed and grievance argues that civil wars hinder economic growth. Violent conflict (CON) can distort economic growth by destroying physical and human capital, diverting resources from productive to unproductive activities, discouraging investment and trade, and undermining social and political stability (Thies and Baum, 2020). To promote economic growth, the inclusive and extractive institution theory posits that institutions should be inclusive. This means that institutions must promote the participation, representation, competition, and rights of the majority of the population while also protecting and enforcing the interests of the public (Saha and Sen, 2021). This is why corruption (COR) is included in Eq. (3).

Furthermore, corruption can act as a “grease” or “sand” in the public sector, depending on the quality of governance and the size of the government (Afonso and de Sá Fortes Leitão Rodrigues, 2022). Similarly, government spending can impact the demand and supply sides of the economy differently, depending on the level and nature of conflict and instability (Dalyop, 2019; Bar-Nahum et al., 2020). Government expenditure can positively or negatively impact economic growth, depending on whether it promotes or hinders the efficiency and productivity of the economy. The Schumpeterian theory of creative destruction (Saha and Sen, 2021) and the Collier–Hoeffler theory of greed and grievance (Spagnol, 2019) explain the basis for the interaction variables between corruption and cost of governance (COR*TGE), violent conflict and the cost of governance (CONF*TGE), and corruption and violent conflict (COR*CONF).

We use panel cointegration techniques to study the effect of government expenditure on real growth for the 15 ECOWAS countries. This study chose these techniques because estimating from the time series cross-sections possesses more degrees of freedom and has higher efficiency than estimating from an individual time series. Moreover, panel cointegration techniques are useful when the time series dimension of each cross-section is short. The empirical analysis of this study is as follows: (i) the study conducted the unit root test to check the stationarity of the variables, (ii) the study also checked the long-term relationship between the variables using the cointegration test, (iii) the study investigated the effect of government expenditure on real growth using the panel cointegration technique, and iv) the paper examined the marginal effect of the moderating roles of corruption and conflict using the approach in Okunlola and Ayetigbo (2022), Akinlo and Okunlola (2022), and Okunlola (2022).

To estimate the long-run relationships in Eq. (3), the study employs the dynamic ordinary least squares (DOLS) and fully modified ordinary least squares (FMOLS) techniques. Both methods correct for the problems of serial correlation and endogeneity that arise when using the panel ordinary least squares (POLS) method on non-stationary variables. The DOLS estimates the cointegrating equation by adding leads and lags of

the changes in the explanatory variables to the OLS regression. This is done to eliminate the serial correlation and endogeneity problems. The FMOLS estimates the cointegrating equation by modifying the OLS regression with a correction term that accounts for the serial correlation and endogeneity problems (see Bhardwaj et al., 2022; Khan et al., 2019).

Data sources and measurement. The paper utilized secondary data spanning from 1999 to 2021. Initially, the paper obtained data on government expenditure (% GDP) and foreign exchange rates from the World Development Indicators (WDI) of the World Bank. Data on corruption (COR) was also collected from the World Governance Indicator (WGI) of the World Bank. The control of corruption index ranges from -2.5 (weak) to 2.5 (strong) and is derived from various sources, including surveys conducted among households, firms, and experts (World Bank, 2023). Additionally, data on conflict (CONF) was sourced from the Major Episodes of Political Violence (MEPV), 1946–2015, available in the Center for Systemic Peace database (see Okunlola and Okafor, 2022). The values on the conflict (CONF) scale used range from 1 (lowest) to 10 (highest) for each MEPV, while 0 signifies the absence of episodes. The scope of countries consists of fifteen (15) ECOWAS countries, six (6) of which are under the West African Monetary Zone (WAMZ), while eight (8) of them are under the West African Economic and Monetary Union (WAEMU). The ECOWAS countries include Benin Republic, Burkina Faso, Cape Verde, Gambia, Ghana, Guinea, Guinea-Bissau, Ivory Coast, Liberia, Mali, Niger, Nigeria, Senegal, Sierra Leone, and Togo. From this list, Gambia, Ghana, Guinea, Liberia, Nigeria, and Sierra Leone are under WAMZ, while Benin Republic, Burkina Faso, Guinea-Bissau, Ivory Coast, Mali, Niger, Senegal, and Togo are under WAEMU.

Empirical results and discussion

A look at government expenditure and real growth in ECOWAS. The trend of government expenditure in ECOWAS increased slightly over the study periods. Although the rise appeared small, there was a significant increase in government expenditure in ECOWAS. For instance, the region's average share of government expenditure to GDP was lowest at about 10.7% in 1999 (see Figs. 1 and 2). It increased to about 13% in 2021, indicating a marginal increase in government expenditure. The increase is more evident in Figs. 1B and 2 government expenditure (% of GDP) rose from an average of 11.4% from 1990 to 2009 to an average of 12.7% between 2010 and 2021. Over the study periods, government expenditure was as high as 19.7% and 17.3% in countries like Cape Verde and Niger, respectively. However, Nigeria and Gambia had the lowest average government expenditure as a share of GDP between 1999 and 2021 (see Figs. 3 and 4). Some of the factors responsible for this increase in government expenditure include inflation in inputs used in the production of public sector goods (Buchanan, 1989), security and military expenditure (Alesina et al., 1995), economic uncertainty (Iheoma, 2022), increased demand for public goods such as roads, communication, power, defense, education, health, and other infrastructure that complement private sector productive activities (Alimi, 2018).

Similarly, average real economic growth was highest in Ghana and Burkina Faso, with an average of 5.7% and 5.6%, respectively (see Figs. 5 and 6). Some of the reasons cited for this growth include economic reforms, aid inflows and debt relief, diversification of the economy, human capital development, and innovation, among others (The World Bank, 2023; Oxford Business Group, 2022; African Development Bank, 2019).

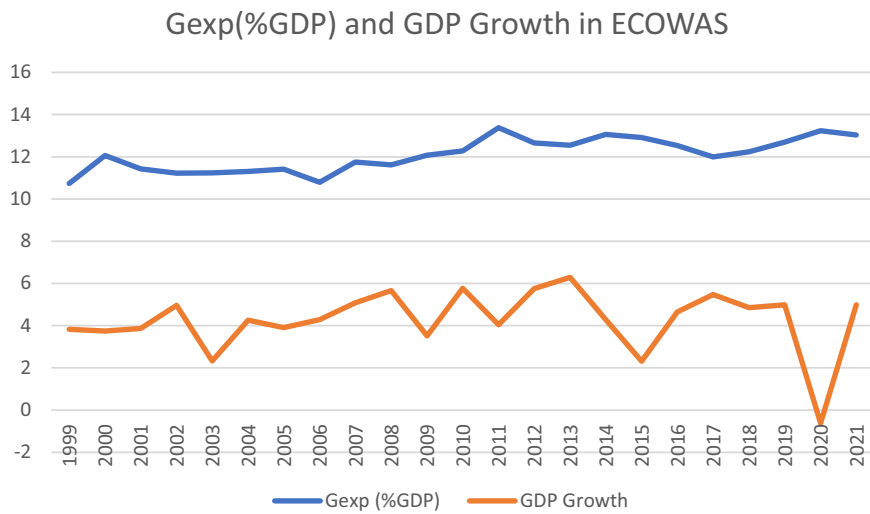


Fig. 1 Average government expenditure (as a percentage of GDP) and GDP growth rate in ECOWAS (1999-2021).

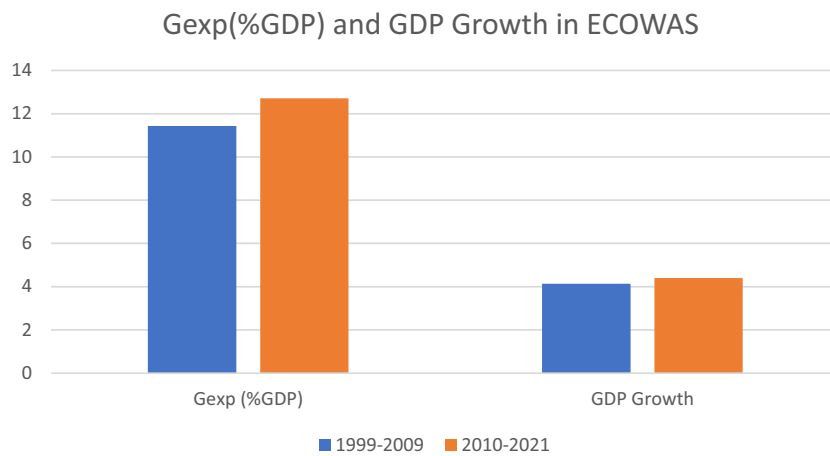


Fig. 2 Average government expenditure and GDP growth (1999-2009 and 2010-2021). This figure shows the average government expenditure growth as a percentage of GDP compared to the real GDP growth rate between the periods 1999-2009 and 2010-2021 in ECOWAS. Source: Made by the authors based on data from WDI.

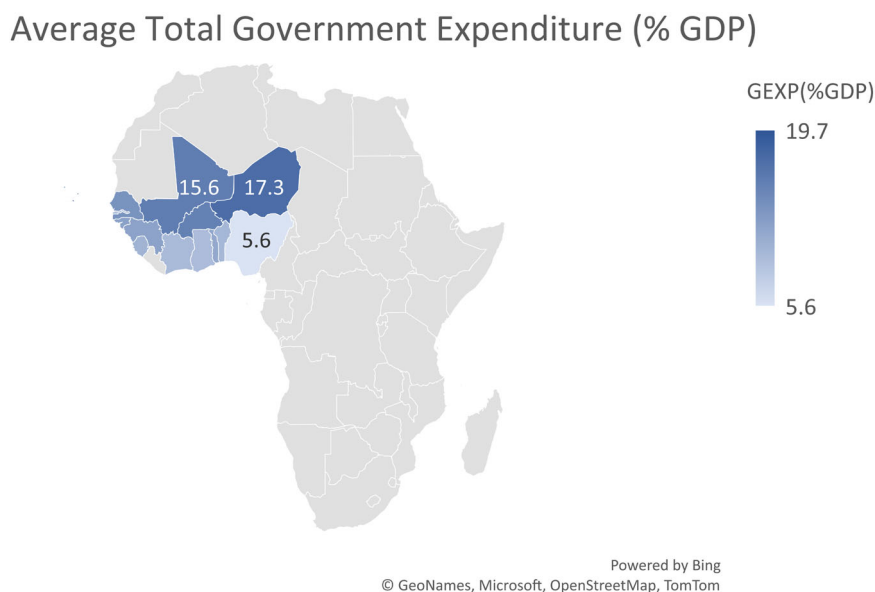


Fig. 3 Spatial mapping of average total government expenditure as a percentage of GDP in ECOWAS. This figure shows the average total government expenditure as a percentage of GDP among ECOWAS countries. Source: Made by the authors based on data from WDI.

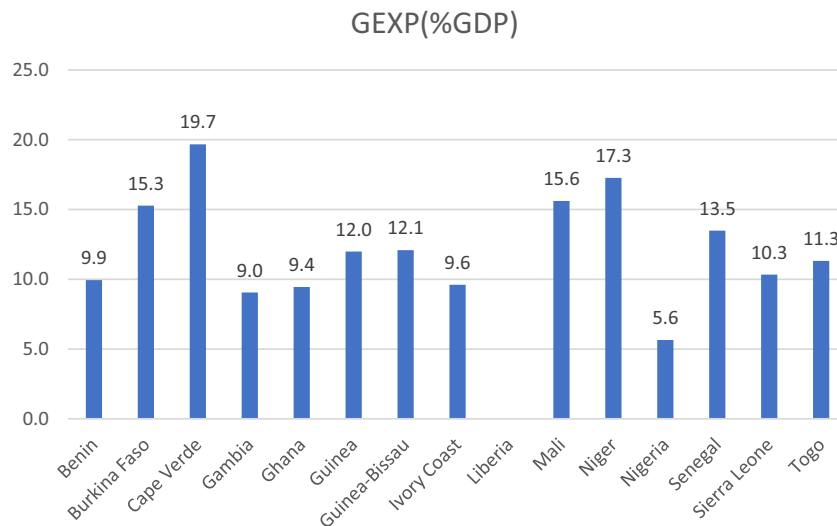


Fig. 4 Average total government expenditure as a percentage of GDP in ECOWAS. This figure shows the average government expenditure as a percentage of GDP per country in ECOWAS. Source: Made by the authors based on data from WDI.

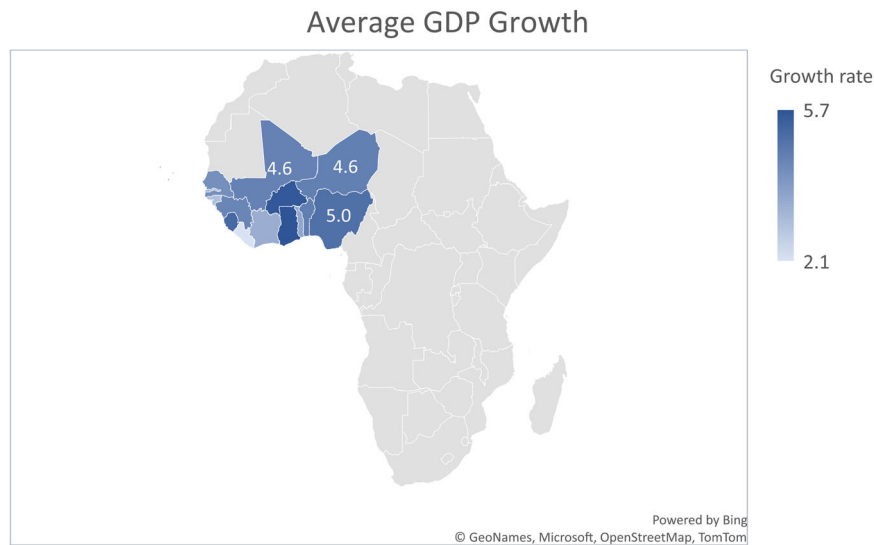


Fig. 5 Spatial mapping of average GDP growth rate in ECOWAS region. This figure shows the average GDP growth rate per country among ECOWAS countries. Source: Made by the authors based on data from WDI.

Data estimation

Stationarity test. In this paper, we conducted three types of unit root tests to assess the degree of integration of variables, both at their original level and after taking their first differences. These tests include Im et al.’s approach (2003), Fisher’s tests using the augmented Dickey–Fuller (ADF) methodology (1979), and the tests developed by Phillips and Perron (1988). These tests fall into the second category, assuming individual unit root processes across the cross-section of data. In all these tests, the null hypothesis assumes the presence of a unit root, while the alternative hypothesis suggests its absence. Additionally, it is important to note that the analysis assumes that the test regressions include an intercept but do not incorporate any deterministic trend. Lastly, the number of lags is automatically determined using the Schwarz information criterion (SIC). The outcomes of these unit root tests are presented in Table 1.

Table 1 indicates that, at the level, there is a unit root for Conflict (CONT) and its interactive terms CONF*TGE and

COR*CONF panel data series. In contrast, other variables are stationary after the first differencing, implying that they are integrated of order one, $I(1)$.

Cointegration tests. This paper used Pedroni’s (1999, 2004) cointegration assessments to study the long-term relationships in a diverse data panel. Pedroni (2004) introduced a set of seven statistical tests that are divided into two categories of cointegration tests. The first category includes four panel-specific statistics: the v -statistic, rho-statistic, PP-statistic, and ADF-statistic. These statistics are organized based on the within-dimension aspect and consider the standard autoregressive coefficients observed across different countries. The second category consists of three group statistics: the rho-statistic, PP-statistic, and ADF-statistic. These tests are categorized under the between-dimension aspect and rely on the individual autoregressive coefficients specific to each country within the panel. The null hypothesis states that there is no cointegration ($H_0 : \sigma_i = 1$), while the alternative hypothesis

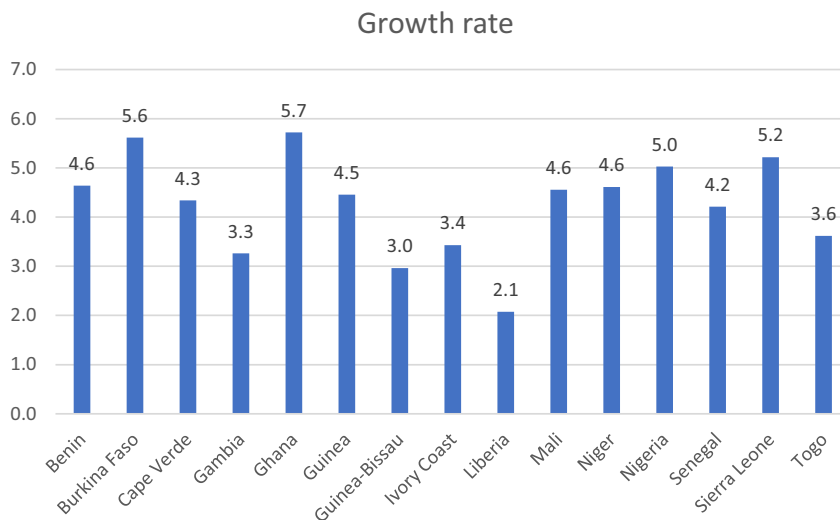


Fig. 6 Average growth rate of GDP in ECOWAS. This figure shows the average GDP growth rate per country in ECOWAS. Source: Made by the authors based on data from WDI.

Table 1 Unit root.				
		ADF	PP	IPS
LNGDP	I(0)	39.159	24.6973	-1.053
	I(1)	0.1222	0.740	0.1462
COR	I(0)	124.893	302.601	-8.240
	I(1)	0.0000***	0.0000***	0.0000***
	I(0)	27.1210	30.8779	-0.123
TGE	I(1)	0.6169	0.421	0.4511
	I(0)	115.683	212.642	-7.680
	I(1)	0.0000***	0.0000***	0.0000***
LN_FER	I(0)	38.191	47.761	-1.161
	I(1)	0.095*	0.0114**	0.123
	I(0)	102.143		-7.052
CONF	I(1)	0.0000***		0.0000***
	I(0)	43.655	24.637	-0.801
	I(1)	0.051*	0.743	0.211
FDI	I(0)	122.604	140.981	-8.251
	I(1)	0.0000***	0.0000***	0.0000***
	I(0)	34.8585	13.978	-3.119
COR*TGE	I(1)	0.001***	0.174	0.001***
	I(0)		87.0880	
	I(1)		0.0000***	
CONF*TGE	I(0)	30.763	51.383	-0.172
	I(1)	0.427	0.009***	0.432
	I(0)	140.218		-9.306
COR*CONF	I(1)	0.0000***		0.0000***
	I(0)	24.416	29.351	-0.156
	I(1)	0.6594	0.395	0.438
COR*TGE	I(0)	100.018	196.231	-6.868
	I(1)	0.0000***	0.0000***	0.0000***
	I(0)	27.2658	40.4642	-2.966
CONF*TGE	I(1)	0.001***	0.000***	0.002***
	I(0)	39.8706	31.041	-3.754
	I(1)	0.000***	0.002***	0.000***

Source: Computed using Eviews 10.
 *Selected based on Schwarz Bayesian criterion.
 ***, **, *Indicates level of significance at 1%, 5%, and 10%.

are defined as follows:

$$\varepsilon_{it} = \sigma_i \varepsilon_{it} + \omega_{it} \tag{4}$$

The study assumes that the tests run with individual intercepts and deterministic trends. Four models were estimated; the first is the baseline model, then the interaction of corruption and government expenditure (COR*TGE), the interaction of conflict and government expenditure (CONF*TGE), and the last is the interaction of conflict and corruption (CONF*COR). Therefore, the results from the tests for the data set for the models are reported in Table 2.

Table 2 indicates that the baseline model has four cointegrating variables at a significance level of 5%. Model II has six cointegrating variables, Model III has five, and Model IV also has four cointegrating variables, all at a significance level of 5%. These results confirm the presence of long-term cointegration among the variables in the models.

Long-run estimations for ECOWAS. We estimated the long-term relationship described in Eq. (3), with real GDP as the dependent variable. The model included several independent variables, such as total government expenditure, foreign exchange rate, corruption, conflict, and interaction variables. When working within a panel estimation framework, it's important to note that the ordinary least squares (OLS) estimator may exhibit asymptotic bias, and the distribution can be influenced by nuisance parameters. To address this bias, we used the fully modified ordinary least squares (FMOLS) and dynamic ordinary least squares (DOLS) panel approaches, as proposed by Pedroni (2001, 2004), to estimate the long-term structural coefficients outlined in Eq. (3). FMOLS employs a non-parametric method to handle endogeneity and serial correlation issues, while DOLS utilizes a parametric approach. Since our variables are logarithmically transformed, the coefficients derived from the long-term cointegration relationship can be interpreted as long-term elasticities. The results of our long-term estimations are presented in Table 3.

Discussions. Table 3 demonstrates a positive and statistically significant relationship between total government expenditure and real GDP. In the baseline model, the DOLS analysis reveals a coefficient of 0.513 for government expenditure, indicating a

suggests the presence of cointegration among the variables. Pedroni's (2004) panel cointegration tests are performed using the residuals obtained from Eq. (4), and these estimated residuals

positive impact on economic growth. Specifically, a 1% increase in government expenditure leads to a 51.3% rise in real GDP. Across all models, the coefficients for government expenditure remain positive, signifying that increased spending by governments enhances economic growth in ECOWAS countries. As previously mentioned, the impact of government expenditure on economic growth varies, ranging from positive to negative or neutral. On the positive side, government spending can stimulate economic growth through various means. For example, investments in infrastructure, such as roads, bridges, ports, and air-

ports, provide the necessary physical and institutional framework for businesses to thrive and expand (Ansar et al., 2016; Zhang and Ji, 2018; Du et al., 2022; Ziolo, 2022).

Likewise, government investment in education and training can enhance workforce productivity, resulting in higher economic growth and improved job prospects (Kousar et al., 2023; Li, 2022; Oyadeyi, 2024b; Kampelmann et al., 2018). Additionally, government funding for research and development promotes innovation, leading to the creation of new products and technologies that drive economic growth (Raghupathi and

Table 2 Cointegration test.

Alternative hypothesis: common AR Coefs. (within-dimension)

	Baseline		COR*TGE		CONF*TGE		CONF*COR	
Panel v-Statistic	17.917***	(0.000)	-2.416	(0.992)	8.682***	(0.000)	-2.225	(0.987)
Panel rho-Statistic	1.631	(0.949)	1.234	(0.891)	1.524	(0.936)	-0.035	(0.486)
Panel PP-Statistic	-1.202	(0.115)	-2.156**	(0.016)	-0.451***	(0.006)	-2.723***	(0.003)
Panel ADF-Statistic	-0.168	(0.433)	-3.126***	(0.001)	-0.423**	(0.036)	-0.330	(0.371)
<i>Weighted</i>								
Panel v-Statistic	19.494***	(0.000)	-2.457	(0.993)	9.449***	(0.000)	-2.248	(0.988)
Panel rho-Statistic	1.614	(0.947)	1.296	(0.903)	1.411	(0.921)	0.165	(0.566)
Panel PP-Statistic	-1.466**	(0.041)	-1.718**	(0.043)	-0.669	(0.252)	-2.148**	(0.016)
Panel ADF-Statistic	-0.187	(0.426)	-2.852***	(0.002)	-0.583	(0.279)	-0.383	(0.351)
<i>Alternative hypothesis: individual AR Coefs. (between-dimension)</i>								
Group rho-Statistic	3.015	(0.999)	1.593	(0.944)	2.201	(0.986)	0.608	(0.728)
Group PP-Statistic	-1.859**	(0.032)	-4.293***	(0.000)	-0.094	(0.463)	-2.816***	(0.002)
Group ADF-Statistic	-0.619	(0.268)	-3.715***	(0.000)	-0.024**	(0.041)	-1.755**	(0.039)

***, **, Indicates level of significance at 1% and 5%.

Table 3 ECOWAS.

Baseline model

	COR	TGE	CONF	LN_FER	FDI	COR*TGE	CONF*TGE	COR*CONF	R-square	Adj. R-Sq.	Obs.
DOLS	2.703*** (0.000)	0.048*** (0.000)	0.404*** (0.000)	2.988*** (0.000)	0.231*** (0.000)				0.72	0.37	76
FMOLS	-1.482*** (0.000)	0.166*** (0.000)	0.435*** (0.000)	1.535*** (0.000)	0.462*** (0.000)				0.06	0.05	133
POLS	-0.449** (0.014)	0.131*** (0.000)	0.590*** (0.000)	0.206*** (0.000)	1.026*** (0.000)				0.35	0.25	256
<i>Interaction of cost of governance and corruption</i>											
DOLS	-12.909*** (0.000)	1.307*** (0.000)	1.644*** (0.001)	0.997** (0.011)		1.230*** (0.000)			0.72	0.26	72
FMOLS	-3.826*** (0.005)	0.238*** (0.008)	0.164*** (0.000)	0.312*** (0.004)		0.298*** (0.006)			0.63	0.44	95
POLS	-21.038*** (0.000)	1.518*** (0.000)	0.320 (0.275)	-0.147 (0.331)		1.280*** (0.000)			0.60	0.49	256
<i>Interaction of cost of governance and conflict</i>											
DOLS	-11.082*** (0.002)	0.518*** (0.002)	1.558 (0.194)	0.793 (0.150)			-0.023 (0.840)		0.89	0.66	36
FMOLS	-3.397*** (0.000)	0.932*** (0.000)	5.650*** (0.000)	0.729*** (0.000)			-0.344*** (0.001)		0.81	0.55	76
POLS	-3.275*** (0.000)	1.202*** (0.000)	5.561*** (0.000)	0.716*** (0.000)			-0.444*** (0.000)		0.76	0.58	256
<i>Interaction of conflict and corruption</i>											
DOLS	-12.540*** (0.000)	0.436*** (0.005)	1.525 (0.357)	0.753* (0.064)				0.337 (0.828)	0.66	0.44	76
FMOLS	-3.262*** (0.000)	0.927*** (0.000)	-3.824*** (0.000)	0.799*** (0.000)				-5.554*** (0.000)	0.25	0.15	133
POLS	-3.207*** (0.000)	1.167*** (0.000)	-3.802** (0.028)	0.788*** (0.000)				-5.588*** (0.000)	0.67	0.46	256

Source: Computed using Eviews 10.
Selected based on Schwarz Bayesian Criterion.
***, **, *Indicates the significance level at 1%, 5%, and 10%.

Raghupathi, 2019; Bellucci et al., 2019). Furthermore, government expenditure on social welfare programs like healthcare and social security can help reduce poverty and inequality, fostering a more stable and productive workforce (Corlet Walker et al., 2021; Cammeraat, 2020; Marshall, 1994).

Nevertheless, it should be noted that government expenditure can also have adverse effects on economic growth, particularly if it is not effectively managed. Firstly, excessive borrowing by the government to finance its expenditure can crowd out private investment, resulting in higher interest rates and reduced economic growth (Thia, 2020; Chien et al., 2022; Traum and Yang, 2015). Furthermore, if government expenditure is wasteful or misaligned, it may have minimal impact on economic growth and could even lead to a decline in productivity (Wuyts, 2020; Abbott and Jones, 2021; Shaddady, 2022). Moreover, in order to finance government expenditures, taxes may need to be increased, which can decrease incentives for work and investment, thereby lowering economic growth. Based on the findings of this study, we can conclude that government expenditure positively influences real GDP in ECOWAS. In this study, the impact of corruption and conflict on real growth in ECOWAS countries is examined. Table 3 presents the result, showing a negative coefficient for the control of corruption. This suggests that a decrease in the level of corruption (for example, from strong to weak) will actually increase economic growth. This finding contradicts the initial expectation, which was that a stronger control of corruption would stimulate economic growth (Saha and Sen, 2021). It is also believed that corruption can either facilitate or hinder the functioning of the public sector, depending on the quality of governance and the size of the government (Afonso and de Sá Fortes Leitão Rodrigues, 2022). Previous studies have argued that corruption can help to reduce bureaucratic inefficiencies and rigid laws, particularly in countries with weak institutions (Méon and Weill, 2010; Houston, 2007; Leff, 1964).

Regarding the conflict variable, Table 3 shows that the coefficient is positive and significant, except for model IV (which involves the interaction of corruption and conflict), where it is negative. The conflict index, as explained in the section “Data sources and measurement”, indicates that an increase in conflict would lead to a rise in economic growth in the ECOWAS region. While there are more studies supporting the negative impacts of conflict, the expectation in this study was for a negative impact of violent conflict. The idea is that conflict can also serve as a catalyst for economic growth by reducing transaction costs and facilitating business activities in countries with poor governance, such as those in ECOWAS. A study by Guidolin and La Ferrara (2010) further demonstrated the positive effect of conflict on economic growth.

Is the government expenditure -real economic growth nexus contingent on corruption or conflict?

Case I. Table 3 shows that all the interactive variables significantly affect the real GDP. For instance, in model II, the coefficient of the interaction between corruption and the proxy for government expenditure is positive. This positive sign indicates a complementary interaction (Cohen et al., 2003; Okunlola and Ayetigbo, 2022; Akinlo and Okunlola, 2022). In other words, an increase in the value of the moderator (in this case, control of corruption) will increase the impact of the explanatory variable (government expenditure) on the explained variable (economic growth) (Cartwright et al., 2018; Okunlola and Ayetigbo, 2022; Akinlo and Okunlola, 2022). This implies that a stronger control of corruption, as measured by the control of corruption index, will increase the effect of

government expenditure (GE) on economic growth in the ECOWAS region. The opposite is also true, where weaker control of corruption will decrease this effect.

A lower level of corruption can lead to decreased wastage and leakage of public resources, improved quality and access to public services, and enhanced trust and accountability in government. Corruption has the potential to further influence the impact of government spending on economic growth. When there is strong control over corruption, it can increase the impact of government expenditure on economic growth by reducing wastage and leakages in governance. Controlling corruption can also improve the quality and access to public services. On the other hand, corruption creates an environment of uncertainty, which deters foreign investment and hinders economic growth. Countries with high levels of corruption are seen as having higher risks, making foreign investors less likely to invest. As a result, economic growth is reduced because the government cannot attract the foreign investment necessary for economic development.

Case II. The result of model III in Table 3 also shows that the interaction between conflict and government expenditure is negative and statistically significant for both FMOLS and P-OLS estimations. This negative interaction referred to as buffering interaction (Cohen et al., 2003; Okunlola and Ayetigbo, 2022; Akinlo and Okunlola, 2022), means that an increase in the value of the moderator (in this case, conflict) will enhance the impact of the explanatory variable (government expenditure) on the explained variable (economic growth) (Cartwright et al., 2018; Okunlola and Ayetigbo, 2022; Akinlo and Okunlola, 2022). In other words, a unit increase in conflict, particularly worsening conflict, will decrease the effect of government expenditure (GE) on economic growth in the ECOWAS region. This implies that security and order would be disrupted, resulting in a negative impact on economic growth and reducing the effectiveness of government expenditure (GE).

During periods of conflict, government expenditure can increase due to the need for security and defense spending, increased government borrowing for reconstruction efforts, and decreased foreign investment. These factors can have a detrimental effect on economic growth. Additionally, the nature and intensity of the conflict can affect the effect of government spending on economic growth. For instance, in a post-conflict society, government expenditure may initially be high due to the need for reconstruction and reconciliation efforts. However, as stability is restored and foreign investment increases, government expenditure may decrease over time. Additionally, the extent to which conflict moderates the relationship between government expenditures and economic growth can depend on the government’s institutional capacity to manage the conflict. If the government can effectively handle the conflict and minimize its negative impact on economic growth, then the effect of government expenditures on economic growth may be less significant.

Case III. The result in model IV in Table 3 also shows a negative interactive term between conflict and corruption, which can be referred to as buffering interaction. We can say that if the moderator (in this case, fighting corruption) gets stronger, it will make the effect of the explanatory variable (conflict) on the explained variable (economic growth) stronger (Cartwright et al., 2018; Okunlola and Ayetigbo, 2022; Akinlo and Okunlola, 2022). In other words, stronger control of corruption will reduce the impact of conflict on economic growth in the ECOWAS region and vice versa. However, it is worth noting that corruption is generally high, and economic growth is low compared to other regions in the ECOWAS region. On the other hand, this also

Table 4 WAMZ result.

Baseline model

	COR	TGE	CONF	LN_FER	FDI	COR*TGE	CONF*TGE	COR*CONF	R-sq.	Adj. R-sq.	Obs.
DOLS	-2.620*** (0.000)	0.120** (0.014)	0.127*** (0.009)	1.948*** (0.000)	0.369*** (0.001)				0.72	0.37	36
FMOLS	-0.643*** (0.000)	0.009* (0.095)	-0.056*** (0.002)	-0.985*** (0.000)	0.072*** (0.000)				0.89	0.06	53
POLS	-1.222* (0.070)	0.164*** (0.000)	0.271*** (0.000)	-0.073 (0.353)	1.068*** (0.000)				0.62	0.60	58
<i>Interaction of cost of governance and corruption</i>											
DOLS	-9.485*** (0.000)	0.929*** (0.000)	0.151*** (0.663)	2.079** (0.000)		0.852*** (0.000)			0.50	0.27	57
FMOLS	-11.189*** (0.000)	1.172*** (0.000)	0.107 (0.548)	1.855*** (0.000)		1.081*** (0.000)			0.56	0.10	57
POLS	-20.528*** (0.000)	2.299*** (0.000)	0.547** (0.044)	-0.032 (0.869)		2.138*** (0.000)			0.35	0.25	100
<i>Interaction of cost of governance and conflict</i>											
DOLS	-7.789*** (0.000)	0.392*** (0.002)	-0.590*** (0.006)	3.226*** (0.000)			0.027 (0.330)		0.87	0.75	19
FMOLS	-0.907*** (0.000)	0.052** (0.018)	0.488 (0.811)	1.035*** (0.000)			-0.063 (0.819)		0.60	0.18	57
POLS	-13.177*** (0.000)	1.730*** (0.000)	3.522*** (0.002)	-1.041*** (0.003)			-0.336*** (0.009)		0.92	0.60	100
<i>Interaction of conflict and corruption</i>											
DOLS	-10.086*** (0.000)	0.429*** (0.005)	0.955* (0.087)	2.600*** (0.000)				1.106** (0.021)	0.92	0.83	19
FMOLS	-0.572** (0.011)	0.047*** (0.000)	-0.099 (0.789)	-0.710*** (0.000)				-0.044 (0.906)	0.26	0.19	38
POLS	-15.552*** (0.000)	1.652*** (0.000)	-1.452 (0.532)	-1.222*** (0.001)				-2.150 (0.323)	0.44	0.10	100

Source: Computed using Eviews 10.
Selected based on Schwarz Bayesian criterion.
***, **, *Indicates the significance level at 1%, 5%, and 10%.

means that a worsening conflict, indicated by a unit increase in the conflict index, reduces the impact of control of corruption on economic growth. Due to the lack of accountability and transparency in government operations, as well as the need for government officials to use their position and power to maintain control over resources, corruption can worsen in a society where conflict is rife. As a result, corruption can further destabilize society and fuel conflict. When combined with conflict, corruption can also lead to a decline in foreign investment, reduced government revenue, and increased public expenditure on defense and security, further weakening the economy. Moreover, the interaction between corruption and conflict can create a vicious cycle, as the lack of economic growth can fuel further corruption and conflict. Additionally, the absence of opportunities and the perception of injustice can increase the likelihood of social unrest and violence. At the same time, corrupt practices can erode the government’s legitimacy and reduce its capacity to address the underlying causes of conflict.

The Case Study of WAMZ and WAEMU Countries. The WAMZ and WAEMU are regional initiatives for economic and monetary integration in Western Africa. Six member countries created WAMZ in 2000 (see Table A), whereas eight member countries established WAEMU in 1994 (see Table A). The results in Tables 4 and 5 demonstrate that government expenditure has a significant and positive impact on real economic growth in both WAMZ and WAEMU countries. This supports the Keynesian school’s assertion that government expenditure stimulates economic growth by increasing aggregate demand. Additionally, these findings align with the study’s results for the ECOWAS region, as presented in Table 3.

The coefficients of government expenditure in the baseline models are smaller compared to the models with interactive terms (refer to Tables 3–5). A smaller coefficient implies that the effect of government expenditure on economic growth is weaker in the absence of interaction between government expenditure and corruption, or between government expenditure and conflict. The coefficient of corruption exhibits a negative sign for both WAMZ and WAEMU countries (see Tables 4 and 5), which is consistent with the result shown in Table 3. This indicates that a one-unit reduction in corruption control will lead to an increase in economic growth. Furthermore, the coefficient of conflict displays varying signs depending on the analysis technique.

How corruption and conflict moderates the effect of government expenditure on economic growth. In Tables 4 and 5, the interactive variables significantly impact real GDP. For example, in case (I) model II, the coefficient of the interactive variable of corruption and government expenditure is positive (see Tables 4 and 5). This result is similar to the one in Table 3. This suggests that in ECOWAS, WAMZ, and WAEMU, a one-unit increase in the control of corruption index—which signifies stronger control of corruption—will increase the effect of government expenditure (GE) on economic growth in the ECOWAS region and vice versa. The stronger the member countries in ECOWAS, WAMZ, and WAEMU can control corruption, the more effective and efficient government expenditure is on economic growth. However, for case (II) model (III), the interactive variable of conflict and government expenditure shows varying signs (see Tables 4 and 5). This result is not statistically significant in WAMZ countries, particularly for DOLS and FMOLS estimations. The signs of the interactive terms of conflict and government expenditure are

Table 5 WAEMU result.

Baseline model

	COR	TGE	CONF	LN_FER	FDI	COR*TGE	CONF*TGE	COR*CONF	R-sq.	Adj. R-sq.	Obs.
DOLS	2.891* (0.066)	0.267 (0.178)	0.089 (0.722)	1.651*** (0.004)	0.541*** (0.008)				0.87	0.70	17
FMOLS	2.207*** (0.002)	0.092** (0.029)	0.223 (0.156)	2.236*** (0.000)	0.457*** (0.000)				0.51	0.45	36
POLS	0.867* (0.000)	0.008 (0.659)	0.012 (0.948)	2.003*** (0.000)	0.560*** (0.000)				0.71	0.70	135
<i>Interaction of cost of governance and corruption</i>											
DOLS	-46.746*** (0.001)	2.037*** (0.007)	0.922*** (0.003)	-1.070 (0.177)		3.212*** (0.000)			0.86	0.72	19
FMOLS	-26.529*** (0.000)	1.296*** (0.000)	0.492*** (0.000)	0.719*** (0.003)		1.877*** (0.000)			0.45	0.29	38
POLS	-1.257 (0.000)	0.207** (0.013)	0.115 (0.731)	3.261*** (0.000)		0.209** (0.000)			0.14	0.11	144
<i>Interaction of cost of governance and conflict</i>											
DOLS	9.002*** (0.001)	1.103*** (0.003)	-121.73** (0.028)	1.890*** (0.005)			7.407** (0.028)		0.98	0.87	18
FMOLS	1.398*** (0.003)	0.141*** (0.002)	4.925** (0.029)	-1.777*** (0.000)			-0.256* (0.054)		0.90	0.71	19
POLS	1.855*** (0.000)	-0.006 (0.784)	-5.196*** (0.000)	-2.562*** (0.003)			0.391*** (0.000)		0.57	0.55	144
<i>Interaction of corruption and conflict</i>											
DOLS	8.268*** (0.000)	0.734*** (0.001)	-8.444*** (0.006)	2.697*** (0.000)				-12.563*** (0.005)	0.74	0.47	19
FMOLS	7.514*** (0.000)	0.452*** (0.000)	-6.466*** (0.003)	3.266*** (0.000)				-10.276*** (0.001)	0.16	0.10	19
POLS	1.391*** (0.000)	0.043 (0.192)	1.555 (0.129)	3.597*** (0.000)				1.806 (0.136)	0.16	0.12	144

Source: Computed using Eviews 10.
Selected based on Schwarz Bayesian Criterion.
***, **, *Indicates the significance level at 1%, 5%, and 10%.

positive in WAEMU, contrary to the result in ECOWAS. The positive sign of the interactive term implies a complementary interaction. This means that a one-unit increase in conflict—indicating worsening conflict—will enhance the effect of government expenditure (GE) on economic growth in the ECOWAS region and vice versa. This is contrary to a priori expectations and may be due to the low incidence of conflict in the WAEMU region compared to WAMZ. For example, during the study period, Nigeria, a member of WAMZ, experienced high conflict incidence in the form of Boko Haram insurgency, militancy, and political-ethnic related crises.

In case (III) model (IV), the interactive variable of conflict and corruption shows varying signs. However, the study will rely on the results of the DOLS estimations, which are considered the most superior technique. The interactive term of conflict and corruption is positive, indicating a complementary interaction. This is contrary to a priori expectations. The complementary interaction means that a one-unit increase in the control of corruption—signifying stronger control of corruption—will worsen the impact of conflict on economic growth in the WAMZ and WAEMU regions and vice versa. However, in the ECOWAS region, they have a buffering interaction, which aligns with a priori expectations.

Conclusion

The effect of government expenditures on economic growth can be positive or negative, depending on how the funds are used. In this study, we support the idea that government expenditures have a positive effect on real growth in ECOWAS countries. Government expenditures play a crucial role in the economic growth model. For instance, a well-functioning government can provide essential

public goods and services, such as infrastructure, education, and healthcare, which are necessary for economic growth.

Moreover, the effectiveness and efficiency of government expenditure depend on how the funds are used. The use of funds can be influenced by corruption and conflict. This study discovered that corruption and conflict moderate the effect of government expenditure on economic growth. Stronger control of corruption will improve the effectiveness and efficiency of government expenditure on economic growth in the ECOWAS, WAMZ, and WAEMU regions. A higher level of conflict, on the other hand, will decrease the effectiveness and efficiency of government expenditure in stimulating economic growth in the ECOWAS region and vice versa. However, this is not the case in WAMZ and WAEMU. Lastly, stronger control of corruption will lessen the impact of conflict on economic growth in ECOWAS and vice versa. These findings suggest that well-managed government expenditure can have a positive contribution to economic growth. Therefore, the governments of ECOWAS countries should prioritize transparency and accountability in their operations. Holding government officials accountable for their actions, promoting open government policies, and transparently reporting government spending can all help with this. Furthermore, the governments of ECOWAS countries should strive for stability and predictability. This can be accomplished by fostering political stability, ensuring the rule of law, and creating a business-friendly environment that attracts investment.

Data availability

Data is available upon request.

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Author contributions

The authors wrote and analyzed the entire manuscript. They all took turns supervising the entire manuscript.

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