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The Effect of Government Expenditure on Inclusive Development in Sub-Saharan Africa. The Role of Institutional Quality

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Abstract

Despite substantial government spending in Sub-Saharan Africa (SSA), achieving inclusive development remains a challenge, as a significant portion of the population continues to experience poor living standards. This study explores how government spending influences inclusive development in Sub-Saharan Africa (SSA) and examines the role of institutional quality in shaping this relationship. Using a two-step system Generalized Method of Moments (GMM) approach, the study analyzes panel data of 44 SSA countries from the year 2000 to 2022 while accounting for key economic factors such as population growth, inflation, lending interest rate, and broad money growth to ensure reliable results. The findings reveal that government expenditure has a significant positive effect on inclusive development, and institutional quality further enhances this positive effect. However, as institutional quality improves, high government expenditure will not be required in achieving inclusive development goals, as market-driven growth becomes more influential than public spending in driving economic inclusion. To maximize development outcomes, the study recommends that policymakers should focus on targeted public investments, strengthen governance frameworks, and encourage private-sector participation to create sustainable and inclusive growth. This study provides fresh insights into how institutional quality influences the effectiveness of public spending, offering new perspectives and guidance for policymakers working to improve inclusive development in SSA.

Keywords: ***Inclusive Development, Government Expenditure, Institutional Quality, Sub-Saharan Africa (SSA)***

1.0 Introduction

Inclusive development has become a critical focus for policymakers, particularly in Sub-Saharan Africa (SSA), where equitable distribution of economic growth benefits remains a pressing challenge. Government expenditure in key areas such as education, healthcare, and infrastructure is pivotal in fostering inclusive development (Chibba, 2008; Teichman, 2016). However, the effectiveness of these expenditures largely hinges on the quality of institutions governing resource allocation and utilization (Traoré, 2018; Keefer & Khemani, 2003). Despite significant investments by governments in SSA, the region continues to grapple with persistent inequality, poverty, and marginalization, underscoring the need to understand the factors that enhance or hinder the impact of government expenditure on inclusive development (Udo & Chukwu, 2020).

While governments in SSA allocate substantial resources to stimulate economic growth, reduce poverty, and promote social inclusion, the outcomes often fall short due to inefficiencies, corruption, and the misallocation of resources (Keefer & Khemani, 2003; Traoré, 2018). Existing research primarily focuses on the relationship between government spending and economic growth, with limited emphasis on the broader concept of inclusive development (Prabowo et al., 2023; Kolawole, 2016). Moreover, the role of institutional quality as a moderating variable in this relationship remains underexplored. Institutional quality, encompassing governance effectiveness, corruption control, and political stability, is critical to ensuring that public resources are effectively utilized to achieve inclusive outcomes (Acemoglu & Robinson, 2012; Rajkumar & Swaroop, 2008). However, weak institutions in many SSA countries hinder the potential benefits of government expenditure. Addressing this research gap requires investigating how institutional quality moderates the impact of government spending on inclusive development, using robust empirical methods and comprehensive measures like the Inclusive Development Index (IDI) (World Economic Forum, 2017).

1.1 Objectives of the Study

1. To examine the effect of government expenditure on inclusive development in SSA,

2. To examine the effect of institutional quality on inclusive development in SSA

3. To examine the moderating role of institutional quality in the relationship between government expenditure and inclusive development.

1.2 Research Hypothesis

H_1 - Government expenditure has a significant positive effect on inclusive development in SSA

H_2 - Institutional quality has a significant positive impact on inclusive development in SSA

H_3 - Institutional quality significantly moderates the relationship between government expenditure and inclusive development in SSA.

2.0 Literature Review

Exploring government expenditure, institutional quality, and inclusive development requires a robust theoretical foundation. This study leverages the Principal-Agent Theory, Public Choice Theory, and Human Development Theory to analyze the dynamics between these variables, grounding its arguments in well-established paradigms.

We leverage the Principal-Agent Theory to explain the delegation of authority between citizens (principals) and government officials or institutions (agents). The theory posits that while citizens entrust governments to allocate public resources effectively, misaligned incentives and information asymmetry often result in inefficiencies and corruption (Jensen & Meckling, 1976; Moe, 1984; Eisenhardt, 2021). The authors apply this theory to highlight how institutional quality; manifested through governance effectiveness, transparency, and corruption control, minimizes agency costs, ensuring that government expenditure benefits marginalized and vulnerable groups (Lupia, 2015; Acemoglu & Robinson, 2012; Laffont & Martimort, 2023). For instance, in SSA, where corruption and weak governance are prevalent, the theory provides a lens to evaluate how institutional reforms can realign agent incentives with societal goals, thus fostering inclusive development (Shapiro, 2021; Traoré, 2018). Furthermore, the presence of strong institutions facilitates the prudent use of resources, creating mechanisms to monitor government performance and reduce misuse (Arrow, 2020; Kaufmann, Kraay & Mastruzzi, 2009).

Similarly, the Public Choice Theory interrogates the motivations behind government expenditure decisions. Unlike traditional perspectives that assume altruism in public officials, this theory views decision-makers as self-interested actors whose choices may not align with societal welfare (Buchanan & Tullock, 1962; Ostrom, 1975; Mueller, 1997). By applying this framework, the authors underscore the importance of institutional checks and balances to prevent resource misallocation and elite capture (Tullock, Seldon & Brady, 2024; Schwartz, 1994). The theory's emphasis on incentive structures resonates with the SSA context, where resource allocation often disproportionately favors the wealthy and politically connected (Traoré, 2018; Udo & Chukwu, 2020). Public Choice Theory further suggests that institutions must enable transparent decision-making and fair resource distribution to foster inclusive development (Brennan & Buchanan, 2022; Niskanen, 2021).

We also adopt the Human Development Theory, rooted in the capability approach pioneered by Amartya Sen, to frame the relationship between government expenditure and inclusive development. The theory emphasizes enhancing individuals' freedoms and capabilities as a measure of societal progress, rather than relying solely on economic metrics like GDP (Sen, 1999; Nussbaum, 2022). This approach aligns with the multidimensional nature of inclusive development, which integrates economic, social, and environmental dimensions (Walker, 2005; Alkire & Foster, 2020). Focusing on investments in education, healthcare, and social protection, this theory argues that government expenditure can enhance individuals' capabilities and address structural inequalities (UNDP, 2021; Kaufmann et al., 2005). Furthermore, the authors argue that institutional quality serves as a moderating factor, amplifying the impact of these expenditures by ensuring resources are allocated efficiently and equitably (Haq, 2023; World Bank, 2014).

Empirical findings further substantiate the theoretical underpinnings of this study. Research from developing regions demonstrates the positive effects of targeted government spending on inclusive development. For instance, in Indonesia, government investments in education and financial inclusion have been shown to reduce poverty and unemployment, albeit with limited impact on income equality (Prabowo et al., 2023; Ernawati et al., 2021). In SSA, however, the effectiveness of such spending is often diminished by weak institutions and governance challenges (Kolawole, 2016; Udo & Chukwu, 2020). Studies reveal that public expenditures in health and education frequently benefit the middle and upper classes more than the marginalized, highlighting the critical role of institutional quality in bridging this gap (Traoré, 2018; Keefer & Khemani, 2003).

Despite these insights, significant research gaps persist. While existing studies emphasize the relationship between government expenditure and economic growth, few explicitly explore its impact on inclusive development, especially in the presence of institutional quality as a moderating variable. Additionally, traditional metrics like GDP per capita and the Gini index fail to capture the multidimensional nature of inclusive development (Chakrabarty & Bhattacharya, 2021; Dreher, 2006). To address this, the authors adopt the Inclusive Development Index (IDI) as a comprehensive measure, encompassing growth, equity, and sustainability dimensions (World Economic Forum, 2017; Szirmai et al., 2018). This methodological shift ensures a more nuanced understanding of how government expenditure and institutional quality interact to foster inclusive development.

In sum, this study argues that institutional quality is not merely a background variable but a pivotal determinant of the effectiveness of government expenditure in achieving inclusive development. By leveraging established theoretical frameworks and addressing gaps in empirical research, the study provides a robust foundation for analyzing governance and equitable growth in SSA.

3.0 Methodology

The researchers adopted a quantitative research approach to examine the relationship between government expenditure (GE), inclusive development (ID), and the moderating effect of institutional quality (IQ). This approach facilitated a systematic analysis of numerical data, enabling a structured framework to measure, analyze, and interpret the relationships between variables (Adedoyin, 2020). Numerical data on inclusive development, government expenditure, and institutional quality were collected and analyzed to assess correlations while accounting for the moderating influence of institutional quality. An explanatory research design was employed to investigate causal relationships among ID, GE, and IQ (Zikmund, 2010). Specifically, a panel data design was used, allowing for the analysis of both within-unit changes and broader trends over time. This approach, which collects data from the same units over multiple periods, is particularly effective for studying causality, controlling for individual-specific characteristics, and addressing issues like omitted variable bias (Xu et al., 2007). Given the study's focus on dynamic relationships among variables over time, this design was deemed appropriate.

The study focused on countries in Sub-Saharan Africa, employing a census sampling method that initially included all 48 countries in the region. However, due to data availability, the sample was refined to 44 countries, excluding 4 countries with missing data on inclusive development indicators. Data collection relied on secondary sources, primarily the World Development Indicators (WDI) and International Monetary Fund (IMF) databases. These globally recognized repositories provided reliable and comprehensive datasets, ensuring the robustness of the study's analysis.

3.1 Sample and Description of Variables

The study uses a balanced panel with yearly data from 2004 to 2023 obtained from the WDI and IMF Data. The sample was built for all the countries in sub-Saharan Africa with data availability for the dependent variable; inclusive development (ID) measured using 11 indicators out of the 12 indicators of inclusive development according to WEF (Dreher, 2006)

Table 1 Inclusive Development Indicators proposed World Economic Forum

Growth & Development	Inclusion	Intergenerational Equity & Sustainability
GDP p.c.	GINI (wealth & net income)	Adjusted net savings
Healthy life expectancy	Poverty ratio	Carbon intensity of GDP
Employment	Mean household Income	Public debt
		Dependency ratio

Source; World Economic Forum Inclusive Development Index (Dreher, 2006)

Inclusive development is a concept that covers the idea of ensuring that the benefits of economic growth and development are shared by all members of society, particularly those who are marginalized or vulnerable. It goes beyond traditional measures of economic progress, such as GDP growth, and focuses on enhancing the well-being and opportunities of all individuals, irrespective of their socio-economic background, gender, ethnicity, or physical abilities.

The following indicators were selected to measure inclusive development;

1. **GDP per capita (Gross Domestic Product per capita):** This indicator measures the average economic output per person in a country. While GDP per capita provides an overall indication of a country's economic performance, it does not account for income distribution or social inequalities.
2. **GINI (wealth & net income):** The GINI coefficient is a measure of income or wealth inequality within a population. It ranges from 0 (perfect equality) to 1 (perfect inequality). Monitoring changes in the GINI coefficient over time provides insights into the distribution of wealth and income across different segments of society.
3. **Adjusted net savings:** This indicator measures the difference between a country's national savings and its consumption of fixed capital, adjusted for environmental factors such as depletion of natural resources and pollution. Positive adjusted net savings indicate sustainable development practices that preserve natural capital for future generations.
4. **Healthy life expectancy:** Healthy life expectancy measures the average number of years a person is expected to live in good health, free from significant illness or disability. It provides an indication of overall population health and well-being beyond just life expectancy.
5. **Poverty ratio:** The poverty ratio or poverty rate measures the proportion of the population living below the poverty line, which is typically defined as the income level required to meet basic needs such as food, shelter, and clothing. Monitoring changes in the poverty ratio helps assess progress in poverty reduction efforts.

6. **Carbon intensity of GDP:** This indicator measures the amount of carbon dioxide emissions produced per unit of GDP. It reflects the environmental impact of economic activities and indicates how efficiently a country is using resources to generate economic output. Lower carbon intensity signifies a more environmentally sustainable economy.
7. **Employment:** Employment indicators measure the proportion of the working-age population that is employed. High levels of employment indicate a healthy labor market and contribute to poverty reduction and social stability.
8. **Mean household income:** Mean household income measures the average income earned by households within a country. It provides insights into the overall economic well-being of the population and can help assess income distribution and inequality.
9. **Public debt:** Public debt refers to the total amount of money owed by the government to creditors. Monitoring public debt levels is essential to ensure fiscal sustainability and assess the government's ability to meet its financial obligations without jeopardizing economic stability.
10. **Dependency ratio:** The dependency ratio compares the size of the economically dependent population (such as children and elderly) to the economically active population (typically working-age adults). A high dependency ratio may strain social welfare systems and impact economic productivity

The study's key independent variable relates to the general government expenditure indicator. Data on general government expenditure was collected from the IMF database. Given its moderating effects, institutional quality constitutes another key independent variable in the study. This study employed all six indicators of institutional quality. The data related to institutional quality was collected from the WDI database.

The study controls for macroeconomic conditions by including population growth which examines the effect of growing populations on inclusive development, and inflation which examines the effect of sustained increase in the general price level of goods and services on inclusive development. Broad money, and lending interest rates which examine the extent of money supply in an economy and the cost of borrowing respectively were also included in the study as control variables. The study employed government expenditure as the main independent variable and institutional quality as the moderating variable. Table 2 below summarizes the variables employed for the study.

Table 2 Summary of variables employed for the study

Variable	Description	Measurement	Source of Data
Inclusive Development (Dependent Variable)	A comprehensive measure of development that encompasses economic growth, social inclusion, and sustainability.	11 indicators as presented in table 1	World Economic Forum (WEF), World Bank
Government Expenditure (Independent Variable)	Total public spending by the government, which may influence the level of inclusive development.	Percentage of GDP spent by the government annually.	World Bank data, International Monetary Fund (IMF)
Institutional Quality (Moderating Variable)	The effectiveness of institutions in fostering transparent, accountable, and equitable processes in governance.	Composite index of: government effectiveness, corruption control, political stability, regulatory quality, rule of law, voice and accountability	Worldwide Governance Indicators (WGI), World Bank
Broad money (Control Variable)	A measure of the total liquidity available in an economy	Total money supply as a percentage of GDP	World Bank Data
Inflation (Control Variable)	The rate at which the general level of prices for goods and services is rising, eroding purchasing power.	Consumer Price Index (CPI) or annual inflation rate (%).	World Bank Data
Population Growth (Control Variable)	The rate at which the population is increasing or decreasing.	Annual population growth rate (%).	World Bank Data
Lending interest rate (control variable)	The cost of borrowing		

The control variables; inflation, population growth, broad money, and lending interest rate play a crucial role in analysing the relationship between government expenditure, institutional quality, and inclusive development. Inflation, which measures the rate at which prices for goods and services rise, is another critical factor influencing inclusive development. High inflation erodes purchasing power, particularly for low-income households, making it harder for them to afford essential services like education and healthcare (Mishra & Anwar, 2022). This can exacerbate poverty and inequality, undermining the goals of inclusive development. Additionally, inflation can reduce the real value of government spending on social programs and

infrastructure, diminishing its effectiveness (Chhibber, 2023). By controlling for inflation, the study can better understand the impact of government expenditure and institutional quality on inclusive development.

Population growth is also a significant variable that can either support or hinder inclusive development. Rapid population growth can strain resources, infrastructure, and services, making it more challenging to achieve equitable development outcomes (Ghosh, 2021). When population growth outpaces economic growth, it can lead to higher unemployment, increased competition for resources, and greater inequality (Lutz & KC, 2020). Conversely, well-managed population growth can contribute positively to inclusive development by expanding the labor force and creating economic opportunities (Jha, 2019). Controlling for population growth helps isolate its effects, allowing the study to more accurately assess how government expenditure and institutional quality influence inclusive development. Together, these control variables ensure a more comprehensive and reliable analysis of the factors contributing to inclusive development. Broad money, as a measure of the total liquidity available in an economy, affects investment, consumption, and overall economic growth, which are critical components of inclusive development. Higher liquidity levels can facilitate access to financial resources, promoting equitable economic participation. Lending interest rates, on the other hand, determine the cost of borrowing, influencing private sector investments, household spending, and access to credit, especially for marginalized groups. Since these financial indicators directly impact the ability of individuals and businesses to contribute to and benefit from economic opportunities, they are essential for controlling external economic factors that could confound the relationship between government expenditure, institutional quality, and inclusive development.

3.2 Estimation Techniques

a. Principal Component Analysis (PCA)

According to Hussain et al. (2021), the Principal Component Analysis (PCA) is a dimensionality-reduction method used to transform large datasets into smaller ones without losing important information. Accordingly, this study uses PCA to develop the composite index of inclusive development (IDI) and institutional quality (IQI).

Inclusive Development Index (IDI)

By using the PCA method, the *jth* factor index can be written as:

$$IDI_i = \beta W_{J1}X_1 + \beta W_{J2}X_2 + \beta W_{J3}X_3 + \cdots + \beta W_{J10}X_{10} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 1$$

Before the PCA index was computed for inclusive development, the individual indicators were transformed to move in the same direction. Using the inverse of each variable, all indicators were transformed to move in the same direction, so that a higher IDI value implies a better inclusive development outcome and a lower IDI value implies poor inclusive development outcomes.

Institutional quality (IQI)

$$IQIj = \beta W_{J1}X_1 + \beta W_{J2}X_2 + \beta W_{J3}X_3 + \beta W_{J6}X_6 \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 2$$

We employed all six indicators of institutional quality (corruption control, government effectiveness, political stability and absence of violence, rule of law, regulatory quality, and voice and accountability) all move in the same direction. Hence the composite index was computed directly, where a high value of IQI implies robust institutional quality structures and a low IQI value implies otherwise

b. General Method of Moments (GMM)

The General Method of Moments (GMM) was employed for this study to estimate the relationships between inclusive development index (IDI), government expenditure (GE), and institutional quality index (IQI). The GMM stands as a good choice owing to its efficacy in addressing crucial issues often encountered in dynamic models, particularly in handling endogeneity and omitted variable bias. Endogeneity, a common concern in dynamic models, arises when explanatory variables are correlated with the error term. GMM's robustness lies in its ability to effectively handle this issue, thus mitigating potential biases that could distort the estimation of relationships between IDI, GE and IQI (Wooldridge, 2011). Moreover, the GMM approach is well-equipped to tackle omitted variable bias, which occurs when pertinent variables influencing the relationship are excluded from the model (Arellano & Bover, 1995). By using GMM, the study seeks to ensure a more comprehensive understanding of the interconnections among IDI, GE, and IQI, thus facilitating more accurate estimations.

The GMM's suitability also extends to its compatibility with dynamic modeling, which characterizes the relationships under examination in this study. Given that these variables evolve, GMM provides an avenue to explore the causal relationships among IDI, GE, and IQI across different periods." This capability is instrumental in capturing the dynamic nature of these relationships and explaining their progression over time (Hansen, 1982). Furthermore, the efficiency of GMM lies in its utilization of moment conditions derived from the data. By making effective use of available information, GMM enhances the precision of parameter estimates, thereby contributing to the robustness of the analysis (Arellano & Bond, 1991). Hence, the application of the General Method of Moments in this study is essential in ensuring a rigorous and comprehensive analysis of the relationships between IDI, GE, and IQI.

c. Model Specification

The main objective of this study was to examine the effect of government expenditure on inclusive development while exploring the moderating role of institutional quality. First, we estimate a model to test the direct effect of government expenditure on inclusive development. The model was specified as below;

$IDI_{it} = \alpha_0 + \alpha_1 IDI_{it-1} + \alpha_2 GOVTExp_{it} + \alpha_3 POPg_{it} + \alpha_4 INF_{it} + \alpha_5 BMg_{it} + \alpha_6 LIR_{it} + \mu_{it}$ …….1

The second model is to test the direct effect of institutional quality on inclusive development. The model is specified as;

$IDI_{it} = \beta_0 + \beta_1 IDI_{it-1} + \beta_2 IQI_{it} + \beta_3 POPg_{it} + \beta_4 INF_{it} + \beta_5 BMg_{it} + \beta_6 LIR_{it} + \mu_{it}$ …….2

In the third model, we examine the moderating effect of institutional quality on the inclusive development and government expenditure nexus

$IDI_{it} = \gamma_0 + \gamma_1 IDI_{it-1} + \gamma_2 GOVTExp_{it} + \gamma_3 IQI_{it} + \gamma_4 (GOVTExp*IQI)_{it} + \gamma_5 POPg_{it} + \gamma_6 INF_{it} + \gamma_7 BMg_{it} + \gamma_8 LIR_{it} + \mu_{it}$ …….3

where IDI = inclusive development index and IQI = inclusive development index, GOVTExp = government expenditure, POPg = population growth, INF = inflation, BMg = broad money growth, and LIR = lending interest rate.

The selection of Population Growth (POPg), Inflation (INF), Broad Money growth (BMg), and Lending Interest Rate (LIR) as control variables in the study is justified by their profound and direct impact on inclusive development indicators. "Population Growth affects the demand for public services, infrastructure, and job opportunities, influencing socio-economic stability and development outcomes (Canning, Raja, & Yazbeck, 2015). Broad money growth underscores they level of money supply in an economy, which significantly affects economic activies and inclusive development. Conversely, inflation affects consumers' purchasing power, cost of living, and economic stability, which are essential for understanding the broader economic environment impacting inclusive development while lending interest rate represents the cost of borrowing (Dornbusch, Fischer, & Startz, 2011). These variables were selected due to their significant roles in economic theory and empirical research, providing a comprehensive framework to control for demographic and economic factors influencing inclusive development in SSA.

c. Total Effect

The term α4(GOVTExp*IQI), in the third model represents the interaction between government expenditure and institutional quality, assessing how their combined effect influences inclusive development while controlling for other factors (the control variables and the error term). However, in line with the literature and following the works of Baltagi et al. (2009), we also determined the total impact of government expenditure on inclusive development, by taking a partial derivative of equation (3) to obtain the total effect of government expenditure on inclusive development. The following is the resultant equation:

$\partial IDI / \partial GOVTExp = \delta_2 + \delta_4 * IQI_{it}$ ……4

Equation (4) therefore elaborates on the total effect, expressing how inclusive development changes concerning variations in government expenditure, factoring in the influence of institutional quality.

$\partial IDI / \partial GOVTExp$ represents the change in Inclusive development concerning changes in Government expenditure (*GE*) while other variables remain constant. (δ_2) signifies the baseline effect or constant impact of government expenditure on inclusive development when institutional quality (IQI) is absent or at zero. (δ_4) indicates the additional effect or slope change in the impact of government expenditure on inclusive development attributed to institutional quality (IQI_{it}). It illustrates how changes in institutional quality modify the relationship between government expenditure and inclusive development

4.0 Results

Table 1 below presents the descriptive statistics of the variables used in the study, highlighting significant variations across Sub-Saharan African countries. The Inclusive Development Index (IDI) has a mean of 0.315 with a standard deviation of 3.707, indicating considerable disparities in inclusive development, ranging from -4.194 to 22.353. Government expenditure (GOVTExp) averages 23.106% of GDP, with a wide range between 3.787 and 66.442, reflecting differences in fiscal policies. Similarly, the Institutional Quality Index (IQI) has a low mean of 0.123 and a standard deviation of 2.143, suggesting generally weak institutional structures, with values spanning from -3.13 to 5.628. Among the control variables, population growth (POPg) shows a high mean of 31.607 and substantial variability (22.047), reflecting demographic diversity. Inflation (INF) averages 26.814%, with a maximum of 69.903%, pointing to significant inflationary pressures in some economies. Broad money supply (BMg) and lending interest rate (LIR) have means of 14.867% and 1.64%, respectively, though their negative minimum values indicate episodes of financial instability. The wide dispersion of these variables underscores the economic heterogeneity in SSA, reinforcing the need for GMM estimation to account for these variations and potential endogeneity.

Table 3. Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
IDI	779	0.315	3.707	-4.194	22.353
GOVTExp	779	23.106	9.315	3.787	66.442
IQI	741	0.123	2.143	-3.13	5.628
POPg	779	31.607	22.047	2.857	74.762
INF	779	26.814	20.063	2.392	69.903
BMg	760	14.867	10.701	-4.353	37.868
LIR	760	1.64	3.409	-6.595	7.645

Source; Authors' own computation, 2025

Next, we examine the issue of multicollinearity among the variables. This was achieved by using pairwise correlations and the Variance Inflation Factor (VIF), with the results presented in Table 4 and Table 5 respectively. The pairwise correlations indicate that most independent variables have low to moderate correlations, with the highest observed between population growth (POPg) and inflation (INF) ($r = 0.686$, $p < 0.01$). While this suggests a notable association, it remains below the critical threshold ($r > 0.80$) that typically signals severe multicollinearity concerns. The VIF results confirm the absence of serious multicollinearity, as all variables have VIF values well below the conventional threshold of 10. The highest VIF is observed for INF (1.660) and POPg (1.440), but these values are still within an acceptable range. The mean VIF of 1.280 further indicates that multicollinearity is not a major issue. Additionally, the 1/VIF values are all above 0.10, reinforcing the independence of explanatory variables. These results suggest that multicollinearity is not a significant concern in the model.

Table 4. Pairwise correlations

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
(1) IDI	1.000						
(2) GOVTExp	0.020*	1.000					
	(0.574)						
(3) IQI	0.016*	-0.004	1.000				
	(0.662)	(0.916)					
(4) POPg	-0.025*	0.475*	0.014	1.000			
	(0.481)	(0.000)	(0.706)				
(5) INF	-0.023*	0.391*	-0.012	0.686*	1.000		
	(0.530)	(0.000)	(0.738)	(0.000)			
(6) BMg	0.005	-0.181*	0.020*	-0.080*	-0.084*	1.000	
	(0.885)	(0.000)	(0.595)	(0.027)	(0.021)		
(7) LIR	-0.062*	-0.018*	0.065*	0.179*	0.180*	0.218*	1.000
	(0.089)	(0.630)	(0.082)	(0.000)	(0.000)	(0.000)	

**** p<0.01, ** p<0.05, * p<0.1*

Source; Authors' own computation, 2025

Table 5. Variance Inflation Factor

Variables	VIF	1/VIF
INF	1.660	0.604
POPg	1.440	0.695
GOVTExp	1.310	0.763
LIR	1.140	0.874
BMg	1.100	0.913
IQI	1.010	0.995
Mean VIF	**1.280**	

Source; Authors' own computation, 2025

Also, the Breusch-Pagan/Cook-Weisberg test for heteroskedasticity was conducted to examine whether the variance of errors is constant. The test yields a chi-squared statistic of 1.31 with a p-value of 0.2523, which is greater than the 5% significance level. Thus, we fail to reject the null hypothesis of constant variance, indicating that heteroskedasticity is not a concern in the model. This suggests that the error terms exhibit homoskedasticity, supporting the reliability of standard errors in the regression analysis. This result is presented in Table 6 below.

Table 6. Test for Heteroskedasticity

Test	**Breusch-Pagan / Cook-Weisberg Test for Heteroskedasticity**
Ho	Constant variance
Variables	Fitted values of IDI
chi2(1)	1.31
Prob > chi2	0.2523

Source; Authors' own computation, 2025

To assess whether cross-sectional dependence exists among the countries in the panel dataset, Pesaran's Test, Friedman's Test, and Frees' Test were conducted and the results presented in Table 7. Pesaran's Test produced a test statistic of 1.266 with a p-value of 0.2054, exceeding the 5% threshold. This indicates no significant cross-sectional dependence among the observations. Friedman's Test resulted in a test statistic of 19.614 and a p-value of 0.9915, which is much greater than 0.05. This strongly confirms the absence of cross-sectional dependence. Frees' Test also yielded a test statistic of 3.343, with alpha values at 1% (0.2601), 5% (0.1782), and 10% (0.1360). Since all alpha values exceed 10%, there is no evidence of cross-sectional dependence at any conventional significance level. The results from all three tests indicate that cross-sectional dependence is not a concern in the dataset, meaning shocks affecting one country do not systematically influence others. Combined with the absence of heteroskedasticity, these findings support the validity of the estimated model, ensuring the robustness of regression results.

Table 7. Cross-sectional Sectional Dependence Test

Test	**Test Statistic**	**P-Value/Critical Value**	**Interpretation**
Pesaran's Test	1.266	Pr = 0.2054	The p-value is greater than 0.05, indicating no significant cross-sectional dependence at the 5% significance level.
Friedman's Test	19.614	Pr = 0.9915	The p-value is much greater than 0.05, suggesting no evidence of cross-sectional dependence.
Frees' Test	3.343	Alpha = 0.10: 0.1360 Alpha = 0.05: 0.1782 Alpha = 0.01: 0.2601	No cross-sectional dependence at 1%, 5% and 10% (as all alpha values > 10%)

Source; Authors' own computation, 2025

Next, we conducted the Pooled Ordinary Least Squares (POLS) test, a necessary step in selecting the appropriate estimation technique between a two-step system GMM and a one-step difference GMM. The decision relies on comparing the magnitude of the lagged dependent variable (IDI) across different models (Soederlind, 2015). The result of the POLS test is presented in table 8 below;

Table 8. POLS Test

	(1)	(2)	(3)
VARIABLES	IDI	IDI	IDI
IDI = L,	0.3388***	0.2187***	0.1541**
	(0.0374)	(0.0397)	(0. 0648)
Standard errors in parentheses			
*** p<0.01, ** p<0.05, * p<0.1			

Source; Authors' own computation, 2025

The results from table 8 show that in Model (1), the POLS approach yields a lagged IDI coefficient of 0.3388 ($p < 0.01$), while in Model (2), using the fixed effects (FE) approach, the coefficient decreases to 0.2187 ($p < 0.01$). In Model (3), which employs the one-step difference GMM, the coefficient further drops to 0.1541 ($p < 0.05$). The statistical significance across all models suggests a positive relationship between past and current inclusive development levels. However, the decreasing magnitude of the lagged IDI coefficient indicates that the FE and GMM models correct for biases inherent in the POLS approach (Soederlind, 2015). According to Phillips (2019) and Kruiniger (2017), when the coefficient of the lagged dependent variable in the fixed effects model (0.2187) exceeds that of the one-step difference GMM model (0.1541), the two-step system GMM becomes the preferred estimation technique for ensuring reliable and unbiased results. Thus, the findings confirm that two-step system GMM is better suited for addressing endogeneity and omitted variable bias in dynamic panel data analysis.

Using the two-step system GMM regression, we explored the effect of government expenditure (GOVTExp) on inclusive development (IDI) in Sub-Saharan Africa (SSA), with institutional quality (IQI) as a moderating variable. The results are presented in table 9.

Table 9. Two-Step System GMM Results

	(1)	(2)	(3)
VARIABLES	IDI	IDI	IDI
IDI = L,	0.3105***	0.3004***	0.3413***
	(0.0059)	(0.0182)	(0.0151)
GOVTExp	**0.0300*** **		**0.0740*** **
	(0.0108)		**(0.0199)**
IQI		0.3619***	0.8160**
		(0.1304)	(0.3480)
c.GOVTExp#c.IQI			-0.0715***
			(0.0117)
Total Effect			**0.0652** **
			(0.0212)
POPg	-0.7135	1.2893	3.2209**
	(1.1039)	(2.1280)	(1.4626)
INF	-0.0103***	-0.0334***	0.1002***
	(0.0019)	(0.0114)	(0.0079)
BMg	0.0143***	0.0032**	0.0145***
	(0.0011)	(0.0014)	(0.0015)
LIR	0.1115***	0.0048	0.1107***
	(0.0045)	(0.0086)	(0.0065)

Constant	-0.4960*	0.7170**	-3.8618***
	(0.2778)	(0.2899)	(0.5151)
Observations	520	646	494
Number of id	40	38	38
Instruments	38	26	36
Wald Statistic	4109	149.6	301926
Wald P-value	0	0	0
Sargan P-Value	0.0173	0.0472	0.0352
Hansen P-Value	0.467	0.510	0.440
AR(1)	0.00123	0.00142	0.00109
AR(2)	0.214	0.283	0.194

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Source; Authors' own computation, 2025

From table 9 above, the coefficient for the lagged IDI is positive and highly significant in all three models (0.3105, 0.3004, 0.3413), indicating strong persistence in inclusive development. This result suggests that higher inclusive development in the previous period leads to higher inclusive development in the current period, consistent with findings by Prabowo et al. (2023), who observed a similar trend in developing economies. The persistence effect underscores the importance of structural policies that ensure sustained development over time. In Model 1, government expenditure has a positive and significant effect on inclusive development (0.0300, $p < 0.01$). This implies that a unit increase in government expenditure leads to a 0.03 units increase in inclusive development, supporting the notion that higher public spending promotes development by funding social services, infrastructure, and other developmental programs. In Model 2, institutional quality (IQI) exhibits a strong positive effect on inclusive development (0.3619, $p < 0.01$). This suggests that strong institutions, characterized by governance effectiveness, corruption control, political stability, regulatory quality, and accountability play a significant role in fostering inclusive development. This finding aligns with Rajkumar & Swaroop (2008), who found that countries with high institutional quality experience better development outcomes from public spending. Similarly, Acemoglu & Robinson (2012) emphasize that institutional quality is a key determinant of whether government resources benefit the broader population or remain captured by elites. The findings also support Lupia (2015) and Kaufmann, Kraay & Mastruzzi (2009), who argue that strong governance mechanisms reduce agency costs and enhance economic inclusivity.

In examining the moderating role of institutional quality in the government expenditure-inclusive development nexus, it was expected that the presence of institutional quality in Model 3 would enhance the positive effect of government expenditure on inclusive development. The results confirm this, as the coefficient for government expenditure increases from 0.0300 in Model 1 to 0.0740 in Model 3 at a 1% significance level. This suggests that the presence of strong institutions enhances the developmental impact of government spending. However, the interaction term between government expenditure and institutional quality is negative (-0.0715) and significant at 1%, indicating that as institutional quality improves, the effect of government expenditure on inclusive development decreases. This aligns with the findings of Williams (2020), who argued that in economies with strong institutions, private-sector growth and market-driven mechanisms play a more significant role in promoting inclusivity than direct government intervention. These findings contrast with Prabowo et al. (2023), who suggested that government spending and institutional quality should have a reinforcing effect rather than a diminishing one. However, the Public Choice Theory provides an explanation: when institutions are weak, government intervention is necessary to correct market failures, but as governance structures strengthen, excessive public spending becomes less essential (Buchanan & Tullock, 1962; Tullock, Seldon & Brady, 2024).

The total effect measures the overall change in inclusive development for a one-unit change in institutional quality when government expenditure is held constant. The total effect coefficient is 0.0652 ($p < 0.05$), indicating that an increase in institutional quality is associated with an increase in inclusive development by 0.0652 units, even when government expenditure remains constant. This finding supports Clements et al. (2023), who emphasized that well-targeted public spending remains an essential driver of inclusive development, especially in emerging economies. The results also align with Haq (2023), who found that strong institutions amplify the long-term benefits of government policies on social and economic inclusion.

In relation to the control variables, Population Growth (POPg) shows mixed effects across models. It is negative in Model 1 (-0.7135) but positive and significant in Model 3 (3.2209, $p < 0.05$). This suggests that while rapid population growth can strain resources, it can also drive economic expansion when accompanied by effective policies, a finding consistent with Jha (2019) and Ghosh (2021). Inflation (INF) has a negative effect in Models 1 and 2 (-0.0103 and -0.0334, $p < 0.01$) but turns positive in Model 3 (0.1002, $p < 0.01$). This highlights inflation's dual role, while high inflation erodes purchasing power, moderate inflation may stimulate investment and economic growth, as found by Mishra & Anwar (2022). Also, Broad Money Growth (BMg) is consistently positive and significant, suggesting that higher liquidity supports inclusive development by increasing access to financial resources, aligning

with the works of Dornbusch, Fischer & Startz (2011). Finally, Lending Interest Rate (LIR) is positive and significant in Models 1 and 3, supporting the notion that higher interest rates may reflect stable monetary policies that contribute to financial inclusion, consistent with Kaufmann et al. (2005).

Turning to model diagnostics and robustness, Wald Statistic and P-value is highly significant across all models, confirming the statistical validity of the models. The Sargan test's p-values (0.0173, 0.0472, 0.0352) indicate some issues with instrument validity, but the Hansen p-values (0.467, 0.510, 0.440) suggest that the instruments used in the models are overall valid. Autocorrelation Test AR(1) is significant, indicating first-order autocorrelation, but Autocorrelation Test AR(2) is not significant, confirming that the model's assumptions about error terms are valid.

Finally, we employ the predictive margins graph to visualize and further explain the moderating role of institutional quality (IQI) on the relationship between government expenditure (GOVTExp) and inclusive development (IDI). As presented in Figure 1 below, the graph plots three lines, each representing different levels of institutional quality (IQI), while holding government expenditure constant.

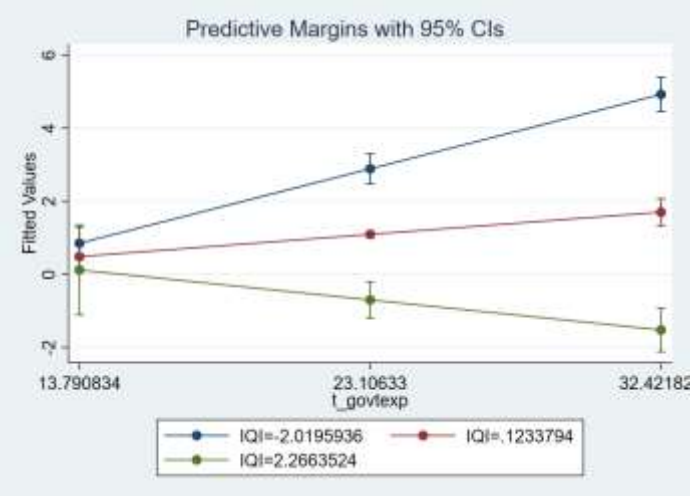

Figure 1 Predictive margins graph on the moderation role of institutional quality

As visualized in the figure above, the relationship between government spending and inclusive development varies depending on the strength of a country's institutional structures. When institutional quality is low (IQI = -2.0195936, blue line), government expenditure shows a strong positive impact on inclusive development, as shown by the steep upward slope. In countries with weak institutions, public spending is essential for driving development because private investment and market systems may not function effectively. As institutional quality improves to a moderate level (IQI = 1.233794, red line), government spending still contributes to inclusive development, but the impact is less pronounced. This suggests that as governance structures strengthen, public funds are used more efficiently, and other factors such as private sector involvement and economic activities start to play a bigger role in economic inclusion. However, at high levels of institutional quality (IQI = 2.2663524, green line), the trend reverses, and increased government spending is linked to a decline in inclusive development. This could mean that in well-governed environments, additional public expenditure becomes less necessary or even counterproductive, potentially leading to inefficiencies or discouraging private investment. These findings emphasize the important role of institutional quality in shaping the effectiveness of government spending. In countries with weak governance, public investment is crucial for providing essential services and fostering economic inclusion. However, as institutions strengthen, they become better at allocating resources efficiently, reducing corruption, and creating a supportive environment for private-sector-led growth. At the highest levels of institutional quality, over-reliance on government spending may actually hinder development if it crowds out private investment or leads to inefficient resource use. This highlights the need for a balanced approach, where fiscal policies are complemented by governance reforms to ensure sustainable and inclusive development.

5.0 Conclusion

While governments aim to enhance inclusive development through expenditure, another key objective is to minimize spending while achieving optimal performance. This highlights the crucial role of institutional quality as a moderator, ensuring that government expenditure yields the desired outcomes with more efficient or lower levels of spending. The two-step system GMM results confirm all three research hypotheses; government expenditure significantly affects inclusive development (H_1), institutional quality positively impacts inclusive development (H_2), and institutional quality moderates the relationship between government expenditure and inclusive development (H_3). The findings align with much of the empirical literature but introduce a new perspective on the interaction between government spending and institutional quality. The predictive graph further highlights this new perspective by illustrating that the effectiveness of government expenditure in promoting inclusive development is strongly influenced by institutional quality; where in environments with weak institutions, government spending is critical for driving inclusive development, whiles as institutional quality improves, the need for extensive government expenditure diminishes. We therefore conclude that, stronger institutions allow governments to achieve better development outcomes with less reliance on public spending, indicating that improving institutional quality can lead to more efficient use of resources while still enhancing inclusive development.

6. Recommendations

To enhance inclusive development in Sub-Saharan Africa (SSA), governments should prioritize development-oriented public expenditure, ensuring that funds are allocated efficiently to key sectors such as education, healthcare, and infrastructure. This will maximize social and economic benefits, particularly for marginalized communities, and promote long-term economic inclusion. Additionally, strengthening institutional quality is crucial to enhancing the effectiveness of public spending. Governments should implement policies that improve governance, transparency, and accountability, while also empowering anti-corruption agencies to monitor resource allocation and prevent mismanagement. Lastly, policy coordination between fiscal reforms and institutional strengthening is essential. Instead of relying solely on increased public spending, policymakers should create an enabling environment for private-sector participation and public-private partnerships (PPPs) to complement government efforts in achieving inclusive development.

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