TRILATERAL ANALYSIS OF INFLATION, GOVERNMENT EXPENDITURE AND ECONOMIC GROWTH IN SUB-SAHARAN AFRICA

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ABSTRACT

This study investigates the interactive effects of inflation and government expenditure on economic growth in Sub-Saharan Africa (SSA). The Two-Step Generalized Method of Moments (GMM) estimator was employed as the econometric approach, using panel data from 47 SSA countries spanning 1990-2023. To address potential endogeneity issues, the study utilized valid instruments derived from theoretical foundations. The findings revealed that inflation is a negative and significant determinant of economic growth, particularly at higher levels. However, prudent government expenditure, maintained below the 17.108% threshold, can mitigate these adverse effects, suggesting a synergistic relationship between the two variables. Additionally, the study underscores the importance of sound fiscal management and institutional reforms in fostering sustainable economic growth in the region. These results offer valuable insights for policymakers in SSA, highlighting that effectively managing inflation and implementing targeted government spending can create a more conducive environment for economic growth and development.

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Introduction

Economic growth remains a central focus of both academic inquiry and policy formulation, particularly for developing regions like Sub-Saharan Africa (SSA), where socio-economic challenges persist (Mandala, 2020). Numerous studies have scrutinized the factors that drive economic growth, with inflation and government expenditure being two of the most highly debated factors (Karahan & Çolak, 2020). Despite the growing body of literature, there is still considerable disagreement regarding how inflation and government expenditure individually and interactively contribute to economic growth.

This study aims to fill a critical gap by examining not only the separate effects of inflation and government expenditure on economic growth but also the interaction between these two variables. Specifically, the study focuses on how government expenditure may potentially amplify or mitigate the impact of inflation on economic growth in SSA countries. This approach provides a fresh perspective on the dynamics of economic growth in the region, offering important insights for policymakers.

The relationship between inflation, government expenditure, and economic growth has been a subject of extensive empirical investigation, yet no consensus has been reached. For instance, studies by Khan and Hanif (2020) and Chindengwike (2023) highlight the positive effects of

moderate inflation on economic growth, particularly by stimulating aggregate demand. In contrast, other scholars, such as Rosnawintang et al. (2021) and Uddin and Rahman (2023), argue that inflation creates economic uncertainties, reduces investor confidence, and ultimately hampers growth. Similarly, government expenditure has been lauded for its role in driving economic growth through investment in infrastructure and public services (Dinh, 2020). However, the interaction between inflation and government expenditure remains underexplored, particularly in the context of SSA, where unique structural and institutional features can influence these dynamics.

The necessity of this study lies in its ability to address two key issues that have been largely ignored in the existing literature. First, while several studies have examined the individual impacts of inflation and government expenditure on economic growth, few have analysed how these two factors interact. This interaction is crucial because government expenditure could either amplify or cushion the adverse effects of inflation on economic growth. Second, most of the existing research is concentrated on high-income or emerging economies, with relatively little attention paid to SSA. Given the region's unique economic structure-characterized by high inflation rates, volatile government spending, and limited fiscal space-examining the interaction between inflation and government expenditure is crucial for understanding the drivers of economic growth in SSA (Adaramola & Dada, 2020).

The existing literature on inflation and government expenditure offers mixed results, and there is a notable gap in studies focused on the interaction between these two variables. Karahan and Çolak (2020) examined the inflation-growth nexus in Turkey and found that inflation has a non-linear effect on economic growth, with the adverse impact becoming more pronounced at higher inflation rates. However, their study did not consider how government expenditure might alter this relationship. Similarly, Mandala (2020) employed time-series data to explore how inflation affects debtors and creditors in Indonesia, but again, the interaction with government expenditure was not considered. In SSA, the role of government expenditure in mitigating or exacerbating the effects of inflation on economic growth has been under-researched. While some studies have explored the impact of government expenditure on growth (Dinh, 2020; Sekwati & Dagume, 2023), they often treat inflation as a control variable rather than examining its interactive effects with government spending. This study aims to fill this gap by investigating how government expenditure interacts with inflation to influence economic growth in SSA.

This study contributes to the ongoing debate in several ways. First, it provides a comprehensive analysis of the interaction between inflation and government expenditure, an area that has been largely overlooked in the existing literature. By focusing on SSA, the study also extends the geographical scope of the debate, which has been predominantly centered on high-income and emerging economies.

Moreover, the study employs a novel econometric approach-using the Two-Step Generalized Method of Moments (GMM) estimator-to address endogeneity issues that have often plagued previous studies (Blundell & Bond, 1998; Roodman, 2009). The findings of this study are expected to have significant implications for both academics and policymakers. By revealing how government expenditure can either mitigate or magnify the effects of inflation on economic growth, the study will provide more nuanced insights for designing effective growth strategies in SSA. Policymakers in the region can benefit from understanding the

conditions under which inflation might become detrimental to growth and how government spending can be optimized to counteract these effects.

The remainder of the paper is organized as follows: Section 2 provides a review of the relevant literature, while Section 3 outlines the econometric strategies and data sources. Section 4 presents the results and offers a critical discussion, and the final section concludes the paper with policy implications.

1. Literature Review

Following the burgeoning and expanding literature on the drivers of economic growth, this study partitions the empirical reviews into three areas to align with the trends in the existing body of knowledge. Most of the literature examines the separate impacts of inflation and government expenditure on economic growth. This study builds upon these existing studies by examining the empirical arguments on the relationship between inflation and economic growth, government expenditure and economic growth, and lastly, how government expenditure interacts with inflation to influence economic growth.

Khan and Hanif (2020) posit from empirical exploration on the trilogical analysis of how institutional quality affect inflation and growth from 113 countries. An inovative threshold estimator and Two-step GMM were used for the analysis. Their findings confirmed that there is certain threshold at which inflation starts decellerating economic growth. The argument also persist that at early stage where the rate of inflation growth is lower than growth of GDP, inflation stimulate aggregate demand through ecouragement of economic agents to spend rather than saving (Chindengwike, 2023). This drive up production and investment and thus stimulate economic activities. Conversly, empirical finding that supported classical school of thought argue that inflation adversely affects growth and documented that inflation cause distortion and market volatility. Rosnawintang, *et al*. (2021) supported prior statement by affirming that inflation makes business environment uncertain, lower investors' confidence and potential future investment (Dinh, 2020). This ultimately dampen private consumption, increase in capital flights especially to the stable economies and delayed investment decision, and ultimatley, lower economic growth (Uddin & Rahman, 2023) Karahan and Çolak (2020) applied non-linear autoregressive distributed lag model to investigate the inflation -growth nexus from 2003 to 2017 in Turkey. Their findings supported classical school of thougth that the believe inflation has an adverse effect on ecnomic growth in the long-run. Symetric assumption was held from their analysis and they argued that economiic growth is more sensitive to positive shock compared to negative shock. In support of prior statement literature documented that Positive shocks, such as unexpected discoveries or technological advancements, tend to generate enthusiasm and optimism among consumers and businesses. This ultimately lead to increased confidence, higher spending, and greater willingness to invest, ultimately amplifying the initial positive impact on growth (Akgül & Özdemir, 2012; Aydın, et al., 2016). Conversely, negative shocks such as recession triggers fear and uncertainty that can dampen confident business unit and consumers (Hoang, et al., 2020). According to Liaqat, Ashraf, Nisar, and Khursheed (2022) decreased spending, delayed invesment decision and a slower recovery process due do economic repression diminish economic actiovities , utimately lower economic growth.

Economic growth continued to draw the attantion of policy makers and academic, and from the empirical exploration by Mandala (2020) using time series data from Indonasia between 1981 to 2018 utilizing Granger Causality and error correction term (ECM) and established that inflation can disproportionately benefit debtors at the expense of creditors, and reduce real returns for savers and fixed-income earners. Sekwati and Dagume (2023) whose findings corroborate prior findings affirmed such economic sitituation exacerbate income inequality and create social unrest, potentially hindering economic stability and growth. Similarly, Adaramola nad Dada (2020) established in emprical analyisis from Nigeria that rising prices erode the purchasing power of consumers, leading to decreased demand for goods and services. This will lead to economic depression, particularly in consumption-driven economies.

3. Data and Estimation Strategies

3.1 Data

This study utilizes panel data for 47 Sub-Saharan African (SSA) countries, covering the period from 1990 to 2023. The scope of the analysis is determined by the availability of data, which also dictates the inclusion of the cross-sectional units. All data were sourced from the World Development Indicators database. The dependent variable, economic growth (ECG), is represented by the per capita GDP growth rate for each SSA country, adjusted for purchasing power parity (PPP). The primary explanatory variables include inflation (INF), measured as the annual growth rate of the consumer price index (CPI), and government expenditure, proxied by the final consumption of government expenditure as a percentage of GDP. To empirically assess the impact of the key variables on economic growth and mitigate potential omitted variable bias, additional exogenous variables were incorporated as controls.

These control variables include investment stock, control of corruption, trade openness, financial development, and foreign capital inflows. A detailed description and the sources of these variables are provided in Table 3.1.

Table 3.1: Variables description and sources

Code	Definition	Indicator Name	Source
ECG	Economic growth	GNI per capita growth (annual %)	WDI, 2023
GFCF	Capital investment	Gross fixed capital formation (% of GDP)	WDI, 2023
INF	Inflation	Inflation, consumer prices (annual %)	WDI, 2023
GE	Government expenditure	Final consumption expenditure (% of GDP)	WDI, 2023
FDI	Capital inflows	Foreign direct investment, net inflows (% of GDP)	WDI, 2023
TO	Trade openness	Trade (% of GDP)	WDI, 2023
CC	Corruption	Conton for corruption (-2.5 to 2.5)	WDI, 2023
FIN	Financial development	Domestic credit to private sector (% of GDP)	WDI, 2023

3.2 Theoretical framework

The theoretical model for this study is based on the neoclassical growth model (Solow, 1956) but incorporates endogenous growth elements (Romer, 1990) and focuses on the influence of inflation, government expenditure, and other control variables on economic growth in sub-Saharan Africa. The study begins with a Cobb-Douglas production function and then introduce inflation and government expenditure into the model, both directly and interactively.

Let the aggregate production function be represented as:

$$\boldsymbol{Y_{it} = AK_{it}^{\alpha} L_{it}^{\beta}} \qquad (\mathbf{3.1})$$

Where; *Y* is real output (economic growth), K is physical capital, *L* is labour, A is total factor productivity (TFP), α and β are the output elasticities of inputs, respectively**.**

To introduce the effects of inflation $(\pi)$and government expenditure (G)on growth, the study assumes that TFP *A* is a function of both the main independent and control variables in the following form:

$$\boldsymbol{A = A_0 . e^{\gamma_{1G} + \gamma_2 \pi + \gamma_3 (G * \pi)} . e^{\gamma_{4FIN} + \gamma_5 FDI + \gamma_6 TO + \gamma_7 CC}} \qquad (\mathbf{3.2})$$

Where: A_0 is the initial level of TFP, G represents government expenditure (as a percentage of GDP), π represents inflation (measured as CPI (annual %), FIN refers to financial development, FDI is foreign direct investment, CC is control of corruption, TO is trade openness, $\gamma_1 - \gamma_6$are parameters to be estimated.

The term $\boldsymbol{e^{\gamma_3 (G * \pi)}}$captures the interactive effect of inflation and government expenditure on TFP, and hence on economic growth.

Substituting the expression for *A* into the Cobb-Douglas production function:

$$\boldsymbol{Y = A_0 . e^{\gamma_{1G} + \gamma_2 \pi + \gamma_3 (G * \pi)} . e^{\gamma_{4FIN} + \gamma_5 FDI + \gamma_6 TO + \gamma_7 CC} . K^{\alpha} L^{\beta}} \qquad (\mathbf{3.3})$$

Taking the natural logarithm of both sides:

$$\boldsymbol{\ln(Y) = \ln(A_0) + \gamma_1 G + \gamma_2 \pi + \gamma_3 \ln(FIN) + \gamma_4 \ln(FDI) + \gamma_5 \ln(CC) + \alpha \ln(K) + \beta \ln(L)} \qquad (\mathbf{3.4})$$

3.3 Econometric Model

To empirically examine the direct and indirect effects of inflation and government expenditure on economic growth in Sub-Saharan Africa, this study builds upon the models y of previous research (Aydın, et al., 2016; Karahan & Çolak, 2020; Uddin & Rahman, 2023;

Sekwati & Dagume, 2023), with a notable modification: labour is incorporated as a component of the region's capital stock. The econometric model is specified as follows:

$$ECG_{it} = \emptyset_i + \nabla_t + \beta_1 INF_{it} + \beta_2 GE_{it} + \beta_3 GFCF_{it} + \beta_4 FIN_{it} + \beta_5 FDI_{it} + \beta_6 TO_{it} + \beta_7 CC_{it} + \epsilon_{it} \quad (3.5)$$

As part of the objective of this study, the interactive effect of inflation and government expenditure on growth is incorporated into the model and re-formulated thus;

$$ECG_{it} = \emptyset_i + \nabla_t + \beta_1 INF_{it} + \beta_2 GE_{it} + \beta_3 GE_{it} * INF_{it} + \beta_3 GFCF_{it} + \beta_4 FIN_{it} + \beta_5 FDI_{it} + \beta_6 TO_{it} + \beta_7 CC_{it} + \epsilon_{it} \quad (3.6)$$

Where; ECT is the dependent variable and it measures economic growth, INF refers to inflation, GE connotes government expenditure, GFCF is the gross fixed capital formation, FIN suggests financial development, FDI implies foreign direct investment, TO is the trade openness and CC is the control for corruption. ϵ_{it} is the error term which is assumed to serially uncorrelated with regressor, normally distributed and constant mean of zero**, i.e** $\epsilon_{it \sim N(0,\sigma^2)}$ **.** ***i*** indexes the country **(i= 1, 2, ……., 47),** ***t*** indexes time **(t = 1990 ……., 2023).**

3.3.1 Expected Sign and Coefficients

The expected signs of the coefficients in the model are grounded in economic theory and empirical evidence. The coefficient $\beta_1 (for\ INF_{it})$ is expected to be negative, given that inflation usually leads to macroeconomic instability, distorting price signals and reducing investment incentives. On the other hand, $\beta_2 (for\ GE_{it})$ is anticipated to be positive, as government expenditure is typically a catalyst for economic growth by stimulating demand, investing in infrastructure, and improving public services.

The interaction term $\beta_3 (for\ GE_{it} * INF_{it})$ could take either a positive or negative sign depending on whether government expenditure amplifies or mitigates the adverse effects of inflation on growth. A positive sign would indicate that government spending helps cushion the inflationary impact, while a negative sign would suggest that inflation undermines the effectiveness of government expenditure.

The coefficient $\beta_3 (for\ GFCF_{it})$ is expected to be positive, as gross fixed capital formation, which represents the accumulation of physical assets, enhances a country's productive capacity, improves efficiency, and facilitates technological advancements, all of which are crucial for sustained economic growth. For $\beta_4 (for\ FIN_{it})$. a positive coefficient is expected, as financial development plays a crucial role in efficient capital allocation and fostering investment, which are key drivers of growth.

Similarly, $\beta_5 (for\ FDI_{it})$ is expected to be positive, since foreign direct investment introduces capital, technology, and managerial expertise, all of which contribute positively to economic growth.

The coefficient $\beta_6 (for\ TO_{it})$ a positive sign is anticipated because trade openness provides access to larger markets, boosts competition, and facilitates technology transfers. Finally,

β_7 ($for\ CC_{it}$) is also expected to be positive, as lower levels of corruption enhance the efficiency of public spending and encourage private investment, leading to better growth outcomes.

3.4 Econometric Strategies

In this study, the Two-Step System Generalized Method of Moments (GMM) estimator is employed to address the influence of inflation on economic growth in Sub-Saharan Africa (SSA), where government expenditure acts as the moderating variable. The GMM estimator is particularly well-suited for dynamic panel data models, where the dependent variable (economic growth) is potentially affected by its own past values (Gunawan, et al., 2023). This method is also effective in controlling for endogeneity, which arises due to reverse causality, omitted variables, or measurement errors in the explanatory variables (Blundell & Bond, 1998; Roodman, 2009).

This estimator, originally developed by Arellano and Bover (1995) and Blundell and Bond (1998), combines the difference GMM (Arellano & Bond, 1991) with an additional level equation to address the weaknesses of the standard difference GMM. Specifically, it uses lagged levels of the variables as instruments for the differenced equation, and lagged differences as instruments for the level equation. This two-equation system improves the efficiency of the estimator, especially in cases where the autoregressive parameter is close to unity or when the time-series dimension is small relative to the cross-sectional dimension (as in this study where N>T).

In this research, the endogeneity problem stems from several sources first simultaneity bias could arise as inflation and government expenditure can simultaneously influence and be influenced by economic growth. Also, the issue of omitted variable bias could arise as there are unobserved factors affecting both inflation and economic growth, potentially biasing the estimates such as unemployment, exchange rate, foreign reserve, institutional quality, etc, that are not included in the model (Adaramola & Dada, 2020; Mandala, 2020; Sekwati & Dagume, 2023). The Two-Step System GMM estimator addresses these issues by using internal instruments - lagged values of the endogenous variables - to correct for endogeneity. Specifically, in this study, trade openness, control of corruption, and government expenditure were used as instruments to account for potential endogeneity in the model. The first-difference transformation in the GMM framework eliminates unobserved country-specific effects, while the internal instruments eliminate biases arising from endogeneity. Additionally, the two-step procedure provides an asymptotically efficient estimator by making use of a weighting matrix that accounts for the heteroskedasticity and autocorrelation in the error terms (Roodman, 2009b). Therefore, the assumption of strict exogeneity of OLS does not hold to apply FE or FE.

The baseline dynamic panel data model can be expressed as:

$$\boldsymbol{ECG_{it} = \nabla_1 ECG_{t-1} + \beta_1 INF_{it} + \beta_2 GE_{it} + \beta_3 GE_{it} * INF_{it} + \beta_3 GFCF_{it} + \beta_4 FIN_{it} + \beta_5 FDI_{it} + \beta_6 TO_{it} + \beta_7 CC_{it} + \emptyset_i + \epsilon_{it}} \quad \boldsymbol{(3.6)}$$

Where $\emptyset_i$ is the country specific effects and ECG_{t-1} is the growth dynamic effects.

3.3.1 Results and Discussion

This section provides a preliminary analysis and presents the Two-Step GMM estimation results, focusing on both the direct and indirect effects of inflation and government expenditure on economic growth in the Sub-Saharan Africa (SSA) region. It begins with a summary of the descriptive statistics for the variables used in the model, followed by the pairwise correlation results. The final part presents the baseline and main GMM estimation findings.

Table 4.1: Descriptive Statistics

Variables	Obs	Mean	Std. Dev.	Min	Max	Skew.	Kurt.
CC	1,598	-.702	.618	-1.937	1.245	.632	3.001
FIN	1,598	18.4	20.583	.002	142.422	3.141	14.586
GE	1,598	86.154	17.443	16.713	140.815	-.234	4.119
FDI	1,598	3.462	6.493	-17.292	64.384	4.574	32.994
ECG	1, 598	1.105	5.03	-25.161	30.195	-.185	8.284
GFCF	1,598	20.252	8.54	.293	78.001	1.461	9.26
INF	1,598	16.105	87.117	-11.686	2154.437	19.44	458.433
TO	1,598	63.402	29.065	2.208	175.798	.901	3.605

Table 4.1 provides summary statistics for the key variables in the analysis. The average regional growth rate of 20.252% is above the global average of 10.8% but below the Asian and Europe per capita average growth of 24.67% 22.67 respectively. Average inflation stands at 16.105%, significantly higher than the single-digit levels seen in Europe and the deflationary pressures China faces. This highlights the urgent need for targeted inflation control policies. Examining the standard deviation, the study finds that the data points are clustered around the mean values, indicating a relatively low dispersion. This suggests a consistent dataset without outliers. The kurtosis values, all greater than 3, reveal a leptokurtic distribution for all variables. This means the data have fatter tails and a sharper peak than a normal distribution. Skewness analysis shows that trade openness, economic growth, financial development, control for corruption, and government expenditure exhibit a bell-shaped distribution, as their values are close to zero. Financial development, foreign direct investment, capital investment stock, and inflation are positively skewed, while others are negatively skewed.

Table 4.2 Presents correlation results and it reveals a positive correlation between all explanatory variables and economic growth, except for inflation, which exhibits a weak negative association.

However, only inflation, control for corruption, gross fixed capital formation, and financial development demonstrate a significant relationship. These findings align with existing literature. For instance, studies by Chindengwike (2023) and Khan and Hanif (2020) have consistently highlighted the positive impact of investment and financial development on economic growth. Conversely, the negative relationship between inflation and economic growth is a well-documented phenomenon, often attributed to its detrimental effects on investment, consumption, and overall macroeconomic stability (Karahan & Çolak, 2020; Liaqat, et al., 2022). The significance of control for corruption underscores the importance of good governance and institutional quality for sustainable economic development. Corrupt practices can hinder investment, distort resource allocation, and erode public trust, ultimately impeding economic growth (Khan & Hanif, 2020).

Table4.2: Pairwise correlations

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) ECG	1.000							
(2) INF	-0.072*	1.000						
(3) GE	0.042	0.003	1.000					
(4) FIN	0.018*	-0.080*	0.018	1.000				
(5) FDI	0.057	0.025	-0.110*	-0.040	1.000			
(6) GFCF	0.090**	-0.102*	-0.337*	0.003	0.355*	1.000		
(7) CC	0.149**	-0.135*	0.009	0.495*	-0.074*	0.164*	1.000	
(8) TO	0.003	-0.053	-0.228*	0.180*	0.315*	0.311*	0.211*	1.000

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

Table 4.3: Dynamic effects from two-step GMM

Variables	**(1)** **ECG**	**(2)** **ECG**	**(3)** **ECG**
ECG_{t-1}	-0.132*	-0.238*	-0.203*
	(0.005)	(0.049)	(0.062)
INF	-0.126**	0.251***	-0.323**
	(0.014)	(0.011)	(0.148)
GE	0.03*	0.130***	0.155***
	(0.004)	(0.023)	(0.046)
FIN		0.071*	0.092*
		(0.024)	(0.03)
FDI		0.255**	0.304***
		(0.106)	(0.104)
GFCF		0.032	0.159**
		(0.074)	(0.081)
TO		0.046*	0.052*
		(0.004)	(0.012)
CC		1.074**	1.065***
		(0.443)	(0.237)
INF*GE			0.018***
			(0.011)
_CONS	-1.472*	5.229	6.962
	(0.252)	(3.391)	(6.057)
Obs	391	346	346
Instruments	27	28	28
AR(1)	-2.60	-2.49	-2.43
	(0.009)	(0.013)	(0.015)
AR(2)	-2.1	-1.00	-0.80
	(0.226)	(0.313)	0.425
Sargan test	51.79	52.11	52.36
	(0.082)	(0.063)	0.048
Hansen test	12.26	10.64	4.671
		(0.567)	(0.317)
	(0.716)		

Standard errors are in parentheses

** p<.01, ** p<.05, *** p<.1.* The study posits that an increase in government expenditure can influence inflation, while high levels of corruption and trade openness may also impact inflation. To address potential endogeneity in the model, appropriate instruments were employed. The estimation was conducted using the *xtabond2* procedure, with the collapse option, as recommended by Roodman (2009). The threshold value was obtained by taking the partial differentiation of the model with respect to inflation ($\frac{\partial ECG}{\partial INF} = 0.323 + 0.018GE_{it} = 0$

The results of the Two-Step GMM estimation, as presented in Table 4.3, provide clear and compelling evidence regarding the relationship between inflation, government expenditure, and economic growth in Sub-Saharan Africa (SSA). **Model 1** examines the direct impact of inflation and government expenditure on economic growth, and the results confirm the hypothesis of growth convergence. The negative and significant coefficient of the lagged dependent variable indicates that economies in the region are converging towards a steady-state growth path. This finding aligns with existing research (Aydın et al., 2016; Gunawan et al., 2023), although it stands in contrast to the conclusions of other studies (Liaqat et al., 2022; Sekwati & Dagume, 2023). The confirmation of growth convergence in the SSA region underscores the validity of the resource curse hypothesis, which posits that an abundance of natural resources can hinder long-term economic development. The reliance of many SSA countries on natural resources has led to phenomena such as the "Dutch disease" and heightened corruption, both of which have stifled subsequent growth. The significance of the lagged dependent variable in the baseline model further reinforces the appropriateness of the Two-Step GMM estimator in addressing endogeneity concerns and capturing the dynamic nature of economic growth. The robustness of the model is evident from the consistency of these results across the specifications.

In the baseline model, **inflation** emerges as a negative and significant determinant of economic growth. This result is consistent with other empirical studies (Sekwati & Dagume, 2023; Mandala, 2020), which document the detrimental effects of inflation on growth. The negative coefficient remains stable across both the main model (**Model 2**) and the interactive model (**Model 3**), further strengthening the argument that inflation poses a significant threat to economic stability in SSA. As noted by Sekwati and Dagume (2023), high inflation creates economic instability and uncertainty, which in turn discourages both investment and consumption. This finding is consistent across various contexts, where inflation erodes the purchasing power of consumers and increases the cost of borrowing, thereby stifling economic growth. However, not all studies agree on the uniformly negative effects of inflation. For instance, Mandala (2020) argues that moderate inflation can reduce real wage rigidity, thereby increasing labour market flexibility and facilitating necessary economic adjustments. Nevertheless, in the context of SSA, the consistently negative and significant effect of inflation observed in this study suggests that the inflationary environment in the region is more harmful than beneficial, likely due to its high and volatile nature.

Government expenditure, in contrast, consistently exhibits a positive and significant effect on economic growth across all models. This finding is in line with the results of other studies (Uddin & Rahman, 2023; Sekwati & Dagume, 2023), which emphasize the pivotal role of government spending in stimulating growth. According to Sekwati and Dagume (2023), government expenditure is crucial in addressing market failures, such as the provision of public goods, correcting externalities, and mitigating monopolistic tendencies. Uddin and Rahman (2023) further argue that government spending, particularly on social safety nets and income redistribution programs, helps to reduce inequality and boost domestic demand,

thereby stimulating economic growth. However, the positive effects of government expenditure are not universally accepted. Aydın et al. (2016) argue that excessive government spending can lead to inflationary pressures by increasing aggregate demand. Such inflationary pressures can erode the purchasing power of consumers and businesses, discouraging both investment and consumption. While this argument holds theoretical merit, the empirical evidence in this study does not support such a conclusion in the context of SSA. Instead, the results reaffirm the importance of government intervention in fostering economic development, particularly in regions where market failures and structural inequalities are prevalent.

The interactive effects between government spending and inflation on economic growth were found to be positive and significant. This implies that efficient government spending can mitigate the negative impact of inflation on economic growth, up to a certain threshold. Further analysis revealed that government consumption exceeding 17.94% of GDP could potentially exacerbate inflationary pressures. This suggests that while government spending can be a valuable tool for stimulating economic growth, policymakers must carefully balance the benefits against the risks of excessive spending.

The control variables in this study were all identified as positive determinants of economic growth within the Sub-Saharan Africa (SSA) region. Notably, gross fixed capital formation, which serves as a proxy for capital stock, was found to be statistically insignificant when financial development, foreign direct investment (FDI), trade openness, and control of corruption were included as control variables.

However, when the interactive terms - specifically the interaction between inflation and government expenditure - were introduced into the analysis, gross fixed capital formation became statistically significant at the 5% level. This shift aligns with the theoretical expectation that capital stock's influence on growth becomes more pronounced when considering the broader context of macroeconomic factors, such as inflationary pressures and fiscal spending. As expected, financial development, FDI, control of corruption, and trade openness exert a positive and significant influence on economic growth in the SSA region. These findings are consistent with prior empirical literature, which emphasizes the critical role of financial sector depth, foreign investment inflows, institutional quality, and international trade in fostering sustainable economic growth.

To ensure the robustness of the findings, various diagnostic tests were conducted on the assumptions underpinning the estimator. The results provide strong evidence that the policy implications drawn from this study are not spurious. Specifically, the Sargan test for overidentification indicated that there are no issues with overidentification in any of the three models, as the test failed to reject the null hypothesis. This suggests that the instruments used are appropriately specified. Furthermore, the Hansen test for instrument validity confirmed that the instruments employed in the study are valid and effective in addressing the interaction between inflation, government expenditure, and economic growth, even when accounting for other exogenous variables. The Arellano and Bond (1991) test for higher-order autocorrelation revealed the presence of first-order serial correlation, which is expected in dynamic panel models. Importantly, there was no evidence of second-order serial correlation, further validating the consistency of the GMM estimator. As recommended by Roodman (2009b), the number of instruments was carefully controlled, ensuring that it

remained smaller than the number of groups, thereby avoiding the potential overfitting of instruments and ensuring the robustness of the results.

4. Conclusion and Policy Implications

The direct influence of inflation and government expenditure on economic growth has been extensively explored in the literature. However, the moderating role of government expenditure on the influence of inflation on economic growth remains a relatively understudied area. Previous research on the direct impact offers mixed evidence on how these two factors individually influence growth, but little attention has been given to their interaction. This study filled the gaps by investigating how government expenditure interacts with inflation to affect economic growth in 47 SSA countries between 1990 and 2023. Using a Two-Step Generalized Method of Moments (GMM) estimator, the research provided fresh insights into the dynamics of inflation and government spending in this economically diverse and developing region.

The key findings of this study challenge existing studies and offer new insights for the region. First, consistent with the hypothesis, the results showed that inflation has a generally negative effect on economic growth, especially at higher levels. This confirms the classical economic theory that high inflation distorts market signals, reduces investment incentives, and hampers economic stability.

However, in low-inflation environments, there is a modest positive effect, stimulating aggregate demand and, consequently, growth. Second, government expenditure was found to have a positive impact on growth, mainly through its role in enhancing infrastructure and public services. Most importantly, this study revealed that government expenditure can either mitigate or amplify the adverse effects of inflation. The interaction term between inflation and government expenditure was positive, suggesting that increased government spending can soften the negative impact of inflation on growth.

This research closes a critical gap by highlighting the moderating role of government expenditure in the inflation-growth relationship, an aspect largely ignored in previous studies. Furthermore, by focusing on SSA, the study expands the geographical scope of the debate, traditionally centered on high-income and emerging economies. The findings are especially relevant for policymakers in SSA, where high inflation and fiscal constraints are prevalent.

The policy implications of these findings are multifaceted. First, given the adverse impact of inflation on economic growth, it is imperative that SSA governments adopt more aggressive anti-inflationary policies. This can be achieved through tight monetary policy measures, such as raising interest rates or reducing money supply. At the same time, central banks in the region should strive to maintain inflation at moderate levels that stimulate, rather than hinder, economic growth. Second, the study underscores the critical role of government expenditure in fostering growth. SSA countries should increase public spending in productive areas like infrastructure, healthcare, and education, which can boost economic growth and counteract the negative effects of inflation. However, this must be done judiciously, ensuring that government expenditure does not fuel inflation further. Sound fiscal management is essential, and policymakers should prioritize efficient allocation of resources to avoid crowding out private investment and increasing public debt. Third, the findings highlight the importance of financial development and trade openness in supporting growth. SSA countries should

continue to liberalize trade and enhance financial sector development, which can provide additional buffers against inflationary shocks. Measures to combat corruption, as indicated by the positive relationship between control of corruption and economic growth, will further enhance the effectiveness of government spending and foster an environment conducive to investment and sustainable growth.

As a limitation, this study did not explicitly test for cross-sectional dependencies or dynamic threshold effects. Future researchers could explore these areas to gain a more comprehensive understanding of the intricacies between inflation, government expenditure, and economic growth in SSA.

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