Original Research Article

JAAS

Journal of Asian and African Studies
1–26

DOI: 10.1177/00219096231188948
journals.sagepub.com/home/jas
Sage

Does China's Flow of FDI and Institutional Quality Matter for Poverty? Evidence from Sub-Sahara Africa

Khadijah Iddrisu
Department of Banking and Finance, Simon Diedong Dombo University of Business and Integrated Development Studies, Ghana

Joshua Yindenaba Abor
Department of Finance, University of Ghana Business School, Ghana

Michael Insaidoo
Department of Banking and Finance, University of Professional Studies, Accra, Ghana

Kannyiri T. Banyen
Department of Banking and Finance, Simon Diedong Dombo University of Business and Integrated Development Studies, Ghana

Abstract

The study adds to the discussion on the necessity for Sub-Sahara African (SSA) countries to eradicate poverty, as outlined in SDG 1 and Africa's Agenda 2063. This contribution was successful in achieving some key objectives. First, we examine the impact of Chinese FDI and institutional quality on the eradication of poverty in SSA. Second, we test empirically whether institutional quality can help Chinese FDI to reduce poverty in SSA. Using an annual dataset for 36 SSA countries for a 20-year period ending in 2020, our pooled OLS results showed that Chinese FDI does not reduce poverty unless there are strong institutions and good governance. Also, the results showed that strong institutions and good governance reduce poverty in SSA. As a result, we recommend that governments establish policies to develop systems and structures that encourage industrialization and attract foreign investors for SSA to reap the full benefits of Chinese FDI.

Keywords

Poverty alleviation, institutional quality, Africa, Agenda 2063, FDI

Introduction

There is a rising concern about the concept of Sustainable Development Goals (SDGs) and how these goals may be met. In 2015, 17 SDGs and 169 targets were set by the United Nations (UN)

Corresponding author:
Khadijah Iddrisu, Simon Diedong Dombo University of Business and Integrated Development Studies, Wa, Ghana.
Email: khadijah.iddris@yahoo.com

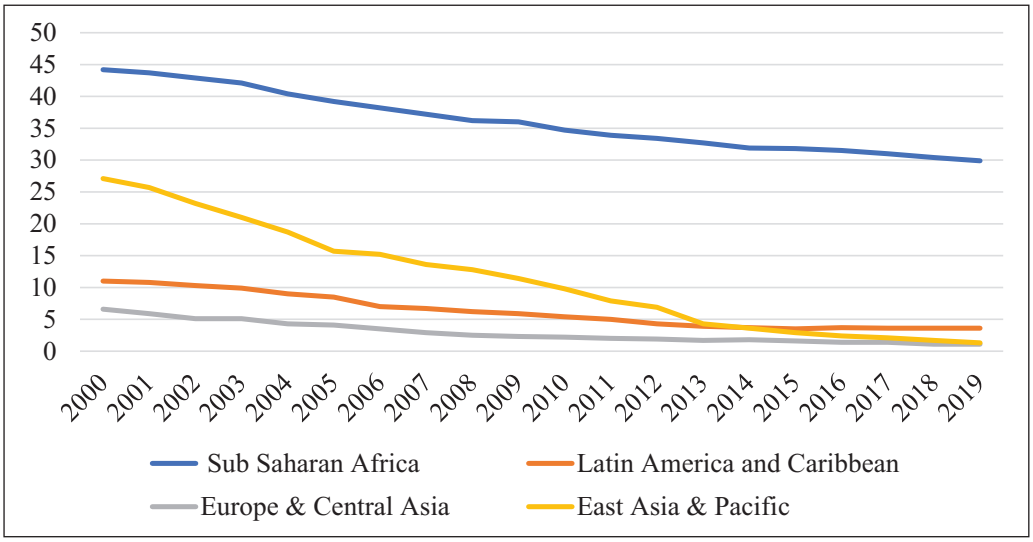

Figure 1. Poverty gap at $3.20 a day (2011 PPP) (%) by region.
Source. World Development Indicators, 2020.

General Assembly where they are expected to be achieved in 2030. Most of these goals are interrelated. For instance, achieving SDG 1 (eradication of poverty) is connected with other SDGs such as access to clean energy (SDG 6), health (SDG 3), water and sanitation (SDG 6), environment (SDG 13), economic progress (SDG 8), among others. Therefore, when economies are able to achieve some of the goals such as poverty alleviation, it may help in the achievement of the other goals. The objective to eradicate extreme poverty by 2030 can be ascribed to the fact that 736 million people lived on less than $ 1.90/day in 2015. However, despite efforts to eradicate poverty globally, Africa's effort to eradicate poverty keeps on declining (Christiaensen and Hill, 2019). For example, although some countries in Africa have experienced growth in their gross domestic product (GDP), poverty continues to increase (World Bank, 2020). This is evident in Figure 1 as most countries of the African sample cannot meet the poverty line of US$ 1.90/day. Comparatively, Africa [mostly Sub-Sahara Africa (SSA)] is unable to reduce the number of people who live under US$ 3.20/day (see Figure 1).

Unlike other regions that seem to be consistently reducing poverty at appreciable rates, the SSA region's poverty reduction can be bettered. This leaves much to be desired, since efforts to eradicate poverty by African economies and their development partners have been heightened (Asongu and Odhiambo, 2019; Tchamyou, 2021). World Bank (2020) and International Labour Organization (ILO, 2020) projects that about 23 million people will live in extreme poverty as a result of the COVID-19 pandemic. This could prevent SSA from achieving UN Agenda 2030 and Africa's Agenda 2063.[1] Despite this, since SSA is a great recipient of foreign direct investment (FDI), the benefits accrued from these inflows can be harnessed to boost its development quest and escape from extreme poverty. For instance, the UN Conference on Trade and Development (UNCTAD, 2021) report shows significant FDI inflows to Africa as compared to other regions. FDI inflows have the potential to eradicate poverty through industrialization, global value addition, and job creation among other benefits (Opoku et al., 2019; Xu et al., 2021). Thus, the benefits that are occasioned by FDI can be exploited by African leaders to fight against poverty.

FDI to SSA comes from different economies, such as the United States, China, and Brazil among others, but China's FDI inflows to Africa have been at an increasing rate (Atitianti and Dai, 2021; Cornia and Martorano, 2012; UNCTAD, 2021). China has become an attractive option for African nations seeking to improve their infrastructure, stimulate economic growth, and enhance global competitiveness (Zhang, 2022). In light of the conditions that often come with Western FDI, some African countries may even consider replacing it entirely with Chinese investment (Dollar, 2016). As an emerging market, Africa has progressively become China's third-largest investment destination, offering a plethora of exceptional business prospects (Sylvaire et al., 2022). Since 2000, China's FDI has made significant contributions to hydrocarbons, precious metals, education, communications, and manufacturing which tends to boost development in SSA (Atitianti and Dai, 2021; Cornia and Martorano, 2012). China's FDI in the African continent (including SSA) has experienced a significant surge, soaring from $200 million in 2000 to approximately $2.9 billion in 2011 (UNCTAD, 2013). This remarkable increase positioned China to be the second-largest country, after the United States, in terms of FDI flows into the African continent in 2013 (UNCTAD, 2013).

Although oil and extractives remain a significant portion of Chinese FDI in SSA, the finance, construction, and manufacturing sectors now contribute to 50% of the overall FDI (Pigato and Tang, 2015; Renard, 2011). Furthermore, Chinese banks have played a vital role in supporting substantial investments in African continent (including SSA) infrastructure (Renard, 2011; Sylvaire et al., 2022). As of 2013, over 2,200 Chinese firms, predominantly private, are operational in various African continent (including SSA) nations (Pigato and Tang, 2015). For example, in Nigeria, Yuemei Group, a Chinese company, invested U$1.2 million in 2006 to establish a manufacturing subsidy and $50 million in 2007 to create a textile industrial park with a complete production chain. By 2009, the park hosted five textile companies and employed 1,000 local workers (Pigato and Tang, 2015). Presently, the group operates ten factories globally, with sales offices in various countries, and has established a new factory in Senegal. Chinese investment in Tanzania totaled $541 million by 2012, with most private companies focusing on low-tech, labor-intensive industries catering to the local market. These companies have created between 80,000 and 150,000 jobs and offer valuable training opportunities. Many local entrepreneurs in Tanzania have started their businesses after working for Chinese firms. Huajin Group invested $10 million to establish a shoe factory in Ethiopia, and trained 90 Ethiopians in China before starting operations. The factory became operational in 2012, profitable in the first year, with 3,500 workers producing 2 million pairs of shoes in 2013 (Pigato and Tang, 2015). According to a survey conducted by Sautman and Yan (2015), out of 400 Chinese companies operating in more than 40 African countries, over 80% of their workforce is composed of local employees. While Chinese nationals still hold the management and senior technical positions, some companies have even managed to localize up to 99% of their workforce. This notable increase highlights the significant growth and expansion of Chinese FDI over the years. Thus, the present study empirically tests if the momentous increase in Chinese FDI could probably enhance poverty eradication in SSA.

Despite the significant role that FDI plays in poverty reduction in Africa, the present paper argues that the presence of quality institutions has the potential to ensure efficient allocation of spillovers from FDI. For instance, effective economic governance ensures venture risk reduction, while solid legal atmosphere shields and secures profit from speculation (Acemoglu and Robinson, 2008). Thus, the present study seeks to explore the linkages between Chinese FDI inflows and poverty alleviation in the presence of strong institutions and governance in SSA. This is attributed to the fact that high-quality institutions and management are excellent at promoting deliberation and reallocation of resources (Acemoglu et al., 2004; Acemoglu and Robinson, 2008). Furthermore, findings from previous studies on the co-movement of FDI inflows and poverty reduction in Africa have been inconclusive. While Ato-Mensah and Long (2021), Ahmad et al. (2019), Fowowe and

Shuaibu (2014), Gohou and Soumaré (2012), and Soumaré (2015) established a positive relationship, a negative relationship was established by Bharadwaj (2014), Ali et al. (2010), and Huang et al. (2010). In addition, extant literature on this relationship in Africa (including SSA) has focused on the effect of general FDI inflows on poverty reduction (Akobeng, 2017; Bharadwaj, 2014; Huang et al., 2010). The present study is novel in the sense that its focus is not only on the co-movement of Chinese FDI inflows and poverty reduction in SSA but it also explores the moderating role of quality institutions and governance on this relationship. The relevance of the present study is its potential to aid policy-makers to formulate policies that would channel Chinese FDI to relevant sectors, which would help to achieve poverty eradication by 2030.

The rest of the paper is organized as follows: "Reviewed literature" section presents the reviewed literature, while the method and data are presented in the "Data and method" section. The results are discussed in the "Results and discussions" section, while the conclusion and practical implications are provided in the "Conclusion and policy implication" section.

Reviewed literature

Theoretical literature review

Theoretically, FDI inflows can have an impact on poverty through three major channels, which include capital stock development, forward and backward connections, and spillover effect (Calvo and Hernandez, 2006; Klein et al., 2001). The first channel is associated with capital stock which seeks to alleviate poverty when Multinational Corporations (MNCs) establish subsidiaries in the host country (Quinonez et al., 2018). When a citizen is poor, the presence of MNCs can provide jobs for such citizens to migrate from poverty. However, if the poor is focused on small and medium enterprises (SMEs), business-to-business interactions with the freshly established firm (MNCs) may be beneficial. This will lead to the creation of employment and increase government revenue which in the long run tends to reduce poverty. Nonetheless, these subsidiaries can crowd out local firms since these MNCs are more capital-intensive which grants them competitive power (Agosin and Machado, 2005).

The next channel is the backward and (or) forward linkages which can reduce poverty (Calvo and Hernandez, 2006). Backward linkage places a greater emphasis on enhancing production efficiency and expanding manufacturing capabilities, primarily driven by the auxiliary's strong inclination towards acquiring transitional goods, while forward linkage focuses on less expensive sources of information and merchandise that MNCs can accommodate both homegrown firms and shoppers (Görg and Greenaway, 2004; Liu et al., 2009). Backlinks are more useful in alleviating poverty since high levels of FDI inflow are expected to increase the efficiency of domestic firms and wages in the host country (Calvo and Hernandez, 2006). The last channel may be attributed to the transfer of information and new developments from MNCs to domestic enterprises and laborers (spillover effect). This may be performed through direct or indirect techniques such as imitation by indigenous enterprises, training of neighborhood specialists, board skills, and improved social and environmental standards (Calvo and Hernandez, 2006; Klein et al., 2001).

According to the neo-institutional theory proposed by North (1990), institutional quality improves the effectiveness of economic activities and enhances higher economic returns. In the context of FDI, institutions can act as a catalyst or a barrier to growth depending on their quality (Acemoglu and Robinson, 2012). Institutional quality refers to the extent to which institutions provide a stable, transparent, and predictable environment for businesses to operate in (Acemoglu and Robinson, 2012; World Bank, 2013). One possible channel through which institutions can influence the link between FDI and growth is by affecting the level of investor confidence in a host

country (De Soto, 2000; Henisz, 2000b; Ozturk, 2007; Staats and Biglaiser, 2012). High-quality institutions can create an enabling environment that encourages foreign investors to enter a country and undertake long-term investments, which can contribute to economic growth (Henisz, 2000a; Nunnenkamp, 2004). On the other hand, low-quality institutions may create uncertainty and unpredictability, leading to a decline in investor confidence and a reduction in FDI inflows. Another channel is through the impact of institutions on the spillover effects of FDI. Institutions can affect the extent to which FDI can contribute to knowledge and technology transfer, innovation, and human capital development (Acemoglu and Robinson, 2012; Staats and Biglaiser, 2012; World Bank, 2013). Institutions that support innovation and knowledge-sharing can enhance the spillover effects of FDI, leading to increased productivity and economic growth (Acemoglu and Robinson, 2012; World Bank, 2013). Since foreign investors consider various factors before investing in a country, such as political stability, the rule of law, contract enforcement, and a predictable business environment, it will be needful for host countries to improve upon the quality level of institutions (Akobeng, 2017; De Soto, 2000; Henisz, 2000b; Staats and Biglaiser, 2012). Therefore, it is imperative to examine empirically if changes in the quality of institutions will aid Chinese FDI to promote poverty reduction in SSA.

Empirical literature review

Although FDI inflow is estimated to indirectly induce poverty eradication through growth (see Feeny et al., 2014; Hsiao and Hsiao, 2006; Topalli et al., 2021), it can, however, directly influence poverty alleviation (see Ahmad et al., 2019; Ato-Mensah and Long, 2021; Bilal Khan et al., 2019; Dada and Akinlo, 2021; Gohou and Soumaré, 2012; Israel, 2014; Shamim et al., 2014; Ucal, 2014; Zaman et al., 2012), albeit the inconclusive results for the direct nexus. The positive effect suggests that FDI inflow increases poverty eradication through capital stock and technology transfer or spillover effect. For example, empirical studies in Pakistan show that FDI inflow reduces poverty (see Shamim et al., 2014; Zaman et al., 2012). Similarly, in Africa, studies show positive comovement of FDI inflow and poverty reduction (see, Ato-Mensah and Long, 2021; Bilal Khan et al., 2019; Dada and Akinlo, 2021; Fowowe and Shuaibu, 2014; Gohou and Soumaré, 2012; Soumaré, 2015). These studies with positive relationships were corroborated by Ucal (2014) who found that developing countries' poverty can be reduced by attracting sufficient FDI. Awad (2021) found that FDI has a dual effect on poverty in Africa. On the one hand, FDI has a direct positive impact on reducing poverty. Based on the empirical findings of Do et al. (2021) using a spatial econometric model, it is demonstrated that FDI has a poverty-reducing effect in provinces.

In contrast to these results, Huang et al. (2010) showed that in both East Asian and Latin American countries, attracting more FDI inflow increases poverty. This is supported by Ali et al. (2010) who also found that in Pakistan, FDI increases the poverty level. Bharadwaj (2014) similarly found FDI inflow to increase poverty in 35 developing countries. Lazreg and Zouari (2018) also realized that in Tunisia, FDI inflow hampers poverty eradication. These studies contradict the theoretical linkage between FDI inflow and poverty reduction and rather argue that weak institutions, low human capital, low infrastructure, and less developed financial system discourage FDI inflow from alleviating poverty. Other studies also argue that the proxy of poverty alleviation can have an influence on the relationship between poverty reduction and FDI. For example, Magombeyi and Odhiambo (2018) found that FDI increases poverty when poverty eradication was proxied with the poverty gap. Similarly, Nguea et al. (2020) also found that in Cameroon, FDI was observed to have a positive impact on poverty reduction when measured with infant mortality. However, there was no evidence to suggest that FDI contributed to poverty reduction when proxied with life expectancy and per capita household income.

Furthermore, there exist a strand of literature that established no relationship between FDI inflow and poverty alleviation. Tsai and Huang (2007), for instance, did not find any significant impact of FDI inflow on poverty eradication in Taiwan. Quinonez et al. (2018) used 13 countries in Latin America and found that FDI does not affect poverty reduction significantly.

In addition, another strand of literature establishes the importance of governance in the quest for an economy to reduce its poverty levels. Using the 2-stage least squares (2SLS) approach, Akanbi (2015) found that governance reduces poverty levels in SSA. This therefore suggests that regardless of the efforts invested to attract foreign capital to reduce poverty, when institutions and governance are weak, poverty will persist. For instance, Ayodeji and Adebayo (2015) established that weak institutions and governance positively influenced the poverty level. On the other hand, Oyinlola and Adedeji (2017), Akobeng (2017), and among others show that strong governance plays a critical role in reducing poverty. Although these studies applied diverse estimation technique, including GMM, 2SLS, fixed, and random effect, the conclusions of good governance leading to higher economic growth and poverty reduction was unanimous. As a result, to reap the full benefits of Chinese FDI inflow in the SSA region, particularly in its quest to reduce poverty, it is necessary to assess the role that governance plays in this relationship. The present study adds to the literature by examining the influence of Chinese FDI inflows on poverty reduction in SSA, particularly due to the higher levels of FDI inflows from China as compared to other sources in the SSA region. Furthermore, due to the potential of weak institutions limiting the spillover effect of Chinese FDI inflows on poverty reduction, the present study further examines the moderating role of institutions in the Chinese FDI inflows-poverty reduction nexus.

Data and method

Data

We employed macro data of 20 years spanning 2000–2020 for 36 SSA countries[2] due to the availability of data (see Note 3). It is important to note that many indicators such as the poverty gap and poverty headcount have been used as proxies for poverty reduction. Unlike Human Development Index (HDI) which accounts for poverty beyond just income by capturing life expectancy and education, the other proxies do not capture human development (Uttama, 2015). Furthermore, compared to HDI statistics, current data on Africa's poverty gap and poverty headcount are insufficient with a lot of gaps (see Figure 3). Using HDI as a measure of poverty reduction is crucial because it goes beyond measuring income poverty alone (Baumann, 2021). HDI also includes life expectancy, which reflects improvements in healthcare and living conditions (Baumann, 2021). HDI captures education, which provides individuals with skills to secure better-paying jobs and empowers them to participate in decision-making processes (Baumann, 2021). Finally, HDI considers income distribution, which is essential for assessing the impact of policies aimed at reducing poverty and inequality (Baumann, 2021; Haughton and Khandker, 2009). Thus, this study utilized the HDI as a proxy for poverty reduction. We proceeded to use poverty gap at US$ 1.90/day as a proxy for poverty, and this was used as robustness checks. While we sourced HDI from Human Development Report Office (HDRO), data for poverty gap is obtained from World Development Indicators (WDI) of The World Bank.

As indicated in Table 1, we sourced Chinese FDI inflows from China's Ministry of Commerce database. We employed Chinese FDI inflows due to their significant contribution to overall FDI inflows to SSA. As shown in Table 1, we examined an index of institutions and governance that is the average of six measures of institutions and governance which includes the rule of law, regulatory quality, government effectiveness, corruption control, voice and accountability, and political

Table 1. Summary of variable description.

Variable	Measurement	Source
Poverty reduction	Human Development Index	HDRO
	Poverty gap at US$ 1.90/day	WDI
Chinese FDI	China outward FDI to Africa (US$)	CMC
Institutional quality index	Average of all the 6 indicators of institutions and governance	Authors' computation
Control of corruption	Estimate of control of corruption	WGI
Political stability and absence of violence	Political Stability and absence of violence, estimate	WGI
Rule of law	Estimate of rule of law	WGI
Government effectiveness	Government Effectiveness, estimate	WGI
Regulatory quality	Estimate of regulatory quality	WGI
Voice and accountability	Estimate of voice and accountability	WGI
GDP per capita	Real GDP per capita PPP (constant 2017, US$)	WDI
Population growth	Population growth (annual %)	WDI
Private credit	Domestic credit to private sector (% GDP)	WDI
Labor force	Labor force participation rate (% population)	WDI
Domestic capital	Gross fixed capital formation (% GDP)	WDI
Trade openness	Export + import (% GDP)	WDI
Inflation	Inflation, consumer prices (annual %)	WDI
Cfdi × INSQi	The interactive term of the Chinese FDI and various measure of institutions and governance	Authors' computation

CMC: China's Ministry of Commerce; FDI: foreign direct investment; GDP: gross domestic product; HDRO: Human Development Report Office; INSQ: institutional quality index; WDI: world development indicator; WGI: world governance indicator.

stability and lack of violence. We as well used individual indicators in a separate regression to assess their influence on poverty reduction. We included governance and institutions as an additional variable of interest since it captures the implications of frameworks and designs in increasing, supporting, driving, and sharing Chinese FDI inflows. The institution variables were sourced from World Governance Indicator (WGI).

There are various control variables that influence poverty reduction (see, Anetor et al., 2020; Uttama, 2015; Zaghdoudi, 2018). However, the present study used GDP per capita, trade openness, inflation, population, domestic capital, private credit, and government expenditure as control variables due to the availability of data, characteristics of the area of study (Africa), and their link with poverty reduction. GDP per capita is used because an increase in the income level of a nation, given its population reduces the poverty level (Anetor et al., 2020; Fosu, 2015). It is important to know that all the control variables were sourced from WDI. As African economies have collectively agreed to use trade to modernize the rural and urban sectors of their economies, we used trade transparency or openness (economic regulation) due to its potential to improve forward and backward linkages, cooperation in global value chains, and familiarity. As asserted by Anyanwu (2016), Obeng et al. (2022), and Xu et al. (2021), trade liberalization aid in the creation of nontrade, social, and sustainable economic development. A vector of net trade as a percentage of GDP is used as a proxy for trade openness. As shown in Table 1, we used consumer price index (annual %) as a proxy for inflation which captures macroeconomic (in)stability. The use of inflation is necessary because price is a key predictor of demand (Wodon and Zaman, 2010). Gross capital formation as a percentage of GDP is used as

a proxy for domestic capital and its choice is due to its direct effect on standard of living of citizens which is a component of HDI (Mustafa et al., 2017; Zaghdoudi, 2018).

As shown in Table 1, domestic credit to private sector as a percentage of GDP is used as a proxy for private credit (Ibrahim and Alagidede, 2017; Levine et al., 2000). Due to the significant role that SMEs plays in African economies, particularly in the area of revenue mobilization and employment, when credits are advanced to this sector, it has the potential to ensure faster economic growth and development. We additionally controlled for government consumption (% GDP) based on the assumption that schooling and human resource spending tends to improve the quality of work, prospects, and life expectancy, thereby reducing poverty (Haque and Khan, 2019; Razmi et al., 2012). The labor force participation (% population) is included because it is a significant predictor of poverty reduction (McCullough, 2017). Furthermore, with growing population pressures, poverty remains a key concern in least-developed economies (Timothy et al., 2015). Therefore, we controlled for population growth (annual%) to investigate how it influences poverty in Africa. Finally, the present study included the interaction term which is the multiplication of Chinese FDI inflows, and institutions, and governance, to ascertain the moderating role of the latter on the Chinese FDI inflows-poverty reduction nexus in Africa.

Empirical model

We follow empirical literature on FDI inflows and poverty reduction in SSA to examine the influence of Chinese FDI inflows on poverty reduction in the presence of institutional quality. Following Zaghdoudi (2018), Anetor et al. (2020), and Uttama (2015), the present study's models are specified as follows:

$$\begin{aligned} HDI_{it} = {} & \varnothing_0 + \varnothing_1 Cfdi_{it} + \varnothing_2 INSQi_{it} + \varnothing_3 GDPC_{it} + \varnothing_4 PG_{it} \\ & + \varnothing_5 LF_{it} + \varnothing_6 DC_{it} + \varnothing_7 TO_{it} + \varnothing_8 Inf_{it} + e_{it} \end{aligned} \tag{1}$$

$$\begin{aligned} HDI_{it} = {} & a_0 + a_1 Cfdi_{it} + a_2 INSQi_{it} + a_3 GDPC_{it} \\ & + a_4 PG_{it} + a_5 LF_{it} + a_6 DC_{it} + a_7 TO_{it} + a_8 Inf_{it} + a_9 \left(Cfdi_{it} \times INSQi_{it} \right) + \varepsilon_{it} \end{aligned} \tag{2}$$

where HDI_{it} is the human development index of the country i at the time t which captures poverty reduction, and $Cfdi_{it}$ denotes the Chinese outflow of FDI to Africa for each country over time. $INSQi_{it}$ represent the institutions and governance of country i at time t which entails the index of institutions and governance and the individual indicator of institutions and governance. Population growth for country is denoted by *PG*, while *LF* represents the labor force. *DC* refers to domestic capital and trade openness is represented by *TO*. The interaction term of Chinese FDI inflows and institutional quality is captured by $\left(Cfdi_{it} \times INSQi_{it} \right)$, while ε_{it} denotes the error term.

Equation (2) is partially differentiated with respect to Chinese FDI inflows which gives rise to equation (3). This differentiation enables the present study to ascertain the net effect of Chinese FDI on poverty reduction.

$$\frac{\partial HDI_{it}}{\partial Cfdi_{it}} = a_1 + a_9 \overline{INSQi_{it}} \tag{3}$$

where ∂ is the difference operator; HDI_{it} is the human development index, $Cfdi_{it}$ is the Chinese FDI inflows, and $\overline{INSQi}$ is the average value of institutional quality.

Table 2. Descriptive statistics.

Variables	Obs.	Mean	Std. Dev.	Min.	Max.
Human development index	756	50.106	10.714	26.2	80.7
Chinese FDI inflows	756	54.759	213.82	−814.91	4807.86
Institutional quality index	756	−0.61	0.6	−1.929	0.88
Rule of law	756	−0.653	0.622	−2.009	1.077
Government effectiveness	756	−0.686	0.604	−1.884	1.057
Regulatory quality	756	−0.612	0.593	−2.236	1.127
Voice and accountability	756	−0.549	0.703	−2	0.983
Political stability	756	−0.515	0.881	−2.665	1.282
Control of corruption	756	−0.646	0.609	−1.816	1.23
Government expenditure	714	13.652	6.629	−19.897	39.451
GDP per capita	756	8.108	0.929	6.447	10.627
Trade openness	714	70.588	34.603	0.785	225.023
Inflation	756	10.693	35.431	−27.66	557.202
Labor force	735	67.506	11.728	44.298	88.35
Population	756	2.612	0.844	−2.629	5.605
Domestic capital	714	23.297	11.434	−22.786	97.128
Private credit	756	20.171	23.992	−10.134	142.422

FDI: foreign direct investment; GDP: gross domestic product; Max: maximum; Min: minimum; Obs.: observation; Std. Dev: standard deviation.
Source. Authors' computation 2022.

The present study used the pooled ordinary least squares (OLS) estimation technique due to its ability to yield the best linear unbiased estimates (BLUE). To overcome the issue of heteroskedasticity and autocorrelation, we use the "*robust"* option (Hamiye Beyaztas and Bandyopadhyay, 2020). This is because heteroskedasticity in OLS results is a serious problem that makes results inconsistent, thus the need to correct it. We also estimate our regression with fixed effect as robustness checks. However, to overcome the heteroskedasticity and autocorrelation, we include "*vce (cluster id)"* option (Hamiye Beyaztas and Bandyopadhyay, 2020).

Results and discussions

Descriptive and correlation matrix

Table 2 presents the summary statistics of the dataset used for the present study. For the sample used, the mean value of the HDI is approximately 50%. The average value of Chinese FDI inflows is US$ 54.759 million, indicating that Africa is unquestionably a benefactor of Chinese FDI. Despite these inflows, Figure 2 shows that few African economies are extraordinary beneficiaries of FDI inflows from China (see Angola, Congo Demographic Republic of Congo, Ethiopia, Ghana, Kenya, Nigeria, South Africa, Zambia, and Zimbabwe).

The mean value of the overall governance indicator is −0.61 which falls within the low institutions range, indicating that the selected countries under study have weak institutions. With regard to the individual governance indicators, the mean values of political stability, voice and accountability, corruption control, government effectiveness, rule of law, and regulatory quality are −0.515, −0.549, −0.646, −0.686, −0.653, and −0.653, respectively. Notwithstanding the poor outcome of the governance indicators for the full sample, South Africa, Mauritius and Botswana at the country

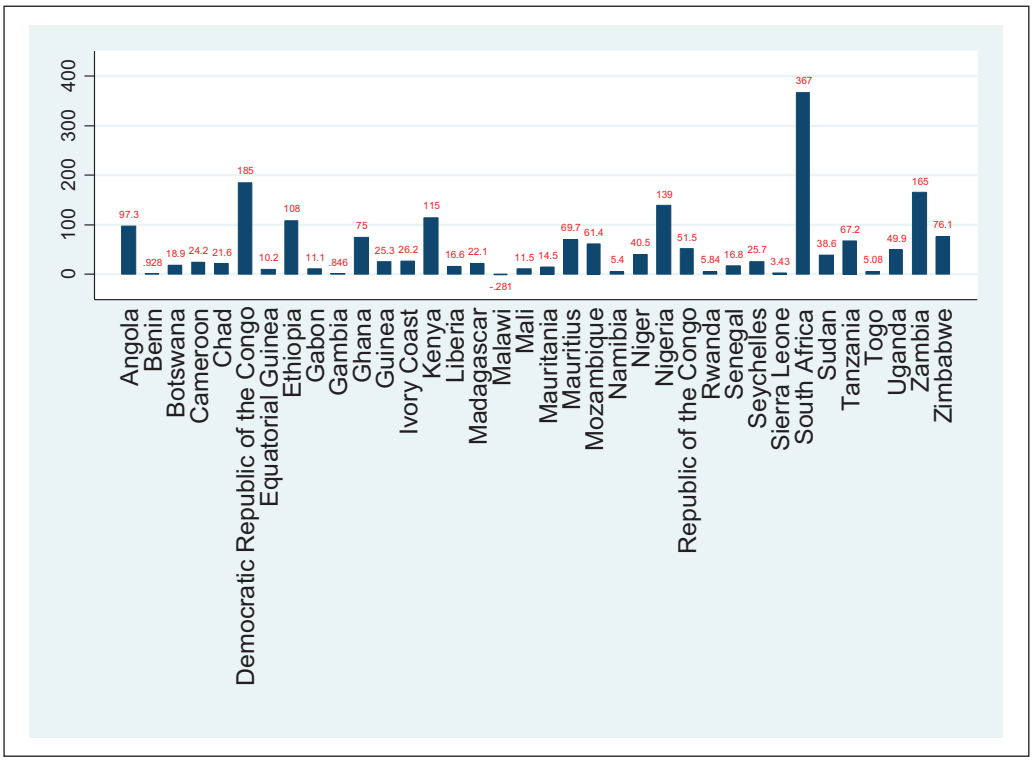

Figure 2. Average within country Chinese FDI (US$ 2017), 2000–2020.
Source. Computation from the Data of China's Ministry of Commerce.

level consistently performed at appreciable levels (see Figure 4). The mean value of the log of GDP per capita is 8.108, with minimum and maximum values of 6.447 and 10.627, respectively. For domestic capital, the lowest and highest log values over the study period are −22.786 and 97.128, respectively, with a mean value of 23.297. The labor force has a minimum of 44.298%, a maximum of 88.35%, and an average of 67.506%. While trade openness has a mean value of approximately 71%, its maximum value is 225%, whereas the minimum value is 0.785%, which reflects acute disparity in the liberalization of trade on the African continent. The inflation rate among the African sample is highly volatile, comparing the mean of 10.693% to the standard deviation of 35.431%. On average, domestic credit to the private sector is 23.297%, suggesting the dire need for foreign investors to support the private sector of African economies to develop. The average population growth is 2.612%, with a maximum rate of 5.605% and a minimum rate of −2.629%. Finally, the average, maximum, and minimum values of the log of government expenditure are 13.652, 39.451, and −19.897, respectively.

Our correlation matrix (see Table 5) suggests that there is no presence of a high correlation between the predictors except the individual indicators of institutional quality. The present study did not, however, include all the individual indicators of institutional quality in a single regression. As shown in Table 6, multicollinearity tests were further conducted using the variance inflation factor (VIF). In all models, the VIF of the individual variable was less than 5, with the average VIF of all models being less than 10. These results resultantly imply that all variables can be used for regression (see Table 6).

The main results for Chinese FDI, institutional quality, and poverty reduction

Tables 3 and 4 present the results of the pooled OLS which was used to estimate the present study's models. We first discuss the effect of the control variables on the dependent variable. We followed it up with a discussion on the effect of Chinese FDI inflows and institutional quality on poverty reduction. Finally, we discuss the moderating role of institutional quality on the Chinese FDI inflows-poverty reduction nexus.

The study finds that the log of GDP per capita has a significant positive effect on HDI. This implies that economic growth contributes to reducing poverty in the countries under study. An increase in GDP per capita implies that income levels of individuals have risen, meaning an improvement in their access to the basic necessities of life at the minimum, which would likely lead to a reduction in poverty levels. Our results corroborate the findings of Dhahri and Omri (2020) and Anetor et al. (2020) that argue that an increase in economic growth leads to poverty reduction in developing countries. Thus, African economies should strive to attain higher economic growth due to its tendency to reduce poverty. Furthermore, we find a negative co-movement of trade openness and poverty reduction. This could be due to the fact that trade liberalization is not a sufficient condition for poverty reduction, and may depend on the absorptive capacity and institutional quality of the host economy. Since the African region is characterized by poor trade regulations and institutions, external trade rather exposes these economies to disruptions such as collapse of domestic firms due to competition, and capital flight. Our results corroborate the findings of Huang and Singh (2011), Jeanneney and Kpodar (2011), and Le Goff and Singh (2014) that found external trade to worsen poverty. Nonetheless, our findings contradict Anetor et al. (2020), who demonstrated that Africa's participation in external trade reduces poverty.

Our empirical findings suggest that poverty reduction is associated with high labor force. This implies that when an economy is endowed with more working-age population, poverty can be reduced. We found an increase in population growth to hamper poverty reduction, which implies that when population growth increase, it exerts pressure on public goods and services which deter some citizens from benefiting from the national cake. In tandem with this, Timothy et al. (2015) showed that an increase in population puts pressure on food due to an increase in household size which causes poverty in developing countries. Our findings support Amila and Luka (2020) and Kabuya (2015) observations that one of the major causes of poverty in Africa is population increase. Furthermore, our results demonstrate that domestic capital stock influences poverty reduction in the SSA region.

Our empirical findings from Table 3 suggest while Chinese FDI do not significantly promote poverty reduction, both the overall governance (institutional quality index) and individual indicators of institutions contribute to the reduction of poverty. This suggests that when institutions are strengthened, it can boost investors' confidence, which would likely lead to an efficient allocation of resources and the enhancement of the absorptive capacity of economic agents. This is corroborated by the findings of Kunawotor et al. (2020) that posits that, the embodiment of strong administration and establishments curtail the abuse of African resources that usually are defiled and redirected away from social value projects which have the tendency to create frameworks for alleviating socioeconomic problems. Our result is akin to Akanbi (2015) and Ahmad et al. (2019) that conclude that in SSA, strong governance and institutions contribute to poverty reduction. Our results, however, show that Chinese FDI inflows do not significantly induce poverty reduction, although it has a positive effect on poverty reduction. This can be attributed to poor governance and institutions which do not help the SSA region to absorb the spillovers from FDI inflows (Ayodeji and Adebayo, 2015).

Table 4 presents the results of the estimation of the effect of institutional quality on the relationship between Chinese FDI inflows and poverty reduction. Strikingly, the results of the estimation of equation (2) which includes the interaction term show that Chinese FDI inflows significantly

Table 3. OLS results of Chinese FDI inflows and institutional quality on HDI.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Chinese FDI	0.0031 (0.0026)	0.0029 (0.0025)	0.0030 (0.0025)	0.0030 (0.0026)	0.0031 (0.0026)	0.0031 (0.0025)	0.0027 (0.0023)
GDP per capita	8.4897*** (0.3135)	8.8421*** (0.3153)	8.4886*** (0.3192)	8.2095*** (0.3214)	8.6364*** (0.3163)	8.4704*** (0.3105)	8.8782*** (0.3094)
Trade openness	−0.0177*** (0.0068)	−0.0168** (0.0072)	−0.0101 (0.0070)	−0.0321*** (0.0076)	−0.0105 (0.0066)	−0.0109* (0.0065)	−0.0191*** (0.0069)
Inflation	0.0024 (0.0053)	−0.0015 (0.0061)	−0.0000 (0.0061)	−0.0006 (0.0055)	0.0038 (0.0052)	0.0019 (0.0053)	−0.0013 (0.0060)
Labor force	0.0903*** (0.0174)	0.0997*** (0.0175)	0.0821*** (0.0194)	0.0822*** (0.0184)	0.1038*** (0.0169)	0.0981*** (0.0168)	0.0988*** (0.0176)
Population	−2.1636*** (0.3599)	−2.0480*** (0.4064)	−2.1011*** (0.4045)	−2.6983*** (0.3765)	−2.3592*** (0.3324)	−2.0396*** (0.3450)	−2.3896*** (0.3845)
Capital	0.0797*** (0.0154)	0.0731*** (0.0162)	0.0713*** (0.0163)	0.0951*** (0.0158)	0.0785*** (0.0152)	0.0681*** (0.0155)	0.0899*** (0.0150)
Private credit	0.0086 (0.0111)	0.0183 (0.0119)	0.0065 (0.0121)	0.0307*** (0.0111)	−0.0005 (0.0114)	0.0095 (0.0104)	0.0082 (0.0117)
Gov't Exp.	−0.0100 (0.0325)	−0.0176 (0.0349)	0.0070 (0.0345)	−0.0010 (0.0335)	0.0150 (0.0326)	−0.0185 (0.0315)	0.0262 (0.0327)
INSQ	3.4871*** (0.4445)						
Cc.		2.7949*** (0.4231)					
GEff			2.9792*** (0.5024)				
PS				1.7892*** (0.2782)			
RQ					3.5198*** (0.4313)		
RL						3.7607*** (0.3995)	
VA							2.1941*** (0.3544)
Constant	−18.0839*** (3.0998)	−22.1448*** (3.1353)	−18.2877*** (3.2432)	−14.9826*** (3.2807)	−20.3645*** (3.0957)	−18.5335*** (3.0521)	−22.6629*** (3.0575)
Obs.	693	693	693	693	693	693	693
R^2	0.7914	0.7821	0.7803	0.7815	0.7937	0.7998	0.7814

FDI: foreign direct investment; GDP: gross domestic product; Geff: government effectiveness; Gov't Exp: government expenditure; INSQ: institutional quality index; Obs.: observation; PS: political stability and absence of violence; RQ: regulatory framework; RL: rule of law; VA: voice and accountability.

Note. Values in () are robust standard errors; ***$p < 0.01$, **$p < 0.05$, and *$p < 0.10$.

Source. Authors' computation 2022.

Table 4. The moderation role of institutional quality on Chinese FDI inflows-poverty reduction nexus.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Chinese FDI	0.0027*** (0.0010)	0.0017** (0.0008)	0.0035*** (0.0009)	0.0015 (0.0017)	0.0036*** (0.0009)	0.0012 (0.0011)	0.0034*** (0.0012)
GDP per capita	8.4697*** (0.3027)	8.8210*** (0.3046)	8.4520*** (0.3092)	8.1656*** (0.3131)	8.6143*** (0.3049)	8.4839*** (0.2981)	8.8806*** (0.2994)
Trade openness	−0.0162** (0.0071)	−0.0152** (0.0073)	−0.0080 (0.0073)	−0.0311*** (0.0077)	−0.0082 (0.0070)	−0.0104 (0.0066)	−0.0180** (0.0070)
Inflation	0.0036 (0.0050)	−0.0006 (0.0060)	0.0012 (0.0059)	0.0007 (0.0053)	0.0053 (0.0050)	0.0031 (0.0051)	−0.0008 (0.0059)
Labor force	0.0855*** (0.0171)	0.0937*** (0.0173)	0.0741*** (0.0193)	0.0831*** (0.0180)	0.0970*** (0.0167)	0.0959*** (0.0164)	0.0939*** (0.0177)
Population	−2.1079*** (0.3523)	−1.9752*** (0.3981)	−2.0248*** (0.3975)	−2.7029*** (0.3736)	−2.2926*** (0.3219)	−1.9993*** (0.3355)	−2.3531*** (0.3809)
Capital	0.0740*** (0.0156)	0.0677*** (0.0161)	0.0630*** (0.0163)	0.0950*** (0.0158)	0.0698*** (0.0154)	0.0647*** (0.0151)	0.0839*** (0.0151)
Private credit	0.0126 (0.0110)	0.0233* (0.0120)	0.0101 (0.0121)	0.0340*** (0.0111)	0.0029 (0.0112)	0.0137 (0.0104)	0.0121 (0.0118)
Gov't Exp.	−0.0120 (0.0323)	−0.0209 (0.0348)	0.0063 (0.0340)	−0.0005 (0.0337)	0.0135 (0.0322)	−0.0246 (0.0310)	0.0265 (0.0320)
INSQ	3.9205*** (0.4638)						
Cfdi_INSQ	−0.0070*** (0.0019)						
Cc		3.2192*** (0.4497)					
Cfdi_Cc		−0.0078*** (0.0018)					
GEff			3.4242*** (0.5213)				
Cfdi_GEff			−0.0066*** (0.0015)				
PS				2.1071*** (0.2961)			
Cfdi_PS				−0.0052** (0.0023)			
RQ					3.9826*** (0.4449)		
Cfdi_RQ					−0.0069*** (0.0016)		
RL						4.2210*** (0.4068)	
Cfdi_RL						−0.0081*** (0.0018)	
VA							2.3922*** (0.3625)
Cfdi_VA							−0.0048*** (0.0017)
Constant	−17.7288*** (2.9897)	−21.7524*** (3.0423)	−17.6204*** (3.1524)	−14.7759*** (3.1772)	−19.8884*** (2.9798)	−18.4535*** (2.9352)	−22.5184*** (2.9707)
Net effect	0.0070	0. 0086	0.0072	N/A	0.0078	N/A	0.0059
Obs.	693	693	693	693	693	693	693
R^2	0.8016	0.7930	0.7912	0.7880	0.8050	0.8102	0.7876

Cfdi: Chinese FDI inflows; FDI: foreign direct investment; GDP: gross domestic product; Geff: government effectiveness; Gov't Exp.: government expenditure; INSQ: institutional quality index; Obs.: observation; PS: political stability and absence of violence; RQ: regulatory framework; RL: rule of law; VA: voice and accountability.

Note. Values in () are robust standard errors; ***$p < 0.01$, **$p < 0.05$, and *$p < 0.10$.

Source. Authors' computation 2022.

contribute to poverty reduction, except in columns 4 and 6 of Table 4. This implies that, in the presence of strong institutions, Chinese FDI inflows have the potential to increase income levels which would ultimately lead to poverty reduction. Due to the absence of strong institutions, the SSA region has not enjoyed the full benefits of Chinese FDI inflows, despite its significant contribution to Africa's commodities widening push (World Bank, 2013).

Resultantly, the consolidated effects of Chinese FDI inflows and institutional quality are fundamental to poverty alleviation in the SSA region. To assess the magnitude of this effect, we calculate the net impact of Chinese FDI inflows on poverty reduction as described in equation (3). First, we compute the net effect of Chinese FDI when the institutional quality index was used as moderation variable and, subsequently, when individual institutional indicators were used as moderation variables. However, since the unconditional coefficient for Chinese FDI inflows is statistically insignificant when political stability and rule of law were used as the moderation variables (see columns 4 and 6 of Table 4), we failed to compute the net effect for columns 4 and 6. Starting with net effect for Chinese FDI when institutional quality index was used as moderation variable, we find our net effect to be 0.0070 as shown below:

$$\frac{\partial HDI_{it}}{\partial Cfdi_{it}} = a_1 + a_9 \overline{INSQ_{it}} = 0.0027 + \left(-0.0070 \times -0.61\right) = 0.0070$$

Similar computation was used for the individual indicators of institutional quality and presented in Table 4 as the net effect. The result of 0.0070 suggests that in the presence of institutional quality, a 1-unit increase in Chinese FDI inflow would reduce poverty by 0.0070 unit. Similarly, the results of 0.0086 (control of corruption), 0.0072 (government effectiveness), 0.0078 (regulatory quality), and 0.0059 (voice and accountability) imply that, in the presence of these four individual institutional indicators, Chinese FDI inflows would lead to poverty reduction in the SSA region. The present study's results support the theoretical linkage which suggests that FDI inflows can only reduce poverty when there is the existence of quality institutions. Quality institutions are key determinants of the attraction of foreign investments due to the confidence that economies with strong institutions offer to potential foreign investors. Furthermore, the beneficial multiplier effects of Chinese FDI inflows can be fully absorbed in the presence of strong institutions such as control of corruption, voice and accountability, regulatory quality and government effectiveness in the host economy. This would lead to the development of growth-enhancing sectors in the SSA region such as SMEs. In SSA, most SMEs that significantly contribute to employment creation and revenue mobilization, lack the needed technology and innovation to make them more efficient and effective in their operations. Thus, the forward and backward linkages to FDI inflows can be fully realized in the presence of quality institutions which have the potential to revive SMEs and other economic sectors in the SSA region.

Robustness checks

Two main robustness checks were conducted. First, we use an alternative measure of poverty reduction with a poverty gap of US$ 1.90. Second, we estimate our model with panel regression (both fixed and random effect) with the results being presented in Appendix 1. When the poverty gap is used as a proxy for poverty, only GDP per capita and labor force were found to influence poverty. As shown in Table 7, higher levels of GDP per capita reduce poverty, while increased labor force leads to a poverty hike. The results of the estimation of the combined effect of Chinese FDI inflows and institutional quality on poverty revealed similar outcomes (see Table 8).

For the second robustness checks, the results of the Hausman test showed that the fixed effect is the ideal estimator for our model estimation, with the results presented in Tables 9 and 10 in Appendix 1. The results of the fixed effect estimation are similar to the results of the pooled OLS

estimation, except for labor force which has the opposite results. We further estimated the combined effects of Chinese FDI inflows and institutional quality on poverty reduction, which is shown in Table 10. We found that, despite the introduction of the interaction term, Chinese FDI inflows exhibited less impact on poverty reduction.

Conclusion and policy implication

Despite various efforts directed at reducing poverty including the attraction of significant Chinese FDI inflows, the SSA region is still saddled with extreme poverty. The present study assessed the effect of Chinese FDI inflows on poverty reduction in the SSA region, and subsequently examined the moderating role of institutional quality on this relationship. Using macro data spanning a period of 20 years and a pooled OLS estimation technique, our results revealed that in the absence of institutional quality, Chinese FDI inflows failed to contribute to poverty reduction in the SSA region. This implies that despite the significant inflow of Chinese FDI into the SSA region, the positive spillovers of these inflows are yet to be realized by the region. On the contrary, the presence of strong institutions is shown to enhance the inflows-induced benefits to the region. The study further revealed that, the institutional quality index, as well as the individual institutional contributes to the reduction of poverty in the SSA region, which implies the denial of larger masses to enjoy these inflows when there are weak institutions and governance.

Based on the findings of the present study and its implications, we recommend the following. To begin with, institutions and governance in the SSA region must be strengthened. This can be achieved when constitutions in the region are designed for the three arms of government (namely executive, judicial, and legislature) to have equivalent power. The present arrangements in the region where the executive arm of government seem to wield excessive power over the other two arms (judicial and legislature) perpetuate the weak status of institutions. Once the fundamental role of serving as a check on each other of the arms of government is restored, institutions would be strengthened which would attract additional foreign investments into the region. Furthermore, while the SSA region seems to attract significant Chinese FDI inflows through the implementation of trade policy, we recommend that policy makers should develop their adsorptive capacity through enhanced social and environmental standards. This will reduce capital flights that mostly occur in the region which would ensure the host economies take full advantage of the spillovers from Chinese investments.

Declaration of conflicting interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

ORCID iDs

Khadijah Iddrisu https://orcid.org/0000-0002-1536-2341

Michael Insaidoo https://orcid.org/0000-0001-7777-6331

Notes

1. Agenda 2063 is Africa's development outline to accomplish inclusive and sustainable socioeconomic development north of a 50-year time frame. Agenda 2063 was born out of African pioneers' recognition that Africa needed to band together and refocus its agenda away from the fight against racial segregation sanctioned by the political system and toward region's political independence.

2. Angola, Benin, Botswana, Cameroon, Chad, D.R. Congo, Equatorial Guinea, Ethiopia, Gabon, Gambia, Ghana, Guinea, Côte d'Ivoire, Kenya, Liberia, Madagascar, Malawi, Mali, Mauritania, Mauritius, Mozambique, Namibia, Niger, Nigeria, Congo, Rwanda, Senegal, Seychelles, Sierra Leone, South Africa, Sudan, Tanzania, Togo, Uganda, Zambia, and Zimbabwe.
3. To access the data and command files used in this study, please visit the Mendeley data repository of the corresponding author at https://doi.org/10.17632/2kxd8d3nr7.1. The repository contains a zip file named "China FDI and poverty reduction," which includes data files in STATA format, a STATA do-file, and an Excel data file. In the do-file, the authors have provided detailed instructions on the necessary steps to generate each table and figure presented in the study. For example, under the subheading "Table 3" in the do-file, the commands provided will generate the results displayed in the corresponding table in the study.

References

Acemoglu D and Robinson JA (2008) *The Role of Institutions in Growth and Development*, vol.10. Washington, DC: The World Bank.

Acemoglu D and Robinson JA (2012) *Why Nations Fail: The Origins of Power, Prosperity and Poverty*. London: Profile Books, pp.45–47.

Acemoglu D, Johnson S and Robinson JA (2004) *Institutions as the fundamental cause of long-run growth*. NBER working paper no. 10481, May. Cambridge, MA: National Bureau of Economic Research (NBER).

Agosin MR and Machado R (2005) Foreign investment in developing countries: does it crowd in domestic investment? *Oxford Development Studies* 33(2): 149–162.

Ahmad F, Draz MU, Su L, et al. (2019) Impact of FDI inflows on poverty reduction in the ASEAN and SAARC economies. *Sustainability* 11(9): 2565.

Akanbi OA (2015) Structural and institutional determinants of poverty in Sub-Saharan African countries. *Journal of Human Development and Capabilities* 16(1): 122–141.

Akobeng E (2017) Gross capital formation, institutions and poverty in Sub-Saharan Africa. *Journal of Economic Policy Reform* 20(2): 136–164.

Ali M, Nishat M and Anwar T (2010) Do foreign inflows benefit Pakistani poor? *The Pakistan Development Review* 48(4): 715–738.

Amila SE and Luka BV (2020) Poverty as a threat to human security in Nigeria. *International Journal of Research and Innovation in Social Science* 4(1): 157–161.

Anetor FO, Esho E and Verhoef G (2020) The impact of foreign direct investment, foreign aid and trade on poverty reduction: evidence from Sub-Saharan African countries. *Cogent Economics & Finance* 8(1): 1737347.

Anyanwu JC (2016) Empirical analysis of the main drivers of income inequality in Southern Africa. *Annals of Economics and Finance* 17(2): 337–364.

Asongu SA and Odhiambo NM (2019) How enhancing information and communication technology has affected inequality in Africa for sustainable development: an empirical investigation. *Sustainable Development* 27(4): 647–656.

Atitianti PA and Dai Q (2021) Does Chinese foreign direct investment improve the welfare of Africans? *Journal of African Business* 23: 964–983.

Ato-Mensah S and Long W (2021) Impact of FDI on economic growth, employment, and poverty reduction in Ghana. *Open Journal of Business and Management* 9(3): 1291–1296.

Awad A (2021) Foreign direct investments in low- and middle-income countries in Africa. *The Journal of Energy and Development* 47(1–2): 47–74.

Ayodeji IO and Adebayo LF (2015) The interface between government policies, human capital development, and poverty reduction in Nigeria. *European Journal of Business and Innovation Research* 3(4): 11–25.

Baumann F (2021) The next frontier—human development and the anthropocene: UNDP human development report 2020. *Environment: Science and Policy for Sustainable Development* 63(3): 34–40.

Bharadwaj A (2014) Reviving the globalization and poverty debate: effects of real and financial integration on the developing world. *Advances in Economics and Business* 2: 42–57.

Bilal Khan M, Huobao X and Saleem H (2019) Direct impact of inflow of foreign direct investment on poverty reduction in Pakistan: a bonds testing approach. *Economic Research-Ekonomska Istraživanja* 32(1): 3647–3666.

Calvo CC and Hernandez MA (2006) Foreign direct investment and poverty in Latin America. In: *Prepared to be delivered at the globalisation and economic policy fifth annual postgraduate conference,* Leverhulme Centre for Research on Globalisation and Economic Policy (GEP), University of Nottingham, Nottingham, 21–22 April.

Christiaensen L and Hill R (eds) (2019) *Poverty in Africa*. Washington, DC: The World Bank.

Cornia GA and Martorano B (2012) *Development policies and income inequality in selected developing regions, 1980–2010*. Report no. 210, December. Geneva: United Nations Conference on Trade and Development (UNCTAD).

Dada JT and Akinlo T (2021) Foreign direct investment and poverty reduction in sub-Saharan Africa: does environmental degradation matter? *Future Business Journal* 7: 21.

De Soto H (2000) *The Mystery of Capital: Why Capitalism Triumphs in the West and Fails Everywhere Else*. New York: Basic Books.

Dhahri S and Omri A (2020) Foreign capital towards SDGs 1 & 2—ending poverty and hunger: the role of agricultural production. *Structural Change and Economic Dynamics* 53: 208–221.

Do QA, Le QH, Nguyen TD, et al. (2021) Spatial impact of foreign direct investment on poverty reduction in Vietnam. *Journal of Risk and Financial Management* 14(7): 292.

Dollar D (2016) *China's Engagement with Africa: From Natural Resources to Human Resources*. Washington, DC: Brookings Institution.

Feeny S, Iamsiraroj S and McGillivray M (2014) Growth and foreign direct investment in the Pacific Island countries. *Economic Modelling* 37: 332–339.

Fosu AK (2015) Growth, inequality and poverty in Sub-Saharan Africa: recent progress in a global context. *Oxford Development Studies* 43(1): 44–59.

Fowowe B and Shuaibu MI (2014) Is foreign direct investment good for the poor? New evidence from African countries. *Economic Change and Restructuring* 47: 321–339.

Gohou G and Soumaré I (2012) Does foreign direct investment reduce poverty in Africa and are there regional differences? *World Development* 40(1): 75–95.

Görg H and Greenaway D (2004) Much ado about nothing? Do domestic firms really benefit from foreign direct investment? *The World Bank Research Observer* 19(2): 171–197.

Hamiye Beyaztas B and Bandyopadhyay S (2020) Robust estimation for linear panel data models. *Statistics in Medicine* 39(29): 4421–4438.

Haque MI and Khan MR (2019) Role of oil production and government expenditure in improving human development index: evidence from Saudi Arabia. *International Journal of Energy Economics and Policy* 9(2): 251–256.

Haughton J and Khandker SR (2009) *Handbook on Poverty and Inequality*. Washington, DC: The World Bank.

Henisz WJ (2000a) The institutional environment for economic growth. *Economics and Politics* 12(1): 1–31.

Henisz WJ (2000b) The institutional environment for multinational investment. *Journal of Law, Economics and Organization* 16(2): 334–364.

Hsiao FS and Hsiao MCW (2006) FDI, exports, and GDP in East and Southeast Asia—panel data versus time-series causality analyses. *Journal of Asian Economics* 17(6): 1082–1106.

Huang CH, Teng KF and Tsai PL (2010) Inward and outward foreign direct investment and poverty: East Asia vs. Latin America. *Review of World Economics* 146: 763–779.

Huang Y and Singh RJ (2011) *Financial Deepening, Property Rights and Poverty: Evidence from Sub-Saharan Africa*. Washington, DC: International Monetary Fund (IMF).

Ibrahim M and Alagidede P (2017) Financial development, growth volatility and information asymmetry in Sub-Saharan Africa: does law matter? *South African Journal of Economics* 85(4): 570–588.

International Labour Organization (ILO) (2020) *COVID-19 Cruelly Highlights Inequalities and Threatens to Deepen Them*. Geneva: ILO Newsroom.

Israel AO (2014) Impact of foreign direct investment on poverty reduction in Nigeria, (1980–2009). *Journal of Economics and Sustainable Development* 5(20): 34–45.

Jeanneney SG and Kpodar K (2011) Financial development and poverty reduction: can there be a benefit without a cost? *The Journal of Development Studies* 47(1): 143–163.

Kabuya FI (2015) Fundamental causes of poverty in Sub-Saharan Africa. *IOSR Journal of Humanities and Social Science* 20(6): 78–81.

Klein MU, Aaron C and Hadjimichael B (2001) *Foreign direct investment and poverty reduction*. Policy research working paper no. 2613, June. Washington, DC: The World Bank.

Kunawotor ME, Bokpin GA and Barnor C (2020) Drivers of income inequality in Africa: does institutional quality matter? *African Development Review* 32(4): 718–729.

Lazreg M and Zouari E (2018) The relationship between FDI, poverty reduction and environmental sustainability in Tunisia. *Journal of Economics and Management Sciences* 1(1): 114–135.

Le Goff M and Singh RJ (2014) Does trade reduce poverty? A view from Africa. *Journal of African Trade* 1(1): 5–14.

Levine R, Loayza N and Beck T (2000) Financial intermediation and growth: causality and causes. *Journal of Monetary Economics* 46(1): 31–77.

Liu X, Shu C and Sinclair P (2009) Trade, foreign direct investment and economic growth in Asian economies. *Applied Economics* 41(13): 1603–1612.

McCullough EB (2017) Labor productivity and employment gaps in Sub-Saharan Africa. *Food Policy* 67: 133–152.

Magombeyi MT and Odhiambo NM (2018) FDI inflows and poverty reduction in Botswana: an empirical investigation. *Cogent Economics & Finance* 6(1): 1480302.

Mustafa G, Rizov M and Kernohan D (2017) Growth, human development, and trade: the Asian experience. *Economic Modelling* 61: 93–101.

Nguea SM, Noumba I and Noula AG (2020) *Does foreign direct investment contribute to poverty reduction in Cameroon? An ARDL-bounds testing approach*. Working paper no. halshs-02570072. Available at: https://shs.hal.science/halshs-02570072/document

North DC (1990) *Institutions, Institutional Change and Economic Performance*. Cambridge: Cambridge University Press.

Nunnenkamp P (2004) *Why Economic Growth Has Been Weak in Arab Countries: The Role of Exogenous Shocks, Economic Policy Failure and Institutional Deficiencies* (Discussion paper no. 409). Kiel: Kieler Diskussionsbeiträge.

Obeng CK, Mwinlaaru PY and Ofori IK (2022) Global value chain participation and inclusive growth in Sub-Saharan Africa. In: Wamboye EF and Fayissa B (eds) *The Palgrave Handbook of Africa's Economic Sectors*. Cham: Springer International Publishing, pp.815–840.

Opoku EEO, Ibrahim M and Sare YA (2019) Foreign direct investment, sectoral effects and economic growth in Africa. *International Economic Journal* 33(3): 473–492.

Oyinlola MA and Adedeji A (2017) Human capital, financial sector development and inclusive growth in sub-Saharan Africa. *Economic Change and Restructuring*: 1–24. https://doi.org/10.1007/s10644-017-9217-2

Ozturk I (2007) Foreign direct investment-growth nexus: a review of the recent literature. *International Journal of Applied Econometrics and Quantitative Studies* 4(2): 79-98.

Pigato M and Tang W (2015) *China and Africa: Expanding Economic Ties in An Evolving Global Context*. Washington, DC: The World Bank.

Quinonez P, Saenz J and Solorzano J (2018) Does foreign direct investment reduce poverty? The case of Latin America in the twenty-first century. *Business and Economic Horizons* 14(3): 488–500.

Razmi MJ, Abbasian E and Mohammadi S (2012) Investigating the effect of government health expenditure on HDI in Iran. *Journal of Knowledge Management, Economics and Information Technology* 2: 1–8.

Renard MF (2011) *China's trade and FDI in Africa; China and Africa: an emerging partnership for development*. Working paper no. 125 and 126, May, pp.1–38. Tunis: African Development Bank.

Sautman B and Yan H (2015) *Localizing Chinese Enterprises in Africa: From Myths to Policies* (HKUST IEMS thought leadership brief series no. 2015-05). Kowloon, Hong Kong: HKUST Institute for Emerging Market Studies.

Shamim A, Azeem P and Naqvi SMMA (2014) Impact of foreign direct investment on poverty reduction in Pakistan. *International Journal of Academic Research in Business and Social Sciences* 4(10): 465–490.

Soumaré I (2015) Does FDI improve economic development in North African countries? *Applied Economics* 47(51): 5510–5533.

Staats JL and Biglaiser G (2012) Foreign direct investment in Latin America: the importance of judicial strength and rule of law. *International Studies Quarterly* 56(1): 193–202.

Sylvaire DDY, Qing WH, Ran CH, et al. (2022) The impact of China's foreign direct investment on Africa's inclusive development. *Social Sciences & Humanities Open* 6(1): 100276.

Tchamyou VS (2021) Financial access, governance and the persistence of inequality in Africa: mechanisms and policy instruments. *Journal of Public Affairs* 21(2): e2201.

Timothy M, Khazamula CP, Francis A, et al. (2015) Comparative impact of public expenditure on agricultural growth: Error correction model for South Africa and Zimbabwe. *Journal of Human Ecology* 50(3): 245–251.

World Bank (2013) *Inclusion Matters: The Foundation for Shared Prosperity*. Washington, DC: The World Bank.

World Bank (2020) *Monitoring Global Poverty*. Available at: https://doi.org/10.1596/978-1-4648-1602-4_ch1

Topalli M, Papavangjeli M, Ivanaj S, et al. (2021) The impact of foreign direct investments on poverty reduction in the Western Balkans. *Economics* 15(1): 129–149.

Tsai PL and Huang CH (2007) Openness, growth and poverty: the case of Taiwan. *World Development* 35(11): 1858–1871.

Ucal MŞ (2014) Panel data analysis of foreign direct investment and poverty from the perspective of developing countries. *Procedia: Social and Behavioral Sciences* 109: 1101–1105.

United Nations Conference on Trade and Development (UNCTAD) (2013) *World Investment Report 2013*. New York; Geneva: United Nations (UN).

United Nations Conference on Trade and Development (UNCTAD) (2021) *World Investment Report*. UNCTAD. Available at: https://unctad.org/topic/investment/world-investment-report

Uttama NP (2015) Foreign direct investment and the poverty reduction nexus in Southeast Asia. In: Heshmati A, Maasoumi E and Wan G (eds) *Poverty Reduction Policies and Practices in Developing Asia*. Singapore: Springer, pp.281–298.

Wodon Q and Zaman H (2010) Higher food prices in Sub-Saharan Africa: poverty impact and policy responses. *The World Bank Research Observer* 25(1): 157–176.

Xu C, Han M, Amegnonna T, et al. (2021) Trade openness, FDI, and income inequality: evidence from sub-Saharan Africa. *African Development Review* 33: 193–203.

Zaghdoudi K (2018) Is the relationship between external debt and human development non-linear? A PSTR approach for developing countries. *Economics Bulletin* 38(4): 2194–2216.

Zaman K, Khan MM and Ahmad M (2012) RETRACTED: the relationship between foreign direct investment and pro-poor growth policies in Pakistan: the new interface. *Economic Modelling* 29: 1220–1227.

Zhang KH (2022) Chinese foreign direct investment in Africa: its motivations, determinants, and impact on the African economies. In: Wamboye EF and Fayissa B (eds) *The Palgrave Handbook of Africa's Economic Sectors*. Cham: Springer International Publishing, pp.603–624.

Author biographies

Khadijah Iddrisu is a PhD candidate of Simon Diedong Dombo University of Business and Integrated Development Studies. She holds an MPhil in Finance from University of Professional Studies, Accra, a BSc. Accounting from the University of Development studies and also an Executive Mini MBA in corporate governance and financial management both from Accra Business School.

Joshua Yindenaba Abor is a Professor of Finance, financial economist, and qualified accountant. He is experienced in development finance and economics research. He holds a PhD in Finance from Stellenbosch University, a fellow of Association of Certified Accountants, UK. He is the former Dean of the University of Ghana, Business school.

Michael Insaidoo is an economist and a lecturer at the UPSA's Department of Banking and Finance. He is a PhD in Economics candidate at the University of Cape Coast. He completed Master of Arts in economics of development from Erasmus University in the Netherlands and holds a Bachelor of Arts degree in Economics from the University of Ghana.

Kannyiri T. Banyen is a senior lecturer in the Department of Finance at the Simon Diedong Dombo University of Business and Integrated Development Studies and a researcher at African growth institute, South Africa. He holds PhD in business administration specializing in development finance from the University of Cape Town and an MPhil in finance from University of Ghana.

Appendix 1

Table 5. Pairwise correlation matrix.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
(1) HDi	1.000																
(2) Cfdi	0.133***	1.000															
(3) GDPc	0.850***	0.070*	1.000														
(4) TO	0.476***	−0.044	0.541***	1.000													
(5) inf	−0.067*	−0.009	−0.065*	−0.026	1.000												
(6) LF	−0.359***	−0.004	−0.549***	−0.197***	0.084**	1.000											
(7) Pop	−0.519***	−0.060	−0.379***	−0.240***	−0.013	0.142***	1.000										
(8) GFCF	0.290***	0.033	0.331***	0.427***	−0.061	−0.184***	0.124***	1.000									
(9) PC	0.539***	0.196***	0.489***	0.174***	−0.008	−0.235***	−0.511***	−0.023	1.000								
(10) GE	0.334***	−0.018	0.275***	0.325***	−0.042	0.029	−0.317***	−0.005	0.369***	1.000							
(11) INSQ	0.560***	0.022	0.395***	0.230***	−0.175***	−0.120***	−0.476***	0.047	0.509***	0.393***	1.000						
(12) Cc	0.501***	0.015	0.322***	0.223***	−0.132***	−0.091**	−0.520***	0.062*	0.455***	0.434***	0.916***	1.000					
(13) GEff	0.572***	0.056	0.421***	0.168***	−0.152***	−0.097***	−0.557***	0.047	0.585***	0.395***	0.929***	0.894***	1.000				
(14) PS	0.518***	−0.045	0.447***	0.421***	−0.170***	−0.090**	−0.284***	0.123***	0.296***	0.368***	0.817***	0.661***	0.638***	1.000			
(15) RQ	0.468***	0.042	0.313***	0.042	−0.198***	−0.176***	−0.385***	−0.009	0.516***	0.255***	0.911***	0.815***	0.887***	0.617***	1.000		
(16) RL	0.547***	0.020	0.364***	0.170***	−0.154***	−0.141***	−0.455***	0.056	0.467***	0.369***	0.964***	0.890***	0.909***	0.738***	0.889***	1.000	
(17) VA	0.415***	0.055	0.234***	0.127***	−0.132***	−0.061*	−0.425***	−0.047	0.486***	0.301***	0.880***	0.753***	0.769***	0.635***	0.793***	0.824***	1.000

Cc: control of corruption; Cfdi: China FDI inflows; GDPC: GDP per capita; GE: government expenditure; GEff: government effectiveness; GFCF: gross fixed capital formation; HDi: human development indicator; inf: inflation; INSQ: institutional quality index; LF: labor force; PC: private credit; Pop: population growth; PS: political stability and absence of violence; RQ: regulatory framework; RL: rule of law; TO: trade openness; VA: voice and accountability, ***$p < 0.01$, **$p < 0.05$, *$p < 0.10$.
Source. Authors' computation 2022.

Table 6. Variance inflation factor.

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Chinese FDI	2.170	2.170	2.270	2.350	2.240	2.200	2.230
GDP per capita	2.080	2.080	2.230	2.020	2.180	2.110	2.170
Trade openness	1.810	1.810	2.000	1.600	1.640	1.700	1.670
Inflation	1.580	1.580	1.810	1.460	1.540	1.520	1.460
Labor force	1.430	1.430	1.460	1.450	1.430	1.430	1.430
Population	1.400	1.400	1.460	1.440	1.430	1.420	1.400
Domestic capital	1.370	1.370	1.380	1.360	1.360	1.370	1.360
Private credit	1.330	1.330	1.280	1.290	1.250	1.290	1.250
Government expenditure	1.070	1.070	1.070	1.070	1.070	1.070	1.060
Institutional quality	1.040	1.040	1.060	1.050	1.070	1.050	1.040
Mean VIF	1.530	1.530	1.600	1.510	1.520	1.520	1.510

FDI: foreign direct investment; GDP: gross domestic product; VIF: variance inflation factor.
Model 1 is when institutional quality index is used as a proxy for institutional quality, Model 2 is when Institutional Quality is measured with control of corruption, Model 3 is when government effectiveness is used as a proxy for institutional quality, Model 4 captures political stability as a proxy for institutional quality, Model 5 uses the regulatory framework as a proxy, Model 6 used rule of law as a proxy, and Model 7 uses voice and accountability as a proxy for institutional quality.
Source. Authors' computation 2022.

Table 7. OLS result of Chinese FDI inflows and institutional quality on poverty reduction.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Cfdi	−0.0002 (0.0007)	−0.0001 (0.0007)	−0.0002 (0.0007)	−0.0002 (0.0007)	−0.0002 (0.0007)	−0.0002 (0.0007)	−0.0002 (0.0007)
GDPc	−7.5295*** (1.7575)	−7.5502*** (1.8769)	−7.3059*** (1.8720)	−7.5490*** (1.7322)	−7.4177*** (1.7923)	−7.3108*** (1.8280)	−7.5641*** (1.7972)
TO	0.0376 (0.0320)	0.0418 (0.0321)	0.0364 (0.0308)	0.0315 (0.0382)	0.0383 (0.0305)	0.0365 (0.0303)	0.0370 (0.0325)
inf	−0.0066 (0.0175)	−0.0041 (0.0143)	−0.0119 (0.0153)	−0.0064 (0.0175)	−0.0089 (0.0181)	−0.0119 (0.0149)	−0.0059 (0.0147)
LF	0.2774*** (0.0787)	0.2743*** (0.0788)	0.2868*** (0.0834)	0.2738*** (0.0791)	0.2833*** (0.0785)	0.2859*** (0.0795)	0.2782*** (0.0771)
Pop	1.7027 (1.2740)	1.9328 (1.2687)	1.5487 (1.2751)	1.6546 (1.2255)	1.6212 (1.2508)	1.5449 (1.2998)	1.6547 (1.2203)
GFCF	−0.1542 (0.1253)	−0.1577 (0.1247)	−0.1532 (0.1256)	−0.1512 (0.1274)	−0.1549 (0.1242)	−0.1531 (0.1250)	−0.1500 (0.1269)
PC	0.0489 (0.0350)	0.0471 (0.0307)	0.0556 (0.0365)	0.0538* (0.0312)	0.0509 (0.0378)	0.0550 (0.0336)	0.0446 (0.0361)
GE	−0.1815 (0.1888)	−0.2144 (0.1901)	−0.1603 (0.1926)	−0.1824 (0.1911)	−0.1683 (0.1872)	−0.1600 (0.1903)	−0.1728 (0.1840)
INSQ	0.9364 (2.2115)						
Cc		1.7489 (1.6937)					
GEff			−0.1735 (2.0732)				
PS				0.6387 (1.3942)			
RQ					0.4461 (2.3583)		
RL						−0.1795 (1.9818)	
VA							1.1254 (1.6692)
Constant	55.7666*** (18.4003)	56.3029*** (19.6126)	52.8118*** (20.0026)	56.3523*** (18.0414)	54.1759*** (18.9673)	52.9220*** (19.2854)	56.0675*** (18.8239)
Observations	113	113	113	113	113	113	113
R^2	0.4895	0.4924	0.4885	0.4899	0.4887	0.4885	0.4911

Cfdi: China FDI inflows; GDPC: GDP per capita; GE: government expenditure; GEff: government effectiveness; GFCF: gross fixed capital formation; Gov't Exp.: government expenditure; inf: inflation; INSQ: institutional quality index; LF: labor force; Obs.: observation; PC: private credit; Pop: population growth; PS: political stability and absence of violence; RQ: regulatory framework; RL: rule of law; TO: trade openness; VA: voice and accountability.

Values in the parenthesis are the robust standard error; ***$p < 0.01$, **$p < 0.05$, *$p < 0.10$.

Source. Authors' computation 2022.

Table 8. The moderating role of institutional quality on Chinese FDI inflows-poverty reduction nexus.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Model 8	Model 9	Model 10	Model 11	Model 12	Model 13	Model 14
Cfdi	−0.0003 (0.0030)	−0.0002 (0.0020)	−0.0007 (0.0042)	−0.0002 (0.0008)	−0.0017 (0.0040)	−0.0003 (0.0009)	−0.0009 (0.0047)
GDPc	−7.4982*** (1.7758)	−7.5258*** (1.8990)	−7.2456*** (1.9374)	−7.6471*** (1.7306)	−7.2614*** (1.8382)	−7.2817*** (1.8406)	−7.5204*** (1.8265)
TO	0.0373 (0.0333)	0.0414 (0.0341)	0.0356 (0.0331)	0.0329 (0.0388)	0.0364 (0.0320)	0.0362 (0.0312)	0.0364 (0.0336)
Inf	−0.0067 (0.0176)	−0.0041 (0.0143)	−0.0120 (0.0152)	−0.0062 (0.0177)	−0.0100 (0.0178)	−0.0121 (0.0149)	−0.0059 (0.0147)
LF	0.2781*** (0.0794)	0.2749*** (0.0798)	0.2884*** (0.0844)	0.2738*** (0.0798)	0.2876*** (0.0800)	0.2864*** (0.0798)	0.2791*** (0.0777)
Pop	1.6899 (1.2882)	1.9234 (1.2851)	1.5318 (1.2747)	1.6823 (1.2545)	1.5386 (1.2605)	1.5241 (1.3035)	1.6420 (1.2218)
GFCF	−0.1542 (0.1259)	−0.1578 (0.1254)	−0.1528 (0.1263)	−0.1510 (0.1281)	−0.1530 (0.1247)	−0.1538 (0.1263)	−0.1498 (0.1275)
PC	0.0484 (0.0349)	0.0467 (0.0305)	0.0550 (0.0368)	0.0563* (0.0309)	0.0492 (0.0380)	0.0543 (0.0336)	0.0436 (0.0365)
GE	−0.1810 (0.1897)	−0.2138 (0.1908)	−0.1603 (0.1936)	−0.1840 (0.1915)	−0.1684 (0.1889)	−0.1587 (0.1910)	−0.1731 (0.1852)
INSQ	0.8614 (2.3914)						
c. Cfdi#c.INSQ	0.0007 (0.0093)						
Cc		1.6937 (1.8499)					
c. Cfdi#c.Cc		0.0006 (0.0093)					
Geff			−0.2868 (2.1360)				
c. Cfdi#c.Geff			0.0011 (0.0083)				
PS				0.8193 (1.6090)			
c. Cfdi#c.PS				−0.0025 (0.0085)			
RQ					0.0321 (2.4807)		
c. Cfdi#c.RQ					0.0033 (0.0080)		
RL						−0.2733 (2.0968)	
c. Cfdi#c.RL						0.0011 (0.0108)	
VA							1.0433 (1.7049)
c. Cfdi#c.VA							0.0013 (0.0083)
Constant	55.5200*** (18.4206)	56.1161*** (19.6965)	52.3143** (20.3819)	56.9381*** (18.0142)	52.9391*** (19.2558)	52.7223*** (19.3255)	55.7660*** (18.9819)
Net effect	–	–	–	–	–	–	–
Observations	113	113	113	113	113	113	113
R^2	0.4896	0.4924	0.4886	0.4905	0.4901	0.4886	0.4913

Cfdi: China FDI inflows; GDPC: GDP per capita; GE: government expenditure; GEff: government effectiveness; GFCF: gross fixed capital formation; Gov't Exp.: government expenditure; inf: inflation; INSQ: institutional quality index; LF: labor force; Obs.: observation; PC: private credit; Pop: population growth; PS: political stability and absence of violence; RQ: regulatory framework; RL: rule of law; TO: trade openness; VA: voice and accountability.

Values in the parenthesis are the robust standard error, ***$p<0.01$, **$p<0.05$, *$p<0.10$.

Source. Authors' computation 2022.

Table 9. Fixed effect results of Chinese FDI inflows and institutional quality on poverty reduction.

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Cfdi	0.0008 (0.0008)	0.0007 (0.0007)	0.0008 (0.0008)	0.0008 (0.0008)	0.0007 (0.0008)	0.0008 (0.0008)	0.0008 (0.0008)
GDPc	15.6003*** (3.2076)	15.6571*** (3.1031)	15.4219*** (3.2484)	15.3647*** (3.1078)	15.9872*** (3.1941)	15.0989*** (3.1068)	15.0928*** (3.0204)
TO	−0.0420** (0.0185)	−0.0411** (0.0183)	−0.0468** (0.0186)	−0.0405** (0.0184)	−0.0406** (0.0183)	−0.0390** (0.0173)	−0.0397** (0.0180)
inf	0.0028 (0.0112)	0.0031 (0.0107)	0.0020 (0.0110)	0.0030 (0.0109)	0.0024 (0.0123)	0.0033 (0.0104)	0.0035 (0.0103)
LF	−0.5470*** (0.1647)	−0.5546*** (0.1613)	−0.5201*** (0.1669)	−0.5515*** (0.1655)	−0.5318*** (0.1592)	−0.5635*** (0.1618)	−0.5609*** (0.1615)
Pop	0.0976 (1.2359)	0.1092 (1.2025)	0.0144 (1.1684)	0.1316 (1.2323)	−0.0195 (1.2765)	0.1329 (1.2183)	0.1117 (1.2109)
GFCF	0.0923*** (0.0225)	0.0925*** (0.0219)	0.0986*** (0.0213)	0.0896*** (0.0222)	0.0895*** (0.0213)	0.0871*** (0.0218)	0.0871*** (0.0206)
PC	0.0139 (0.0727)	0.0173 (0.0719)	0.0227 (0.0739)	0.0150 (0.0722)	0.0076 (0.0708)	0.0189 (0.0720)	0.0188 (0.0715)
GE	0.0903* (0.0530)	0.0815 (0.0488)	0.0850* (0.0484)	0.0895 (0.0534)	0.0952* (0.0499)	0.0846 (0.0527)	0.0838 (0.0515)
INSQ	−1.5126 (1.8055)						
Cc		−2.0752 (1.4203)					
GEff			−2.3566 (1.6346)				
PS				−0.3552 (0.6794)			
RQ					−2.2400 (1.6301)		
Rule of law						0.3496 (1.6296)	
VA							0.6864 (1.2133)
Constant	−42.1529 (35.9515)	−42.6078 (34.6172)	−42.9013 (36.4365)	−39.3304 (34.8923)	−46.3439 (35.3751)	−36.0035 (34.7450)	−35.8547 (33.9423)
Observations	693	693	693	693	693	693	693
R^2	0.6679	0.6718	0.6732	0.6661	0.6727	0.6654	0.6660
Number of id	33	33	33	33	33	33	33

Cfdi: China FDI inflows; GDPC: GDP per capita; GE: government expenditure; GEff: government effectiveness; GFCF: gross fixed capital formation; Gov't Exp.: government expenditure; inf: inflation; INSQ: institutional quality index; LF: labor force; Obs.: observation; PC: private credit; Pop: population growth; PS: political stability and absence of violence; RQ: regulatory framework; RL: rule of law; TO: trade openness; VA: voice and accountability.

Values in the parenthesis are the robust standard error; ***$p < 0.01$, **$p < 0.05$, *$p < 0.10$.

Source. Authors' computation 2022.

Table 10. Fixed effect results of moderating role of institutional quality on Chinese FDI inflows-poverty reduction nexus.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Cfdi	0.0008* (0.0005)	0.0005 (0.0003)	0.0010* (0.0005)	0.0005 (0.0006)	0.0010* (0.0005)	0.0003 (0.0003)	0.0011* (0.0006)
GDPc	15.3828*** (3.1914)	15.4062*** (3.0681)	15.2000*** (3.2286)	15.2318*** (3.1186)	15.7498*** (3.1793)	14.9242*** (3.0806)	14.8885*** (3.0141)
TO	−0.0410** (0.0184)	−0.0395** (0.0179)	−0.0457** (0.0183)	−0.0402** (0.0185)	−0.0393** (0.0181)	−0.0385** (0.0171)	−0.0386** (0.0178)
inf	0.0035 (0.0110)	0.0039 (0.0105)	0.0027 (0.0108)	0.0034 (0.0108)	0.0031 (0.0121)	0.0042 (0.0102)	0.0040 (0.0102)
LF	−0.5264*** (0.1645)	−0.5302*** (0.1617)	−0.4957*** (0.1671)	−0.5403*** (0.1647)	−0.5113*** (0.1589)	−0.5398*** (0.1616)	−0.5465*** (0.1615)
Pop	0.0362 (1.1982)	0.0367 (1.1599)	−0.0516 (1.1349)	0.1053 (1.2202)	−0.0837 (1.2270)	0.0591 (1.1718)	0.0608 (1.1779)
GFCF	0.0903*** (0.0233)	0.0903*** (0.0223)	0.0959*** (0.0219)	0.0899*** (0.0228)	0.0863*** (0.0220)	0.0852*** (0.0225)	0.0848*** (0.0216)
PC	0.0169 (0.0720)	0.0208 (0.0706)	0.0258 (0.0727)	0.0158 (0.0726)	0.0114 (0.0700)	0.0230 (0.0708)	0.0214 (0.0710)
GE	0.0899 (0.0542)	0.0809 (0.0497)	0.0833 (0.0496)	0.0922* (0.0532)	0.0934* (0.0516)	0.0813 (0.0541)	0.0843 (0.0525)
INSQ	−1.4419 (1.8231)						
c. Cfdi#c.INSQ	−0.0020* (0.0010)						
Cc		−1.9303 (1.4216)					
c. Cfdi#c.Cc		−0.0026** (0.0011)					
GEff			−2.2852 (1.6407)				
c. Cfdi#c.GEff			−0.0019** (0.0009)				
PS				−0.3221 (0.6893)			
c. Cfdi#c.PS				−0.0012 (0.0011)			
RQ					−2.1426 (1.6412)		
c. Cfdi#c.RQ					−0.0018** (0.0009)		
RL						0.4302 (1.6405)	
c. Cfdi#c.RL						−0.0025** (0.0011)	
VA							0.7319 (1.2145)
c. Cfdi#c.VA							−0.0015* (0.0008)
Constant	−41.7143 (35.7207)	−42.1192 (34.2964)	−42.6500 (36.1904)	−39.0327 (34.7942)	−45.7070 (35.1721)	−36.0301 (34.4709)	−35.1409 (33.8245)
Net Effect	0.0020	–	0.0023	–	0.0021	–	0.0019
Observations	693	693	693	693	693	693	693
R^2	0.6715	0.6771	0.6770	0.6677	0.6761	0.6696	0.6687
Number of id	33	33	33	33	33	33	33

Cfdi: China FDI inflows; GDPC: GDP per capita; GE: government expenditure; GEff: government effectiveness; GFCF: gross fixed capital formation; Gov't Exp.: government expenditure; inf: inflation; INSQ: institutional quality index; LF: labor force; Obs.: observation; PC: private credit; Pop: population growth; PS: political stability and absence of violence; RQ: regulatory framework; RL: rule of law; TO: trade openness; VA: voice and accountability.

Values in the parenthesis are the robust standard error; ***$p < 0.01$, **$p < 0.05$, *$p < 0.10$.

Source. Authors' computation 2022.

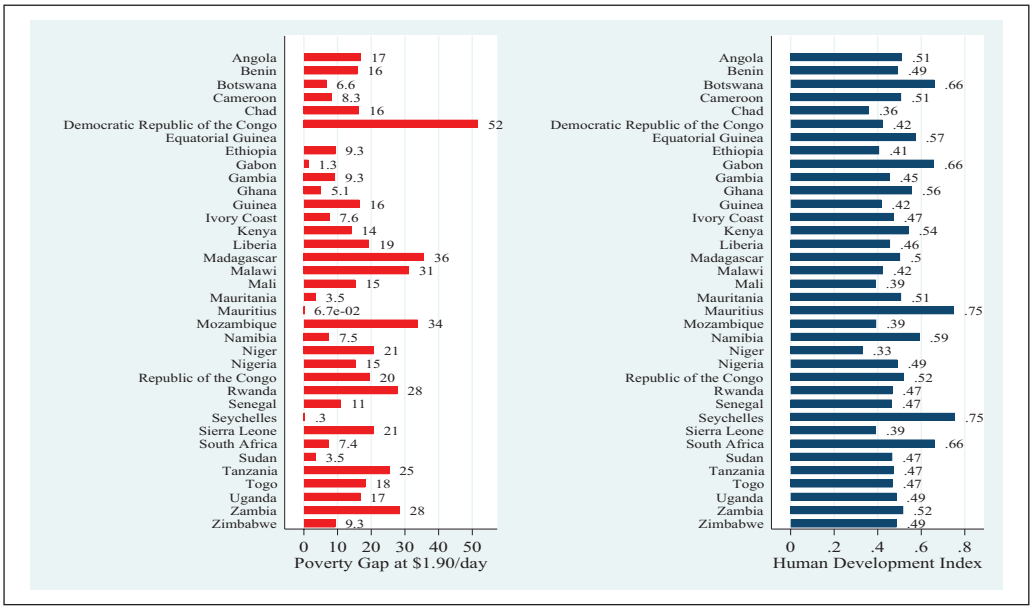

Figure 3. Average within country poverty eradication, 2000–2020.

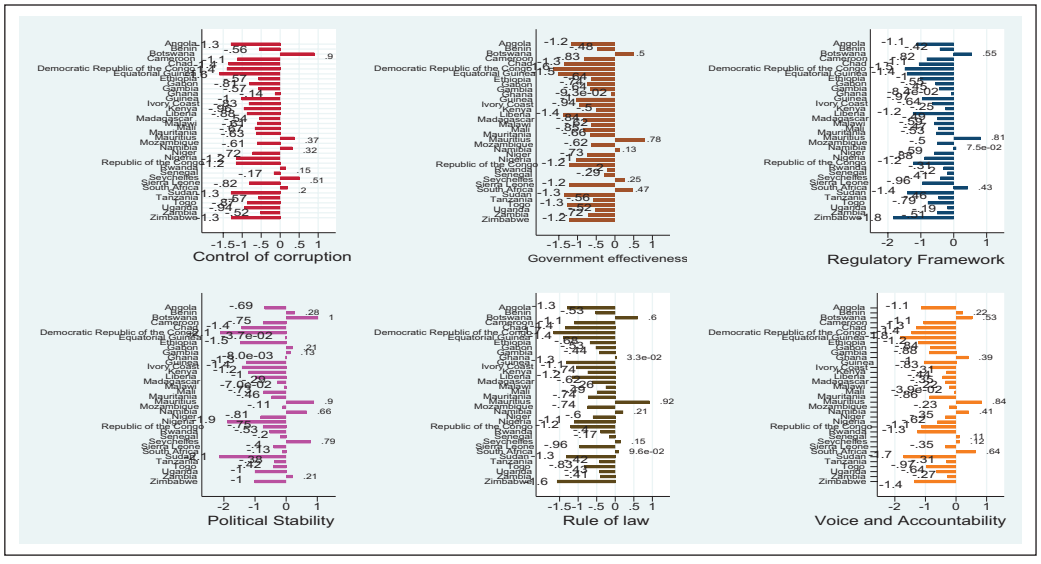

Figure 4. Average within country institutional quality, 2000–2020.