EFFECT OF FOREIGN DIRECT INVESTMENT ON INCOME INEQUALITY IN SUB SAHARAN AFRICA

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Abstracts

This study investigates the effect of Foreign Direct Investment (FDI) on income inequality in Sub-Saharan African countries using panel data from 2015 to 2021. Employing the Two-step system Generalized Method of Moments (GMM) estimator to address potential endogeneity and dynamic panel bias, the model controls for institutional quality, exchange rates, GDP growth, and lagged income inequality (Gini Index). Diagnostic tests, including AR(1), AR(2), Hansen, and Sargan, validate the model and instrument selection. Results indicate a highly persistent income inequality process, with the lagged Gini Index coefficient close to unity and statistically significant ($p < 0.001$). FDI exhibits a positive and marginally significant effect on income inequality (coefficient = 8.37, $p = 0.05$), implying that increased FDI inflows are associated with rising income inequalities in the region. Institutional quality, exchange rate, and GDP growth variables show no statistically significant effects. These findings highlight the heterogeneous and context-dependent nature of FDI's distributional effects, suggesting that in Sub-Saharan Africa, FDI may exacerbate inequality under prevailing institutional and economic conditions. Policy recommendations include promoting inclusive FDI projects, enhancing education and skills development, and implementing progressive redistribution mechanisms to mitigate rising inequality.

Keywords: Foreign Direct Investment, Income Inequality, System GMM

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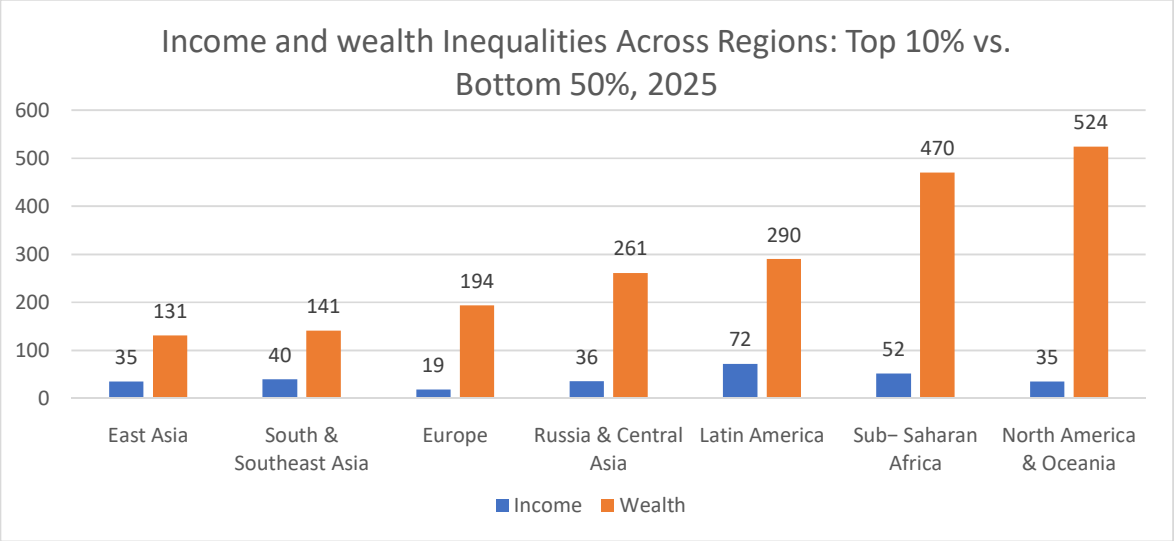
1. INTRODUCTION

Inequality persists as a significant economic challenge, with global incomes and wealth rising yet remaining unevenly distributed (World Bank, 2025). A small segment of the population holds a large share of this wealth, while billions still face limited resources and opportunities (International Bank for Reconstruction and Development & World Bank, 2025). Chancel et al., (2025) estimates that today's global income could theoretically provide each person about €1,200 monthly, totaling €14,000 annually. However, resource distribution is highly unequal, with a small minority receiving a disproportionate share of these gains. The adoption of the United Nations' 2030 Agenda for Sustainable Development in 2015 marked a commitment by world leaders to reduce inequalities, specifically through Sustainable Development Goal 10, which aims to

"reduce inequalities within and across countries" (United Nations, 2015). In addition, African Union Agenda 2063 also aims at reducing income inequality between individuals in African economies. Despite these commitments, income inequality is still remains a significant socioeconomic factor that affects both developed and developing nations (Dossou et al., 2023; Muinelo-Gallo, 2022; Shi et al. 2020). Income inequality is a key indicator of how income is distributed across different segments of the population, within society, or across various regions (Ofori et al. 2022).

Despite the United Nations' adoption, the world in general and Sub Saharan Africa in particular may not likely achieve the target of reducing inequality by 2030 unless concerted efforts are made in addressing the problem. This is because the growing disparity between the rich and poor remains one of the critical challenges of recent decades, affecting countries across all continents, irrespective of their gross domestic product per capita (World Bank, 2024;OECD, 2018; UNDP, 2019; Xu et al., 2021; Sehrawat& Singh, 2021; Song et al., 2021;Dossou et al., 2021). The analysis of global income and wealth distribution highlights a stark inequality. Report from the Chancel et al., (2026) shows that in 2025, the bottom 50% of the global population captures only 8% of total income while owning merely 2% of total wealth. In contrast, report further reveals that the top 10% holds a substantial 75% of personal income and receives 53% of total income. This data underscores the significant imbalance in wealth and income distribution worldwide. The world is divided into distinct income tiers: high-income regions such as North America, Oceania, and Europe; middle-income groups including Russia, Central Asia, East Asia, and the Middle East and North Africa; and economically disadvantaged areas with low average incomes, such as Latin America, South and Southeast Asia, and Sub-Saharan Africa.

Sub-Saharan Africa, face the double burden of high levels of extreme inequality in both income and wealth as shown in figure 1.



Source of Data: Chancel et al., (2025)

Figure 1 shows that in 2025, Sub-Saharan Africa displays notably high levels of both income and wealth inequalities compared to other regions. Its income inequality value is 52, which is significantly higher than East Asia (35), South & Southeast Asia (40), Europe (19), Russia & Central Asia (36), and North America & Oceania (35), but lower than Latin America's exceptionally high income inequality at 72. Furthermore, Figure 1 also shows that when it comes to wealth inequality, Sub-Saharan Africa has the highest value at 470, far exceeding all other regions: East Asia (131), South & Southeast Asia (141), Europe (194), Russia & Central Asia (261), Latin America (290), and even North America & Oceania (524), which is the only region surpassing it in wealth inequality. This comparison highlights that Sub-Saharan Africa not only struggles with substantial income disparities but faces an even more extreme concentration of wealth, making it one of the most unequal regions globally in terms of wealth distribution. On country level, Sub-Saharan African countries appears to dominates the majority of the top 10 countries with the highest inequality index as shown in figure 2:



Source of Data: Chancel et al., (2026)

Information in figure 2 shows that in the top ten countries with the highest income inequality in 2025, Sub-Saharan African countries dominate the list, making up eight out of the ten entries. These Sub-Saharan African countries are South Africa (63), Namibia (59.1), Eswatini (54.6), Botswana (53.3), Zambia (51.5), Angola (51.3), Mozambique (50.5), and Zimbabwe (50.3). The two non-Sub-Saharan African countries on the list are Colombia (54.8) and Brazil (52), both located in Latin America. This comparison highlights that the majority of the countries facing the most severe income inequality are in Sub-Saharan Africa, underscoring the region's particularly acute challenge with income disparities compared to other parts of the world.

From the foregoing, it is evident that Sub-Saharan Africa is home to eight of the ten most unequal nations in the world and is the second most unequal region in the world after Latin America and the Caribbean. This would continue to be a thread to the achievement

of the African Union Agenda 2063, and the United Nations 2030 SDG 10 which aims to reduce inequality. If these goals are not met, the Sub-Saharan African region may experience social unrest that could negatively affect economic growth and worsen extreme poverty (Grossman &Helpman, 2018; Lankisch et al., 2019), threaten economic development and social cohesion (Ofori et al., 2021), increase terrorism (Ajide& Alimi, 2021; Okafor &Chikalipah, 2021), and may have an adverse effect on international investment (Xu et al., 2021). Addressing income inequality is therefore pivotal in achieving developmental objectives to any meaningful governments.

In this study, it is posited that foreign direct investment (FDI) could significantly impact income inequality in Sub-Saharan Africa. It has been increasingly recognized as a potential driver of economic growth and a mechanism to reduce income disparities in developing regions (Iddrisu, 2024; Opperman, 2025). By providing capital, technology transfers, and employment opportunities, FDI can enhance income levels, especially among lower-income groups, thereby narrowing the income gap. Recent empirical evidence suggests that FDI reduces income inequality through various channels. For instance, Iddrisu (2024) found that foreign bank presence, a form of FDI, significantly reduces income inequality in African countries with greater economic freedom by improving access to financial services for lower-income populations. Similarly, Asongu and Odhiambo (2023) show that FDI inflows are positively associated with poverty reduction and more equitable income distribution when host countries have effective governance and institutional frameworks. These mechanisms include job creation in labor-intensive sectors, skill development, and increased wages, which directly benefit lower- and middle-income earners.

Numerous empirical studies have explored the relationship between FDI and income inequality at the individual country level (Msweli, 2015; Trinh, 2016; Kaulihowa, 2018; Gam et al., 2023; Kaulihowa&Adjasi, 2018; Le et al., 2021; Tsaurai, 2020; Asongu et al., 2020; Adams &Klobodu, 2017; Ihsan et al., 2023). These studies reveal mixed findings: some indicate that FDI significantly reduces income inequality, while others suggest that FDI may exacerbate inequality, particularly in countries that are already highly unequal. This lack of consensus complicates policy efforts aimed at harnessing FDI for inclusive growth in the region. Consequently, there is a critical need for a systematic examination of the effects of FDI on income inequality in Sub-Saharan Africa. Understanding this relationship is essential for designing targeted policies that ensure FDI promotes equitable economic development rather than deepening existing disparities. It is on this basis that the present study is designed to investigate the effect of foreign direct investment on income inequality in Sub-Saharan African countries. The remainder of this paper is organized as follows: Section two contains the theoretical and empirical literature. Section three contains the methodology. Section four presents and discusses the results, and finally, section five contains the summary, conclusion, and policy recommendations.

2. LITERATURE REVIEW

This section analyzes the theoretical and empirical literature on the effect of FDI inflows on income inequality in Sub Saharan Africa.

2.1 Theoretical Literature

This sub section reviews theories relevant to the study's objectives which include the Modernization theory, the North-South FDI model and the Neoclassical Growth Model

2.1.1 Modernization Theory

Given the topic of this study, some theories show the effect of foreign direct investment inflows on income inequality. First, according to the modernization theory, Rostow (1960) claims that a host country's different stages of development processes will have a different effects on income inequality. This theory posits that inflows from foreign direct investment will initially increase income inequality at the early stages of developmental processes, however, this effect will decrease once an optimum development stage is attained. Modernization theorists claim that FDI is an ultimate instrument for the flow of capital, knowledge and market, which leads to development for newly independent economies (King and Varadi, 2002). They regard foreign and domestic capital as homogeneous goods, so the capital fosters economic growth and its benefits ultimately spread throughout the whole economy. The theorists opine the Kuznets effect wherein income inequality increases at first as per capita income grows, but declines later once a certain level of development is attained.

2.1.2 The North-South FDI Model

The North–South FDI Model, proposed by Feenstra and Hanson (1997), suggests that foreign direct investment from advanced economies can unintentionally widen income inequality in developing countries. Because multinational firms typically bring skill-biased technologies and production processes, they increase the demand for skilled labor in host economies, pushing up skilled wages while leaving unskilled workers behind. This dynamic widens the wage gap even in countries where unskilled labour is abundant. Critics further argue that foreign investors often rely on capital-intensive techniques, which reduce employment opportunities for unskilled workers and push many into low-productivity informal activities. Over time, this creates a dualisticeconomic structure: a small, modern, high-wage sector dominated by foreign firms, and a large, backward sector where most unskilled workers remain. Such structural imbalances reinforce unequal income distribution and limit the broader developmental benefits of FDI (Lall, 1985; Jenkins, 1996; Reuveny and Li, 2003).

2.1.3 Neoclassical Growth Theory

The neoclassical growth theory, pioneered by Solow (1956) and Koopmans (1965), posits that foreign direct investment (FDI) stimulates economic growth in host countries by increasing capital accumulation and enabling the transfer of advanced technologies and managerial expertise. This growth leads to higher GDP, which, through a multiplier effect, can reduce poverty and income inequality by generating employment opportunities, raising wages, and improving access to goods and services for broader segments of the population. The theory assumes that markets tend toward equilibrium, allowing the benefits of economic expansion to be distributed more evenly across society, thus narrowing income disparities. However, the extent to which FDI effectively reduces inequality depends on contextual factors such as institutional quality, labor market

flexibility, and government policies that influence how the gains from growth are shared among different income groups.

2.1.4 The Underpinning Theory

For studying the effect of foreign direct investment on income inequality in Sub Saharan Africa, the Neoclassical growth theory pioneered by Solow, 1956 is the most suitable to adopt as the underpinning theory. This is because the theory provides a clear framework for understanding how FDI can promote broad-based development by increasing capital accumulation, transferring technology, improving productivity, and generating employment opportunities that raise overall income levels. Its central assumption that economic growth driven by investment and technological progress can lift lower-income groups through job creation, higher wages, and improved access to goods and services aligns well with a research objective centered on inequality reduction. While real-world outcomes in Sub-Saharan Africa depend on institutional quality, labor market conditions, and policy choices, the neoclassical perspective offers the strongest theoretical basis for explaining the potentialof FDI to narrow income gaps rather than widen them.

2.2 Empirical Literature Review

Recent empirical studies consistently show that the impact of FDI on income inequality is highly context-specific and often nonlinear. Pham et al. (2025) illustrate this complexity using provincial data from Vietnam, finding that FDI first increases inequality before becoming inequality-reducing at higher levels. Chuong et al. (2025) similarly report mixed effects of FDI on household income distribution in Vietnam, noting that FDI reduces inequality among high-income groups but increases disparities among other segments, underscoring the need for policies that promote social equity. In post-communist EU countries, Supic et al. (2025) find that high human-capital concentration in foreign-owned firms initially reduces inequality but later increases it as these firms offer higher wages than domestic enterprises, particularly in weaker institutional environments. Soto et al. (2024), examining 46 low-tax countries, show that FDI reduces inequality and enhances welfare, with effects strengthened by supportive tax frameworks, highlighting the role of domestic fiscal policy in shaping distributional outcomes.

At the global level, Hekmatpour (2024) finds a positive linear relationship between FDI and inequality in non-OECD countries, while developed economies exhibit an inverted U-shaped pattern. Rej et al. (2024) explore related dynamics and show that positive shocks to FDI increase carbon emissions, suggesting that FDI's broader economic effects may interact with inequality in complex ways. In Africa, Kaulihowa and Adjasi (2018) identify a U-shaped relationship between FDI and inequality across 16 countries, with initial improvements in income distribution diminishing as FDI inflows rise. Lee et al. (2022) further demonstrate that FDI reduces inequality across 37 countries, though this effect weakens at higher levels of financial development, while financial development itself reduces inequality but with diminishing returns. Khan and Nawaz (2019) find an inverted U-shaped relationship between trade and inequality in CIS countries, with FDI also exerting significant distributional effects.

Meta-analytic evidence from Huang et al. (2020), based on 543 studies, shows that FDI increases inequality in low-income countries, has no significant effect in middle-income

countries, and reduces inequality in high-income economies, suggesting that development level shapes absorptive capacity. Investor heterogeneity also matters: Lu et al. (2025) find that Chinese SOEs reduce inequality due to stronger oversight and reputational pressures, while POEs tend to worsen inequality. Country-specific evidence from Vietnam by Le et al. (2021) shows that FDI increases inequality, with effects moderated by education and institutional quality. Institutional factors are further emphasized by Jude and Levieuge (2020), who find that FDI reduces inequality only in countries with strong institutions. In Sub-Saharan Africa, Asongu and Odhiambo (2023) report that FDI often increases inequality because inflows are concentrated in capital-intensive sectors such as mining and telecommunications, which generate limited employment for low-skilled workers.

The existing literature shows clear gaps in understanding how FDI affects income inequality, particularly in regions like Sub-Saharan Africa. Most studies focus on Asia, Europe, or broad global samples, leaving Sub-Saharan African economies underrepresented despite their unique reliance on resource-seeking, capital-intensive FDI. Although many researchers identify nonlinear patterns such as U-shaped or inverted U-shaped effects these dynamics have not been thoroughly tested in Sub-Saharan African contexts. Important moderating factors such as institutional quality, trade openness, exchange rate and gross domestic product are also inconsistently examined, even though evidence suggests they significantly shape inequality outcomes. Methodologically, many African studies rely on national-level data and simpler econometric techniques, overlooking sub-national disparities and more advanced approaches that could better capture the complex channels through which FDI influences income inequality. To fill these gaps. This study therefore designed to investigate the effect of FDI on income inequality in sub–Saharan African countries using System Generalized Method of Moments.

3. METHODOLOGY

This section presents the research methodology adopted for the study. It outlines the theoretical framework that underpins the analysis, the estimation techniques employed to test the hypotheses, and the definitions of the variables included in the model. The expected signs of the relationships between variables are specified in line with established theory and prior empirical evidence. Furthermore, the chapter details the data sources utilized, highlighting their scope, reliability, and relevance to the research questions. By systematically addressing these components, the methodology ensures that the study's objectives are pursued with rigor, transparency, and coherence.

3.1 Theoretical Framework and Empirical Model

The study adopts the Neoclassical Growth Model proposed by Solow (1956) as its theoretical framework. This model provides a robust foundation for analyzing how foreign direct investment (FDI) can foster broad-based economic development. Specifically, it emphasizes the role of FDI in enhancing capital accumulation, facilitating technology transfer, improving productivity, and generating employment opportunities that contribute to higher income levels. The central assumption of the Solow model that sustained economic growth is driven by investment and technological progress aligns closely with the study's objective of reducing inequality. By creating jobs, raising wages,

and expanding access to goods and services, FDI has the potential to lift lower-income groups and promote inclusive growth.

Building on this theoretical foundation, the study employs the empirical model developed by Teixeira and Loureiro (2019), with slight modifications to suit the specific context of the research. The model is specified as follows:

$$GINI = f(FDI,\ INST, TR, EXR,\ GDP)$$
……. (1)

In this study, GINI represents the dependent variable, capturing income inequality for country i at time t. The key independent variable is FDI, denoting foreign direct investment inflows. A set of control variables is included to account for additional factors influencing inequality: INST (institutional quality), TR (trade openness), EXR (exchange rate), and GDP (gross domestic product).

Using a panel data framework, the functional relationship can be expressed as the following econometric model:

$$GINI_{it}=\alpha+\beta_1 FDI_{it} + \beta_2 INST_{it} + \beta_3 TR_{it}+\beta_4 EXR_{it}+\beta_5 GDP_i t+ \eta_t + \lambda_i + \Pi_{it}$$
……(2)

Where α is the constant term. β_1, β_2, β_3, β_4, and β_5 are the coefficients measuring the impact of each explanatory variable. μi captures unobserved country-specific effects. ϵit is the idiosyncratic error term. This specification allows the study to assess the direct effect of FDI on income inequality while controlling for institutional, trade, macroeconomic, and growth-related factors across countries and over time.

The study used the Generalized Method of Moment (GMM) model established by Arellano and Bond (1991) and Arellano and Bover (1995) to address the fixed panel OLS model's inadequacies in dealing with heterogeneity issues such as time-invariant inequalities in the sample countries. Because the model is dynamic, it can help solve the problem with fixed panel models. Thus, the GMM model specification is as follows:

$$GINI_{it} = \alpha_0 + \ell GINI_{it-1}+\beta_1 FDI_{it}+\beta_2 INST_{it}+\beta_3 TR_{it}+\beta_4 EXR_{it}+\beta_5 GDP_i t + \eta_t + \lambda_i + \Pi_{it}$$
……. (3)

In Equation (3), the dependent variable is $GINI_{it}$, which measures income inequality in Sub-Saharan Africa (SSA) for country i at time t. The inclusion of the lagged dependent variable, $\ell GINI_{it-1}$, captures the dynamic behavior of inequality over time and justifies the use of a panel Generalized Method of Moments (GMM) estimator. This dynamic specification allows the model to account for persistence in inequality, where past levels influence current outcomes. The terms η_t and λ_i represent time-specific and country-specific effects, respectively, while ν_{it} denotes the idiosyncratic error term.

3.2 Estimation Method and Justification

System GMM is employed in this study because it effectively addresses the econometric challenges inherent in dynamic panel data models, particularly the inclusion of a lagged

dependent variable that introduces endogeneity and persistence in income inequality. Unlike traditional estimators, System GMM combines equations in differences and in levels, thereby strengthening the instrument set and improving efficiency compared to Difference GMM, which often suffers from weak instruments when variables are highly persistent (Shehu et al 2025). This approach is well suited to panels with a large cross-sectional dimension and relatively short time periods, as is the case with Sub-Saharan Africa, and it allows the use of internal instruments to control for endogeneity in key explanatory variables such as FDI, institutional quality, and trade openness. Moreover, System GMM accounts for unobserved country-specific heterogeneity and time effects, while providing diagnostic tests such as the Hansen test for instrument validity and the Arellano-Bond test for autocorrelation, ensuring that the estimates are both consistent and robust.

3.3 Variable Description and Expected Signs

The table below presents the variables employed in the study, together with their definitions, measurements, and expected signs. This structured summary provides clarity on how each variable is operationalized within the empirical model and the theoretical expectations guiding the analysis.

Variable	Measurement / Definition	Expected Sign	Rationale
GINI (Dependent)	Gini coefficient, measuring the extent of disparity in income distribution	—	Captures income inequality across countries and over time
FDI (Independent)	Net inflows of foreign direct investment as % of GDP	**Positive**	FDI may increase inequality if benefits are concentrated among higher-income groups
GDP (Control)	Gross Domestic Product, measured in constant U.S. dollars	**Negative**	Higher economic output is expected to reduce inequality through inclusive growth
INST (Control)	Institutional quality, expressed as a composite index	**Negative**	Stronger institutions promote equitable distribution and reduce inequality
TR (Control)	Trade openness, measured as the ratio of exports plus imports to GDP	Ambiguous	Trade can reduce inequality by expanding opportunities, but may also widen gaps
EXR (Control)	Exchange rate, measured as the rate at which domestic currency is converted to foreign currency	**Negative**	Stable exchange rates support economic stability, reducing inequality pressures

3.4 Data Source

The World Development Indicators (WDI) database serves as the source for the Foreign Direct Investment (FDI) indicator. The Gini index, used as a proxy for income inequality, is obtained from the World Income Inequality Database (WIID) maintained by UNU-WIDER. The control variables which include Institutional Quality, GDP, and Exchange Rate are likewise sourced from the World Development Indicators (WDI) database.

4. RESULTS AND DISCUSSION

Before estimating the main model, the study run some preliminary tests which include descriptive statistics and correlation matrix. The descriptive statistics include the mean, standard deviation, minimum and the maximum values of each of the variables. The descriptive statistics Table 1 presents key components of the variables utilized in the study, derived from 336 observations across Sub-Saharan African countries between 2015 and 2021.

Table 1: Descriptive Statistics

VARIABLES	OBS	MEAN	ST. DEV.	MIN	MAX
Inst Q. index	336	-.0535714	1.360993	-2.46595	2.48544
Gini index	336	54.37794	6.736249	32.026	67.275
Trade Open	336	66.16022	33.03671	4.127549	235.8202
Exch Rate	336	1117.248	3289.325	3.6	23097.99
GDP	336	3.67000000	8.080000	3.16000000	4.93000000
FDI	336	7.6000000	2.6100000	-7.40000000	4.13000000

Source: Author's computation from Stata 15

Data in Table 1 shows that Institutional Quality Index has a mean value of -.053, showing the region's typically low institutional quality, with values ranging from -2.47 (extremely weak institutions) to 2.49 (stronger institutions). The relatively high standard deviation (1.36) indicates significant diversity in institutional quality among countries. The Gini Index averages 54.38, showing significant income disparity across the region. Gini coefficients range from 32.03 (somewhat closer to equal income distributions) to 67.28 (very unequal), with a wide range (standard deviation of 6.74). With a mean of 66.16%, Trade Openness indicates a modest level of participation into international trade. Nonetheless, the large standard deviation (33.04) and wide range (4.13% to 235.82%) show that some countries are quite open while others are far less so.

The exchange rate spans from 3.6 to 23,098, with a significant mean (1117.25) and a large standard deviation (3289.33), demonstrating that currency prices and volatility differ across country. GDP Growth Rate averages 3.67%, with a narrow range (3.16% to

4.93%) and substantial variability (standard deviation 8.08), indicating modest economic growth but significant volatility. Foreign Direct Investment (FDI) inflows have a mean of 7.6, with negative values (-7.4) and a maximum of 4.13, with a standard deviation of 2.61. This implies that net FDI inflows vary between countries, with some seeing outflows or data modifications.

The correlation matrix shows the pairwise linear relationships between the main variables in the study. The correlation coefficients between a number of different economic and institutional variables are presented in the Table 2, which provides an understanding of the interrelationships between these variables.

Table 2: Correlation Matrix

	Inst Q. Index	Gini Index	Trade Open	Exch Rate	GDP	Poverty Rate	FDI
Inst Q. Index	1.0000						
Gini Index	-0.0426	1.0000					
Trade Open	0.0205	-0.1419	1.0000				
Exch Rate	-0.3357	-0.0445	0.0126	1.0000			
GDP	-0.1641	0.1177	0.2787	-0.0985	1.0000		
FDI	0.0697	0.0748	-0.0541	-0.0344	0.0004	-0.0890	1.0000

Source: Author's computation from Stata 15

Information in Table 2 shows that Institutional Quality Index (Inst Q. Index) has a very weak negative correlation with the Gini Index (-0.0426), suggesting that better institutional quality is slightly correlated with lower income inequality. Gini Index (Income Inequality)shows a weak negative correlated with Trade Openness (-0.1419), indicating that greater trade openness may be modestly correlated with reduced income inequality in the dataset. Exchange Rate has a moderate negative correlation with Institutional Quality (-0.3357), implying that countries with stronger institutions tend to have more stable or lower exchange rates (or vice versa). GDP is weakly positively correlated with Trade Openness (0.2787) and slightly positively correlated with Gini Index (0.1177), suggesting that countries with higher GDP tend to be more open to trade and may experience slightly higher income inequality. Foreign Direct Investment (FDI) has weak positive correlations with Institutional Quality (0.0697) and Gini Index

(0.0748), indicating a slight tendency for countries with better institutions and higher income inequality to attract more FDI, though these relationships are very weak. Most correlations are relatively low (absolute values below 0.3), indicating weak linear associations between variables. The low correlations also suggest that multicollinearity is unlikely to be a serious issue in system GMM analyses involving these variables, as none show very strong correlation (above 0.8).

The estimated system GMM model on the effect of foreign direct investment on income inequality in Sub Saharan Africa is also shown in Table 3. Regarding model diagnostics, the AR(1) and AR(2) tests for autocorrelation yield p-values of 0.313 and 0.331, respectively, which are above typical significance levels. This suggests there is no evidence of second-order serial correlation in the residuals, supporting the validity of the GMM estimator. The Hansen test p-value of 0.741 and Sargan test p-value of 0.408 both indicate that the instruments used in the model are valid; the null hypothesis that the instruments are exogenous cannot be rejected. These diagnostic tests support the model's validity and the appropriateness of the instruments used

Table 3: Effects of FDI on Income Inequality in SSA

Gini Index	Coef.	Cor Std Err	z	P>|z|	95% Conf. Interval	
L.1Gini Index	.9963979	.0172764	57.67	0.000	.9625368	1.030259
FDI	8.370000	4.26e-12	1.96	0.050	1.51e-14	1.67e-11
Inst Q. Index	.0912523	0.643414	1.42	0.156	-.0348545	.2173592
Exch Rate	5.5600000	7.310000	0.76	0.446	-8.75e-06	.0000199
GDP	-1.9600000	3.97000000	-0.05	0.961	-7.9700000	7.5800000
Constant	-.3079029	9401475	-0.33	0.743	-2.150558	1.534752
AR(1) *p*-value	0.313					
AR(2) *p*-value	0.331					
Hansan test *p*-value	0.741					
Sargan Test	0.408					

Source: Author's computation from Stata 15

Statistics in Table 3 shows that the lagged dependent variable, L.1Gini Index, has a coefficient of approximately 0.996 with a very small standard error, and it is highly statistically significant ($z = 57.67$, $p < 0.001$). This indicates strong persistence in income inequality over time, meaning past inequality is a very strong predictor of current inequality. Furthermore, Foreign Direct Investment (FDI) exhibits a positive coefficient

of 8.37 in the two-step system GMM estimation, which implies that increases in FDI tend to be associated with rises in income inequality as measured by the Gini Index. The statistical significance of this effect is right at the conventional 5% threshold, with a z-value of 1.96 and a p-value of exactly 0.05. This indicates that the observed positive relationship is unlikely to be due to random chance, but it also signals that the evidence is not overwhelmingly strong. This positive relationship aligns with theories and empirical findings suggesting that while FDI can promote economic growth, it may also worsen income disparities if the benefits are unevenly distributed across different segments of society. For example, empirical studies in the emerging economies often finds that FDI's distributional effects are uneven in the early stages of economic development. Some studies report a U-shaped relationship between FDI and inequality, where FDI initially increases inequality but may reduce it as countries develop stronger financial markets and institutions (Gam et al., 2023; Couto & Center, 2018; Kaulihowa&Adjasi, 2018; Ard, 2015). This pattern supports the result, indicating that in contexts with weaker institutional capacity or less inclusive policies, FDI tends to raise inequality.

In contrast, other studies suggest that FDI can help reduce income inequality under certain conditions. Some empirical studies found that FDI generally contributes to lowering inequality in countries with higher financial development, where the benefits of investment are more broadly shared (Indra, 2019). This contrast highlights the importance of country-specific factors, such as governance quality, labor market structure, and redistributive mechanisms, in shaping the impact of FDI on income distribution. Overall, findings are consistent with a growing body of literature emphasizing the context-dependent nature of FDI's effects on inequality.

The Institutional Quality Index (Inst Q. Index) shows a positive coefficient (0.091), but it is not statistically significant ($p = 0.156$), indicating no clear evidence that this variable affects inequality in this model. Exchange Rate and GDP both exhibit statistically insignificant coefficients with large standard errors and p-values well above conventional thresholds (0.446 and 0.961, respectively), suggesting no meaningful effects on inequality in this estimation.

5. CONCLUSION AND POLICY RECOMMENDATIONS

5.1 Conclusion

In conclusion, the results highlight the strong persistence of income inequality over time, as evidenced by the highly significant lagged Gini Index coefficient. The positive and marginally significant impact of Foreign Direct Investment (FDI) on income inequality suggests that increases in FDI tend to exacerbate income disparities, consistent with theories and empirical findings that emphasize the uneven distribution of FDI benefits across different social groups. This effect appears particularly relevant in contexts with weaker institutional frameworks or less inclusive policies, where FDI may disproportionately favor capital owners and skilled workers. Additionally, the Institutional Quality Index, Exchange Rate, and GDP do not show statistically significant effects on inequality in this model. Overall, these findings contribute to the growing evidence that the impact of FDI on income inequality is complex and varies according to

institutional and developmental conditions, underscoring the need for policies that promote inclusive growth alongside foreign investment.

5.2 Recommendation

Based on the findings, the following policy recommendations are proposed to address the relationship between Foreign Direct Investment (FDI) and income inequality:

1. Promote Inclusive Investment Policies: Governments should design policies that encourage FDI projects with strong linkages to local economies, ensuring that foreign investment benefits a broad range of social groups, including low-skilled workers and marginalized communities. Incentives could be provided for firms that engage in skills training, local sourcing, and job creation beyond skilled labor.

2. Strengthen Institutional Quality: Although the Institutional Quality Index was not statistically significant in this model, improving governance, transparency, and regulatory frameworks remains crucial. Strong institutions can help ensure that the gains from FDI are more evenly distributed and that labor rights and environmental standards are upheld.

3. Enhance Education and Skill Development: To mitigate inequality exacerbated by FDI favoring skilled workers, investments in education and vocational training are essential. Developing human capital will enable a larger share of the population to benefit from the opportunities created by foreign investment.

4. Implement Progressive Redistribution Mechanisms: Fiscal policies such as progressive taxation and targeted social spending can help redistribute income and reduce inequality. Revenue generated from FDI-related economic growth can be channeled into social programs that support vulnerable populations.

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