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Macroeconomic Determinants of Economic Growth in Sub-Saharan Africa: A Panel CS-ARDL Approach

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ABSTRACT

This study examines the macroeconomic determinants of economic growth in 47 Sub-Saharan African (SSA) countries using the Cross-Sectionally Augmented Autoregressive Distributed Lag (CS-ARDL) model over the period 1980–2023. The empirical findings indicate that government expenditure is the only variable that exerts a positive and statistically significant effect on economic growth in both the short run (coefficient = 0.2288, $p < 0.001$) and the long run (coefficient = 0.1396, $p < 0.001$). Conversely, imports have a negative, statistically significant effect on economic growth in both the short run (coefficient = –0.0039, $p = 0.013$) and the long run (coefficient = –0.0024, $p = 0.019$), suggesting that excessive reliance on imports may constrain economic performance in the region. Gross capital formation, exports, foreign direct investment (FDI), and inflation were found to have statistically insignificant effects on economic growth in both the short- and long-run. Furthermore, the lagged dependent variable (coefficient = –0.5958, $p < 0.001$) and the error-correction term (ECT = –1.5958, $p < 0.001$) confirm the existence of a stable long-run equilibrium relationship and indicate a rapid adjustment process following short-run deviations from equilibrium. The study concludes that productive government expenditure remains a key driver of economic growth in SSA, while import dependence poses a challenge to sustainable economic expansion. Accordingly, policymakers should prioritize efficient public investment, strengthen domestic productive capacity, promote industrialization and export diversification, and

implement policies to reduce excessive reliance on imports to achieve sustained economic growth across the region.

1.Introduction

Sustained and inclusive economic growth remains one of the foremost development challenges in Sub-Saharan Africa (SSA). Over the past four decades (1980–2024), the region has experienced mixed economic performance, characterised by intermittent periods of expansion, stagnation, and contraction (WB, 2024).

Despite abundant natural resources, a growing working-age population, and increased global integration, SSA economies continue to experience sluggish industrialisation, weak structural transformation, and persistent macroeconomic instability (WB, 2024). As a result, poverty levels remain high, income inequality is widening, and progress toward the Sustainable Development Goals (SDGs) is uneven and slow.

Macroeconomic fundamentals are widely recognised as key drivers of economic growth. Variables such as Foreign Direct Investment (FDI), inflation, government expenditure, gross capital formation, and international trade (imports and exports) have been empirically linked to economic performance in both developed and developing economies. However, within the SSA context, empirical findings have been mixed and inconclusive. For instance, Shuaibu and Chua (2020), using a CS-ARDL model on 40 SSA countries (1992–2018), found that trade had positive short-run but negative long-run effects on growth, suggesting structural inefficiencies in trade composition.

Similarly, Kesuh et al. (2024), analysing Cameroon using the ARDL model, reported that trade openness, government expenditure, and capital formation positively affected growth, while inflation and FDI negatively affected growth in both the short- and long-run. Other studies highlight the role of infrastructure and institutions in mediating the impact of macroeconomic variables. Ogbaro et al. (2023), using CS-ARDL on 25 SSA countries (1996–2020), found that infrastructure alone does not enhance growth unless supported by strong institutional frameworks. Meanwhile, Oyebowale and Algarhi (2020) found, in a panel study of 21 African economies, that government expenditure, capital formation, and exports have significant positive effects on long-

run growth. In contrast, broad money supply and inflation did not show consistent effects.

These conflicting findings are partly attributable to methodological limitations. Many studies use econometric models that fail to account for cross-country interdependence, structural breaks, and heterogeneity in economic structure and policy responses. Moreover, the majority of studies either focus on short time frames or single-country analyses, limiting their ability to generalise findings across the SSA region or capture long-run economic dynamics. As a result, policymakers often lack robust, region-wide empirical evidence to guide macroeconomic reforms aimed at stimulating sustained growth.

Given the growing complexity of global economic linkages, the susceptibility of SSA economies to external shocks (such as commodity price swings, capital flow reversals, and climate change), and persistent domestic challenges, a more comprehensive, data-driven analysis is urgently needed. There is a clear research gap in understanding how a broad set of macroeconomic indicators jointly influence economic growth across the SSA region, over time, and under varying structural conditions.

This study seeks to fill that gap by analysing the macroeconomic determinants of economic growth across 47 Sub-Saharan African countries over the period 1980 to 2023. Using the Cross-Sectionally Augmented Autoregressive Distributed Lag (CS-ARDL) model, the study accounts for both short-run and long-run dynamics, while addressing key issues such as cross-sectional dependence and country-specific heterogeneity. By offering updated, robust empirical evidence, the findings aim to support the formulation of more effective, context-specific macroeconomic policies that promote sustained growth across SSA.

Sub-Saharan Africa (SSA) continues to face persistent challenges in achieving sustained and inclusive economic growth, despite its abundant natural resources, growing population, and increasing efforts toward regional integration. The region remains highly vulnerable to internal and external shocks, including inflation volatility, exchange rate instability, and unpredictable capital flows, which hinder long-term development efforts. Over the past decades, policymakers and scholars have focused on macroeconomic fundamentals such as foreign direct investment (FDI), inflation, government expenditure, gross capital formation, and trade (imports and exports),

as key drivers of economic growth. However, empirical findings remain inconclusive and context-specific, particularly within SSA.

Previous studies show mixed results regarding the role of these macroeconomic variables. For example, trade openness and government spending are often found to enhance growth in some contexts (Oyebowale & Algarhi, 2020; Kesuh et al., 2024), while inflation and FDI have shown negative or insignificant effects in others (Samsuddin & Amar, 2020; Shuaibu & Chua, 2020). Moreover, existing empirical studies often suffer from methodological limitations, including failure to account for cross-sectional dependence, dynamic heterogeneity, and structural differences across countries. Many of these studies focus on individual countries or sub-regions (East or North Africa), limiting the generalizability of their findings to the broader SSA region.

More importantly, few studies comprehensively examine the joint impact of a wide range of macroeconomic variables on economic growth across a large sample of SSA countries using advanced econometric techniques that can address these methodological concerns. This gap hampers the formulation of coherent, evidence-based macroeconomic policies across the region.

This study addresses the existing gap by analysing 47 countries in Sub-Saharan Africa over a multi-decade period using the Cross-Sectionally Augmented Autoregressive Distributed Lag (CS-ARDL) model. This method corrects for cross-country interdependence and dynamic heterogeneity, providing robust short-run and long-run estimates of how key macroeconomic indicators, namely FDI, inflation, exchange rate, gross capital formation, government expenditure, imports, exports, and interest rates, influence real GDP. The study's wide regional coverage and advanced methodology position it to offer new, policy-relevant insights into the macroeconomic determinants of economic growth in SSA, particularly in an era of global economic uncertainty and structural transformation.

2. Methodology

2.1 Study area

The study was conducted in Sub-Saharan Africa (SSA), comprising 47 countries: Angola, Benin, Botswana, Burkina Faso, Burundi, Cabo Verde, Cameroon, the Central African Republic, Chad,

Comoros, the Republic of the Congo, the Democratic Republic of the Congo, Djibouti, Equatorial Guinea, Eswatini, Ethiopia, Gabon, The Gambia, Ghana, Guinea, Guinea-Bissau, Côte d'Ivoire, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mauritius, Mozambique, Namibia, Niger, Nigeria, Rwanda, São Tomé and Príncipe, Senegal, Seychelles, Sierra Leone, Somalia, South Africa, Sudan, Tanzania, Togo, Uganda, Zambia, and Zimbabwe (AfDB, 2022).

This region was selected for its diverse economic structures, varying levels of development, and ongoing, albeit uneven, structural transformation (WB, 2024). Sub-Saharan Africa provides a unique setting for examining the role of macroeconomic variables in shaping economic growth, as countries within the region exhibit substantial differences in economic performance, institutional capacity, and policy environments. Understanding these dynamics is crucial to informing evidence-based policies that promote inclusive, balanced, and sustainable economic development across the region.

2.2 Research Design

This study adopts a quantitative panel econometric design to investigate the macroeconomic determinants of economic growth in Sub-Saharan Africa (SSA). The design is appropriate because it enables the analysis of both short-run and long-run dynamics while accounting for cross-country heterogeneity and interdependencies that characterise SSA economies.

Secondary data covering the period 1980 to 2023 were obtained from the Economic Commission for Africa (ECA) database (https://ecastas.uneca.org/data/) to model economic growth and macroeconomic variables. The analysis focused on macroeconomic variables, including Government Expenditure (GE), inflation, imports, exports, Foreign Direct Investment (FDI), and Gross Capital Formation (GCF).

2.3 Theoretical Framework

This study is anchored in the Neoclassical Growth Theory, Endogenous Growth Theory, Keynesian Fiscal Theory, and Trade Theory. The Neoclassical Growth Theory posits that capital accumulation is a key driver of economic growth; therefore, Gross Capital Formation (GCF) is expected to positively influence economic growth by increasing productive capacity and labor productivity. Endogenous Growth Theory emphasises technological innovation, knowledge spillovers, and

productivity improvements as sources of sustained growth. Within this framework, Foreign Direct Investment (FDI) and exports are expected to promote economic growth through technology transfer, capital inflows, market expansion, and increased competitiveness.

Further, Keynesian Fiscal Theory highlights the role of government intervention in stimulating economic activity through public expenditure. Consequently, government expenditure is expected to positively affect economic growth by supporting infrastructure development, investment, and employment creation. Trade theory suggests that imports can contribute to growth by providing access to capital goods, intermediate inputs, and advanced technologies, although excessive dependence on imports may adversely affect domestic production. Therefore, the effect of imports on economic growth may be either positive or negative. Furthermore, macroeconomic stability theory identifies inflation as an important determinant of economic performance. While moderate inflation may accompany economic expansion, high and persistent inflation can create uncertainty, discourage investment, and reduce economic efficiency. As a result, inflation is generally expected to affect economic growth negatively.

2.4 Study Variables

This study examines the macroeconomic determinants of economic growth in Sub-Saharan Africa, using the natural logarithm of GDP (InGDP) as the dependent variable. Independent variables include Government Expenditure (InGE), inflation, imports, exports, Foreign Direct Investment (FDI), and Gross Capital Formation (GCF). These variables capture key fiscal, trade, investment, and price stability factors that influence growth. Monetary variables are log-transformed for normalisation and ease of interpretation. Table 1 provides details on their measurement and description.

Table 1: Description and Measurement of Study Variables

Variable	Measurement / Description
Dependent Variable	
GDP (InGDP)	Gross Domestic Product (Current USD dollars); natural log used for normalisation
Independent Variables	
Government Expenditure (InGE)	Government Expenditure (Current USD dollars); natural log used for normalisation

Inflation (GDP Deflator)	Measures the average price level of all goods and services produced in an economy. - (annual % growth)
Imports	Total imports as % of GDP
Exports	Total exports as % of GDP
FDI	Net inflows of Foreign Direct Investment as % of GDP
Gross Capital Formation (GCF)	Total investment in physical assets as % of GDP

2.5 Methods of Data Analysis

2.5.1 Pre-Estimation Diagnostics

The study employed Pesaran's CD Test (2004 and 2007) to examine cross-sectional dependence among 47 Sub-Saharan African countries over the study period. To strengthen the robustness of the results, additional checks using the Friedman (1937), the Breusch–Pagan LM (1980), and Frees (1995) tests were also conducted. Since the results indicated cross-sectional dependence, the study applied the Cross-sectionally Augmented IPS Test to examine the stationarity properties of the variables, as this second-generation test accounts for common shocks and interdependencies across countries.

In addition, optimal lag lengths were determined using the Modified Akaike Information Criterion, Modified Bayesian Information Criterion, and Hannan–Quinn Information Criterion, which help balance model fit and parsimony. Before estimation, multicollinearity among explanatory variables was also examined using the Variance Inflation Factor.

2.5.2 Model specification

The study used the Cross-Sectionally Augmented Autoregressive Distributed Lag (CS-ARDL) model to examine the effects of macroeconomic variables on economic growth across 47 countries in SSA. Given cross-sectional dependence, heterogeneity across countries, and potential endogeneity of lagged GDP, the model is estimated using the CS-ARDL approach developed by Chudik and Pesaran (2015).

The CS-ARDL model can be expressed as follows:

$$\Delta InGDP_{it} = \alpha_i + \sum_{k=1}^{p} \varphi_{i,k} \Delta InGDP_{i,t-k} + \sum_{k=0}^{q} \sum_{j=1}^{J} \beta_{j,i,k} \Delta X_{j,i,t-k} + \emptyset_i (InGDP_{i,t-1} - \sum_{j=1}^{J} \theta_{j,i} X_{j,i,t-1}) + e_{it}$$

Where:

$i = 1,2,3, \ldots\ldots, N$ indexes countries and $t = 1,2,3, \ldots\ldots, T$ indexes times,

Δ denotes first differences,

α_i is the country-specific fixed effect

φ_{it} captures the short-run dynamics of GDP

$\beta_{j,ik}$ are the short-run effects of explanatory variables at lag k

The term in parentheses is the Error Correction Term (ECT) with $\emptyset_i$ measuring the speed of adjustment toward the long-run equilibrium

$\theta_{j,i}$ represent the long-run coefficients of explanatory variables' contributions

e_{it} is the idiosyncratic error term.

This specification allows for capturing both short-run dynamics and long-run relationships, while controlling for cross-sectional dependence via country averages of the variables.

3. Results and Discussion

3.1 Results

3.1.1 Summary Statistics

The descriptive statistics presented in Table 2 summarize the characteristics of the study variables based on 2,068 observations from Sub-Saharan African countries. The natural logarithm of GDP (lnGDP) has a mean value of 8.46 and a standard deviation of 1.68, indicating moderate variation in economic output across countries and over time. The skewness value of –0.03 suggests that the distribution of GDP is approximately symmetric, with no substantial departure from normality.

Government expenditure (lnGE) records an average value of 20.36 and a standard deviation of 1.52, indicating relatively low variability across the sample. Its skewness coefficient of 0.18 further suggests a nearly symmetric distribution. Gross Capital Formation (GCF), a proxy for investment activity, has a mean of 22.43 and a standard deviation of 11.56, reflecting considerable differences in investment levels across countries and periods. The positive skewness of 1.68 indicates that some countries experienced investment rates substantially above the sample average.

Inflation has a mean value of 13.58 and a standard deviation of 28.17, revealing substantial variation in price levels across the region. The high skewness coefficient of 9.07 indicates the presence of extreme inflation episodes in a few countries during the study period. Similarly, imports and exports exhibit considerable heterogeneity, with average values of 39.81 and 29.07, respectively. Imports have a standard deviation of 26.28 and a skewness of 2.27, while exports have a standard deviation of 20.28 and a skewness of 1.70. These positive skewness values suggest that a small number of countries recorded exceptionally high trade volumes relative to the rest of the sample.

Foreign Direct Investment (FDI) records an average value of 3.27 with a standard deviation of 7.85, indicating substantial variability in foreign capital inflows across countries. The skewness coefficient of 8.57 reveals a highly right-skewed distribution, implying that a few countries attracted exceptionally large amounts of foreign investment.

Table 2: Descriptive Statistics of the Study Variables for 47 countries of SSA

Variable	Observation	Mean	Std. deviation	Skewness
InGDP	2,068	8.4564	1.6804	-0.0326
InGE	2,068	20.3557	1.5157	0.1827
GCF	2,068	22.4348	11.5635	1.6753
Inflation	2,068	13.5809	28.1671	9.0688
Import	2,068	39.8088	26.2769	2.2716
Export	2,068	29.0708	20.2827	1.6973
FDI	2,068	3.26568	7.85181	8.5743

Source: ECA database, 2025

3.1.2 Optimal Lag Selection Results

Table 3 presents the results of the lag order selection based on the Modified Bayesian Information Criterion (MBIC), Modified Akaike Information Criterion (MAIC), and Modified Hannan–Quinn Information Criterion (MQIC). The three information criteria attain their lowest values at lag 1, indicating that a first-order lag structure provides the optimal specification for the model. Consequently, lag 1 was selected for the subsequent empirical analysis.

Furthermore, the Cross-Sectional Dependence (CD) statistic remains close to unity across all lag specifications, indicating strong cross-sectional dependence among the sampled Sub-Saharan African countries.

Table 3: Selection Order Criteria Results

Lag	CD	J	J p-value	MBIC	MAIC	MQIC
1	1.0000	239.7524	0.0109169	-1210.881	-144.2476	-536.7955
2	1.0000	132.6865	0.3703357	-834.4024	-123.3135	-385.0121
3	1.0000	42.41002	0.9828993	-441.1344	-85.58998	-216.4393
4	1.0000					

Source: ECA database, 2025

3.1.3 Panel Cross-sectional Dependence Test of the Study Variables

Table 4 presents the results of the panel cross-sectional dependence tests conducted to assess whether the 47 Sub-Saharan African (SSA) countries included in the study exhibit interdependence. Testing for cross-sectional dependence is essential because countries within the region may be interconnected through trade relationships, regional integration, financial linkages, and the transmission of economic shocks. Failure to account for such dependence may lead to biased and inefficient panel data estimates.

To evaluate the presence of cross-sectional dependence, four complementary tests were employed: Pesaran's Cross-sectional Dependence (CD) Test, Friedman's Test, Frees' Test, and the Breusch–Pagan Lagrange Multiplier (LM) Test. The results provide strong evidence of cross-sectional dependence among the study variables across SSA countries. Specifically, the Pesaran CD statistic is 52.664 with a p-value of 0.0000, indicating highly significant dependence across panel units. Consistent with this finding, the Friedman statistic (535.851), the Frees statistic (9.927), and the Breusch–Pagan LM statistic (11,950.439) are all statistically significant at the 1 percent level.

The rejection of the null hypothesis of cross-sectional independence across all four tests confirms substantial interdependence among the countries in the sample. This suggests that economic developments, policy changes, or external shocks in one SSA country are likely to spill over into other countries in the region.

Table 4: Panel Cross-sectional Dependence Test of the Study Variables

Test	Statistic	Probability
Pesaran CD	52.664	0.0000
Friedman	535.851	0.0000
Frees	9.927	0.0000
Breusch-Pagan LM	11950.439	0.0000

Source: ECA database, 2025

3.1.4 Panel Unit Root Test of the Study Variables

Table 5 presents the results of the panel unit root tests conducted to determine the stationarity properties of the study variables across the 47 Sub-Saharan African countries. Because the earlier analysis confirmed the presence of cross-sectional dependence, the study applied the Cross-sectionally Augmented IPS Test. This second-generation panel unit root test accounts for common shocks and cross-country interdependence. This test helps determine the integration order of each variable and guides the selection of an appropriate estimation technique.

The results indicate that the variables exhibit mixed integration orders. Specifically, GDP and GE are non-stationary at the level, as indicated by their positive test statistics and high p-values (1.0000). Still, they become stationary after first differencing, with statistically significant p-values (0.0000), implying that they are integrated of order one (I (1). In contrast, the remaining variables GCF, Inflation, Import, Export, and FDI are stationary at the level, as their test statistics are negative and statistically significant (p-values of 0.0000), indicating that they are integrated of order zero (I (0).

Moreover, the results reveal that the dataset consists of a combination of I (0) and I (1) variables. This mixed integration structure supports the use of the Cross-Sectionally Augmented Autoregressive Distributed Lag (CS-ARDL) Model, which is suitable for estimating both short- and long-run relationships in panel data characterised by cross-sectional dependence and variables integrated at different orders.

Table 5: Panel Unit Root Test of the Study Variables

Variable	Level		First Difference	
	Test Statistic	P-Value	Test Statistic	P-Value
InGDP	7.4977	1.0000	-22.7925	0.0000
InGE	6.6092	1.0000	-25.0888	0.0000
GCF	-5.7497	0.0000	-	-
Inflation	-15.5839	0.0000	-	-
Import	-3.9201	0.0000	-	-
Export	-3.9412	0.0000	-	-
FDI	-11.7415	0.0000	-	-

Source: ECA database, 2025

3.1. 5 Multicollinearity Test Results

Table 6 reports the results of the multicollinearity diagnostics conducted using the Variance Inflation Factor. The mean VIF value of 4.39 suggests that multicollinearity is not a serious concern in the model, as it is well below the commonly accepted threshold value of 10. The results indicate that the explanatory variables do not exhibit excessive linear relationships that could distort the regression estimates.

Among the variables, gross capital formation shows the highest VIF value of 6.6, followed by imports (6.43), government expenditure (5.69), and exports (5.28). Although these values are higher than those of the other variables, they still fall within acceptable limits and suggest only moderate correlation among some predictors. In contrast, foreign direct investment (1.34) and inflation (1.01) have relatively low VIF values, indicating minimal correlation with other explanatory variables.

Furthermore, since all VIF values are below the critical threshold of 10, the results confirm that severe multicollinearity is not present in the model. Therefore, all variables were retained for further estimation in the CS-ARDL Model.

Table 6: Multicollinearity Test Results

Variable	VIF
Government Expenditure (InGE)	5.69
Export	5.28
Gross Capital Formation (GCF)	6.60
Import	6.43
FDI	1.34
Inflation	1.01
Mean VIF	**4.39**

3.1.6 Panel CS-ARDL Estimation of 47 SSA countries

The results from the panel unit root and cross-sectional dependence tests revealed that the variables are integrated of mixed orders, I(0) and I(1), and that significant cross-sectional dependence exists among the 47 Sub-Saharan African (SSA) countries. Given these characteristics, the Cross-Sectionally Augmented Autoregressive Distributed Lag (CS-ARDL) model was employed, as it is well-suited to panel data with cross-sectional dependence and mixed integration orders. The CS-

ARDL framework enables the estimation of both short-run dynamics and long-run relationships between economic growth and the selected macroeconomic variables.

The short-run estimates presented in Table 7 indicate that government expenditure exerts a positive and highly significant effect on economic growth (coefficient = 0.2288, $p < 0.001$). This finding suggests that increases in public spending stimulate economic activity and boost short-run output growth in SSA countries. Imports, however, have a negative, statistically significant impact on economic growth (coefficient = –0.0039, $p = 0.013$), suggesting that greater import dependence may adversely affect short-term economic performance. In contrast, exports, foreign direct investment (FDI), gross capital formation (GCF), and inflation do not exhibit statistically significant short-run effects on economic growth.

The coefficient of the lagged dependent variable is negative and highly significant (–0.5958, $p < 0.001$), indicating the existence of a stable adjustment mechanism toward the long-run equilibrium. Furthermore, the error-correction term is negative and statistically significant (–1.5958, $p < 0.001$), confirming the presence of a long-run equilibrium relationship among the variables. The magnitude of the adjustment coefficient suggests that deviations from the equilibrium path are corrected rapidly over time.

Regarding the long-run estimates, government expenditure remains positive and highly significant (coefficient = 0.1396, $p < 0.001$), demonstrating that fiscal expenditure plays a crucial role in promoting sustained economic growth in SSA countries. Imports continue to have a negative, statistically significant effect on long-run economic growth (coefficient = –0.0024, $p = 0.019$), suggesting that a persistent increase in imports may constrain long-term economic performance. Gross capital formation shows a positive but statistically insignificant relationship with economic growth (coefficient = 0.0040, $p = 0.102$), while exports, FDI, and inflation remain insignificant in explaining long-run growth variations.

Table 7: CS-ARDL Estimation of 47 SSA Countries

D.InGDP	Coefficient	Std. Err.	z	P>z
Short Run Est.				
Mean Group:				
Export	-0.0004	0.0032	-0.1200	0.9010
FDI	0.0034	0.0051	0.6600	0.5120
GCF	0.0056	0.0034	1.6300	0.1030

Import	-0.0039	0.0016	-2.4700	**0.0130**
Inflation	-0.0006	0.0007	-0.8600	0.3890
InGE	0.2288	0.0373	6.1300	**0.0000**
L.InGDP	-0.5958	0.0436	-13.6500	**0.0000**
Adjust. Term				
Mean Group:				
lr_InGDP	-1.5958	0.0436	-36.5600	**0.0000**
Long Run Est.				
Mean Group:				
lr_Export	-0.0006	0.0023	-0.2600	0.7970
lr_FDI	0.0030	0.0035	0.8400	0.4000
lr_GCF	0.0040	0.0025	1.6400	0.1020
lr_Import	-0.0024	0.0010	-2.3600	**0.0190**
lr_InGE	0.1396	0.0211	6.6200	**0.0000**
lr_Inflation	-0.0005	0.0005	-1.1000	0.2720

Source: ECA database, 2025

3.2 Discussion of Results

The findings of this study reveal that government expenditure has a positive, statistically significant effect on economic growth in both the short- and long-run across Sub-Saharan Africa (SSA). This result is consistent with the findings of Oyebowale and Algarhi (2020), who reported that government expenditure significantly promotes long-run economic growth in African economies. Similarly, Kesuh et al. (2024) found that government spending positively influences economic growth in Cameroon in both the short- and long-run. The consistency of these findings underscores the critical role of fiscal policy in stimulating economic activity and promoting sustainable growth. Government expenditure can enhance economic performance through investments in infrastructure, education, healthcare, and other productive sectors that improve human capital and productive capacity.

Contrary to expectations and some previous empirical studies, gross capital formation was found to have a positive, though statistically insignificant, effect on economic growth in both the short- and long-run. This finding differs from those of Oyebowale and Algarhi (2020) and Kesuh et al. (2024), who identified capital formation as a significant driver of economic growth. The insignificant effect observed in the present study may suggest that investment levels in many SSA countries have not been sufficiently productive to generate substantial growth effects. Factors such as inefficient allocation of investment resources, weak institutional frameworks, inadequate

infrastructure, and low technological absorption may limit the growth-enhancing impact of capital accumulation in the region.

A notable finding of this study is that imports negatively and statistically significantly affect economic growth in both the short- and long-run. This result suggests that increased dependence on imports may weaken domestic production, reduce the competitiveness of local industries, and contribute to trade imbalances that constrain economic growth. The finding partially supports the argument advanced by Shuaibu and Chua (2020), who found that trade variables significantly influence growth in SSA. However, their study reported positive short-run and negative long-run effects. The differences in findings may reflect changes in trade structures across SSA countries, variations in sample coverage, and differences in econometric methodology. The results imply that many SSA economies continue to rely heavily on imported consumption and intermediate goods, limiting the development of domestic productive sectors and reducing the potential growth benefits of international trade.

The study further found that exports have no statistically significant effect on economic growth in either the short- or long-run. This finding contrasts with Oyebowale and Algarhi (2020), who reported a positive contribution of exports to long-run economic growth in African economies. The insignificant export effect may be attributed to the composition of exports in many SSA countries, which are predominantly primary commodities characterized by low value addition, price volatility, and limited linkages with the domestic economy. Consequently, export expansion alone may not necessarily translate into sustained economic growth unless accompanied by economic diversification and industrial development.

The results also indicate that foreign direct investment (FDI) has a positive but statistically insignificant effect on economic growth in both the short- and long-run. This finding is consistent with Samsuddin and Amar (2020), who found that FDI did not significantly influence economic growth in developing G20 countries. Similarly, Hadush et al. (2023) reported that FDI had no significant effect on growth in East African countries. These findings suggest that the developmental benefits of FDI are not automatic and depend largely on host-country conditions, including institutional quality, infrastructure development, human capital, financial market development, and the capacity to absorb foreign technology and knowledge spillovers.

Inflation was found to have a negative, but statistically insignificant, effect on economic growth in both the short- and long-run. This result aligns with the findings of Oyebowale and Algarhi (2020), who reported inconsistent effects of inflation on economic growth in African economies. The insignificant effect may reflect heterogeneous inflation experiences across SSA countries, in which moderate inflation levels may not necessarily impede economic growth, while excessively high inflation can be harmful. The result also supports the argument of He and Xu (2019) that the impact of macroeconomic variables on growth varies across countries due to structural differences, policy environments, and nonlinear economic relationships.

The error-correction coefficient was negative and highly significant, confirming the existence of a stable long-run equilibrium relationship among the variables. The relatively large adjustment coefficient indicates that deviations from the long-run equilibrium are corrected rapidly, suggesting a strong convergence process toward equilibrium following short-term economic shocks. This finding is consistent with the theoretical foundations of ARDL-type models. It supports the appropriateness of the CS-ARDL framework for analysing growth dynamics in the presence of cross-sectional dependence and heterogeneous country characteristics.

Furthermore, the findings suggest that government expenditure remains the most important macroeconomic driver of economic growth in SSA, while excessive import dependence constrains growth performance. In contrast, gross capital formation, exports, FDI, and inflation do not exhibit statistically significant growth effects during the study period. These results imply that achieving sustainable economic growth in SSA requires not only maintaining productive public expenditure but also strengthening domestic productive capacity, promoting industrialisation, reducing import dependence, and improving the effectiveness of investment and foreign capital inflows. The findings further reinforce the importance of structural transformation and economic diversification as prerequisites for sustained long-term growth across the region.

4. Conclusion and Recommendations

4.1 Conclusion

This study employed the Cross-Sectionally Augmented Autoregressive Distributed Lag (CS-ARDL) model to examine the short-run and long-run effects of selected macroeconomic determinants on economic growth across 47 Sub-Saharan African (SSA) countries over the period

1980–2023. The adoption of the CS-ARDL framework was motivated by the presence of mixed orders of integration and significant cross-sectional dependence among the countries in the sample.

The findings reveal that government expenditure is a significant, positive determinant of economic growth in both the short- and long-run. This result underscores the importance of fiscal policy in stimulating economic activity and promoting sustained growth in SSA. Productive public spending on infrastructure, education, health, and other development-oriented sectors remains critical for enhancing economic performance and improving long-term growth prospects.

Conversely, imports were found to have a significant negative effect on economic growth in both the short- and long-run. This finding suggests that excessive dependence on imports may undermine domestic production, weaken industrial competitiveness, and constrain economic growth. The result highlights the need for policies that strengthen domestic productive capacity, promote value addition, and reduce structural dependence on imported goods.

The study further found that gross capital formation, foreign direct investment (FDI), exports, and inflation do not have statistically significant effects on economic growth during the study period. These findings suggest that the potential growth benefits of investment, trade, and foreign capital inflows may be limited by structural constraints, weak institutional frameworks, inadequate infrastructure, low levels of industrialisation, and insufficient economic diversification across many SSA economies.

Furthermore, the negative and highly significant error-correction term confirms the existence of a stable long-run equilibrium relationship among the variables. The results indicate that short-run deviations from equilibrium are corrected relatively quickly, demonstrating a strong adjustment mechanism within the economies under study.

The study concludes that government expenditure remains the most important macroeconomic driver of economic growth in Sub-Saharan Africa, while import dependence poses a significant challenge to sustainable economic expansion. The findings further suggest that achieving higher, more inclusive economic growth requires not only effective fiscal policy but also structural transformation strategies that strengthen domestic industries, enhance productive capacity, improve institutional quality, and promote economic diversification. Given the substantial

heterogeneity and interconnectedness of SSA economies, policy interventions should be tailored to country-specific conditions while addressing common regional development challenges.

4.2 Recommendations

i. Governments in Sub-Saharan Africa should prioritise public spending on productive sectors such as infrastructure, education, healthcare, agricultural modernization, and technological innovation. Emphasis should also be placed on improving public financial management systems, enhancing transparency, and ensuring efficient allocation of resources to maximise the growth-enhancing effects of government expenditure.

ii. Policymakers should implement strategies to strengthen domestic productive capacity and reduce reliance on imported goods. This can be achieved through industrialization policies, support for local manufacturing, promotion of agro-processing, and investment in value-added production. Encouraging import substitution in strategic sectors can help improve trade balances, create employment opportunities, and stimulate sustainable economic growth.

iii. Governments should therefore promote export diversification by encouraging the production and export of manufactured and value-added products. Investments in industrial development, technology adoption, and regional value chains can enhance export competitiveness and increase the contribution of trade to long-term economic growth.

iv. SSA countries should strengthen institutional quality, improve infrastructure, enhance human capital development, and promote technology transfer to increase the productivity of both domestic and foreign investments. Creating a stable and predictable business environment can also improve the effectiveness of investment in generating sustainable economic growth.

v. Future studies should incorporate additional variables such as institutional quality, governance effectiveness, financial development, technological innovation, and human capital to provide a more comprehensive understanding of the determinants of economic growth in SSA. Further research may also examine country-specific and sub-regional differences to identify heterogeneous growth drivers across the region.

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