



# Fiscal Policy, Institutional Quality, and Sustainable Development Goals: A Perspective of Anglophone Countries in West Africa

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Received: 20 March 2024 / Accepted: 2 August 2024

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## Abstract

Fiscal policies and their impact on development have received myriad reactions in recent times. The interactive role of Institutional Quality (IQ) in the fiscal policy-Sustainable Development Goals (SDGs) nexus in the anglophone countries in West Africa has remained unexplored. This paper examines the nexus between fiscal policy measures and SDGs. To examine the moderating role of IQ in the fiscal policy-SDGs nexus. Using panel data from 2005–2021, the study employed the Ordinary Least Square and Robust Least Square regression techniques for estimations. Findings revealed a negative association between government revenue and SDGs. Similarly, the study found government expenditure negatively affects SDGs. On the other hand, the result showed that the rule of law negatively and significantly moderates the relationship between proxied fiscal policy measures and SDGs. Lastly, the paper discovered that regulatory quality plays a significant positive moderating role in the fiscal policy-SDGs nexus.

**Keywords** Fiscal policy · Government revenue · Sustainable development goals · Global crisis · Anglophone countries

## Introduction

Fiscal policy refers to the various economic initiatives and measures the central government takes to control an economy to ensure economic growth and sustainable development [19, 29, 38]. Government revenue and expenditure are the two most indispensable measures utilized when economists, researchers, and policymakers attempt to disaggregate fiscal policy into its founding components [16]. Government revenue represents the total funds accruing to a state within a specified budgetary year [36]. This may include taxes of all forms, fees, fines, and royalties [17]. To another scholar, government revenue comprises the total amount of money the state earns through all income-generating sources, which can stem from foreign sources

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through the export of mineral resources [3]. Government expenditure, on the other hand, represents the total amount of expenses incurred by the state within an accounting year [22].

These expenditures mainly stem from two sources; thus, regular expenditures are incurred on non-capital projects, while those on capital projects are referred to as capital expenditures. Sustainable Development Goals (SDGs) refer to different developmental indicators set by the United Nations (UN) assembly for countries to be achieved in a specific year, with the first target to be realized in 2015 [30, 43]. Again, SDGs are country performance indicators used to rate countries in terms of development and bother on different areas that ensure human well-being and make the world a safe place to live, it is measured with the SDG index where countries with higher index show progress toward achievement of SDGs [13, 51]. Some delicate areas for countries to achieve include safe and clean water, sanitation, education, poverty reduction, and political and environmental challenges facing our world [29]. Ćorić et al. [19] provided evidence that fiscal policy significantly and positively impacts sustainable development in Croatia. Again, an investigation in sub-Saharan Africa empirically proved that fiscal policy positively affects sustainable growth [21]. Similarly, Crentsil [20] posited that government expenditure and revenue have facilitated sustainable development in Ghana. An empirical inquiry in selected West African countries concluded that government expenditure and government revenue have a crowding-in impact on investment in spearheading sustainable growth [45]. Premised on the above evidence, pursuing prudent fiscal policies to achieve SDGs should be the priority of governments in anglophone countries in West Africa.

Notwithstanding, eight years overdue after the setting of SDGs in 2012 at the Rio conference, anglophone nations are still lagging in terms of achieving SDGs. According to statistics, on a scale of one hundred percent, most anglophone countries were scoring less than average, specifically 44.9, 45.2, 46.7, 47.4, and 48.2 on the SDG achievement index according to World Development Indicators [59]. This is a problematic situation that calls for immediate attention. Though expenditures to be incurred in a year are planned against revenue expected, incessant fiscal indiscipline has resulted in massive debt and reduced progress on sustainable development project achievement since monies to finance such projects are used to service interest debt annually by countries in the anglophone sub-region. This may partially explain the slow pace of growth and SDG attainment witnessed in anglophone countries in West Africa. Some studies have been on fiscal policy and sustainable growth linkage, while others have examined the linkage between fiscal policy and investment growth.

Results for these studies have been inconsistent; for example, Crentsil [20], Delacht et al. [21], and Omojolaibi et al. [45] documented a positive relationship. Meanwhile, Bedhiye and Singh [11] found a negative relationship, while Mengistu [42] discovered no association between fiscal policy measures and sustainable development. Regarding the concepts under discussion, an appreciable scientific gap exists in the literature in understanding how the budgetary framework and quality of institutions interact to propel the achievement of SDGs in the Anglophone countries in the ECOWAS bloc. Though a chunk of studies have examined the effect of fiscal policy on economic growth in a broad spectrum, only a few have examined the impact of budgetary policy on SDGs. Secondly, no known study has explored the interactive role of institutional quality in influencing fiscal policies toward achieving SDGs. Thirdly, a limited empirical analysis exists on West African anglophone states' unique economic and political.

Again, some existing studies measured fiscal policy at the broad level without disaggregating it into expenditure and revenue, which may lead to misleading results. Also, some of the prior studies used the conventional OLS, which is inefficient in all datasets. Moreover,

previous studies have concentrated outside the anglophone bloc of West Africa. Additionally, no known study has explored the considered variables in a single study. This leaves a cavity in research and incites further studies of this nature. This study examines the nexus between fiscal policy measures and SDGs and the moderating role of institutional quality in the fiscal policy-SDG nexus in anglophone countries in West Africa. The study's findings would inform policymakers on the pragmatic economic policies to adopt to facilitate the achievement of SDGs. Again, the study's outcome would direct governments on which project to prioritize. Also, the study's findings would enrich the fiscal policy SDGs literature by guiding future research. The remaining part of the study is structured as follows: Chapter two reviews the literature, and Chapter three describes the methods employed. Chapter four presents and discusses the results, while Chapter five highlights the summary, conclusion, and recommendations.

## Literature Review

### Theoretical Review

The paper is built on the public choice theory, the institutional economics theory, and the neoclassical theory. Public Choice Theory. This theory explains how decisions taken by the government concerning revenue mobilization and expenditure allocation are influenced by political dynamics and incentives [52]. Thus, when public officials expect to receive incentives when the economy grows, they would enact policies that increase government spending on the productive sectors of the economy alongside a taxation policy that lessen the tax burden on businesses and consumers to boost consumption and stimulate economic growth [15, 33]. As emphasized by the theory, government spending and taxation are the concepts used to measure fiscal policies in this paper, therefore, the theory is relevant to the present discussion. Empirical studies [10, 33, 47] have applied the theory. Institutional Economic Theory. This theory holds that when an effective legal system and proper frameworks and structures are in place, it can perform its supervisory role in monitoring the conduct of businesses and agencies to ensure sound business practices to promote sustainable development [18]. The institutional theory points out that the presence of quality institutions would mean the setting of appropriate rules and regulations to protect industries, which would boost investor confidence and attract multinational corporations to invest in the economy [6, 18, 55, 57]. The theory is relevant to the present discussion because it ponders institutional quality's role in sustainable growth, as examined by the study. Existing studies [9, 31, 55] applied the theory.

### Empirical Review

Several studies have found mixed results regarding the interconnectedness between fiscal policy and sustainable development. Delacht et al. [21] examine the role played by fiscal policy and institutional quality in building resilience for sustainable development in 26 African countries. The study applied the Generalized Moment of Method (GMM) and probabilistic framework. The results showcased that tax revenue and prudent government expenditure significantly promote resilience for sustainable development. The study used data preceding 2017; therefore, its findings may not be applicable today since the variables

considered have experienced remarkable variations since 2017. Comparably, Bedhiye and Singh [11] analyzed the effect of fiscal policy on private investment in promoting sustainable development in Ethiopia through the ARDL approach. Findings showed that government expenditure has a crowding-out effect while import duties and budgetary policy reforms have a crowding-in effect on private investment in ensuring sustainable development. The research recommended that the government reconsider its expenditures to alter the adverse impact on private investment. The shortfall of the study is the concentration on Ethiopia in isolation, which makes the findings lack generalizability.

Similarly, Omojolaibi et al. [45] studied the effect of fiscal policy on investment for sustainable development in five selected West African countries through the fixed effect estimation. They found that government expenditure and revenue have a crowding-in effect on promoting investment for sustainable development. This result debunks the account of Bedhiye and Singh [11], who provided evidence of a crowding-out effect. Comparably, Mengistu [42] studied the relationship between fiscal policy measures and economic development in Ethiopia with a dataset of 35 years. The time series estimation techniques revealed that unproductive expenditure and non-distortionary taxes have no association with sustainable development. However, productive spending has a significant positive impact on development, while distortionary taxes harm sustainable development. This finding contradicts the account of Bedhiye and Singh [11], who discovered that government expenditure has a crowding-out effect on private investment in ensuring development; meanwhile, it coincides with the results of Omojolaibi et al. [45]. The paper recommended the government encourage private investment to promote sustainable development. The result lacks generalizability due to the study's microscopic spectrum. On the contrary, Ćorić et al. [19] used structural VAR to examine the effect of fiscal and monetary policies on Croatia's economic growth with data from 2004 to 2012. The finding was that expansionary monetary and fiscal policies have a positive significant effect on sustainable economic growth. The study's weakness is its use of a short data span as variations in the variables before 2004 and after post-2012 were not captured, making the results not widely applicable. Similarly, Havi and Enu [35] analyzed the effect of monetary and fiscal policy on the development of the Ghanaian economy. The study employed the OLS technique to explore data from 1980 to 2012. The result revealed a significant positive relationship between Ghana's fiscal policy, monetary policy, and economic development. This result confirms the finding of Ćorić et al. [19], who found a positive relationship between fiscal and monetary policy and economic development, nonetheless, it deviated from the result of Bedhiye and Singh [11] who put forward an opposing argument.

The findings of Havi and Enu [35] lack generalizability and applicability since the data did not cover events after 2012. Again, it failed to disaggregate the fiscal policy into its components. To build on the identified weakness, Crentsil [20] employed the OLS technique to examine the effect of government expenditure and revenue on sustainable economic development in Ghana with data from 2010 to 2019. The study discovered both government revenue and spending have a significant and positive impact on sustainable economic growth. The positive effect converges with the account of Delacht et al. [21], who discovered government revenue and expenditure positively impact economic development; meanwhile, the result contradicts the findings of Bedhiye and Singh [11], who documented that government expenditure adversely impacts private investment in promoting sustainable development.

The study's weakness is its use of OLS and omission of data before 2010, which limited the findings. Junfeng et al. [38] explored the effect of fiscal and monetary policies on

sustainable development in the post-COVID era in sampled BRICS-T countries through the ARDL-PMG technique. Findings demonstrated that fiscal policies significantly and positively contributed to economic growth during the Covid period. This critical study was conducted outside the anglophone bloc of West Africa necessitating for perspective study in anglophone countries in West Africa. Arvin et al. [8] examined the effect of government expenditure, government revenue, and institutional quality on sustainable economic development in low-income and lower-middle-income countries from 2005–2019 using the conventional ARDL technique. Results revealed that government expenditure and revenue and quality institutions positively impact sustainable economic growth in the sampled countries. The findings concord with Crentsil's [20] and Havi and Enu's [35] results. Contrastingly, the account deviated from the findings of Bedhiye and Singh [11], who revealed an inverse relationship between government expenditure and private investment in promoting development, and Mengistu [42], who documented that unproductive government expenditure and distortionary taxes have no association with sustainable economic growth. A thorough review of existing studies on the concepts unveiled that though few studies have been conducted, a considerable number of them did not disaggregate the measures of fiscal policies to find the standalone effect on sustainable development [19, 38, 35]. Again, some studies employed the OLS technique, which is inefficient in normalizing inherent data problems like serial and autocorrelation [20, 35]. Also, most of the studies considered a short data span with none considering data before 2010 to 2021 in a single study [19, 20, 38]. Moreover, none of the studies explored the possibility of moderating the role of institutional quality in the examined nexus. Additionally, literature on fiscal policy-SDGs is generally scarce on the sub-region view and non-existence in the anglophone countries in West Africa, leaving a cavity in literature.

## Hypothesis Development and Priori

According to the extant literature, a significant positive relationship exists between government expenditure, revenue, and sustainable development [20]. This discovery is supported by the account of Arvin et al. [8], whose empirical study unveiled that government expenditure and revenue positively affect sustainable economic development. Prior studies [19, 35] proved that fiscal policy positively affects sustainable development. Conversely, Bedhiye and Singh [11] concluded that government expenditure adversely impacts sustainable growth; meanwhile, government revenue has a positive link with development. Notwithstanding, Mengistu [42] documented that unproductive expenditure and non-distortionary taxes have no association with development. According to the literature, quality institutions are necessary to fasten fiscal policies' effect on sustainable growth (Delacht et al. [21]). Arvin et al. [8] confirmed this and documented that quality institutions promote sustainable economic growth. Per the above discourse, the present study hypothesizes that,

**H<sub>1</sub>:** Government expenditure significantly and positively affects sustainable development.

**H<sub>2</sub>:** Government revenue significantly and positively affects sustainable development.

**H<sub>3</sub>:** The rule of law significantly and positively moderates fiscal policy-sustainable development nexus.

**H<sub>4</sub>**: Regulatory quality significantly and positively moderates the fiscal policy-sustainable development nexus.

## Methodology

This section of the study details the methodological approach employed by the survey.

## Data and Sources of Data

The study used secondary panel data from 2005 to 2021 for all considered variables. The benefit of secondary data that motivated its usage in the study is its uniform measurement standard, as confirmed [39]. Again, secondary data are already refined and comprise a large sample and broader spectrum than primary data, allowing for trend analysis and comprehensive comparison across countries and demographics and allowing for generalization of findings [56].

Also, the preference for secondary data in the study was due to its accuracy, reliability, and authenticity advantages. These variables are Government Revenue (GREV), Government Expenditure (GEXP), Rule of Law (RL), Regulatory Quality (RQ), Public Debt (PDT), Inflation (IF), Foreign Direct Investment (FDI\_I), Global Crisis (crisis) and SDG\_I. The data for the variables above were retrieved from the World Development Indicators (WDI) section of the databank.worldbank.org [58]. The data source was chosen due to WDI's trust and ability to provide dependable data over the years, as numerous researchers and policymakers used. The 17 years of data were considered appropriate because the world has experienced several crises, such as the global financial sector meltdown and the COVID-19 pandemic that has led to macroeconomic variables undergoing abrupt variations. Again, the 17 years data period was justified by the assertion of Rashid [50], who posited that using a data period of more than ten years for statistical analysis is capable of yielding reliable results, as confirmed by Gadzo et al. [28], Gadzo and Asiamah [27], Okofo-Dartey and Bosomtwe [44], and Forson et al. [26].

## Model Specification

The model set for the study is premised on the objectives and the analytical tool used by the survey. This study adapted the linear model based on the credence given [41]. The adapted model shows the interconnectedness among the variables connecting the study's objectives.

$$LSDG\_I_{i,t} = \alpha + \delta_1 LGREV_{i,t} + \delta_2 LGEXP_{i,t} + \delta_3 LIF_{i,t} + \delta_4 LPDT_{i,t} + \delta_5 FDI_{1i,t} + \delta_6 Crisis_{i,t} + \epsilon_t \quad (1)$$

$$LSDG\_I_{i,t} = \alpha + \delta_1 LGREV_{i,t} + \delta_2 LGEXP_{i,t} + \delta_1 RL_{i,t} + \delta_4 LIF_{i,t} + \delta_5 LPDT_5 + \delta_6 LFDI_{16} + \delta_7 Crisis_7 + \epsilon_t \quad (2)$$

$$LSDG\_I_{i,t} = \alpha + \delta_1 LGREV_{i,t} + \delta_2 LGEXP_{i,t} + \delta_3 RQ_{i,t} + \delta_4 LIF_{i,t} + \delta_5 LPDT_5 + \delta_6 LFDI_{16} + \delta_7 Crisis_7 + \epsilon_t \quad (3)$$

$$\begin{aligned}
 LSDG\_I_{i,t} = & \alpha + \delta_1 LGREV_{i,t} + \delta_2 LGEXP_{i,t} + \delta_3 RQ_{i,t} + \delta_4 RL_{i,t} + \delta_5 GREV * RQ_{i,t} \\
 & + \delta_6 GEXP * RQ_{i,t} + \delta_7 LIF_{i,t} + \delta_8 LPDT_{i,t} + \delta_9 FDI_{i,t} + \delta_{10} Crisis_{i,t} + \varepsilon_t
 \end{aligned}
 \tag{4}$$

$$\begin{aligned}
 LSDG\_I_{i,t} = & \alpha + \delta_1 LGREV_{i,t} + \delta_2 LGEXP_{i,t} + \delta_3 RQ_{i,t} + \delta_4 RL_{i,t} + \delta_5 GREV * RL \\
 & + \delta_6 GEXP * RL_{i,t} + \delta_7 LIF_{i,t} + \delta_8 LPDT_{i,t} + \delta_9 FDI_{i,t} + \delta_{10} Crisis_{i,t} + \varepsilon_t
 \end{aligned}
 \tag{5}$$

where:

LSDI\_I is SDG index, GREV is government revenue, GEXP is government expenditure, RQ is regulatory quality, RL is the rule of law, GREV\*RQ and GEXP\*RQ are the interaction of regulatory quality, GREV\*RL and GEXP\*RL are the interaction of rule of law, IF is inflation, LPDT is public debt, FDI\_I foreign direct investment index, Crisis represents global uncertainties.  $i$  is the country in question for cross-section,  $t$  is the time series factor,  $\delta_i$  coefficient of the independent variables,  $\varepsilon_t$  is the stochastic error term, and  $\alpha$  is the intercept. Equation (1) assesses the direct effect of fiscal policy measures on sustainable development without the moderating variables; Eq. (2) measures the same effect in the presence of RL and RQ, respectively. Equations (4 & 5) assess the interactive role of the RQ and RL respectively. The adoption of the linear model was anchored on its previous use in the literature to examine similar concepts [1, 41].

## Estimation Technique

Previous studies have used different estimation approaches to examine the nexus between fiscal policy and sustainable development, such as Ordinary Least Square (OLS). This study applied the Panel Pool Mean as proposed by Pesaran et al. [48]; however due to the weaknesses associated with the technique, such as the sensitivity to outliers, leveraging points, and influential observation, which distort estimates and minimize accuracy [53] the study went further to use Robust Least Square (RLS) technique due to the strength associated with the method such as normalizing issues like heteroskedasticity and serial correlation. Again, the application of the RLS is premised on its empirical use [1]. Also, another benefit of the RLS, which influenced its use in the study, is its ability to yield modest results in panel data [5]. Moreover, another benefit of RLS that motivated its application in the study is its ability to control for heterogeneity across the panel cross-sections [49]. Additionally, RLS can control cross-section dependency [37] Table 1.

## Measurement of Variables

The adoption of the various variables and their measurements were anchored on credence given by literature that used these variables.

## Discussion of Results

This section of the study discusses the results ascertained from the various tests.

**Table 1** Variable measure and source

Variable	Measurement	Reference
Sustainable Development Goal (SDG_I)	Sustainable Development Growth Index	[2, 24, 34, 54]
Government Revenue (GREV)	The total revenue earned by the government in a fiscal year	[19, 20, 42]
Government Expenditure (GEXP)	Total expenditure incurred by the government in a fiscal year	[19, 20, 42]
Regulatory Quality (RQ)	Index of regulatory quality	[59]; [7]
Rule of Law (RL)	Index of rule of law	[4]; (Chuba, 2015)
Inflation (IF)	Consumer price index	[20],[59]
Foreign Direct Investment (FDI_I)	Foreign capital flows into a country	[59]; [12]
Public Debt (PDT)	Total debt owed by the government	[59]; [46]
Crisis	Dummy	[14], Lee et al. 2021; Ranjbari et al. 2021)

Source: Author's construct



**Table 2** Descriptive Statistics

	LSDG_I	LGREV	LGEXP	RL	RQ	LIF	LEXDT	LFDI_I	CRISIS
Mean	3.968	4.234	2.186	5.672	-0.646	2.321	22.949	2.002	0.285
Median	3.957	4.371	2.188	5.765	-0.669	2.314	22.877	1.699	0.000
Maximum	4.026	4.929	2.339	6.186	-0.511	2.604	23.780	3.276	1.000
Minimum	3.913	3.628	2.094	4.341	-0.821	1.992	22.254	1.004	0.000
Std. Dev	0.041	0.515	0.063	0.385	0.089	0.194	0.494	0.657	0.421
Jarque–Bera	6.064	8.307	2.530	24.036	2.086	6.295	5.174	10.354	12.076
Probability	0.088	0.016	0.282	0.200	0.352	0.083	0.075	0.086	0.102
Sum	257.891	275.208	142.079	346.018	-39.429	150.869	1491.708	130.139	18.500
Observations	65	65	65	61	61	65	65	65	65

Source: E-views estimate (2023). The acronyms as used in all tables are LSDG\_I=Log of Sustainable Development Goal Index, LGREV=Log of Government Revenue, LGEXP=Log of Government Expenditure, RL=Rule of Law, RQ=Regulatory Quality, LIF=Log of Inflation, LEXDT=Log of Public Debt, LFDI=Log of Foreign Direct Investment Index, Crisis=crisis

## Descriptive Analysis

To assess the characteristics of the variables under discussion, the study conducted a descriptive statistics test with results displayed in Table 2 above. According to the table, the highest mean was recorded by public debt, depicting that the Ghanaian government has been borrowing in high amounts for the period. The lowest mean, as recorded by regulatory quality, signifies that Ghana has been performing abysmal regulating activities. On the median values, regulatory quality again registered a negative median figure of 0.669, and 22.89 was also recorded by public debt. The maximum and minimum values for sustainable development of 4.026 and 3.913 show that Ghana has been performing below average in achieving sustainable development goals. In terms of the will to set rules to monitor the country's functionalities, Ghana performed well with the highest of 6.18 alongside a minimum of 4.34; meanwhile, implementing rules and regulations set by institutions saw an awful performance with a negative maximum and minimum of -0.511 and -0.821 respectively. FDI registered a maximum of 3.27 and a minimum of 1, indicating the country is performing below average in foreign capital inflows. Regarding the dispersion of the variables, government revenue dispersed most from the average, signifying lapses in revenue collection. On the normality of the data through the use of the Jarque Bere probability, which tests the null hypothesis that the data is usually distributed, all the variables except government revenue recorded a  $p$ -value above 0.05; based on this, the study concluded that the data is standard.

## Correlation Analyses

In statistical analysis, correlation tests the relationship between variables and each other in the distribution. A correlation of 0.8 and above shows the presence of multicollinearity [23, 32], while others support that a correlation value of 0.7 is the acceptable threshold [40]. The study found mixed correlations with positive and inverse values, aside from the highest correlation between external debt and government revenue and FDI and regulatory

**Table 3** Pairwise Correlation

	LSDG_I	LGREV	LGEXP	RL	RQ	LIF	LEXDT	LFDI_I	CRISIS
LSDG_I	1.000								
LGREV	-0.397	1.000							
LGEXP	-0.433	0.429	1.000						
RL	0.589	-0.476	0.020	1.000					
RQ	0.034	-0.083	0.529	0.243	1.000				
LIF	0.613	-0.495	-0.428	0.410	-0.486	1.000			
LEXDT	0.697	-0.893	-0.448	0.472	-0.081	0.679	1.000		
LFDI_I	-0.357	0.357	0.767	-0.026	0.814	-0.680	-0.432	1.000	
CRISIS	0.086	0.109	0.012	0.351	-0.186	0.424	0.113	-0.286	1.000

Source: E-views estimate (2023)

**Table 4** Panel Unit root

Variables	Level		1st Difference	
	t-Stat Prob		T-Stat Prob	
LGREV	-0.86	0.34	-2.51	0.010**
LSDG_I	4.33	1.00	-1.94	0.050***
LGREV	-1.70	0.08	-3.33	0.000***
LGEXP	-0.03	0.67	-3.29	0.010**
RL	1.05	0.92	-3.25	0.001***
RQ	-0.86	0.34	-2.51	0.010**
LIF	-0.04	0.67	-3.43	0.001**
L	-0.61	0.45	-3.60	0.000**
LFDI_I	1.38	0.96	-3.11	0.000***
CRISIS	-0.88	0.33	-3.19	0.001***

Source: E-vies estimate (2023)

quality, the rest were below the 0.8 benchmark. Based on this, the study concludes that severe multicollinearity has no problem, which aligns with the survey [1]. The pairwise correlation results are presented in Table 3.

## Unit root test

Unit root test is used to assess the stationarity level of variables in statistical analysis. Failure to ensure the variables are without unit-roots would lead to spurious results. The study adopted the conventional Philip-Perron unit root test, which tests the null hypothesis that there is no stationarity and is rejected at the 5% significance level. According to Table 4, testing the variables at the level showed that none was stationary. However, testing at the first difference showed  $p$ -values for all variables were less than 0.05; based on this output, the study rejects the null hypothesis and concludes that the variables are stationary at the first difference, which justifies that further analysis would be free from the spurious result as posited [25].

**Table 5** Panel Period  
Heteroskedasticity LR Test

	Value	Df	Probability
Likelihood ratio	5.513781	5	0.9868
LR test summary:			
	Value	Df	
Restricted LogL	-312.0961	169	
Unrestricted LogL	-309.3392	169	

Source: E-views estimate (2023)

## Heteroskedasticity test

To ensure the estimation is free from heteroskedasticity, the study employed the panel cross-section heteroskedasticity LR test, which tests the null that the residuals are homoscedastic and is rejected at the 5% significance level with the result in Table 5. The test recorded a  $p$ -value of 0.9868; since the  $p$ -value is more than 0.05, the study failed to reject the null and conclude that the residuals are homoscedastic.

To assess the direct impact of fiscal policy measures proxied by Government Revenue (GREV) and Government Expenditure (GEXP) on Sustainable Development Goals (SDG), the study conducted six estimations in six models with Model1-3 via the conventional OLS however, due to the weakness of the OLS the study further estimated the models with the Robust LS technique due to the strength of the method in normalizing data problems such as serial and autocorrelation. On the measure of the robustness of the models, the study recorded R-square values of more than the acceptable threshold of 0.7 and above; adjusted R-square values for all models were also above the 0.7 threshold. Due to the kitchen sink problem, which makes the R-square monotonic, the study preferred the adjusted R-square to measure the explanatory power of the combined regressors. Again, just as recorded by the R-wald test statistics, Adjusted R-wald statistics in all the robust estimations exceeded the 0.7 threshold. This leads to the conclusion that the sampled variables account for a high percentage of variations in sustainable development, on the measure of the significance of the entire model using the F-statistics for OLS estimation and Rn statistics for Robust OLS estimations, Table 6 recorded probabilities of less than 0.05, which led to the rejection of the null hypothesis of the insignificance model and concluded that all the models are significant. Moreover, the standard regression error for all models was below 0.5, indicating high estimation accuracy and bias-free. The results for the direct relationship are presented in Table 6.

All the models recorded a significant positive constant, meaning sustainable development would still be positive when the sampled variables assume a value of 0. LGREV registered a negative significant relationship with LSDG in all six models at a magnitude of -0.032, -0.026, -0.044, -0.009, -0.024, and -0.013 from Model 1 to 6, respectively. The  $H_1$  is rejected, signaling that an increase in government revenue significantly reduces sustainable development. Again, the inverse relationship connotes that the governments in the anglophone bloc are investing a chunk of their income in projects that yield only short-term benefits and are not aligned with sustainable development objectives. This result, though deviated from the expectation of the study, the plausible reason is that anglophone countries are investing in non-sustainable industries that emit high volumes of carbons, which harm the environment as observed in the industrial enclaves in Tema, Accra, Kumasi, and

**Table 6** Direct relationship between fiscal policy measures and SDG

Variable	Ordinary Least Square (OLS)			Robust Least Square (RLS)		
	Model1	Model2	Model3	Model1	Model2	Model3
C	3.060 (0.000***)	2.995 (0.000***)	3.350 (0.000**)	2.435 (0.000***)	2.950 (0.000***)	2.43 (0.000***)
LGREV	-0.032 (0.000***)	-0.026 (0.000***)	-0.044 (0.000***)	-0.009 (0.000***)	-0.024 (0.000***)	-0.013 (0.000***)
LGEXP	-0.064 (0.001***)	-0.081 (0.000***)	-0.103 (0.000***)	-0.023 (0.079*)	-0.089 (0.000***)	-0.023 (0.107)
LIF	0.007 (0.310)	0.002 (0.807)	0.013 (0.123)	0.014 (0.005**)	-0.003 (0.605)	0.009 (0.073*)
LDPT	0.049 (0.000***)	0.051 (0.000***)	0.040 (0.000***)	0.069 (0.000***)	0.05 (0.000***)	0.068 (0.000***)
LFDI_I	0.01 (0.000***)	0.009 (0.001***)	0.023 (0.000***)	0.004 (0.006**)	0.009 (0.000***)	0.009 (0.002**)
CRISIS	0.012 (0.000***)	0.005 (0.046**)	0.016 (0.000***)	-0.0034 (0.029**)	0.005 (0.072*)	-0.001 (0.557)
RL		0.013 (0.000***)			0.015 (0.000***)	
RQ			-0.060 (0.033**)			-0.046 (0.005**)
R-Squared	0.978	0.985	0.979	0.824	0.835	0.802
Adjusted R-Squared	0.976	0.983	0.976	0.807	0.813	0.775
Prob(F-Stat)	0.000***	0.000***	0.000***			
Rw-Squared				0.993	0.988	0.994
Adjusted Rw-Squared				0.993	0.988	0.994
Prob (Rn Stat)				0.000***	0.000***	0.000***
S.E of regression	0.001	0.005	0.011	0.001	0.001	0.001

Source: E-views estimate (2023). \*\*\*, \*\*, and \* denote significance at 1%, 5%, and 10%. Note: values in parenthesis are probabilities, while values without parenthesis are coefficients

Takoradi in Ghana; Abuja, Lagos in Nigeria; Monrovia in Liberia; Banjul in the Gambia, and Free town in Sierra Leone.

Again, the persistent increase in unsustainable ways of mineral extraction in the anglophone bloc that deplete forest reserves and water bodies and require governments to invest vast sums of money to reclaim land and process water for domestic use hinders progress toward sustainability. Theoretically, the result aligns with the public choice theory, which states that political incentives and dynamics influence revenue mobilization and spending in that government revenues are not disbursed toward investment in sustainable projects in the anglophone region of West Africa [33, 52]. Again, the result meets the expectation of the public choice theory because governments in the region are investing heavily in short-term projects. At the same time, sustainability initiatives like green economy are underfunded [15]. The recorded result confirms the findings of Mengistu [42], who found that distortionary taxes hurt development. In contrast, the result contradicts the argument put forward by Delacht et al. [21] that government revenue has a positive impact on sustainable development; Crentsil [20] concluded that there is a positive relationship between government expenditure and sustainable growth. Also, the joyous discovery of Bedhiye and Singh [11] and Havi and

Enu [35] refutes the adverse finding. Similarly, government expenditure recorded a significant negative relationship with sustainable development goals in all six models. The  $H_2$  is rejected with the conclusion that a rise in government expenditure decreases sustainable development progress. The inverse result signifies that the governments in the Anglophone bloc allocate a higher percentage of their budget toward projects that do not yield sustainable benefits. Again, the result means that these governments are not prioritizing sustainable development initiatives or current sustainable development projects, such as building a green economy, which are not receiving enough funding, and there are inefficiencies in their implementations. The observed finding misaligns with the study's expectation, which is unsurprising because a chunk of government yearly budgetary allocations is geared toward servicing debt interest as all the countries in the anglophone bloc are burnt on excessive borrowing from foreign creditors. Another plausible reason for the unexcepted result is that government expenditures in the sub-region are influenced mainly by political dynamics and incentives, as posited by the public choice theory. This leads to decisions that yield short-run benefits rather than long-term sustainable development.

The adverse finding supports the assertions of the public choice theory, which states that government expenditure decisions are induced mainly by political incentives and dynamics [52] because government expenditures in the region are aligned with political priorities as projects that meet the interest of the ruling government receive adequate funding at the expense of the projects to achieve sustainable development. The ascertained result agrees with the finding of Mengistu [42], who documented that unproductive government expenditure negatively impacts sustainable growth. Also, the result aligns with the account of Bedhiye and Singh [11], who revealed that government expenditure has an adverse effect on private investment in promoting sustainable development in Ethiopia. Meanwhile, the inverse result debunks the argument put forward by Delacht et al. [21], Arvin et al. [8], and Crentsil [20], who discovered that government expenditure has a significant positive effect on sustainable development. Also, the finding that fiscal policy has a positive association with sustainable growth, as documented by Havi and Enu [35] and [38], contradicts the findings of this study. The divergence in the findings can be attributed to specific spatial characteristics inherent in the studied countries.

Control variables, on the other hand, saw inflation recording a positive but insignificant relationship with sustainable development in all six Models except in Model 1 of RLS estimation. This means that a rise in inflationary pleasures does not impact long-term development. The observed findings suggest that inflation has only a short-term impact on the anglophone bloc. Public debt showed a significant positive effect on sustainable growth, indicating that increasing government borrowing leads to progress toward sustainable development. This result means that more government loans are invested in projects with long-term and sustainable gains. The finding stands to reason that governments in the studied countries commit enough budgetary allocation to sustainable development activities. Similarly, foreign direct investment registered a significant positive relationship with sustainable growth. This means a rise in the total amount of capital that multinational corporations invest in, which increases sustainable development. The probable reason is that these firms participate in developing the country through investment in infrastructure such as roads, tap water, and school facilities through corporate social responsibility. The arrival of foreign firms like Suzuki, Nissan, Renault, and BMW to set up automobile assembling plants might have contributed to the positive result. However, these firms do not trade in all the sampled countries. The result indicates that the anglophone bloc government must encourage initiatives to attract foreign investment. Crisis surprisingly

registered a significant positive relationship in 4 models and a negative in 2 models. This finding implies that during the covid-era, more donor agencies granted debt moratoriums to nations to lessen their burden and commit more money to sustainable projects, which positively impacted growth and strengthened fiscal policies. This result aligns with the discovery of Junfeng et al. [38], who found that budgetary policies contributed to significant development during the pandemic. The rule of law has a significant positive association with sustainable development, which means that institutions that set rules and regulations have set appropriate rules that increase the rate of achieving sustainable development. Nonetheless, regulatory quality showed a significant inverse relationship with sustainable development. This connotes that increased regulation exerts a demeaning impact on sustainable development. Again, political actors concentrate on regulating activities that yield only interim benefits, ignoring activities with sustainable benefits.

To examine the surrogating role of institutional quality measures in the fiscal policy-sustainable development nexus, the study conducted four estimations through the OLS and RLS. All models in the OLS estimations recorded R-square and Adjusted R-Square as more significant than the 0.7 threshold. Again, the RLS estimations recorded R-wald statistics of 0.979 and 0.949 for Models 1 and 2 and Adjusted R-wald statistics of 0.979 and 0.949, respectively. Since these margins are more significant than the 0.7 threshold as posited by [1], the study conclude that the variables accounted for considerable variation in sustainable development. The OLS estimations registered prob (F-statistic) of 0.000\*\*\* while the RLS Models recorded prob (Rn-statistics) of 0.000\*\*\*, based on these indications, the study rejected the null hypothesis of insignificance Model and concluded that the Models are very significant to test the intended objectives. The estimations were error-free based on the ascertained standard error of regression margins of less than 0.5 for all estimations. These results are presented in Table 7.

The rule of law (GREV\*RL) played a non-significant negative role in the relationship between government revenue and sustainable growth in the OLS estimation; however, the effect was very significant at a  $p$ -value of 0.000\*\*\* in the RLS estimation. Since the discussions are mainly based on the robust estimation, the  $H_3$  is rejected and concludes that the rule of law negatively moderates the government revenue-sustainable development goal nexus. This finding means that institutions like parliament in the sampled countries do not set rules to achieve sustainable development. The result also implies that finance ministries in anglophone countries do not allocate adequate funds toward sustainable development initiatives, and government agencies' policies regarding revenue allocation mainly focus on projects that yield short-term benefits and undermine sustainable projects.

Similarly, the rule of law adversely moderated the government expenditure-sustainable development nexus at a significance level of 0.000\*\*\*. The result means that these anglophone countries lack adequate adherence to the rule, and a rise in government expenditure does not contribute to sustained growth. Moreover, the result implies that Anglophone countries lack a solid legal framework and thus paves the way for embezzlement, misuse, and inefficient application of funds allocated to sustainable projects. This result has theoretical underpinnings because the legal framework, allocation of funds, and enforcement and implementation of sustainable projects are influenced and impeded by political dynamics and incentives adjudicated by the public choice theory [52]. Nevertheless, the finding deviates from the expectation of the institutional economic theory in that setting policies and frameworks by institutions negatively impacts sustainable development [18]. The result misaligns with the conclusion of Delacht et al. [21], who posited that institutional quality positively impacts sustainable growth.

**Table 7** Interaction Role of RL and RQ in the fiscal policy-sustainable development nexus

Variable	Ordinary Least Square (OLS)		Robust Least Square (RLS)	
	Model 1	Model 2	Model 1	Model 2
C	1.836 (0.015**)	2.041 (0.000***)	1.222 (0.014**)	2.385 (0.000***)
LGREV	-0.071 (0.135)	0.057 (0.003**)	-0.137 (0.000***)	0.036 (0.059*)
LGEXP	0.494 (0.170)	0.314 (0.000***)	0.684 (0.005**)	0.188 (0.024**)
LIF	-0.007 (0.485)	0.001 (0.871)	-0.024 (0.000***)	-0.005 (0.421)
L	0.056 (0.000***)	0.040 (0.000***)	0.077 (0.000***)	0.040 (0.000***)
LFDI_I	0.005 (0.141)	0.011 (0.002**)	0.004 (0.077*)	0.015 (0.000***)
CRISIS	0.003 (0.603)	0.011 (0.000***)	-0.006 (0.081*)	0.012 (0.000***)
RL	0.190 (0.168)		0.212 (0.023**)	0.005 (0.046**)
RQ		-2.092 (0.000***)		-1.548 (0.000***)
LGREV*RL	0.009 (0.364)		0.024 (0.000***)	
GEXP*RL	-0.098 (0.115)		-0.134 (0.001***)	
GREV*RQ		0.145 (0.000***)		0.116 (0.000***)
GEXP*RQ		0.649 (0.000***)		0.445 (0.001***)
R-Sq	0.986	0.992	0.755	0.832
Adj. R-Sq	0.983	0.990	0.712	0.798
Prob (F-Stat)	0.000***	0.000***		
Rw-Sq			0.979	0.949
Adj Rw-Sq			0.979	0.949
Prob (Rn-Stat)			0.000***	0.000***
S.E regression	0.001	0.004	0.001	0.001

Source: E-views estimate (2023). \*\*\*, \*\*, and \* denote significance at 1%, 5%, and 10%. Note: values in parenthesis are probabilities, while values without parenthesis are coefficients

Regulatory quality (GREV\*RQ) and (GREV\*RQ), on the other hand, significantly and positively moderate the fiscal policy-sustainable development growth nexus. The null  $H_4$  is accepted, signaling that increasing institutions or power vested in institutions that implement policies increases the rate at which budgetary policy affects sustainable development goals. Also, the result signifies that increasing regulations ensure adequate funds are allotted to development projects and that implementation and supervision of sustainable initiatives are conducted effectively. Moreover, the finding implies that regulatory institutions in the studied countries push for policies that progress the achievement of sustainable development. This

finding concurs with the institutional economic theory in that the availability of a robust legal framework and proper structures progress the rate of achieving sustainable development growth as advocated by the institutional economic framework [18]. This finding supports the account of Delacht et al. [21], who documented that institutional quality positively affects sustainable growth in 26 sub-Saharan African counties.

## Concluding Remarks

Policies implemented by governments and their corresponding impact on a nation's development have come under scrutiny recently as developmental-oriented agencies are on the neck of developing countries' governments to pursue policies that spur sustainable development, of which West African anglophone countries are of no exemption. The exploration of the interactive role of institutional quality in the fiscal policy-SDG nexus has been mixed from the anglophone perspective. The paper sought to explore the association between fiscal policy measures and the multiplicative role played by institutional quality in this nexus. The study employed the OLS and RLS techniques to analyze data ascertained from the WDI repository from 2005–2021. The results revealed an inverse association between LGREV and SDG, confirming the negative findings in the literature and converging with the public choice theory in the sense that political dynamics and incentives influence government revenue allocation. It is concluded that anglophone countries invest government revenue in non-sustainable development initiatives that inure short-term benefits and are not aligned with SDGs. Similarly, the test found that government expenditure adversely impacts SDGs. This result affirms inverse findings in the literature and coincides with the public choice theory, which states that political actors dictate government expenditure. It is concluded that a more significant portion of government expenditure in the anglophone economies is geared toward initiatives that do not yield sustainable benefits.

Again, a chunk of government expenditure is spent servicing interest debt while sustainable development projects are underfunded. The rule of law inversely moderates the fiscal policy-sustainable development nexus, which contradicts the assertions of the institutional economic theory since the improvement in the rule of law dampens fiscal policies' influence on sustainable development. It is concluded that institutions in anglophone countries mandated to set policies do not pursue policies focusing on sustainable development projects. Lastly, regulatory quality significantly moderates the fiscal policy-SDGs nexus. This result has theoretical underpinnings since it confirms the prepositions of the institutional economic theory because better regulation fastens progress toward sustainable development. It is concluded that improving regulation ensures the effective implementation of fiscal policies geared toward achieving SDGs. Premised on the ascertained findings, the study implores the government in the anglophone bloc to reduce the high political interference in deciding which priority project should be pursued. Again, governments are implored to allocate adequate funds to finance sustainable development projects.

Also, to reduce the spate of environmental degradation and water pollution through illegal mineral extraction that requires the government to spend colossal sums in reclaiming degraded land, policymakers should set stringent rules and regulations with punitive penalties to deter culprits from engaging in non-sustainable mineral extraction practices. Moreover, industrialization initiatives taken by some governments in the Anglophone bloc, such as Ghana's one district and one factory, should incorporate modern facilities



that reduce the emission of excess fumes and machines that recycle waste products to sustain the environment. Again, to alter the adverse effect of government expenditure on SDGs, governments in the sub-region should restructure their budgetary allocation to focus more on SDG projects. Governments in the anglophone countries of West Africa should overhaul current decision-making agencies and adequately resource regulatory bodies to supervise SDG initiatives effectively.

## Implications and limitations of the study

The adverse effect of fiscal policy on SDG attainment signals counterproductive policies. Therefore, governments should realign fiscal policies to enhance SDG achievement with a greater focus on efficient resource allocation. Again, IQ's positive and negative moderating role implies the importance of improving institutional networks, strengthening the rule of law, and the quality of institutions that will catalyze fiscal policy effectiveness in attaining SDGs. Also, the paper calls for context-specific fiscal actions; regulators should pursue fiscal policies that deal with the Anglophone states' unique bottlenecks to ensure revenue mobilization and expenditure are tailored toward SDG achievement. The study has limited generalizability of findings due to its focus on only Anglophone countries in West Africa. Again, though there are similarities among these countries, there may still be differences in sizes, which the study did not account for. Moreover, there was inadequate existing literature regarding the topic under discussion.

The paper urges further studies to be conducted in the individual countries in the ECOWAS bloc, francophone countries of West Africa, and ECOWAS at large.

## Declarations

**Disclosure Statement** The author is an MBA graduate; I have no conflict of interest and received no funding.

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