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EFFECTIVENESS OF INCLUSIVE GROWTH STRATEGIES ON POVERTY REDUCTION IN SUB-SAHARAN AFRICA

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Abstract

This paper examines the efficacy of inclusive growth strategies in reducing poverty in SSA. The study specifically analyses the effect of economic, social, and institutional inclusiveness on poverty level from 2000 to 2022 for a panel of eighteen (18) lower middle-income countries in SSA. Data were analysed using the Differenced Generalised Method of Moments. Results revealed that inclusive growth leads to reduction of poverty level in the case of higher inclusive growth, suggesting the potency of inclusiveness economic growth may well contribute towards stemming poverty. However, the potential of inclusive growth strategies is yet to be fully realised in SSA.

Keywords: Inclusive Growth, Social Inclusion, Economic Inclusion, Institutional Inclusion, Sub-Saharan Africa.

JEL Classification: I31, I38, O43, O55

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1. Introduction

Ongoing discussions in academic circles highlight the potency of inclusive growth as a key strategy for reducing poverty, especially in low-income developing regions, including Sub-Saharan Africa (SSA). The prominent role of inclusive growth in stemming series of challenges that bedevil the SSA region cannot be overemphasised (Yinusa, Aworinde, & Odusanya, 2020; Ogede et al., 2023). The effectiveness of inclusive growth strategies on poverty reduction in Sub-Saharan Africa is a critical area of study due to its profound implications for societal development, economic stability, and human welfare. SSA remains one of the most impoverished regions globally, with persistent challenges such as income inequality, gender disparities, and limited access to essential services despite spurts in economic growth. These issues are exacerbated by factors that include rapid population growth, environmental degradation, and political instability, underscoring the urgency of effective poverty alleviation strategies (Asongu, Nnanna, & Acha-Anyi, 2020). This study focuses on understanding how inclusive growth strategies can mitigate poverty in SSA, emphasising the interplay between economic policies, social inclusivity, and institutional inclusion. The rationale for this focus stems from the severe socio-economic repercussions of poverty on individuals, communities, and national economies. Poverty not only hampers human potential and well-being but also undermines economic growth and stability, perpetuating cycles of deprivation and social exclusion (Asongu, Nnanna, & Acha-Anyi, 2020). This array of challenges could be efficiently addressed through inclusive growth strategies, by focusing on promotion of equitable access to economic opportunities, healthcare, education, and other social services.

The concept of inclusive growth recognises that economic expansion should benefit all segments of the society, particularly marginalised groups such as women, youth, and rural populations. Fostering inclusive economic participation, through the promotion of economic, social, and institutional inclusion, ensures that the proceeds from economic growth benefit the entire citizenry (Makarewicz-Marcinkiewicz, 2013). Economic inclusion plays a crucial role in fostering growth that benefits the poor, especially in rural areas, via massive investments in agriculture and infrastructure. Given the agrarian nature of many economies in the SSA region, agricultural output growth will not only directly result in poverty decline but its positive effects could permeate the broader economy (Berkhout et al., 2017). The impact of investments in rural roads is particularly significant, as they connect isolated rural communities to essential services, reverse rising trends of poverty and stimulates social inclusion. Social inclusion, which involves social protection systems covering aspects like social security, health, and women's empowerment, is recognised as a potent tool in alleviating poverty. Social protection programmes provide short-term aid and long-term support to vulnerable populations, addressing essential life events and breaking the cycle of poverty (Berkhout et al., 2017). Institutional inclusion focused on removing institutional and

policy barriers is another critical dimension in poverty reduction. Comprehensive programmes addressing various areas where support is needed, especially for the benefit of women, are also crucial in empowering women both within and outside households (Fan & Cho, 2021).

In the region, the realities of poverty are obvious with significant implications for social cohesion, political stability, and economic development. Historically, the region has struggled with inadequate infrastructure, weak institutional frameworks, and fettered access to education and healthcare, thereby undermining economic mobility and exacerbating poverty (Meagher, 2015; Umeji, 2020). Despite decades of economic growth and development initiatives, poverty remains pervasive, particularly among vulnerable populations such as women, children, and rural communities. The region's rich natural resources have not translated into equitable prosperity for all (Asongu et al., 2020). The effectiveness of inclusive growth strategies in mitigating these challenges remains uncertain, with marginalised groups, such as youth, women and rural communities, experiencing profound barriers to accessing education, healthcare, and employment opportunities (Ozoemena, 2018; Meagher, 2015; Umeji, 2020). Evidence from SSA countries reveal disparities in income distribution, educational attainment, and healthcare outcomes, underscoring the uneven progress towards achieving inclusive growth objectives (Makarewicz-Marcinkiewicz, 2013).

Previous research has explored various dimensions of inclusive growth in SSA, emphasising the nexus between economic policies, social inclusivity, and sustainable development. Existing policies aimed at promoting inclusive growth in SSA have yielded mixed results. While some initiatives have succeeded in expanding access to education, healthcare, and financial services, others have been hindered by institutional inefficiency, political instability, and inadequate resource allocation. The effectiveness of these policies varies across countries and regions, reflecting the diverse socio-economic landscapes and development priorities within the SSA region (Asongu et al., 2020). Despite extensive discourse, gaps persist in understanding how inclusive growth strategies have effectively reduced poverty in Sub-Saharan Africa. Limited studies have specifically examined the interplay between inclusive growth strategy and poverty within the region's diverse contexts (Meagher, 2015; Umeji, 2020). Unlike earlier studies, this study contributes to the growing literature on the inclusive growth-poverty nexus by ascertaining and comparing the effects of core inclusive growth strategies (economic, social and institutional) on poverty level in Sub-Saharan Africa. This study contributes significantly to relevant literature by enhancing the understanding of the intricate relationship of economic, social, and institutional inclusiveness with the poverty level in the region.

Against this background, the paper explicitly aimed to:

i. investigate the impact of economic inclusion strategy on poverty level,
ii. determine the effect of social inclusion strategy on poverty level, and
iii. estimate the effect of institutional inclusion strategy on poverty in SSA.

Our results indicate that both infrastructural investment and political stability have a very high tendency to significantly reduce poverty in the region. This underscores the significant roles played by basic infrastructure and political stability in reducing poverty. On the other hand, the coefficients of both health and educational outcomes are positive in relation to poverty. Although this runs quite contrary to expectation, it vividly reveals that investments and growth in both the health and education sectors seem to be less inclusive and modest achievements in these sectors may not be sufficient for breaking the vicious poverty cycle in SSA. These results provide relevant insights into areas that still require support from international agencies and donors towards effective poverty alleviation in Sub-Saharan African countries.

Other sections in the paper are organised as follows: Section 2 presents the review of previous studies. Section 3 focuses on methodology and Section 4 presents the results and discusses the findings, while Section 5 concludes the paper.

2. Review of Previous Studies

In the literature, numerous studies have linked inclusive growth to poverty reduction. These studies underscore the effectiveness of inclusive growth or its specific dimensions, comprising economic, social and institutional inclusion in reducing poverty, and suggest that, as an economy gets closer to achieving overall inclusive growth, it also moves closer to eradicating poverty. Linking inclusive growth to poverty, Nansadiqa et al (2019) employ a vector error correction model (VECM) to analyse the dynamic relationship among economic growth, unemployment, and poverty reduction in Indonesia. VECM analysis finds empirical evidence supporting the negative impact of economic growth and unemployment on poverty levels in Indonesia over the long term. Equally, Adegboyega (n.d.) studies poverty reduction and inclusive growth in Nigeria using the Johansen Co-integration test and Error Correction Model. The analysis confirms the necessity of economic growth; however, it may not ordinarily result into poverty reduction and inclusive development without deliberate policies addressing unemployment, household consumption, agricultural productivity, and rural-urban disparities. Lee and Sissons (2016) explore the link between economic growth and poverty across British cities. The study found limited evidence supporting the notion that economic growth effectively reduced poverty. Similarly, Yadav (2023) studies inclusive growth and poverty reduction in India. The study highlights that inclusive growth indicators, such as poverty reduction, income distribution, and employment equality, have not progressed as expected despite India's significant economic growth. Osamwonyi and Osamwonyi (2015) investigate the inclusiveness of growth in Nigeria and find that the country has not achieved inclusive growth despite impressive economic growth rates over the years. Rather, the economy is still characterised by widespread poverty, high unemployment rates, and significant income and wealth inequality. Key factors contributing to this non-

inclusive growth include underperformance in the manufacturing sector, inadequate human capital development, and low global competitiveness.

On the effect of specific dimensions of inclusive growth to poverty, Umeji (2020) studies how social exclusion impacts poverty in Nigeria. The study found that social exclusion is a significant contributor to poverty in Nigeria. Despite various government initiatives aimed at promoting social inclusion, a large percentage of the population remains in extreme poverty. A similar finding on the effect of social inclusion was established by Cuesta et al. (2022) concerning the estimation of the population at risk of social exclusion in Kenya based on Sen's capability approach. The study reveals that 36.1% of the population lives in absolute poverty, with higher rates in rural areas (40.1%) as compared to urban areas (29.1%). Specific vulnerable groups, such as religious minorities and persons with disabilities, experience disproportionately higher poverty rates (48.3% and 45.7%, respectively). Overall, 16.6 million people, representing 36.6% of the total population, are at risk of social exclusion, with children constituting the largest group at risk as more than half (9.2 million) are facing exclusion. Similarly, the study by Goswamee et al. (2024) on the impact of social inclusion revealed that gender inequality exacerbates poverty by limiting access of women to economic opportunities, education, and decision-making roles. Poverty, in turn, aggravates gender disparities and contributes to social exclusion, particularly among marginalised groups. Social inclusion was identified as crucial for mitigating these issues, underlining the need for inclusive policies and interventions. Likewise, Toriola et al. (2022) utilise panel data analysis to explore the implications of social inclusion on poverty reduction in six lower-middle-income ECOWAS countries. Empirical findings indicate significant negative influence of per capita GDP on poverty, indicating that higher GDP per capita causes reduction in poverty rates. However, income inequality as well as educational and health outcomes were found to be statistically insignificant in their effects on poverty reduction.

Studies analysing the effect of economic inclusion on poverty are abound. For instance, Meagher (2015) analyses the dynamics of informal economy and its interaction with inclusive market initiatives in Kaduna and Kano in Northern Nigeria. The study reveals that inclusive approaches seem to exacerbate inequalities and exclusion rather than enhance economic opportunities for informal workers. Asongu et al. (2020) employ both the Generalised Method of Moments and the fixed effects regression to assess the role of financial access in the connection between income inequality and gender economic inclusion in SSA. Financial access was found to have a negative net effect on the link between female labour force participation and income inequality, suggesting its weak efficacy in stemming income inequality towards enhanced participation of women in formal economic sectors. Conversely, a positive net effect was observed between financial access and female unemployment, indicating its potential role in reducing gender disparities vis-a-vis unemployment

rates. However, overall, there were net negative effects from financial access on the Gini coefficient and Palma ratio for female employment, highlighting complexities in the interaction of financial access, inequality, and female economic inclusion. Aslam et al. (2020) assess how institutional quality, social inclusion, and digital inclusion impact inclusive growth across different income groups. Utilising a two-step system-GMM estimation technique, the study finds that institutional quality has a direct positive association with inclusive growth in high-income countries but not consistently across the various income groups. Social and digital inclusiveness significantly contribute towards inclusive growth across all income groups, with the exception of social inclusion in middle-income countries.

The review of studies provides evidence that most of them concentrate on the aggregate measure of inclusion or on only one or two dimensions of inclusive growth. There is a limited number of studies incorporating all three dimensions of inclusion in the context of Sub-Saharan Africa. Yet, all dimensions of inclusive growth are crucial for achieving overall goals and targets concerning poverty reduction. This research paper addresses this gap by studying the specific impact of each dimension of inclusion on poverty reduction in SSA and analyses the effects of economic, social, and institutional inclusion on poverty in SSA.

3. Methodology

This study covers 18 SSA countries classified as low-middle-income by World Bank, for a period of twenty-three (23) years (2000 to 2022). Following Zainudin and Nordin (2017), the study used a dynamic panel model, where the lagged dependent variable (Yi_{t-1}) is included as an explanatory variable, indicating correlation with the current value (Arellano & Bover, 1995; Gujarati, 2004, Asiedu, 2013; Anyanwu, 2013). The dynamic panel model is specified as follows:

$$Y_{it} = \beta_1 Y_{it-1} + \beta_2 X_{2it} + \beta_3 X_{3it} + \Sigma^{J}_{j=1} \gamma_j Z_{jit} + \theta_i + u_{it} \qquad (1)$$

θ_i is the country-specific fixed effect, Y_{it-1} is the lagged value of the dependent variable of country i at time t, X_2 is the first independent variable of country i at time t, X_3 is the second independent variable of country i at time t, Z is a vector of control variables and γ_i are a set of slope coefficients of control variables. In the current study, independent variables are the three specific dimensions of inclusive growth and the aggregate measure of inclusive growth. In measuring overall inclusive growth, different indicators exist in relevant literature, such as GDP per capita (see Wei &Ren, 2011; Sun, Liu & Tang, 2018), public educational expenditure (Sun, et al, 2018), public health expenditure (World Economic Forum, 2018), and employment rates (Wu, &Zou, 2019; Sun, Liu & Tang, 2018). In this study, GDP per capita (GDPPC)

is utilised due to its popularity and its capacity to reflect the income distribution and investment capacity of the population (Toriola et al, 2022; Wu & Zhou, 2019).

In measuring the three specific dimensions of inclusive growth, namely: social, economic and institutional (Rauniyar & Kanbur 2009; Fernando 2008), the social inclusion was measured using educational outcome (EDUO) as proxy for secondary school enrolment (Adeniyi et al, 2020; Toriola et al, 2022), health outcome (HOU) as proxy for under-five mortality rates (Yu & Wang, 2012; McKinley, 2010), and income inequality (INEQ) as proxy for Gini coefficient (Anyanwu, 2013; Toriola et al, 2022). Economic inclusion was measured by infrastructural investment (INFRI) as proxy for capital formation (Rauniyar & Kanbur 2009; Ali & Son 2007; Fernando 2008) and agricultural development (AGRID) as proxy for added agricultural value (Rauniyar & Kanbur 2009; Bolt 2004). Institutional inclusion was gauged by gender equality (GEQ) (Adebosin et al, 2018) and political stability (PS) as proxy for political stability and absence of violence (Olarenwaju et al, 2019). To measure poverty levels (POV), the poverty headcount ratio was employed (Sinnathurai, 2013; Toriola et al, 2022).

In order to estimate the effect of economic inclusion on poverty, the functional relationship where economic inclusion, measured by infrastructural investment (INFRI), and agricultural development (AGRID) are expressed as a function of poverty (POV) is given as follows:

$$POV_{it} = \beta_1 POV_{it-1} + \beta_2 INFRI_{2it} + \beta_3 AGRID_{3it} + \theta_i + u_{it} \quad (2)$$

The effect of social inclusion on poverty is analysed by expressing social inclusion measured by educational outcome (EDUO) and health outcome (HOU) as a function of poverty (POV).

$$POV_{it} = \beta_1 POV_{it-1} + \beta_2 EDOU_{it} + \beta_3 HOU_{3it} + \theta_i + u_{it} \quad (3)$$

In the same way, the study analyses the effect of institutional inclusion on poverty through expressing institutional inclusion measured by gender equality (GEQ), and political stability (PS) as a function of poverty (POV), with the functional relationship given as:

$$POV_{it} = \beta_1 POV_{it-1} + GEQ_{2it} + \beta_3 PS_{it} + \theta_i + u_{it} \quad (4)$$

Equally, to account for the effect of the overall measure of inclusive growth on poverty, the functional relationship incorporating the control variable comprising of inflation (INF) and net export (NX), which proxy trade openness as used in Anyanwu (2013), is expressed thus:

$$POV_{it} = \beta_1 POV_{it-1} + \beta_2 IG_{it} + \Sigma_{j=1}^{J} \gamma_j Z_{jit} + \theta_i + u_{it} \quad (5)$$

IG is inclusive growth proxied by GDP per capita while control variables $\Sigma_{j=1}^{J} \gamma_j Z_{jit}$ comprise inflation rate (INF) and net export (NX).

In the study, poverty level (POV) was measured using the poverty headcount ratio, infrastructural investment (INFRI) was proxied by Gross fixed capital formation (constant 2015 US$), agricultural development (AGRID) was proxied by agriculture, forestry, and fishing, value added (constant 2015), education outcome (EDOU) was proxied by School enrolment, secondary (% gross), while health outcome (HOU) was proxied by under-5 mortality rates. Furthermore, gender equality (GEQ) was proxied by CPIA gender equality rating (1=low to 6=high), political stability (PS) by was measured by estimates of political stability and absence of violence/terrorism, inclusive growth (IG) was proxied by GDP per capita (current US$), inflation (INF) was proxied by consumer prices (annual %) and net export (NX) was measured using the difference between exports and imports of goods and services (in constant 2015 US$).

Data were sourced from the World Bank's World Development Indicators and World Governance Indicators for a period of twenty-three (23) years (2000 to 2022) on eighteen (18) low-middle-income SSA countries, providing a comprehensive and reliable dataset for the research. The list of the eighteen (18) lower-middle-income (LMI) sub-Saharan African countries were drawn from the list of the twenty-three (23) LMI African countries presented by Jobarteh (2024), based on classification by World Bank 2021/2022 covering all five (5) regions in Africa and the recognised African Union (AU) regional economic communities. The 18 countries are Angola, Benin, Cabo Verde, Cameroon, Comoros, Congo republic, Côte d'Ivoire, Eswatini, Ghana, Kenya, Lesotho, Mauritania, Nigeria, São Tomé and Príncipe, Senegal, Tanzania, Zambia, and Zimbabwe. To conduct this estimation, the study employed the Differenced Generalised Method of Moment (D-GMM) estimation technique of dynamic panel model. The preference for D-GMM over system Generalised Method of Moment (s-GMM) is because it guards against over-identification and instrument proliferation (Asongu, Roux & Biekpe, 2017). Besides, the method allows for a robust analysis of relationships over time (Toriola et al, 2022; Asiedu, 2013; Gujarati, 2004).

4. Results and Discussion

Results cover the preliminary test under which the tests for normality, multicollinearity and unit root are presented and are presented as follows:

Table 1: Descriptive statistics

	POV	INFRI	ADRID	EDUO	HOU	GEQ	PS	GDPPC	INF	NX
Mean	43.080	6.54E+09	8.65E+09	47.525	78.901	3.351	-0.395	1621.455	11.097	-7.57E+09
Median	42.400	3.26E+09	1.73E+09	46.134	75.900	3.500	-0.281	1380.885	5.3183	-4.67E+09
Maximum	69.000	3.15E+10	1.22E+11	90.380	202.900	4.500	1.224	5083.827	557.202	-1.50E+08
Minimum	22.500	70766643	24446952	12.856	12.300	2.500	-2.26	253.380	-16.86	-4.16E+10
Std. Dev.	10.768	7.30E+09	2.12E+10	17.761	35.972	0.494	0.732	986.813	37.169	8.11E+09
Skewness	0.279	1.386941	3.950769	0.533	0.600	0.302	-0.435	1.172	10.738	-1.972
Kurtosis	2.351	4.221499	18.28268	2.980	3.338	2.310	2.808	3.980	138.947	7.273
Jarque-Bera	11.936	123.2512	4822.246	17.351	25.333	12.205	12.450	104.949	307822.	486.100
Probability	0.003	0.000	0.000	0.000	0.000	0.002	0.002	0.000	0.000	0.000
Observations	391	322	391	367	391	348	377	390	390	345

Results of descriptive statistics appear in Table 1. From the results, poverty level (POV) has a mean value of 43.080, with values ranging from 22.500 to 69.000 and a standard deviation of 10.768, indicating substantial variability. Skewness of 0.279 and kurtosis of 2.351 suggest a relatively normal distribution, though the Jarque-Bera test statistic (11.936, p = 0.003) indicates some deviation from normality. These high poverty levels, as indicated by the high mean value with significant variability, reflect ongoing challenges in achieving inclusive growth in SSA. Furthermore, infrastructural investment (INFRI) has a mean value of 6.54E+09, with a standard deviation of 7.30E+09, showing high variability and a range from 70766643 to 3.15E+10. Skewness of 1.387 and kurtosis of 4.221 indicate a right-skewed and leptokurtic distribution. The Jarque-Bera test statistic (123.2512, p = 0.000) confirms non-normality, suggesting inconsistent infrastructural development, which is vital for economic growth and poverty alleviation. Agricultural development (AGRID) has a high mean value of 8.65E+09, with extreme variability indicated by a standard deviation of 2.12E+10 and a wide range from 24446952 to 1.22E+11. The skewness of 3.951 and kurtosis of 18.283 suggest a highly right-skewed and leptokurtic distribution. The Jarque-Bera test statistic (4822.246, p = 0.000) shows significant non-normality, reflecting the crucial albeit uneven role of agriculture in SSA economies.

Education outcomes (EDUO) show a mean value of 47.525, ranging from 12.856 to 90.380, with a standard deviation of 17.761, indicating significant variability. Skewness of 0.533 and kurtosis of 2.980 suggest a slightly right-skewed and near-normal kurtosis. The Jarque-Bera test statistic (17.351, p = 0.000) confirms non-normality, highlighting uneven educational access and quality, both critical for inclusive growth and long-term poverty reduction. Equally, the Health outcomes (HOU) have a mean value of 78.901, with significant variability, as indicated by a standard deviation of 35.972 and a range from 12.300 to 202.900. The skewness of 0.600 and kurtosis of 3.338 reflect a distribution with some right-skewed and leptokurtosis. The

Jarque-Bera test statistic (25.333, p = 0.000) shows non-normality, indicating disparities in health services and outcomes across SSA.

Inclusive growth measured by the GDP per capita (GDPPC) has a mean value of 1621.455, with values ranging from 253.380 to 5083.827, suggesting significant disparities in economic well-being across SSA. The standard deviation of 1380.885 indicates high variability. The positive skewness of 1.172 and kurtosis of 3.980 show a distribution with occasionally high values. The Jarque-Bera test statistic (104.949, p = 0.000) confirms non-normality, reflecting uneven economic growth that may not uniformly benefit all population segments, thus hindering inclusive growth. Political stability (PS) has a mean value of -0.395, indicating general instability. The range from -2.26 to 0.732 and a standard deviation of 1.224 show considerable variability. Skewness of -0.435 suggests a slight left-skewed, while kurtosis of 2.808 indicates a more platykurtic distribution, indicating less frequent extreme events. The Jarque-Bera test statistic (12.450, p = 0.002) suggests non-normality, highlighting political instability as a barrier to economic growth and poverty reduction. Gender equality (GEQ) has a mean value of 3.351, with a range from 2.500 to 4.500 and a low standard deviation of 0.494, indicating lower variability. The skewness of 0.302 and kurtosis of 2.310 suggest a relatively normal distribution. However, the Jarque-Bera test statistic (12.205, p = 0.002) indicates some deviation from normality, pointing to systemic gender disparities that could impede inclusive growth and poverty alleviation.

Inflation has a mean value of 11.097, which is high and indicative of persistent inflationary pressures. The minimum value of -16.86 and maximum of 37.169 demonstrate considerable fluctuation, reflected in the high standard deviation of 10.738. With skewness of 10.738 and kurtosis of 138.947, the distribution is highly right-skewed and leptokurtic, indicating sporadic but extreme inflationary spikes. The Jarque-Bera test statistic (307822.6, p = 0.000) shows significant departure from normality, which can destabilise economies, erode purchasing power, and exacerbate poverty. Net exports (NX) with a mean value of -7.57E+09 suggests a substantial trade deficit, reflecting more imports than exports. The NX range from -4.16E+10 to 8.11E+09 indicates significant variability, highlighting economic instability. The high standard deviation of 1.97E+10 underscores this volatility. Skewness of -1.972 indicates that extreme negative values are more common. A kurtosis of 7.273 indicates a leptokurtic distribution, with frequent extreme deviations from the mean value. The Jarque-Bera test statistic (486.100, p = 0.000) confirms non-normality, implying that trade policies and external economic shocks may have unpredictable impacts on SSA economies.

Descriptive statistics reveal substantial variability and non-normality across key economic indicators in SSA. As implied by the statistical distribution of the variables, high levels of inflation, trade deficits, and variability in GDP per capita, political sta-

bility, health, and education outcomes, underscore possible challenges when it comes to achieving inclusive growth.

Table 2: Pairwise Correlation Matrix

	POV	INFRI	ADRID	EDUO	HOU	GEQ	PS	GDPPC	INF	NX
POV	1.000									
INFRI	-0.473	1.000								
ADRID	-0.390	0.726	1.000							
EDUO	0.061	-0.023	0.181	1.000						
HOU	0.132	-0.052	-0.217	-0.540	1.000					
GEQ	-0.062	-0.002	0.031	0.173	-0.244	1.000				
PS	-0.032	-0.060	-0.222	0.054	-0.107	0.442	1.000			
GDPPC	-0.147	0.478	0.059	0.142	-0.214	-0.112	-0.021	1.000		
INF	-0.096	0.061	-0.019	-0.075	0.155	0.102	-0.197	-0.046	1.000	
NX	0.407	-0.865	-0.557	0.016	-0.118	0.008	0.158	-0.596	-0.1360	1.000

Key: POV: poverty level, INFRI: infrastructural investment, AGRID: agricultural development, EDUO: education outcome, HOU: health outcome, GEQ: gender equality, PS: political stability, GDPPC: inclusive growth, INF: inflation, NX: net export proxy
Source: Author, 2024

The pairwise correlation coefficients, as presented in Table 2, show the correlation between infrastructural investment and poverty level. This suggests that higher infrastructural investment is associated with lower poverty levels, reflecting the critical role of infrastructure in enhancing economic opportunities and reducing poverty. Agricultural development also shows a negative correlation with poverty level. This negative relationship highlights the importance of agricultural development in poverty reduction, since improved agricultural practices and output can enhance food security and income for the rural poor.

Educational outcomes have a very weak positive correlation with poverty, suggesting that higher educational outcomes have not significantly impacted lower poverty levels in this dataset, which could indicate issues with the quality of education or the translation of educational attainment into economic opportunities. Health outcomes show a weak positive correlation with poverty level. This runs quite contrary to expectation. This counterintuitive result reflects the complexity of health indicators or the fact that poverty-stricken areas might still have targeted health interventions that improve health outcomes with no immediate reduction in poverty.

The association, albeit tenuous, between GDP-per-capita and poverty indicates that higher inclusive growth tends to lower poverty levels, thereby reflecting the notion that inclusive growth can contribute towards poverty reduction. Gender equality and poverty level have a very weak negative correlation, indicating a slight tendency for better gender equality to be associated with lower poverty levels. This weak relationship suggests that, while gender equality is important, other factors might play a more significant role in poverty alleviation in SSA. Political stability has an extremely weak negative correlation with poverty level, suggesting a negligible relationship. This indicates that political stability, while crucial for overall development, may not directly correlate with poverty levels. Net exports have a moderately positive correlation with poverty, indicating that higher net exports are associated with higher poverty levels. This probably implies that the benefits of export activities are not widely distributed among the population or that export-driven growth has not been inclusive. Correlation analysis generally reveals interrelationships among key socio-economic variables affecting inclusive growth and poverty in SSA.

Table 3: Levin, Lin & Shu Unit Root Test Results

	LEVEL		FIRST DIFFERENCE	
	W-Stat	**PROB**	**W-Stat**	**PROB**
POV	2.46404	0.9931	-11.2962	0.0000
INFRI	6.51151	1.0000	-10.8442	0.0000
ADRID	- 7796.32	0.0000	- 19195.1	0.0000
EDUO	2.78120	0.9973	-10.3194	0.0000
HUO	-32.1821	0.0000	0.67109	0.7489
GEO	1.43127	0.9238	-10.0334	0.0000
PS	-4.17425	0.0000	-17.1870	0.0000
GDPPC	1.31536	0.9058	-124308	0.0000
INF	-10.3428	0.0000	-22.1797	0.0000
NX	5.60332	1.0000	-9.63472	0.0000

Key: POV: poverty level, INFRI: infrastructural investment, AGRID: agricultural development, EDUO: education outcome, HOU: health outcome, GEQ: gender equality, PS: political stability, GDPPC: inclusive growth, INF: inflation, NX: net export

Source: Author, 2024

Unit root test results indicate that poverty level, infrastructure investments, educational outcomes, gender equality, economic growth and net exports are non-stationary at levels but become stationary at first differences. However, inflation, health outcome and political stability, as well as agricultural development were stationary at levels. This necessitates careful consideration in econometric modelling and policy formulation when addressing these underlying trends.

Table 4: Cross-Sectional Dependence Test

Test	Statistic	d.f.	Prob.
Breusch-Pagan LM	332.961	378	0.4130
Pesaran scaled LM	-0.3643		0.6903
Pesaran CD	-0.0420		0.9639

Source: Author, 2024

In the results illustrated in Table 4, the associated probabilities of the statistics across the three tests, comprising Breush-Pagan LM test, Pesaran Scaled LM test and Pesaran CD test, which are 332.961, -.3643, and -0.0420, respectively, are above the 0.05 critical level. This implies that the null hypothesis cannot be rejected for the three tests indicating uncorrelated residuals across cross-sectional units, which supports the use of standard panel data estimators without additional corrections for cross-sectional dependence.

Table 5: D-GMM Estimates

Economic Inclusion Effect		**POV(-1)**	**LOG (INFRI)**	**LOG (ADRID)**	**Time**	**Obs**	**Instrument**	**J-stats**	**AR(1)**	**AR(2)**	**Jarque Bera**	**F-stat**
		0.022 (0.000) [8.637]	-0.055 (0.00) [-13.570]	0.091 (0.000) [32.085]	21	294	14	13.456 (0.265)	-2.092 (0.036)	0.954 (0.340)	1.349 (0.491)	1955.786 (0.000)
Social Inclusion Effect		**POV(-1)**	**LOG (EDUO)**	**LOG (HOU)**								
		0.020466 (0.000) [90.830]	0.011 (0.000) [39.637]	0.024 (0.000) [184.894]	21	335	16	13.772 (0.390)	-1.612 (0.107)	1.015 (0.310)	2.155 (0.510)	6893.221 (0.000)
Institutional Inclusion Effect		**POV(-1)**	**GEQ**	**PS**								
		0.022 (0.000) [42.290]	0.034 (0.000) [6.217]	-0.011 (0.000) [-23.504]	21	310	16	13.152 (0.436)	-2.147 (0.032)	1.089 (0.276)	1.311 (0.110)	1034.371 (0.000)
Aggregate Effect	**PPOV (-1)**	**LOG (GDP PC)**	**INF**	**NX**								
	0.756 (0.000) [16.617]	-1.084 (0.000) [-5.063]	0.0030 (0.017) [2.410]	7.37E-11 (0.527) [0.632]	21	314	15	14.402 (0.276)	-0.554 (0.600)	0.430 (0.687)	1.622 (0.022	131.920 (0.000)

Key: POV: poverty level, INFRI: infrastructural investment, AGRID: agricultural development, EDUO: education outcome, HOU: health outcome, GEQ: gender equality, PS: political stability, GDPPC: inclusive growth, INF: inflation, NX: net export

Note: Values in parenthesis ( ) and brackets [ ] are p-values and t-statistics, respectively

Source: Author, 2024

According to Table 5, the coefficient of agricultural development is 0.091. This positive and highly significant relationship suggests that increased agricultural activities are not translated into poverty level reduction. This result indicates that agricultural development benefits are not equitably distributed across the population. This could be due to issues such as lack of access to modern farming technologies, or unequal distribution of agricultural investments. The coefficient of infrastructural investment is negative. This negative and highly significant relationship indicates that increased infrastructural investment could bring about reduction in poverty levels. The probability value of the AR (1) statistic indicates some first-order serial correlation in the residuals, while the p-value of the AR (2) statistic reveals absence of second-order serial correlation. The Hansen J-statistic suggests that the instruments used in the model are valid, supporting the credibility of the instrumental variable approach when it comes to mitigating endogeneity concerns.

The coefficient of health outcomes is positive and highly significant, implying that improvements in health outcomes are not effective in lowering poverty levels. Ordinarily, this runs contrary to expectation since better population health outcomes should reduce poverty. However, many households still lack unfettered access to quality health care, especially in rural areas which harbour most of the inhabitants of the region. In the same vein, the region consistently records very poor health outcomes in terms of high mortality rates and low life expectancy, while the level of investment and resource management in health care still remain abysmally poor to yield noticeable and desirable improvements in health outcomes in the region (Kalu et al, 2025). In fact, Musah et al. (2025) indicate that rising out-of-pocket expenditure is associated with worsening health outcomes in SSA. The coefficient of educational outcomes is positive and highly significant. This is similar to the health outcome results. It suggests that mere enrolments in schools is not significant in lowering poverty levels. Normally, education should empower individuals with knowledge and skills necessary for economic participation since it enhances job prospects and reduces income inequality. It is apt to note that investments in education are still too low to stimulate growth and development to the level required for substantially reducing poverty while the majority of citizenry are still lacking access to qualitative education. The region has a very high number of out-of-school children, with nearly 90 percent of them failing to acquire basic reading and comprehension skills before reaching age 10 (Barrigah, 2023), while dropout rates are soaring. These facts indicate the tenuous effect of educational outcomes on poverty. As contended by Sikiku (2024), for education to really impact the vicious cycle of poverty in the SSA, governments need to improve budgetary allocations to education and ensure more judicious utilisation of available funds. The p-value of the AR (1) statistic indicates first-order serial correlation in the residuals. The AR (2) statistic indicates no problem of second-order serial correlation. The Hansen J-statistic with a p-value of 0.000 confirms the validity of the instruments used in the model.

The coefficient of political stability is negative and highly significant. This shows that improved political stability is associated with lower poverty levels. The AR (1) statistic indicates first-order serial correlation in the residuals, while the AR (2) statistic confirms absence of second-order serial correlation. Based on the p-value of J-statistic, the instruments used in the model are valid. The coefficient of inclusive growth is negative and highly significant, indicating that higher inclusive growth is associated with lower poverty levels in SSA. The model suffers no potential problem of second-order serial correlation based on the p-value of the AR (2). Likewise, the J-statistic suggests that the instruments used in the model are valid.

The result of the analysis showed that the economic inclusion components of any inclusive growth tested, comprising agricultural development and infrastructural investment, play a crucial role in shaping poverty levels in SSA. While agricultural development shows a positive, albeit counterintuitive, relationship with poverty indicating challenges in equitable distribution of benefits, infrastructural investment demonstrates a clear negative relationship with poverty, highlighting its role in promoting inclusive growth. This finding is in line with Meagher (2015) on the dynamics of informal economy and its interaction with inclusive market initiatives. The study reveals that, while economic opportunities for informal workers are enhanced by inclusive approaches, these often exacerbate inequalities and exclusion within the informal sector. This is also in line with Asongu et al. (2020) on the moderating role financial access plays in the relationship between income inequality and gender economic inclusion. Financial access was found to have a negative net effect on the relationship between the Palma ratio and female labour force participation, suggesting limited effectiveness in moderating income inequality when it comes to enhancing women's participation in formal economic sectors.

Furthermore, results show that the social inclusion dimensions tested in the study, comprising health and education outcomes, significantly influence poverty levels in SSA. Improved health outcomes and expanded access to education contribute positively to poverty reduction by enhancing human capital, increasing productivity, and improving overall quality of life. These findings corroborate those of Goswamee et al. (2024). The result is at variance with Toriola et al. (2022) concerning implications of social inclusion on poverty reduction in ECOWAS. Empirical findings suggest that income inequality, educational outcomes, and health outcomes have no significant effect on poverty. This result is also supported by Aslam et al. (2020) on the impact of institutional quality, social inclusion, and digital inclusion on inclusive growth across different income groups. The study reveals that social and digital inclusivity significantly contributes to inclusive growth across all income groups, except for social inclusion in middle-income countries.

Furthermore, analysis shows that the institutional inclusion dimensions covering political stability and gender equality significantly influence poverty levels in SSA. Improved political stability enhances governance effectiveness and investor

confidence, contributing to economic growth and poverty reduction. Similarly, promoting gender equality empowers women, reduces inequalities, and enhances social cohesion, thereby fostering inclusive growth. This result agrees with evidence on the effect of institutional inclusion on poverty provided by Aslam et al. (2020) on the impact of institutional quality, social inclusion, and digital inclusion on inclusive growth.

The result of the effect of overall measure of inclusive using GDP per capita shows that inclusive growth and inflation significantly influence poverty levels in SSA. Higher inflation rates are associated with increased poverty, highlighting the importance of effective inflation management for poverty reduction. Additionally, higher inclusive growth is linked to lower poverty levels, underscoring the role of economic growth in improving living standard and reducing poverty. The finding is also congruous with Nansadiqa et al. (2019) on the dynamic relationship between economic growth, unemployment, and poverty reduction in Indonesia. It is also in line with the study of Yadav (2023) on inclusive growth and poverty reduction in India. The study highlights that despite India's significant economic growth, inclusive growth indicators such as poverty reduction, income distribution, and employment equality have not progressed as expected. It is congruent with Osamwonyi and Osamwonyi (2015) on phenomenon of inclusive growth in Nigeria where it was submitted that despite impressive economic growth rates in Nigeria over the years, the country has not achieved inclusive growth. The result also agree with Toriola et al (2022) on the implications of social inclusion on poverty reduction.

5. Conclusion

This study examined how inclusive growth strategies exert on poverty reduction in Sub-Saharan Africa. The study specifically analysed the effect of economic, social, and institutional inclusiveness on poverty level from 2000 to 2022. It is inferred that the effect of infrastructural investment on poverty is negative while agricultural development exerts a positive effect on poverty. The result also showed that health outcomes and education exert a positive effect on poverty. Political stability shows a negative effect while the effect of gender equality on poverty is positive. The aggregate measure of inclusive growth shows a negative effect implying that higher inclusive growth is linked to lower poverty levels. This result implies that the aggregate inclusive growth strategy positively contributes to poverty reduction but the effect of individual components of the three specific strategies of inclusive growth is not uniform. The study demonstrated the capability of inclusive growth in addressing poverty but the potential of the specific inclusive growth strategies in addressing poverty is yet to be fully realised in SSA.

The study therefore recommends the need for policies that prioritise enhanced agricultural productivity and equitable access to agricultural resources and technolo-

gies. At the same time, investments in infrastructure are vital for reducing regional disparities and fostering economic opportunities. There is also the need to prioritise investments in healthcare infrastructure, ensuring universal access to quality healthcare services, and enhancing educational opportunities for all segments of the population. Furthermore, policies aimed at enhancing institutional inclusion should focus on strengthening governance frameworks, safeguarding political stability, promoting gender equality, and addressing inefficiencies.

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