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Financial Sector Governance and Poverty Alleviation in Sub-Saharan Africa: The Moderating Role of Foreign Direct Investment

Sié Ernest YOUL ✉
Center for Economic and Social Studies, Documentation and Research
University Thomas SANKARA, Saaba, Burkina Faso
https://orcid.org/0009-0001-6262-8288

Abstract

This article examines the effects of financial development on multidimensional poverty in 35 Sub-Saharan African countries over the period 2006–2020. Using two-stage least squares and instrumental-variables quantile regression, the results show that financial development reduces multidimensional poverty in Sub-Saharan Africa (SSA), and that this effect varies across the distribution of multidimensional poverty. The results also indicate that countries receiving higher levels of FDI are likely to see their multidimensional poverty decline as a result of financial sector development. However, the effects of financial development and FDI on poverty are influenced by institutional quality. Corruption limits their impact, thereby exacerbating poverty.

These findings confirm the central role of financial development and FDI as levers for improving the living conditions of vulnerable populations in developing countries. These findings thus call on policymakers to encourage FDI and stimulate financial sector development in order to reduce multidimensional poverty in SSA. They also recommend prioritizing improvements to governance and anti-corruption mechanisms. Public authorities should improve transparency in the allocation of funds and foreign investment, strengthen the independence of oversight institutions, and ensure the effective enforcement of contracts. These improvements to the institutional framework would help channel financial flows and FDI towards productive and inclusive sectors, thereby ensuring a more equitable redistribution of growth gains and an effective reduction in poverty.

Keywords: financial development, foreign direct investment, institutional quality, multidimensional poverty, Sub-Saharan Africa.

JEL Classification: G20; F21; K23; I32; O55.

Introduction

Improving living conditions for the population is a major concern for developing countries, particularly those in Sub-Saharan Africa (SSA). Although SSA countries have experienced significant economic growth over the past few decades, poverty levels remain high (African Development Bank, 2018). Poverty has worsened in recent years in SSA due to the COVID-19 pandemic. According to the World Bank (2022) report, in 2020, SSA accounted for 60% of the world's people living in extreme poverty, or 389 million people. Poverty in Sub-Saharan Africa varies significantly from region to region. East and West Africa account for more than half of the continent's poor.

In 2020, it also had the highest poverty rate in the world, at around 35%. Poverty in SSA is a highly complex reality that goes beyond simple income measures. It reflects the deprivations experienced by populations in several fundamental aspects of life. These deprivations are grouped into three dimensions: standard of living, health, and education. This situation makes poverty a multidimensional phenomenon, and the SSA remains the region most affected by multidimensional poverty. According to World Bank (2021) data, approximately 59% of the population in Sub-Saharan Africa (SSA) lived in multidimensional poverty in 2015. In 2020, more than half of the region's population remained multidimensionally poor, facing significant deprivation in access to basic services and adequate living standards.

The persistence of poverty in SSA can be attributed to a lack of access to financial services, which leaves the population vulnerable to basic social services (education, healthcare, drinking water, electricity, housing, etc.). Access to financial services helps to reduce poverty, increase private investment, and promote economic growth (Bruhn and Love, 2014). The development of the financial sector offers numerous benefits for SSA countries. It facilitates access to financial services, as well as transactions and payments between individuals. This helps to improve their well-being by promoting entrepreneurship, women's empowerment, investment in education, and risk management (Churchill and Marisetty, 2020; Zhang and Posso, 2019).

In light of the above arguments, financial development could be a key factor in reducing multidimensional poverty in SSA. However, financial development in this region is not particularly impressive and remains weak compared with the global picture. Indeed, the average financial development index in Sub-Saharan Africa is estimated at 0.136, compared to a global average of 0.304; 0.248 in the Middle East and Central Asia; 0.329 in Asia and the Pacific; and 0.506 in Europe. This situation results in the exclusion of certain people from financial services essential to their well-being. Furthermore, most people excluded from financial services are generally poor (Allen et al., 2016) and many suffer from social exclusion, as well as exclusion from electricity, drinking water, and basic healthcare (Alkire et al., 2017; Allen et al., 2016). In this context, the research question that arises is as follows: can financial development help to reduce multidimensional poverty in Sub-Saharan Africa?

Empirical research on the relationship between financial development and multidimensional poverty in SSA remains inconclusive. Most of this research has analysed these effects using estimation techniques that assume homogeneity in the effects of financial development (Zahonogo, 2017; Appiah-Otoo et al., 2022; Ouedraogo and Ouedraogo, 2025), whereas it is reasonable to expect these effects to vary according to the level of multidimensional poverty. Thus, our research offers a different perspective and fills a gap in the literature by using instrumental-variables quantile regression, which allows us to estimate effects across the multidimensional poverty distribution.

Furthermore, this research highlights the role of governance in the relationship between financial development and poverty reduction. According to North (1990), institutions influence the efficiency of financial markets. Effective institutions reduce uncertainty, limit transaction costs, and strengthen trust among financial actors. Consequently, the effects of financial development on poverty reduction depend on the quality of a country's institutions. High-quality institutions promote the development of the financial sector, thereby stimulating private investment and reducing poverty. Conversely, poor institutional quality reduces the effects of financial development by misallocating financial resources, which can exacerbate poverty.

Finally, this research examines the role of foreign direct investment (FDI) in financing SSA economies. As these countries are already characterized by structural constraints limiting access to financial services, FDI constitutes an additional source of financing. It contributes to improving the financial sector and promotes the integration of developing economies into the international market.

According to Borensztein et al. (1998), FDI is a more stable source of financing than portfolio investment and official development assistance. It facilitates domestic investment, improves human capital, and stimulates economic growth. Thus, FDI can reduce the financing constraints faced by developing countries by providing additional capital, thereby improving the well-being of their populations. In this sense, FDI can facilitate access to financial services and reduce multidimensional poverty by stimulating production, creating jobs, and transferring know-how. However, the effectiveness of FDI within the economy depends on the quality of the host country's institutions (Rodrik, 2008)8). Host countries with transparent rules, strong contractual protection, low levels of corruption, and credible financial institutions help to channel FDI towards productive sectors that create jobs and income for disadvantaged populations. Conversely, in countries characterized by poor institutional quality, FDI is often concentrated in extractive sectors with limited redistributive effects on the economy. Thus, the quality of institutions is a determining factor in FDI's ability to contribute effectively to inclusive development and poverty reduction.

In light of the arguments presented above, our research aims to analyse the effects of financial development on multidimensional poverty, focusing on the roles of FDI and institutional quality. It contributes to the literature in four ways. Firstly, it incorporates the non-monetary dimension of poverty by using a multidimensional measure that allows consideration of deprivation in areas such as education, health, drinking water, electricity, and housing. Furthermore, it uses a broader measure of financial development that encompasses financial markets, unlike previous studies, which relied on banking-sector indicators. This measure of financial development accounts for the contributions of financial institutions and markets. Secondly, our research uses quantile regression to show that the effects of financial development may vary according to the level of multidimensional poverty. Thirdly, it highlights the role of FDI in the relationship between financial development and multidimensional poverty. Finally, it shows that the effectiveness of financial development and FDI depends on institutional quality.

The remainder of the paper is organized as follows. Section 2 reviews the relevant literature. Section 3 outlines the research methodology. Section 4 describes the data sources and presents the descriptive analysis. Section 5 discusses the empirical results, while last Section concludes the paper and offers policy recommendations.

1. Literature Review

2.1. Financial Development, FDI, and Poverty

Several theoretical approaches can be drawn upon to explain the relationship between financial development and multidimensional poverty. These include financial development theory, the capabilities approach, and endogenous growth theory. Financial development theory suggests that access to and use of financial services reduce poverty by providing the resources needed to meet daily needs (King and Levine, 1993; Rajan and Zingales, 1998).

Similarly, Beck et al. (2007) noted that access to financial services enhances beneficiaries' entrepreneurial opportunities, thereby improving their income, consumption, level of independence, and participation in decision-making within the family and community. Thus, access to financial services promotes beneficiaries' economic empowerment and helps reduce deprivation in non-monetary areas (education, health, housing, energy). Financial development, therefore, serves as a lever to reduce multidimensional poverty by enabling households to invest in their well-being. In the capabilities approach developed by Sen (1999), the development of the financial sector is a key lever for improving household well-being. According to this approach, financial development facilitates households' access to credit, savings, and insurance. They can thus turn to the financial sector to invest in areas such as education, health, energy, etc. This helps to reduce multidimensional poverty.

Finally, this research draws on endogenous growth theory, which holds that FDI plays a central role in capital accumulation and technology diffusion (Borensztein et al., 1998), and that the development of the financial sector constitutes an efficient mechanism for resource allocation (Levine, 2005). In this sense, FDI can help reduce multidimensional poverty by stimulating economic growth and developing the financial system. This approach highlights a complementary relationship between FDI and the financial sector.

Empirically, numerous studies have shown that financial development reduces multidimensional poverty. According to Fowowe and Shuaibu (2014), financial development is a major determinant of poverty reduction, as it improves people's living conditions. Their study also shows that the impact of FDI depends on the financial sector's ability to channel financial resources towards productive investments likely to contribute to poverty reduction. For these authors, financial development acts as a channel through which FDI influences poverty. For Mlambo (2024), the development of the financial sector stimulates economic growth in low-income countries by facilitating the efficient allocation of financial resources. Thus, financial development acts as an intermediary, channelling resources towards productive investments and thereby helping reduce poverty.

Kouamé (2019) has also shown that FDI reduces poverty by stimulating economic growth and job creation and by improving household incomes. He also notes that the impact of FDI depends on countries' economic structure, their level of financial development, and their ability to channel FDI flows towards productive investments.

Finally, Boukhatem and Mokrani (2012) examined the relationship between financial development and poverty across a panel of low- and middle-income countries. Their findings show that financial development helps reduce poverty by expanding access to various sources of finance for poor people and vulnerable groups. Thus, the development of the financial sector facilitates transactions, offers opportunities to accumulate assets and smooth consumption, and enables poor households to better cope with shocks, thereby mitigating the risk of a resurgence in poverty. The poverty-reduction effects associated with financial development are influenced by FDI. Indeed, FDI promotes financial development by expanding the supply of financial services and products, thereby strengthening the financial sector's capacity to contribute fully to development financing. Thus, financial development plays a central role by facilitating the dissemination of FDI gains throughout the domestic economy, broadening economic opportunities, and improving the resilience of vulnerable people.

2.2. Financial Sector Governance and Poverty

Institutionalist theory, developed by North (1990), shows that institutions constitute the «rules of the game » governing economic activity. According to this approach, the efficiency of the financial sector and FDI depends on the quality of institutions (protection of property rights, enforcement of contracts, the efficiency of the judicial system, and the fight against corruption). Strong institutions bolster confidence in the financial system, improve resource allocation, and facilitate access for poor people to credit, employment, and the economic opportunities generated by FDI. Conversely, in a weak institutional environment, the benefits of financial development and foreign investment may be monopolized by elites or diverted to unproductive activities, thereby limiting their impact on poverty reduction.

Similarly, the work of La Porta et al. (1998) indicates that the financial sector depends on the quality of the legal and regulatory framework. Better protection for investors and creditors promotes the expansion of credit, private investment, and financial inclusion. From this perspective, the effects of financial development and FDI on poverty are greater when legal institutions guarantee transaction security and market transparency. Conversely, weak legal systems increase risks, discourage productive investment, and limit the economic benefits of FDI for vulnerable populations.

Empirically, research has also shown that institutional quality influences the impact of the financial sector and FDI. Using a panel of 75 developing and developed countries, Aracil et al. (2022) examined the relationship between institutional quality, financial inclusion, and poverty. Their findings showed that institutional quality reinforces the positive effect of financial inclusion on poverty reduction. Their results also indicate that inclusive institutions, characterized by stronger anti-corruption controls and more effective governance, enhance the impact of financial development on the well-being of poor populations. Similarly, Abor et al. (2024) have shown that FDI promotes financial inclusion more when institutions are of higher quality and financial markets are more developed. For these authors, institutional quality acts as a moderating variable in the transmission of FDI's effects on financial development and economic inclusion, particularly in developing countries.

3. Research Methodology

To estimate the effects of financial development on multidimensional poverty in SSA, we draw on Zahonogo (2017), in which poverty is modelled as a function of financial development and a set of control variables. This model is defined as follows:

$$MP_{it} = \beta_0 + \beta_1 FD_{it} + \sum_2^k \beta_k X_{k,it} + \varepsilon_{it} \quad (1)$$

where the indices *i* and *t* represent the country and period under consideration respectively, *MP* measures multidimensional poverty (multidimensional poverty index), *FD* measures financial development, *X* is the matrix of control variables, and *ε* is the error term specific to country *i* and period *t*.

The matrix of control variables includes macroeconomic variables such as GDP per capita, inflation, control of corruption, population growth, and trade openness.

$\omega^{th} 0 < \omega < 1$)As we have shown previously, most studies have highlighted a homogeneous effect of financial development on multidimensional poverty. Given that countries in SSA have varying levels of multidimensional poverty, the effects of financial development may vary depending on these levels of poverty. To account for this heterogeneity, we use instrumental variable quantile regression to highlight these conditional effects. According to D'Haultfoeuille

and Givord (2014), quantile regression offers a useful framework, as it allows us to study the entire conditional distribution of the variable of interest rather than the mean, and is well-suited to describing the determinants of changes in inequality and poverty. Thus, the quantile regression model is specified by solving an optimisation problem at the quantile (.

$$\min_{\delta \in R^k} \left[\sum_{i \in \{i: y_i \geq x_i' \delta\}} \Psi |y_i - x_i' \delta| \sum_{i \in \{i: y_i \geq x_i' \delta\}} (1 - \Psi) |y_i - x_i'| \right] \quad (2)$$

where y_i is the dependent variable (multidimensional poverty), x_i the vector of explanatory variables.

Quantile regression minimizes the weighted sum of absolute deviations (Kaplan and Sun, 2017) and allows the various quantiles (10th, 25th, or 90th) to be obtained by weighting the residuals appropriately. Thus, the conditional quantile of y_i, given x_i, is given by eq. 3 below:

$$Q_y(\Psi | x_i) = x_i' \delta_0 \quad (3)$$

To analyse the role of FDI in the relationship between financial development and multidimensional poverty, we will create an interaction term between FDI and financial development, incorporating this interaction term into Model 1, we obtain the following model 4:

$$MP_{it} = \beta_0 + \beta_1 FD_{it} + \beta_2 FD * FDI_{it} + \beta_3 FDI_{it} + \sum_4^k \beta_k X_{k,it} + \varepsilon_{it} \quad (4)$$

The effects of financial development and FDI on poverty depend on the quality of institutions[1]. To account for this, we add interaction terms to Model 1. First, we introduce an interaction term between the financial development variable and the quality of institutions, resulting in the following model 5:

$$MP_{it} = \beta_0 + \beta_1 FD_{it} + \beta_2 FD * CC_{it} + \beta_3 CC_{it} + \sum_4^k \beta_k X_{k,it} + \varepsilon_{it} \quad (5)$$

Secondly, we cross-examine the FDI variable and institutional quality, and we obtain the following Model 6:

$$MP_{it} = \beta_0 + \beta_1 FD_{it} + \beta_2 CC_{it} + \beta_3 FDI * CC_{it} + \beta_4 FDI_{it} + \sum_5^k \beta_k X_{k,it} + \varepsilon_{it} \quad (6)$$

4. Data Sources and Descriptive Analysis of Variables

This study employs secondary data to examine the effects of financial development on multidimensional poverty in Sub-Saharan Africa (SSA) over the period 2006–2020, selected based on the availability of multidimensional poverty data. The dataset was compiled from multiple sources. Data on GDP per capita, trade openness, inflation, population growth, and corruption were obtained from the World Bank (2021), while financial development indicators were sourced from the International Monetary Fund (IMF, 2021).

We now present the descriptive statistics for the variables over the period 2006 to 2020 in these 35 SSA countries. These statistics present the means by variable over the study period in question. Table 1, relates this descriptive analysis, shows an average multidimensional poverty index of 0.320 (32%) in SSA. On average, 32% of the population in SSA lived in multidimensional poverty over the period 2006–2020. The average financial development index is 0.118, with a standard deviation of 7.3, indicating low financial development across SSA.

[1] In the context of SSA, corruption serves as a useful proxy for institutional quality, as it reflects the degree of transparency, administrative efficiency, and enforcement of economic regulations.

Table 1: Descriptive Analysis of Variables

Variables	Obs	Mean	Standard deviation	Min.	Max
Multidimensional poverty index	107	0.320	0.125	0.068	0.668
Financial development	525	0.118	0.073	0.026	0.558
GDP per capita	525	1,315.398	1,336.58	270.657	7,384.701
Control of corruption	525	-0.721	0.490	-1.916	0.776
Trade openness	525	29.531	15.891	0	82.529
Population growth rate	525	2.621	0.701	-0.310	4.129
Inflation	518	176.174	90.652	50.361	2,042.289

Source: Author

5. Results and Discussion

5.1. Effects of Financial Development on Multidimensional Poverty in Sub-Saharan Africa

Analysing the effects of financial development on multidimensional poverty faces an endogeneity problem linked to reverse causality. Indeed, financial development, which facilitates access to financial services, can reduce multidimensional poverty, and a reduction in poverty can, in turn, improve the financial sector (Demirgüç-Kunt and Klapper, 2013). To control for this endogeneity bias, we use the instrumental variables technique and estimate the results using two-stage least squares (2SLS) and instrumental variables quantile regression (IVQR). For the instruments, we use lagged values of financial development. According to Kpodar (2007), lagged values of endogenous variables can constitute valid instruments. Similarly, Wooldridge (2010) showed that lagged values of an endogenous explanatory variable can serve as instruments, as they are correlated with the endogenous variable and uncorrelated with the error term. The estimation results obtained using two-stage least squares and instrumental variable quantile regression are presented in Table 2.

Column 1 presents the average effect of financial development on multidimensional poverty estimated using two-stage least squares (2SLS). The results indicate that financial development significantly reduces multidimensional poverty in SSA. However, because the effects may vary across different levels of poverty, instrumental variable quantile regression (IVQR) is employed to provide a more comprehensive assessment. The poverty-reducing effect of financial development can be attributed to improved access to credit, savings, and formal financial services, which enhance households' ability to invest in productive activities, education, and health. These findings are consistent with Levine (2005), who argues that financial development promotes more efficient resource allocation and improves economic well-being.

Columns 2 to 6 present the differentiated effects of financial development on multidimensional poverty in SSA. These results indicate that the effects of financial development on multidimensional poverty depend on the distribution of poverty levels. Indeed, financial development has more pronounced poverty-reducing effects in countries with lower levels of multidimensional poverty. In countries with high multidimensional poverty, financial development has marginal effects. The results obtained across the different quantiles support our hypothesis that financial development can have differentiated effects depending on the level of poverty. These results can be explained by the fact that, in countries where multidimensional poverty is low, households already possess a minimum level of human and physical capital, enabling them to better exploit the opportunities offered by financial

development. In such cases, access to financial services and products has a more pronounced impact, as it facilitates investment in education, health, and income-generating activities. These results show that financial development is more effective at reducing multidimensional poverty in countries with relatively favourable conditions. These results confirm the findings of Banerjee and Duflo (2011), who argue that the effectiveness of economic policies depends on the existence of a minimum level of resources.

Table 2: Results of the estimation of the effects of financial development on the multidimensional poverty

Variables	Estimation using 2SLS and the IVQR					
	Dependent variable: multidimensional poverty index					
	2SLS	IVQR				
		Q = 0.10	Q = 0.25	Q = 0.50	Q = 0.75	Q = 0.90
Financial development	-0.179***	-0.251***	-0.212***	-0.202***	-0.175***	-0.016
	(0.034)	(0.036)	(0.031)	(0.047)	(0.029)	(0.037)
GDP per capita	-0.205**	-0.113***	-0.089**	-0.050	-0.174***	-0.173***
	(0.084)	(0.041)	(0.038)	(0.040)	(0.061)	(0.028)
Control of corruption	-0.039	0.004	0.006	-0.080***	-0.002	-0.017
	(0.025)	(0.019)	(0.017)	(0.021)	(0.028)	(0.017)
Trade openness	0.193**	-0.035	-0.009	0.007	-0.044	-0.097
	(0.079)	(0.069)	(0.064)	(0.019)	(0.103)	(0.062)
Population growth rate	3.010*	7.709***	6.147***	6.044***	3.557	2.975**
	(1.609)	(1.548)	(1.526)	(0.080)	(2.301)	(1.381)
Inflation	-0.006	-0.021	-0.006	-0.006	-0.024	0.052***
	(0.014)	(0.015)	(0.014)	(0.014)	(0.022)	(0.013)
Constant		0.715***	0.564***	0.564***	1.142***	1.425***
		(0.119)	(0.117)	(0.117)	(0.177)	(0.106)
Observations	312	295	295	295	295	295
Anderson cannon. LM stat.		70.793				
Cragg-Donald Wald F-stat		57.391				
Hansen-Sargan test (P-value)		0.1250				

Note: Standard errors in parentheses. ***p<0.01; **p<0.05; *p<0.1.
Source: Author

5.2. The Role of FDI in the Financial Development–Multidimensional Poverty Nexus in SSA

In the first part of our results, we presented the effects of financial development on multidimensional poverty in SSA. We now examine the role of FDI in the relationship between these two variables. The aim is to analyse whether FDI can stimulate financial development to act effectively as a means of reducing multidimensional poverty. The FDI data are sourced from the World Bank (2021). The results of this analysis are presented in Table 3.

Table 3: Role of FDI in the relationship between financial development and multidimensional poverty

Variables	Estimation using 2SLS	
	Dependent variable: multidimensional poverty index	
Financial development (FD)	-0.174***	(0.061)
FDI	-0.318*	(0.181)
FDI*FD	-0.354***	(0.113)
GDP per capita	-0.403***	(0.111)
Control of corruption	0.016	(0.027)
Trade openness	0.178**	(0.084)
Population growth rate	4.872**	(2.226)
Inflation	-0.007	(0.009)
Observations	290	
Anderson canon. LM stat.	68.076	
Cragg-Donald Wald F-stat	51.731	
Hansen-Sargan test (P-value)	0.1368	

Note: Standard errors in parentheses. ***p<0.01; **p<0.05; *p<0.1.
Source: Author

These findings show that FDI amplifies the impact of financial development in reducing multidimensional poverty. FDI is beneficial for SSA countries, as it strengthens the role of financial development in reducing multidimensional poverty. Financial sector development acts as a transmission mechanism for the positive effects of FDI on the economy. It does so by improving access to credit, business financing, and financial inclusion. These findings are consistent with those of Levine (2005), which indicate that financial development improves financial intermediation and helps transform investment flows into economic opportunities accessible to vulnerable populations.

5.3. Institutional Quality and the Financial Development–FDI–Poverty Relationship in SSA

The effects of the financial sector on the economy depend on the quality of institutions. The same applies to FDI. This section analyses the effects of financial development and FDI on multidimensional poverty in SSA, highlighting the role of institutional quality, as measured by corruption levels. The results of this analysis are presented in Table 4.

Model 1 examines the effects of corruption on the relationship between financial development and multidimensional poverty. The results indicate that the interaction between corruption and financial development has a positive effect on poverty. This means that in a highly corrupt environment, financial development fails to benefit poor populations effectively, thereby exacerbating poverty. These results show that corruption in SSA reduces the effectiveness of financial intermediation by encouraging the misappropriation of resources, crony lending, and privileged access to finance for political or economic elites. These results are consistent with North's (1990) institutionalist approach, which holds that weak institutions reduce the effectiveness of economic policies.

Model 2 examines the effects of corruption on the relationship between FDI and multidimensional poverty in sub-Saharan Africa. The positive effect of the interaction between corruption and FDI on poverty indicates that, in the presence of corruption, FDI does not benefit the population and may increase poverty. In Sub-Saharan African countries where corruption

is high, FDI may be directed towards extractive sectors that are not labour-intensive and have weak links to the local economy. Corruption also encourages rent-seeking and the mismanagement of resources from these investments, thereby exacerbating poverty. These findings corroborate those of Dani (2008), who emphasizes that the effectiveness of foreign investment depends on the quality of institutions in host countries.

Table 4: Results of the estimate of the effects of corruption on the financial sector and FDI

Variables	Estimates using two-stage least squares (fixed effects)	
	Dependent variable: multidimensional poverty	
	(1)	(2)
Financial development (FD)	-0.456** (0.179)	-0.394** (0.168)
FD*CC	0.193** (0.098)	
FDI		-0.686* (0.380)
FDI*CC		0.130*** (0.024)
Control of corruption (CC)	0.024 (0.028)	0.010 (0.029)
GDP per capita	-0.424*** (0.097)	-0.487*** (0.092)
Trade openness	0.084 (0.075)	0.084 (0.076)
Population growth rate	6.985*** (1.864)	5.953*** (1.999)
Inflation	-0.020*** (0.007)	-0.024*** (0.007)
Observations	285	285
Anderson cannon. LM stat.	345.504	362.296
Cragg-Donald Wald F-stat	616.243	669.837
Hansen-Sargan test (P-value)	0.1605	0.1231

Note: Standard errors in parentheses. ***p<0.01; **p<0.05; *p<0.1.
Source: Author

5.4. Robustness Analysis

We will now examine the robustness of our results by using an alternative measure of financial development and by including control variables.

Robustness Analysis Using an Alternative Measure of Financial Development

The first robustness analysis involves testing the stability of the effects of financial development on multidimensional poverty. To do this, we use credit extended to the private sector as an alternative measure of financial development. Zahonogo (2017) uses credit granted to the private sector as a measure of financial development. Data for this indicator are sourced from the World Bank (2021).

The results of this analysis, presented in Table 5, show that credit extended to the private sector reduces multidimensional poverty and that this effect varies with the distribution of poverty levels. These results reinforce the robustness of our conclusions regarding the effects of financial development on multidimensional poverty.

Table 5: Robustness Test with an Alternative Financial Development Measure.

Variables	Estimation using 2SLS and the IVQR					
	Dependent variable: multidimensional poverty index					
	2SLS	VIQR				
		Q = 0.10	Q = 0.25	Q = 0.50	Q = 0.75	Q = 0.90
Credit granted to the private sector	-0.582*** (0.190)	-0.246*** (0.030)	-0.218*** (0.035)	-0.183*** (0.042)	-0.032** (0.014)	-0.012 (0.017)
GDP per capita	-0.274** (0.112)	-0.087** (0.036)	-0.073* (0.038)	-0.031** (0.015)	-0.120** (0.058)	-0.154*** (0.053)
Control of corruption	0.021 (0.025)	-0.0001 (0.017)	0.006 (0.017)	-0.007 (0.020)	-0.020 (0.025)	-0.0007 (0.021)
Trade openness	0.164** (0.078)	-0.073 (0.061)	-0.023 (0.064)	0.031 (0.075)	-0.010 (0.109)	0.221*** (0.036)
Population growth rate	4.016* (2.087)	7.004*** (1.362)	6.283*** (1.435)	6.776*** (1.253)	3.936* (2.106)	0.952 (1.792)
Inflation	-0.009 (0.009)	-0.015 (0.013)	-0.005 (0.014)	-0.015 (0.012)	-0.025 (0.020)	0.041** (0.017)
Constant		0.711*** (0.101)	0.640*** (0.107)	0.562*** (0.125)	0.890*** (0.183)	1.252*** (0.153)
Observations	305	295	295	295	295	295
Anderson cannon. LM stat.		56.482				
Cragg-Donald Wald F-stat		42.657				
Hansen-Sargan test (P-value)		0.1492				

Note: Standard errors in parentheses. ***p<0.01; **p<0.05; *p<0.1.
Source: Author

The following robustness analysis assesses the sensitivity of FDI's effects on the relationship between financial development and multidimensional poverty. We also use credit extended to the private sector as an alternative measure of financial development. The results of this robustness analysis are presented in Table 6. They show that FDI reduces multidimensional poverty in sub-Saharan Africa by facilitating the private sector's access to credit. This analysis confirms previous findings on the role of FDI in financing economies.

Table 6: Robustness Analysis of the Role of FDI

Variables	Estimation using 2SLS
	Dependent variable: multidimensional poverty index
Credit granted to the private sector (Credit)	-0.200*** (0.033)
FDI	-0.235** (0.090)
FDI*Credit	-0.301** (0.122)
GDP per capita	-0.178*** (0.042)
Control of corruption	0.016 (0.019)

Variables	Estimation using 2SLS
	Dependent variable: multidimensional poverty index
Trade openness	0.183** (0.083)
Population growth rate	1.113 (1.616)
Inflation	0.065*** (0.015)
Observations	290
Anderson-Canon LM test	49.233
Cragg-Donald Wald F-stat	37.864
Hansen-Sargan test (P-value)	0.1839

Note: Standard errors in parentheses. ***p<0.01; **p<0.05; *p<0.1
Source: Author

Robustness Analysis by Adding Control Variables

The second robustness analysis involves adding additional control variables to the model. These variables include domestic investment and human capital. These variables are used by Youl et al. (2025) as determinants of poverty. We first check whether the effects of financial development on multidimensional poverty remain stable after adding these control variables.

The estimation results obtained using two-stage least squares and instrumental-variables quantile regression are presented in Table 7. These results show that financial sector development reduces multidimensional poverty in ASS, and that this effect varies according to the distribution of multidimensional poverty. These results are consistent with what we presented in Table 2 and Table 5. The addition of the supplementary variables to the model does not alter the results obtained.

Table 7: Robustness Analysis Including Control Variables

Variables	Estimation using 2SLS and the IVQR					
	Dependent variable: multidimensional poverty index					
	2SLS	IVQR				
		Q = 0.10	Q = 0.25	Q = 0.50	Q = 0.75	Q = 0.90
Financial development	-0.318* (0.184)	-0.437*** (0.114)	-0.294** (0.147)	-0.173*** (0.028)	-0.052*** (0.013)	-0.097 (0.062)
GDP per capita	-0.353*** (0.120)	-0.088** (0.036)	-0.107** (0.040)	-0.074* (0.040)	-0.163*** (0.057)	-0.242*** (0.035)
Control of corruption	0.020 (0.027)	-0.003 (0.016)	-0.001 (0.018)	-0.001 (0.018)	0.006 (0.025)	-0.010 (0.015)
Trade openness	0.163* (0.087)	-0.044 (0.072)	0.041 (0.079)	0.009 (0.080)	-0.099 (0.113)	0.0136* (0.070)
Population growth rate	4.729** (2.293)	7.254*** (1.395)	6.508*** (1.540)	7.373*** (1.552)	4.128 (2.189)	3.005** (1.356)
Inflation	-0.008 (0.009)	-0.018 (0.013)	-0.006 (0.014)	-0.002 (0.014)	0.039* (0.020)	0.053*** (0.012)
Domestic investment	-0.002 (0.086)	-0.012 (0.081)	-0.083 (0.090)	0.083 (0.090)	0.152 (0.128)	0.035 (0.079)

Variables	Estimation using 2SLS and the IVQR					
	Dependent variable: multidimensional poverty index					
	2SLS	IVQR				
		Q = 0.10	Q = 0.25	Q = 0.50	Q = 0.75	Q = 0.90
Human capital	-0.155** (0.064)	-0.209*** (0.027)	-0.169*** (0.030)	-0.204*** (0.030)	-0.167*** (0.043)	-0.174*** (0.026)
Constant		0.692*** (0.107)	0.691*** (0.118)	0.637*** (0.119)	1.040*** (0.168)	1.408*** (0.104)
Observations	305	287	287	287	287	287
Anderson cannon. LM stat.		66.901				
Cragg-Donald Wald F-stat		48.296				
Hansen-Sargan test (P-value)		0.2518				

Note: Standard errors in parentheses. ***p<0.01; **p<0.05; *p<0.1
Source: Author

Finally, we examine the robustness of FDI's effects on the relationship between financial development and multidimensional poverty in SSA by including two additional control variables: domestic investment and human capital. The results of this robustness analysis are presented in Table 8. These results show that financial development and FDI reduce multidimensional poverty in SSA. The negative interaction term indicates that FDI reduces multidimensional poverty by stimulating the development of the financial sector, thereby enabling people to access useful services and products tailored to their needs. These results are consistent with those presented in Table 3 and Table 5, which show that financial development is a channel through which FDI affects multidimensional poverty.

Table 8: FDI and Multidimensional Poverty: Robustness Tests of the Finance–Poverty Relationship

Variables	Estimation using 2SLS
	Dependent variable: multidimensional poverty index
Financial development (FD)	-0.373***. (0.105)
FDI	-0.243** (0.018)
FDI*FD	-0.852** (0.358)
GDP per capita	-0.356 (0.303)
Control of corruption	0.017 (0.026)
Trade openness	0.190** (0.087)
Population growth rate	3.861* (2.138)
Inflation	-0.008 (0.009)
Domestic investment	-0.107 (0.066)
Human capital	-0.119** (0.059)
Observations	285
Anderson canon. LM stat.	67.753
Cragg-Donald Wald F-stat	51.875
Hansen-Sargan test (P-value)	0.1167

Note: Standard errors in parentheses. ***p<0.01; **p<0.05; *p<0.1
Source: Author

Conclusion and Economic Policy Implications

Multidimensional poverty is a major concern for policymakers, particularly in developing countries. This research, therefore, focuses on Sub-Saharan African (SSA) countries, where multidimensional poverty is most pronounced and access to financial services is limited. Financial sector development serves as a lever to help vulnerable people escape poverty. This article, therefore, examines the contribution of financial development to the reduction of multidimensional poverty using a panel of 35 SSA countries for the period 2006–2020.

Unlike previous studies, this research shows that financial development can have varying effects depending on the distribution of poverty levels. Using two-stage least squares and instrumental-variable quantile regression, we find that financial development reduces multidimensional poverty in SSA and that this effect varies according to the distribution of multidimensional poverty levels. The results also indicate that countries receiving higher levels of FDI are more likely to see a reduction in multidimensional poverty as a result of financial sector development. However, the effects of financial development and FDI on poverty are influenced by institutional quality. Corruption limits their impact, thereby exacerbating poverty.

These findings confirm the central role of financial development as a lever for improving the living conditions of vulnerable populations in developing countries. These findings call on policymakers to encourage FDI and stimulate financial sector development in order to reduce multidimensional poverty in SSA. It is also recommended that priority be given to improving governance and anti-corruption mechanisms. Public authorities should improve transparency in the allocation of funds and foreign investment, strengthen the independence of oversight institutions, and ensure the effective enforcement of contracts. These improvements to the institutional framework would help channel financial flows and FDI towards productive and inclusive sectors, thereby ensuring a more equitable redistribution of growth gains and an effective reduction in poverty.

Credit Authorship Contribution Statement

Sié Ernest YOUL: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Software, Writing – original draft, Writing – review & editing.

Conflict of Interest Statement

The author has no conflicts of interest to declare.

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Data Availability Statement

The data used in this study are derived from publicly available international databases. Data on multidimensional poverty were obtained from the Global Multidimensional Poverty Index (MPI) database, while data on financial development were sourced from the International Monetary Fund (IMF) Financial Development Database. Macroeconomic and governance indicators, including GDP per capita, trade openness, inflation, population growth, foreign direct investment, and control of corruption, were obtained from the World Bank's World Development Indicators (WDI) database.

All datasets used in the analysis are publicly accessible through the respective data providers. The compiled dataset and related analytical files used to generate the reported results are available from the corresponding author upon reasonable request.

Ethical Approval Statement

This study is based exclusively on secondary data obtained from publicly available international databases and does not involve human participants, animal subjects, personal data, or confidential information. Consequently, ethical approval from an institutional review board or ethics committee was not required.

All data were collected, processed, and analysed in accordance with the terms of use of the respective data providers. The study adheres to the principles of research integrity, transparency, and reproducibility. The analytical procedures and data sources are fully documented to facilitate verification and replication of the results.

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Appendix

Table A1: List of countries in the study

Countries	Countries	Countries	Countries	Countries
Benin	Congo, Rep	Guinea	Lesotho	Senegal
Burkina Faso	Ivory Coast	Guinea-Bissau	Liberia	Sierra Leone
Burundi	Eswatini	Kenya	Mozambique	Sudan
Cameroon	Ethiopia	Madagascar	Namibia	Tanzania
Central African Republic	Gabon	Mali	Niger	Togo
Chad	Gambia	Mauritania	Nigeria	Uganda
Congo, Demo, Rep	Ghana	Malawi	Rwanda	Zambia

Source: Author