

# Bridging Africa's income inequality gap: How relevant is China's outward FDI to Africa?

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## ABSTRACT

This study examines whether: (i) the remarkable inflow of Chinese FDI to Africa matters for bridging the continent's marked income inequality gap, (ii) Africa's institutional fabric is effective in propelling Chinese FDI towards the equalisation of incomes in Africa and (iii) there exist relevant thresholds required for the various governance dynamics to cause Chinese FDI to equalise incomes in Africa. Our results, which are based on the dynamic GMM estimator and macrodata for 48 African countries, reveal the following. First, although Chinese FDI contributes to fairer income distribution in Africa, the effect is weak. Second, although Africa's institutional fabric matters for propelling Chinese FDI towards the equalisation of incomes across the continent, governance mechanisms for ensuring political stability, low corruption, and voice and accountability are critical. Finally, the critical masses required for these three key governance dynamics to cause Chinese FDI and other income inequality-reducing modules to reduce income inequality are 0.8, 0.5 and 0.1, respectively. These critical masses are thresholds at which governance is necessary but no longer sufficient to complement Chinese FDI to mitigate income inequality. Hence, at the attendant thresholds, complementary policies are worthwhile. Policy recommendations are provided in the conclusion.

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## 1. Introduction

Income inequality remains a pressing issue in both developed and developing countries despite concerted efforts to address it (World Bank, 2020; Shi et al., 2020; Bourguignon, 2016; Milanovic, 2016). Relative to others, Africa remains one of the most unequal and marginalised continents despite tremendous gains in the fight against poverty over the past two decades (World Bank, 2020; Kunawotor et al., 2020; Asongu and Odhiambo, 2020; Shimeles and Nabassaga, 2018). This is a major concern considering efforts

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made by African countries and their development partners in addressing the continent's hydra-headed problems of poverty, unemployment and income inequality since the turn of the millennium (Ofori et al., 2021; Ofori and Asongu, 2021; Tchamyou, 2021).

The outlook concerning income inequality in Africa is also not encouraging following the emergence of the coronavirus pandemic, which pushed at least 23 million people into the extreme poverty bracket in 2021 (World Bank, 2020; ILO, 2020a, 2020b). In particular, income inequality is expected to rise following the dip in economic growth and the floundering of informal activities due to the pandemic (IMF 2020; Ofori et al., 2022a,b). This has indeed compounded the already dire income inequality situation in Africa, casting doubts on the achievement of SDG 10 in the short to medium term and Africa's Agenda 2063 in the longer term (Bicaba et al., 2017; Ofori et al., 2022c,e; Ujunwa et al., 2021). It is in this regard that empirical contributions such as the present study are imperative for guiding policy actions on how African leaders can address income inequality, which can go a long way in fostering social cohesion, human resource development, and the quality of life.

In this study, we identify two key channels in line with Africa's Agenda 2063 and the United Nation's Agenda 2030 on how industrialisation and fairer income growth and distribution can be realised (AU 2015; UN 2015). The first is the momentous rise in external finance in the form of foreign direct investment (FDI), which, as UNCTAD (2021), Opoku et al. (2019) and Cornia and Martorano (2012) point out, is vital for promoting sustainable income growth and distribution in developing countries. Additional optimism regarding FDI for fairer income distribution in Africa is that: (1) it is projected to rebound in 2022 despite taking a dip<sup>2</sup> in 2019 and 2020 following the implementation of the Africa Continental Free Trade Area (AfCFTA), and (2) it has been identified as one of the key drivers of Africa's remarkable growth strides in the past two decades. Particularly, regarding the latter, information gathered from the UNCTAD (2021, 2020, 2019) shows that, in 2018, FDI inflow to Africa amounted to US\$ 46 billion. As Xu et al. (2021) report, this remarkable inflow of resources can reduce income equality in marginalised settings like Africa through industrialisation, enhanced global value participation, job creation, and improved government revenue mobilisation. Besides, we gather from Atitianti and Dai (2021), UNCTAD (2019) and Cornia and Martorano (2012) that, among the major foreign investors in Africa, Chinese investors (hereinafter: *China FDI*) stand out.<sup>3</sup> Precisely, Atitianti and Dai (2021) report that, the stock of China's FDI to Africa increased from US\$ 0.5 billion in 2003 to US\$35 billion in 2020. It is also documented in Cornia and Martorano (2012) that over the last two decades, the inflow of China FDI to the hydrocarbons, precious metals, telecommunication, and manufacturing sectors has risen remarkably, citing it as a pivotal contributor to the strong growth trajectories of Africa in the period.

Second, taking cues from Kaufman et al. (2010) and Acemoglu and Robinson (2012), we reckon that Africa's institutional fabric could also play a key role in incentivising more significant FDI inflows and sharing the gains from FDI. Our main argument is that, although FDI could contribute to Africa's quest to equalise incomes, governance remains a crucial mechanism and the lubricant to 'turn the turbines on'. For instance, strong economic governance is required to reduce investment risk, while strong legal frameworks are needed to safeguard and guarantee investment returns (Acemoglu et al., 2008). Moreover, as Acemoglu et al. (2008,2004) point out, good governance is crucial to promote social welfare and equitable income distribution. Political stability is also imperative to attracting, integrating and sustaining FDI into recipient economies (Huynh, 2021; Ofori and Asongu, 2022). Further, for FDI to reduce income inequality, governance effectiveness could also prove crucial to building a business-friendly climate for sustaining foreign investors and fostering social inclusion and redistribution (Acemoglu and Robinson, 2012).

Despite these developments, rigorous empirical contributions informing policymakers interested in Africa's shared growth agenda as to whether China FDI contributes to reducing or exacerbating income inequality in Africa are hard to find. Additionally, a glaring lacuna in the income inequality literature is that, the extant literature lacks a comprehensive empirical contribution informing policy as to whether good governance interacts with China FDI to equalise incomes in Africa. This study, therefore, extends the income inequality literature on Africa by testing two hypotheses. First, we test whether unconditionally, both China FDI and good governance reduce income inequality in Africa. Second, we test whether governance quality moderates China FDI towards bridging Africa's income disparity gap. Finally, we examine threshold levels required for our governance dynamics to propel China FDI toward income equality in Africa.

Our results, which are based on the dynamic GMM estimator and macrodata for 48 African countries, reveal that although (1) Chinese FDI contributes to equitable income distribution in Africa, the effect is weak, and (2) Africa's institutional fabric matters for propelling Chinese FDI towards the equalisation of incomes across the continent, governance mechanisms for ensuring political stability, low corruption, and voice and accountability are key. Finally, the critical masses required for these three key governance dynamics to propel Chinese FDI towards reducing income inequality in Africa are 0.8, 0.5 and 0.1, respectively.

The rest of the study is structured as follows: Section 2 presents a review of the literature on the FDI-income inequality nexus, and the governance quality-income inequality relation. Section 3 details the methods underpinning the empirical analysis. We present our results and discussion in Section 4 and the conclusion and policy recommendations in Section 5.

## 2. Literature review

This section is divided into parts. The first part (i.e., Sections 2.1 and 2.2) focuses on the theoretical and empirical perspectives of capital flows and income distribution. The second (i.e., Sections 2.3 and 2.4) deals with a survey of the extant scholarship on the role of governance in FDI inflows on the one hand, and the effect of FDI on income inequality on the other.

<sup>2</sup> FDI inflow to Africa decreased by 10% to US\$ 45 billion in 2019 following tepid global and regional output growth and demand for primary commodities. In 2020, FDI inflow to Africa declined by 40% following the emergence of the coronavirus pandemic, (UNCTAD, 2021)

<sup>3</sup> Other notable key investors are EU countries, the United States of America and India

### 2.1. Theoretical linkages between FDI, governance and income inequality

A survey of the extant scholarship on income distribution indicates that two opposing ideas – (i) the modernisation theory and (ii) the dependency (world systems) theory – explain the relationship between FDI and income inequality. The former is deeply rooted in the neoclassical dictum espoused in the Heckscher-Ohlin and Stolper-Samuelson theorem that openness to trade and capital flows shifts income toward a country's abundant factor (Ohlin, 1933; Stolper and Samuelson, 1941). It follows that, by integrating into the global economy, the knowledge/technological spillover associated with FDI enables developing countries to specialise in low-skill-intensive labour production. This eventually creates shared prosperity as trade gains in the form of global value chain participation, foreign exchange, and durable employment creation intensify (Rivera-Batiz and Romer, 1991; Grossman and Helpman, 1990, 1991; Krueger, 1998). As Kuznets (1955) and Rostow (1990) reckon, this takes quite a long time to materialise as developing countries repackage gains in terms of access to export markets, capital and technology to shared income growth and distribution. In between, the modernisation theory suggests that FDI first stimulates growth in some leading/favoured sectors of the host economy, benefiting the skilled elites compared to economic agents in the traditional sector (Adelman and Robinson, 1989). However, in later stages of development, as the host economies expand, the growth of the modern industrial sector outpaces the traditional sector, culminating in the transfer of surplus labour from the former to the latter. The resultant rise in labour income, economic growth and political democracy eventually equalises incomes across all sectors (Fei and Ranis, 1964; Lenski, 1966).

The dependency theory is the idea that, although capital flows from advanced (i.e., core) countries to developing (i.e., periphery) countries can spur the industrial drive of the latter, they can also widen the income disparity gap in the periphery (Girling, 1973). Theorists favouring the dependency view of FDI-induced income distribution opine that the flow of capital from advanced to developing countries is associated with capital-intensive investments, which constrain the employment of the numerous unskilled labours in the peripheries (Rubinson, 1976). In this regard, Findlay (1978) argues that the inflow of such skill-biased FDI to developing countries raises the premium of skill-labour relative to that of the unskilled, fuelling income inequality. This is echoed in the argument presented by Feenstra and Hanson (1996, 1997) that the rise in automation associated with capital-intensive FDI exacerbates income inequality in developing countries. A key channel through which this manifests, as Roberts and Hite (2000) recount, is through the activities of multinational firms, which weaken the power of labour unions as foreign control of host countries intensifies. As Evans (1976) suggests, this is fuelled or perpetuated by a 'small labour elite' who, in their bid to maintain and stabilise their privileged status, form alliances with foreign investors to suppress the performance of indigenous entrepreneurs.

A notable observation from these two opposing views of the FDI-income distribution relationship is that the economic systems and development strategies of markets and production in developing countries could prove crucial in sharing the gains from FDI (Evans, 1976). It is in this regard that the UNDP (2011, 2017), OECD (2016) and World Bank (2013) stress that governance is the fulcrum from which everything else in the economy evolves. This aligns with the argument by Stiglitz (2002) that robust economic, political and institutional framework/structures are crucial for attracting and sharing the gains from FDI. Further, quality governance can be instrumental for building trust and cooperation, which are essential elements in disadvantageous settings like Africa for (i) encouraging cross-border investment and (ii) deterring rent-seeking behaviour characteristics of FDI. The relevance of quality governance in leveling the playing field for all and providing an enabling environment for capital flows to contribute to equitable income distribution is also well documented in the literature (see e.g., Acemoglu et al., 2008; North, 1989; Acemoglu and Robinson, 2012, 2010). In this regard, the authors point out that bad governance, which is conspicuous in the developing world, contributes to the routine economic stagnation, social unrest and weak investor climate, sapping the masses of equal opportunities and fair delivery of public goods. Accordingly, boosting effective governance in small open economies like those of Africa is essential to address corruption and enhance economic freedom and equal opportunities for all (Adeleye et al., 2017; Kaufman et al., 2010).

### 2.2. Empirical evidence on FDI and income inequality

As capital flows to Africa continue to increase even after the 2008/09 global financial meltdown, many researchers have examined whether FDI affects income distribution across the continent. It is imperative to point out that the findings from prior studies are not without controversy. For example, using the generalised method of moments (GMM) estimation technique, Xu et al. (2021) investigated the influence of FDI on income inequality for a panel of 38 African countries. Robust evidence from the study indicates that FDI contributes to the reduction in income inequality across the continent. It is a result that re-affirms the evidence in Ofori and Asongu (2021) indicating that FDI promotes fairer income growth and distribution in Africa. Despite these income inequality-reducing effects of FDI, some empirical contributions suggest that FDI worsens income inequality. For instance, using data for 16 African countries, Kaulihowa and Adjasi (2018) find evidence from the pooled mean group estimator to show that FDI exacerbates income inequality. Anyanwu (2016) and Batuo and Asongu (2015) present similar results that FDI heightens income inequality in Africa. The harmful effect of FDI, according to the former, is because capital inflows to Africa are primarily concentrated in the hydrocarbon, precious metals, and telecommunications sectors, which generate fewer jobs.

Outside the shores of Africa, a plethora of empirical works have also explored the relationship between FDI and income inequality. Again, the results are mixed and inconclusive. For example, Song et al. (2021) investigated the relationship between FDI and income inequality in 20 major remittance-receiving countries and found that FDI intensifies income inequality. To reduce the harmful effect of FDI, the authors suggest that FDI should be spread across regions and industries. Similarly, Khan and Nawaz (2019) examined the link between FDI and income inequality in the Commonwealth of Independent States (CIS). Compelling evidence from the GMM estimator shows that FDI raises the income disparity gap in the CIS, but only in the long run. This aligns with the results of Herzer et al. (2014), which indicate that FDI raises income in Latin America. Nonetheless, some prior contributions also reveal that

FDI reduces income inequality. For instance, Lee et al. (2022) find that FDI lessens income inequality for a panel of 37 economies. Similarly, Mihaylova (2015) find that FDI contributes to the equalisation of incomes in the Central and Eastern European countries but only when high levels of education and economic development have been attained.

### 2.3. Empirical evidence on governance quality and income inequality

Several empirical works have investigated the effect of governance on income distribution in Africa. For example, Gossel (2022) finds convincing results using the GMM estimator to show that democracy reduces income inequality in 38 African countries. Kunawotor et al. (2020) used the two-step GMM estimation approach to examine the relationship between institutional quality and income inequality for a panel of 44 African economies from 1990 to 2017. They reveal that control of corruption and the rule of law are crucial governance modules for reducing income inequality in Africa. These findings have been echoed in Ofori et al. (2022) and Adams and Akobeng (2021), with political stability and government effectiveness being identified as the main governance dynamics for fostering equitable income distribution in Africa.

Aside from the African continent, robust evidence concerning the influence of governance on income distribution has also been reported. In a more comprehensive study by Canh et al. (2020), we observe that poor institutional quality heightens income inequality in 41 high-income countries. This is in line with the work of Josifidis et al. (2017) indicating that institutional inertia to technological changes contributes to the high inequality in advanced countries. However, Rossvoll and Sparman (2015) find that in the OECD countries, robust labour market institutions contribute to equalising incomes. We find similar evidence in Dafermos and Papatheodorou (2013) suggesting that resilient institutions for social protection and labour market regulation are critical for a fairer income distribution in the European Union.

### 2.4. Brief literature survey: The role of good governance for FDI inflows to Africa

The rationale for investigating the moderating role of governance in the FDI-income inequality relationship is rooted in prior evidence that the degree of governance plays a crucial role in incentivising and sustaining capital inflows. For instance, Gangi and Abdulrazak (2012) report that 3 governance indicators, namely, voice and accountability, government effectiveness, and the rule of law, are giant channels for attracting FDI to Africa. Similarly, Suliman and Mollick (2009) find evidence using the fixed estimator to show that, whereas improvements in political and civil rights enhance FDI inflows, political instability (wars) deters foreign investors in sub-Saharan Africa.

On the contrary, empirical works such as Okafor et al. (2015, 2011) also reveal that stronger democracy and weak structures and frameworks for corruption control hinder FDI flows to Africa. Similarly, Gossel (2017) analysed the impact of democratic capital and democratic rights on FDI flows to 42 SSA countries from 1972 to 2014. The author finds robust evidence that while FDI responds positively to democratic capital in more democratic countries, in less democratic countries, it is the accumulation of democracy that matters. Contrary to Suliman and Mollick (2009), Onyeiwu and Shrestha (2004) find that political rights are ineffective in incentivising FDI flows to Africa.

The empirical literature survey thus far shows that researchers have not explored whether China FDI deepens or reduces income inequality in Africa. Also, despite giant gains made by countries such as South Africa, Botswana, Mauritius, Cape Verde and Lesotho in various facets of governance, as is apparent in Figure A.1 in the Appendix, there is no literature on whether these developments matter in moderating the effect of Chinese FDI on income inequality in Africa.

## 3. Data and methods

### 3.1. Data

This study employs a macro-panel comprising 48 African economies<sup>4</sup> for the period 1996–2020 for the empirical analysis. For our main income inequality variable, we opt for the Palma ratio, since it captures the tails in the distribution of incomes across a given population (Lahoti et al., 2016). We mine data on the Palma ratio from the Global Consumption and Income Project (Lahoti et al., 2016) and the World Income Inequality Database (UNU-WIDER 2021). To evaluate the robustness of our estimates on the Palma ratio, we use the net Gini index as an alternative measure of income inequality. The Gini index is sourced from the Standardised World Income Inequality Database (Solt, 2022). Our main variable of interest is China FDI, proxied by the monetary value of Chinese FDI (US\$) to African Countries. As articulated in the preceding sections, we keep tabs on Chinese FDI as its inflow to African countries has been a significant component of overall FDI. Besides, with the implementation of the AfCFTA and the finalisation of Africa's investment protocol, grounds are fertile for market-seeking, efficiency-seeking, strategic asset-seeking, and resource-seeking foreign investors, key of which are Chinese investors, to invest in Africa. For our second variable of interest, we consider 6 governance indicators— *the rule of law, control of corruption, regulatory quality, governance effectiveness, political stability, and voice and*

<sup>4</sup> The countries are: Algeria, Angola, Benin, Botswana, Burkina Faso, Burundi, Cabo Verde, Cameroon, Central African Republic, Chad, Comoros, Congo Dem. Rep, Congo Rep, Cote d'Ivoire, Djibouti, Egypt, Arab Rep, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mauritius, Morocco, Mozambique, Namibia, Niger, Nigeria, Rwanda, São Tomè and Príncipe, Senegal, Seychelles, Sierra Leone, South Africa, Sudan, Tanzania, Togo, Tunisia, Uganda, Zambia, Zimbabwe.

**Table 1**  
Description of the variables and data sources.

Variables	Descriptions	Sources
<b>Outcome variables</b>		
Palma ratio	The ratio of the share of incomes held by the wealthiest 10% of the population to that of the poorest 40%.	GCIP/WIID
Gini index (net)	The distribution of incomes among individuals in a population (0 = perfect equality; 1 = perfect inequality)	SWIID
<b>Variables of interest</b>		
China FDI	China's outward FDI to Africa (US\$)	MOFCOM
Control of corruption	Captures perceptions of the public on the extent to which public power is exercised for private gain, including petty and grand forms of corruption and state "capture" by elites and private interests (estimate)	WGI
Government effectiveness	Perception of the effectiveness of governments in managing and introducing policies aimed at economic growth and development (estimate)	WGI
Political stability	Measures perceptions of the likelihood of political instability and/or politically-motivated violence, including terrorism.	WGI
Voice and accountability	Captures perceptions of the extent to which a country's citizens can participate in selecting their government, as well as freedom of expression, association, and free media.	WGI
Rule of law	Captures perceptions of the extent to which agents have confidence in and abide by the rules of society, and, in particular, the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence	WGI
Regulatory quality	Captures perceptions of the government's ability to formulate and implement sound policies and regulations that permit and promote private sector development.	WGI
<b>Control variables</b>		
Economic growth	Real GDP per capita (US\$' 2017 PPP)	WDI
Economic growth square	Square of Real GDP per capita (US\$' 2017 PPP)	WDI
Human capital	Composite index for years of schooling and returns to education	PWT
Urbanisation	The number of persons residing in an area classified as "urban" per 100 total population (% total population).	WDI
Trade openness	Sum of export and import (% GDP)	WDI

Note: WDI is World Development Indicators; GCIP is Global Consumption and Income Project; SWIID is Standardised World Income Inequality Database; WIID is World Income Inequality Database; WGI is World Government Indicator; PWT is Penn World Tables, and MOFCOM is China's Ministry of Commerce

*accountability*, to capture the implications of systems and structures in incentivising and sustaining FDI on the one hand and sharing the gains from FDI on the other hand. All the governance indicators are taken from the World Governance Indicators (Kaufman et al., 2010)

Finally, we control for covariates such as urbanisation, human capital, economic growth, and trade openness. The relevance of these variables in the conditioning information set is captured in what follows. First, we consider human capital per evidence in the extant scholarship that it can foster income inequality in marginalised societies. For instance, Tchamyou (2021) and Sarkodie and Adams (2020) emphasise that investment in human capital could contribute to bridging the skillset and productivity gaps among richer and poorer households. This can, in turn, spur economic growth, innovation and private sector performance, creating room for more durable employment opportunities. Second, we keep tabs on trade openness following the unanimous agreement by African leaders to use trade as a module for reviving the continent's agricultural and industrial sectors. It is a move which could go a long way to boost forward and backward linkages, global value chain participation, foreign exchange, and the creation of durable socio-economic opportunities (Obeng et al., 2022; Adeleye et al., 2021; Xu et al., 2021; Anyanwu et al., 2016). Third, we consider urbanisation against the backdrop that it can fuel income inequality in the developing world as low-skill rural migrants settle for low-wage or precarious jobs for subsistence in urban centres (Adams and Klobodu, 2019; Sulemana et al., 2019). Finally, we pay attention to economic growth in line with the wisdom in the classical growth theory that rising economic growth signifies an increasing capacity of governments and the private sector to create opportunities and foster inclusive growth (see Fosu, 2018; Gyimah-Brempong, 2002). But for the data on human capital, which are taken from the Penn World Tables, all the control variables are sourced from the World Development Indicators (World Bank, 2021). The description of the variables is provided in Table 1.

### 3.2. Estimation strategy

The study draws on the intuition in the modernisation theory that FDI can contribute to shared income growth and distribution (Bernstein, 1971). Additionally, we take cues from the argument that good governance is essential to level the playing field and enable the masses to gain from economic integration (UNDP, 2017; OECD, 2016; World Bank, 2013; Acemoglu and Robinson, 2012; Kaufman et al., 2010). That said, we turn our attention to the specifications of our empirical models. We do so by following prior contributions such as those by Anyanwu et al., (2016) and Kunawotor et al. (2020), where we first specify a baseline model to examine the relationship between income inequality and our control variables, as is apparent in Eq. (1).

$$palma_{it} = \alpha_0 + \delta_1 palma_{it-1} + \beta_1 urban_{it} + \beta_2 trade_{it} + \beta_3 hci_{it} + \beta_4 gpc_{it} + \eta_t + \mu_t + \varepsilon_{it} \quad (1)$$

where *palma* denotes the Palma ratio in country *i* at time *t*; *urban* represents urbanisation; *trade* is trade openness; *hci* is the human



capital index; **gpc** is real GDP per capita. Furthermore, to capture the Kuznets effect considering the level of development of the economies under consideration, we modify Eq. (1) by introducing the square of economic growth in Eq. (1) to obtain Eq. (2):

$$palma_{it} = \alpha_0 + \delta_1 palma_{it-1} + \beta_1 urban_{it} + \beta_2 trade_{it} + \beta_3 hci_{it} + \beta_4 gpc_{it} + \beta_5 gpc_{it}^2 + \eta_i + \mu_t + \varepsilon_{it} \tag{2}$$

To test the effect of China FDI and good governance on income inequality, we modify Eq. 2 as follows:

$$palma_{it} = \alpha_0 + \delta_1 palma_{it-1} + \beta_1 urban_{it} + \beta_2 trade_{it} + \beta_3 hci_{it} + \beta_4 gpc_{it} + \beta_5 gpc_{it}^2 + \beta_6 gov_{it} + \beta_7 cfdi_{it} + \eta_i + \mu_t + \varepsilon_{it}, \tag{3}$$

where **cfdi** is China’s outward FDI to Africa; **gov** is an indicator for the 6 governance modules (i.e., regulatory quality, corruption control, the rule of law, governance effectiveness, political stability, and voice and accountability).<sup>5</sup> Next, in line with our hypothesis on the moderating role of governance quality in the China FDI-income inequality relationship, we introduce six interaction terms for China FDI and the various governance indicators as seen in Eq. 3:

$$palma_{it} = \alpha_0 + \delta_1 palma_{it-1} + \beta_1 urban_{it} + \beta_2 trade_{it} + \beta_3 hci_{it} + \beta_4 gpc_{it} + \beta_5 gpc_{it}^2 + \beta_6 gov_{it} + \beta_7 cfdi_{it} + \beta_8 (gov_{it} \times cfdi_{it}) + \eta_i + \mu_t + \varepsilon_{it} \tag{4}$$

Following Nguyen (2021), Eq. 4 is modified by log-transforming all the variables except for the governance indicators and human capital index to obtain:

$$\ln(palma_{it}) = \alpha_0 + \delta_1 \ln(palma_{it}) + \beta_1 \ln(urban_{it}) + \beta_2 \ln(trade_{it}) + \beta_3 hci_{it} + \beta_4 \ln(gpc_{it}) + \beta_5 \ln(gpc_{it}^2) + \beta_6 gov_{it} + \beta_7 \ln(cfdi_{it}) + \beta_8 (gov_{it} \times \ln(cfdi_{it})) + \eta_i + \mu_t + \varepsilon_{it} \tag{5}$$

where  $\eta_i$  is the unobserved country-specific effect, and  $\mu_{it}$  represents the independent and identically distributed error term. Although in this case, the dynamic ordinary least squares, for instance, can be applied to test our hypotheses, as Stock and Watson (1993) argue, we opt for the Blundell and Bond (1998) approach. The choice of this estimation is explained in what follows. First, the number of countries considered in this study, which is 47, is greater than the period under consideration (i.e.,  $N > T$ ) (see Asongu and Odhiambo, 2020; Ofori and Grechyna, 2021). Second, as prior contributions such as Obeng et al. (2022) and Ofori et al. (2022b) reckon, it is imperative to address the issue of misspecification in shared growth models of this kind by capturing the initial level of inequality. To this end, we introduce the first lag of income inequality to capture the initial level of shared prosperity. This, however, raises endogeneity concerns, since  $palma_{it-1}$  depends on  $\varepsilon_{it-1}$ , which is also a function of the country-specific impact (i.e.,  $\mu_t$ ). According to Roodman (2009), this arises in the first difference estimation as the GMM estimator sweeps away the country-specific effects leading to a correlation between the lag of income inequality and the error terms.

To take care of the aforementioned econometric concerns, Arellano and Bond (1991) and Wooldridge (2010), for instance, proposed that the differenced lagged left-hand variable and the other endogenous covariates are instrumented with their past values. This will mean estimating Eq. (7) via the first-difference GMM estimator, which is also not without limitations. For instance, Ahn and Schmidt (1995) argue that the first-difference GMM estimator does not account for possible information in the level relationship and the relations between the level and the first differences. This arises, since, in the presence of strong endogeneity, the level variables become weak instruments for their first differences.

To mitigate the shortfalls of the first-difference estimator, Blundell and Bond (1998) suggested the system GMM estimator, which estimates the level and first-difference regressions as a system. In this regard, we follow the Blundell and Bond (1998) approach by instrumenting the level equation with the lagged first-differenced covariates and that of the first-differenced estimation with the lagged level variables. As echoed in Windmeijer (2005) and Bond et al., (2021), the two-step system GMM estimator yields asymptotically consistent and reliable estimates (i.e., lower bias and standard errors) compared to the first-difference GMM. Additionally, we follow Roodman (2009) by collapsing the instruments to take care of possible overfitting of the endogenous variables, which, if unresolved, can result in wrong coefficients and confidence intervals.

Accordingly, we follow Asongu and Odhiambo (2019) by transforming Eq. (5) into Eqs. (6) and (7) to capture the level and first-difference specifications, which encapsulate the dynamic system GMM estimation:

$$palma_{it} = \lambda_0 + \delta_1 palma_{it-1} + \beta_1 cfdi_{it} + \beta_2 gov_{it} + \sum_1^5 \theta_k V_{kit-\tau} + \mathcal{A}_i + \mu_t + \varepsilon_{it} \tag{6}$$

$$palma_{it} - palma_{it-\tau} = \delta_1 (palma_{it-\tau} - palma_{it-2\tau}) + \beta_1 (cfdi_{it} - cfdi_{it-\tau}) + \beta_2 (gov_{it} - gov_{it-\tau}) + \beta_3 (cfdi_{it} \times gov_{it} - cfdi_{it-\tau} \times gov_{it-\tau}) + \sum_1^5 \theta_k (V_{kit-\tau} - V_{kit-2\tau}) + (\mu_t - \mu_{it-\tau}) + (\varepsilon_{it} - \varepsilon_{it-\tau}) \tag{7}$$

From Eq. 7, the attendant marginal effect of China FDI on income inequality in the presence of good governance is presented as:

$$\frac{\partial (palma_{it})}{\partial (cfdi_{it})} = \beta_1 + \beta_3 g\bar{ov}_{it} \tag{8}$$

where  $g\bar{ov}$  is the mean score for a given governance module and  $V_k$  is a vector of all the control variables. It is worth noting that the potency of the GMM estimator in yielding robust estimates depends on several post-estimation tests. Following Ofori et al. (2022c,

<sup>5</sup> The governance indicators are introduced into the models step by step.

**Table 2**  
Summary statistics, 1996 – 2020.

Variable	Obs	Mean	Std. Dev.	Minimum	Maximum
<b>Dependent variables</b>					
Gini (net)	724	48.216	6.668	30.4	62.9
Palma ratio	917	6.376	1.768	2.483	21.78
<b>Variables of interest</b>					
China Outward FDI	813	51.264	205.09	-814.91	4807.8
Governance effectiveness	817	-0.680	0.591	-1.848	1.056
Control of corruption	817	-0.583	0.589	-1.562	1.2167
Political stability	817	-0.516	0.862	-2.699	1.200
Regulatory quality	817	-0.625	0.552	-2.236	1.127
Rule of law	817	-0.625	0.601	-1.852	1.077
Voice and accountability	817	-0.522	0.670	-1.841	0.997
<b>Control variables</b>					
Urbanisation	1200	41.254	17.193	7.412	90.092
Trade openness	1112	72.583	42.471	9.955	347.99
Human capital	961	1.7653	0.4292	1.053	2.9388
GDP per capita (US\$)	1191	1784.312	2363.9	102.598	16390.82

Note: Obs is Observation and Std. Dev. is Standard Deviation

2022d), we evaluate the validity of the instrument using Hansen (1982)'s test of over-identification. The Hansen test is premised on the null hypothesis that the set of identified instruments and the residuals are uncorrelated. Hence, the appropriateness of the instruments and thus the robustness of our estimates depend on the failure to reject the null hypothesis. On the other hand, if the null hypothesis is rejected, then the instruments are not robust because the restrictions imposed by relying on the instruments are invalid. Finally, we evaluate the reliability of our estimates based on the post-estimation tests of: (i) whether there is evidence of second-order serial correlation in the residuals or not, (ii) the significance of the interaction terms, and (iii) the Wald test for the overall model significance.

## 4. Presentation and discussion of results

### 4.1. Descriptive statistics and correlation analysis

We begin the presentation of our results by reporting the summary statistics (see Table 2) and the correlations among the variables (see Table A.1 in the Appendix). As is apparent in Table 2, the average income inequality scores measured across the Palma ratio and the net Gini index (%) are 6.376 and 43.612, respectively.

Also, the averages of all the governance variables are negative, denoting the weak institutional fabric of Africa. The data shows that, over the study period, African countries are better in terms of political stability (-0.516) and voice and accountability (-0.522) compared to regulatory quality (-0.625) and governance effectiveness (-0.680). For our variable of interest, China FDI, we find a mean value of US\$ 51.264 billion, which indicates that Chinese investment in Africa has been significant over the study period. Further scrutiny of the data as presented in Figure A.2 shows that Algeria, Angola, Congo D.R., Ethiopia, Ghana, Kenya, Nigeria, South Africa, Zambia and Zimbabwe receive the highest Chinese FDI. On the contrary, countries such as Burkina Faso, Cabo Verde, Comoros and Malawi record low China FDI.

As our empirical results suggest, improving governance quality in Africa can be an incentive not only for attracting China FDI but also for safeguarding investments, providing durable jobs and addressing the continent's marked income inequality, as shown in Fig. 1.

### 4.2. Results on the effect of China FDI and governance quality on income inequality

This section presents and discusses our results regarding the effect of China FDI and good governance on income inequality (i.e., the Palma ratio). We precede the presentation of our main results by examining the effects of the control variables on income inequality. From the baseline results in Column 1 of Table 3, we find that the lag of the Palma ratio is positive and statistically significant, which suggests that inequality persists in Africa. Similar results were found by Kunawotor et al. (2020), who also used the GMM estimator to examine the determinants of income inequality in Africa. We also find a positive and significant effect of urbanisation, signifying that it exacerbates income inequality in Africa. This result could be explained by the marked disparities in socioeconomic opportunities and social services, namely education, communication networks and hospitals, across Africa's rural and urban divide. Against the backdrop that it is mostly unskilled individuals who migrate from rural areas to urban centres in search of economic opportunities, the result is not far-fetched. Our finding corroborates that of Sulemana et al. (2019), who show that urbanisation contributes to the widening of the income disparity gap in Africa.

Similarly, the effect of economic integration, proxied by trade openness, on income inequality is positive and statistically significant. This suggests that economic integration pacts such as the current AfCFTA are not an end in achieving equitable income distribution. The result, therefore, signifies that if the envisaged impact of the AfCFTA, which is to lift 30 million people out of

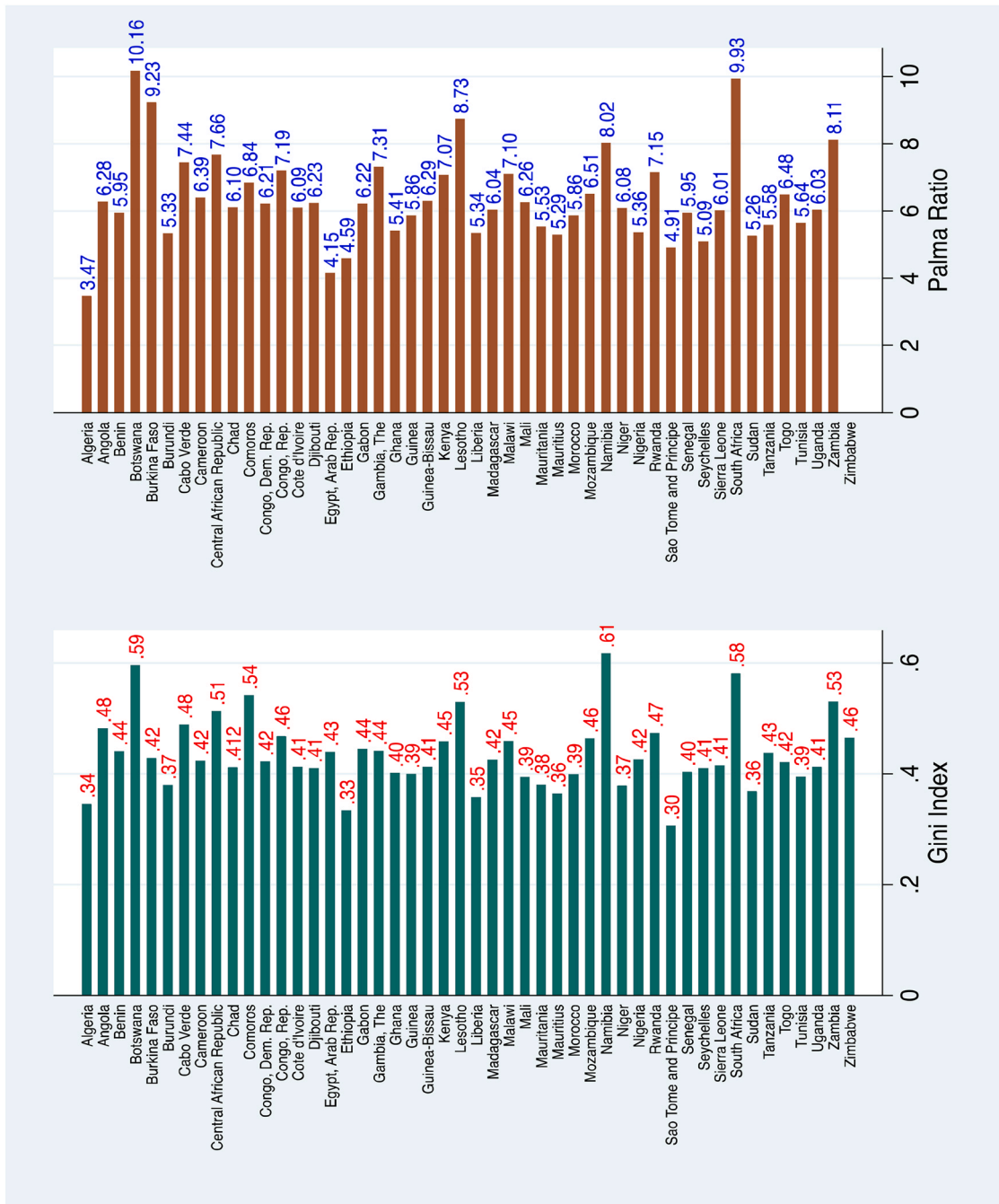


Fig. 1. Average in-country China outward FDI and income inequality in Africa, 1996–2020.



**Table 3**  
GMM results for the joint effect of China's outward FDI and governance quality on income inequality in Africa (Depend variable: Palma ratio).

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Urbanisation	0.0052*** (0.0012)	-0.0039*** (0.0006)	-0.0067*** (0.0016)	-0.0058*** (0.0009)	-0.0051*** (0.0009)	-0.0050*** (0.0009)	-0.0045*** (0.0010)	-0.0052*** (0.0019)	-0.0042*** (0.0010)	-0.0046*** (0.0012)	-0.0043*** (0.0009)	-0.0025* (0.0013)	-0.0025* (0.0013)	-0.0040*** (0.0008)
Trade openness	0.0017*** (0.0002)	-0.0001 (0.0002)	0.0007*** (0.0002)	0.0003 (0.0002)	-0.0003*** (0.0001)	0.0004 (0.0002)	0.0002 (0.0003)	0.0003 (0.0002)	-0.0003* (0.0004)	-0.0003* (0.0002)	-0.0001 (0.0002)	-0.0002 (0.0003)	-0.0007** (0.0003)	0.0000 (0.0001)
Human capital	0.0001*** (0.0000)	-0.0001 (0.0000)	-0.0001*** (0.0000)	-0.0001*** (0.0000)	-0.0001*** (0.0000)	-0.0001*** (0.0000)	-0.0001*** (0.0000)	-0.0001*** (0.0000)	-0.0001*** (0.0000)	-0.0001*** (0.0000)	-0.0001*** (0.0000)	-0.0001*** (0.0000)	-0.0001*** (0.0000)	-0.0001 (0.0000)
Economic growth	-0.0001*** (0.0000)	0.0001 (0.0000)	0.0001*** (0.0000)	-0.0001*** (0.0000)	0.0001 (0.0000)	-0.0001 (0.0000)	0.0001*** (0.0000)	-0.0001 (0.0000)	0.0001*** (0.0000)	-0.0001 (0.0000)	0.0001*** (0.0000)	0.0001*** (0.0000)	0.0001*** (0.0000)	-0.0001*** (0.0000)
Economic growth square	-0.0240*** (0.0037)	-0.0313*** (0.0068)	-0.0004 (0.0115)	0.0075 (0.0072)	-0.0176*** (0.0028)	-0.0059 (0.0058)	-0.0476*** (0.0048)	-0.0055 (0.0075)	-0.0266** (0.0123)	-0.0065 (0.0070)	-0.0168* (0.0087)	-0.0191** (0.0087)	-0.0279*** (0.0037)	-0.0048*** (0.0023)
China FDI	-0.0004*** (0.0000)	-0.0004*** (0.0000)	-0.2615*** (0.0402)	-0.4159*** (0.0384)	-0.0037 (0.0090)	-0.0627*** (0.0181)	-0.1314*** (0.0289)	-0.0002*** (0.0000)	-0.0004*** (0.0000)	-0.0002*** (0.0000)	-0.0002*** (0.0000)	-0.0002*** (0.0000)	-0.0005*** (0.0000)	-0.0001*** (0.0000)
Control of corruption (CC)														
Rule of law (RL)														
Government effectiveness (GE)														
Regulatory quality (RQ)														
Political stability (PS)														
Voice and accountability (VA)														
CC × China FDI														
RL × China FDI														
GE × China FDI														
RQ × China FDI														
PS × China FDI														
VA × China FDI														
Palma ratio (-1)	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Constant	0.8812*** (0.0797)	0.2989*** (0.0909)	-0.6589*** (0.1216)	-0.3457*** (0.0942)	0.0000 (0.0000)	-0.2946*** (0.0814)	0.0000 (0.0000)	-0.2541** (0.0956)	-0.2739 (0.1753)	0.0395 (0.0926)	0.0247 (0.1068)	0.0437 (0.1241)	0.0001 (0.0000)	0.0001 (0.0000)
Time Effect	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	713	491	529	529	529	529	529	529	491	491	491	491	491	491
Thresholds	na	na	na	na	na	na	na	na	0.8	0.4	0.4	0.4	0.5	0.1
Net Effect	na	na	na	na	na	na	na	na	-0.0007	-0.001	-0.0005	-0.0005	-0.001	-0.0005
Joint Significance Test	na	na	na	na	na	na	na	na	25.570***	632.77***	374.36***	588.83***	181.05***	272.44***
Statistic														
Joint Significance P-Value	na	na	na	na	na	na	na	na	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

(continued on next page)

Table 3 (continued)

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Countries	40	40	40	40	40	40	40	40	40	40	40	40	40	40
Instruments	40	39	40	40	40	40	40	40	39	39	39	39	39	39
Fisher Statistic	3.900e +10***	1.380e +11***	168271***	1.670e +11***	3.480e +11***	1.700e +11***	1.28286***	979461***	5.990e +10***	244958***	1.100e +10***	1.850e +10***	104881***	5.250e+10***
Fisher P-value	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Hansen P-Value	0.452	0.445	0.620	0.346	0.105	0.411	0.501	0.381	0.255	0.448	0.382	0.365	0.715	0.292
AR(1)	0.033	0.078	0.104	0.102	0.102	0.102	0.103	0.102	0.078	0.069	0.076	0.074	0.056	0.068
AR(2)	0.697	0.311	0.184	0.221	0.220	0.223	0.205	0.223	0.276	0.331	0.320	0.325	0.323	0.340

Notes: Standard errors in parentheses | \*\*\*p < 0.01, \*\* p < 0.05, \*p < 0.1

extreme poverty and equalising incomes, is to be achieved, then factors such as governance might need attention. This corroborates the findings of Xu et al. (2021) and Anyanwu et al. (2016), who argue that trade openness heightens income inequality due to skillset mismatch and weak economic freedom.

Albeit a modest effect, we find strong empirical evidence that human capital drives income inequality upward in Africa. The magnitude of the coefficient implies that a per cent increase in human capital development contributes to the worsening of income inequality by a modest 0.0001 per cent. This is plausible because low-paying informal jobs, which are widespread across Africa, can deepen the income growth gap between the skilled and the unskilled. Our finding is consistent with Xu et al. (2021), who found a positive relationship between education and income inequality in 38 sub-Saharan African countries from 2000 to 2015.

Interestingly, both economic development and its square report significant income inequality-inducing effects. This result is at variance with the Kuznets (1955) hypothesis signifying that with appropriate systems and structures, African countries can leapfrog the theorised unequal growth trajectories characteristic of countries in their stage of development. This could be attributed to the fact that many stakeholders have implemented policies that can foster inclusive growth, and even more so considering efforts by African countries to enhance access to physical and digital infrastructure and broaden the coverage of fiscal and social redistribution (see Lustig et al., 2019; Mutiiria et al., 2020; Lufumpa et al., 2017).

In line with the first objective of this study, we turn our attention to the unconditional effects of China FDI and governance quality on income inequality in Africa (see columns 2–8). For the former, the result suggests that for every 1 per cent increase in the inflow of China FDI to Africa, income inequality decreases by a modest 0.0004 per cent. This empirically underscores the World Bank (2013) report that China's outward FDI has contributed to Africa's export diversification drive and growth. In particular, market- and resource-seeking Chinese investors have taken advantage of the African Growth Opportunities Act by investing massively in Africa's manufacturing and extractive sectors, especially in Ethiopia, Lesotho and South Africa (Kaplinsky and Morris, 2016). These investments, which are channelled mainly into the textile, shoemaking, and food and beverage subsectors, create stable economic opportunities for the masses.

Also, we find evidence that all our governance dynamics matter for bridging the income gap in Africa. The results indicate that regulatory quality (−0.08), control of corruption (−0.26) and political stability (−0.17) are key to promoting fairer income distribution in Africa. The essence of robust structures for corruption control rests on the argument that corruption saps African countries' resources which could otherwise have been used to mount social equity programmes and build systems to ease socio-economic hardships (Kunawotor et al., 2020; Adams and Klobodu, 2016). Additionally, addressing the continent's ever-lingering challenges of socio-political unrest could be a giant step toward enhancing investor confidence and sustaining foreign investments to contribute to the equalisation of incomes. This is more so considering the rise in successful and failed coup d'état attempts in Africa to 6 in 2021 alone.<sup>6</sup>

We now focus on our second objective, where we examine the combined effects of China FDI and good governance on income inequality (Columns 9–14). The uniqueness of this study is that we find strong empirical evidence to show that all 6 governance dynamics matter for moderating the effect of China FDI on income inequality. For instance, following Eq. (8), we calculate the net effect of China FDI and corruption control as:

$$\frac{\partial(\text{palma}_{it})}{\partial(\text{cfdi}_{it})} = \beta_1 + \beta_3 g \bar{v}_{it} = (-0.0004) + [(0.0005) \times (-0.583)] = -0.0007,$$

where −0.583 is the mean value of control of corruption; −0.0004 is the unconditional effect of China FDI, and 0.0005 is the conditional effect of China FDI on income inequality. Likewise, we calculate a net impact of −0.001 for the interaction between political stability and China FDI. This is calculated as:

$$\frac{\partial(\text{palma}_{it})}{\partial(\text{cfdi}_{it})} = \beta_1 + \beta_3 g \bar{v}_{it} = (-0.0005) + [(0.001) \times (-0.516)] = -0.001,$$

where the average political stability score is −0.516, and the direct and indirect effects of China FDI are −0.0005 and 0.001, respectively. Following similar computations, we report a partial effect of −0.001 for the rule of law pathways. The remaining governance pathways—regulatory quality, governance effectiveness, voice and accountability, also reveal similar partial effects (i.e., −0.0005). As captured succinctly in UNCTAD (2019), the improvement in democratic practices and national security not only sustains FDI but builds investor confidence, which could attract new investors. This is more so because foreign investors substituted North Africa and West Africa for Southern Africa following the Arab Spring and the rise in Jihadist groups in Northern Nigeria, Niger, Burkina Faso and Mali since 2011.

In the same vein, government effectiveness and regulatory quality, which are vital components of economic freedom, could reduce income inequality by creating an enabling business environment for the masses to benefit from China FDI. This could be through the creation of forward and backward linkages that could drive the revival of the continent's agricultural and industrial sectors, creating demand for skilled and unskilled labour. Finally, effective voice and accountability is also imperative to ensure that FDI and FDI-related gains are shared equitably. This is also relevant to shape public interest in ensuring that environment-friendly production practices, which are crucial for sustainable income growth and distribution in agriculture predominant settings like Africa, are adhered to by foreign investors.

<sup>6</sup> <https://www.bbc.com/news/world-africa-46783600>

**Table 4**  
GMM results for the joint effect of China's outward FDI and governance quality on income inequality in Africa (Depend variable: Net Gini index).

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Urbanisation	-0.0308 *** (0.0035)	-0.0135 *** (0.0033)	0.0360 *** (0.0029)	0.0207 *** (0.0023)	-0.0385 *** (0.0046)	-0.0365 *** (0.0048)	-0.0115 ** (0.0052)	0.0032 (0.0021)	-0.0055 (0.0051)	-0.0176 *** (0.0042)	-0.0202 *** (0.0036)	-0.0130 *** (0.0043)	-0.0094 ** (0.0040)	-0.0140 *** (0.0043)
Trade openness	0.0016 *** (0.0005)	0.0018 *** (0.0004)	0.0040 *** (0.0003)	0.0059 *** (0.0003)	0.0041 *** (0.0004)	0.0046 *** (0.0005)	0.0084 *** (0.0008)	0.0076 *** (0.0004)	0.0007 (0.0005)	0.0009 * (0.0005)	0.0019 *** (0.0005)	0.0027 *** (0.0005)	0.0003 (0.0006)	0.0008 * (0.0004)
Human capital	-0.0001 *** (0.0000)	0.0001 *** (0.0000)	0.0001 *** (0.0000)	0.0001 *** (0.0000)	-0.0001 *** (0.0000)	-0.0001 *** (0.0000)	0.0001 *** (0.0000)	0.0001 *** (0.0000)	-0.0001 *** (0.0000)	-0.0001 *** (0.0000)	-0.0001 *** (0.0000)	0.0001 *** (0.0000)	0.0001 *** (0.0000)	-0.0001 * (0.0000)
Economic growth	-0.0002 *** (0.0000)	0.0001 *** (0.0000)	0.0001 *** (0.0000)	0.0001 *** (0.0000)	-0.0001 *** (0.0000)	-0.0003 *** (0.0000)	-0.0001 *** (0.0000)	0.0001 *** (0.0000)	0.0001 *** (0.0000)	0.0001 *** (0.0000)	-0.0001 *** (0.0000)	-0.0001 *** (0.0000)	0.0001 *** (0.0000)	0.0001 *** (0.0000)
Economic growth square	0.2920 *** (0.0185)	-0.0092 (0.0000)	-0.2358 *** (0.0140)	-0.2165 *** (0.0123)	0.2940 *** (0.0330)	0.3713 *** (0.0550)	0.0070 (0.0094)	-0.1454 *** (0.0114)	-0.0191 (0.0283)	0.0229 (0.0238)	0.0564 *** (0.0231)	0.0195 (0.0257)	0.0010 (0.0214)	0.0071 (0.0228)
China FDI		-0.0002 *** (0.0000)												
Control of corruption (CC)			-0.2911 *** (0.0382)											
Rule of law (RL)				-0.0078 (0.0146)										
Government effectiveness (GE)					-0.3188 *** (0.0374)						0.0851 * (0.0439)			
Regulatory quality (RQ)						0.3880 *** (0.0431)						0.1374 * (0.0753)		
Political stability (PS)							0.3389 *** (0.0666)						-0.0429 (0.0382)	
Voice and accountability (VA)								0.0739 * (0.0371)						-0.1025 ** (0.0487)
CC × China FDI									0.0001 (0.0003)					
RL × China FDI										0.0003 (0.0002)				
GE × China FDI											0.0001 (0.0002)			
RQ × China FDI												-0.0006 *** (0.0002)		
PS × China FDI													0.0006 *** (0.0001)	
VA × China FDI														0.0004 ** (0.0002)
Net Gini index (-1)	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Constant	-4.1129 *** (0.1309)	0.0000 (0.0000)	0.0000 (0.0000)	0.0000 (0.0000)	-4.6369 *** (0.2847)	-3.9093 *** (0.4339)	0.0000 (0.0000)	0.0000 (0.0000)	0.0000 (0.0000)	0.0000 (0.0000)	0.0000 (0.0000)	0.0000 (0.0000)	0.0000 (0.0000)	0.0000 (0.0000)
Time Effect	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

(continued on next page)

Table 4 (continued)

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Observations	566	386	416	416	416	416	416	416	386	386	386	386	386	386
Net Effect	na	na	na	na	na	na	na	na	-	-	-	-	-0.0004	-0.0005
Joint Significance	na	na	na	na	na	na	na	na	-	-	-	-	17.440***	5.730***
Test Statistic														
Joint Significance	na	na	na	na	na	na	na	na	-	-	-	-	0.0002	0.0216
P-Value														
Countries	40	40	40	40	40	40	40	40	40	40	40	40	40	40
Instruments	40	38	39	39	39	39	39	39	38	38	38	38	38	38
Fisher Statistic	2.340e + 12***	2.030e + 12***	6.140e + 12***	4.470e + 12***	2.230e + 12***	1.320e + 12***	2.330e + 12***	5.500e + 12***	1.920e + 12***	1.170e + 12***	9.760e + 11***	1.020e + 12***	2.040e + 12***	1.480e + 12***
Wald P-value	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Hansen P-Value	0.949	0.903	0.979	0.980	0.982	0.979	0.980	0.978	0.863	0.853	0.847	0.868	0.864	0.856
AR(1)	0.019	0.031	0.032	0.031	0.031	0.031	0.031	0.032	0.032	0.032	0.032	0.032	0.032	0.032
AR(2)	0.198	0.634	0.339	0.357	0.545	0.149	0.211	0.302	0.513	0.448	0.621	0.190	0.370	0.475

Notes: Standard errors in parentheses; \*\*\* p < 0.01, \*\* p < 0.05, \* p < 0.1



### 4.3. Robustness checks

In this section, we evaluate the robustness of our estimates on the Palma ratio by using the net Gini index as an alternative measure of income inequality. Concerning the results for our control variables, as reported in Column 1 of Table 4, the results are similar to the Palma ratio results. For instance, while trade openness heightens income inequality in Africa (0.016%), human capital and economic growth report marginal effects of  $-0.0001$  per cent and  $-0.0002$  per cent, respectively.

We shift our attention to the premier objective of this study, and find that China FDI unconditionally contributes to bridging the continent's income inequality gap. As we see in the Palma ratio results, the effect of China FDI on income inequality in Africa is modest ( $-0.0002$ ), suggesting that more significant income equality dividends could be achieved if incentives for attracting inflows are enhanced.

Regarding the effect of our governance indicators on income inequality, we find that governance effectiveness, the rule of law and control of corruption are key. The results make sense in that these governance modules are crucial for boosting, safeguarding and sharing FDI and FDI-related gains. We next turn our attention to objective two of the study, where we find that only the governance modules of political stability and voice and accountability are relevant to forming synergies with China FDI for equitable income distribution in Africa. This result can be explained as follows. First, it might be attributed to the insufficiency of the Gini index to capture the tails income distribution in a given population. The computation of the net effects of the political stability-China FDI interaction term yields  $-0.0004$ , which is obtained by engaging the mean political stability score of  $-0.516$ ; the unconditional effect of China FDI of  $-0.0001$ , and  $0.0006$  as the conditional effect of China outward FDI.

$$\frac{\partial(\text{gini}_{it})}{\partial(\text{cfdi}_{it})} = \beta_7 + \beta_7 g \bar{v}_{it} = (-0.0001) + [(0.0006) \times (-0.516)] = -0.0004$$

Similarly, for the accountability and China FDI pathway, we find a marginal effect of  $-0.0005$ , taking into account the average accountability score of  $-0.522$ ; the direct ( $-0.0001$ ) and indirect ( $0.0007$ ) effects of China FDI on income inequality in Africa.

$$\frac{\partial(\text{gini}_{it})}{\partial(\text{cfdi}_{it})} = \beta_7 + \beta_7 g \bar{v}_{it} = (-0.0003) + [(0.0004) \times (-0.522)] = -0.0005$$

Overall, there is convincing evidence that although China FDI is directly and indirectly effective in reducing income inequality in Africa, the effects are weak. Second, the evidence indicates that mechanisms aimed at stabilising African countries and ensuring that resources count for all are key governance modules that propel China FDI contribute to income equality in Africa.

### 4.4. Further discussion of results and policy implications through threshold analysis

So far, two key findings stand out regarding our first two objectives. Regarding the first objective, there is strong evidence that although China FDI matters for the equalisation of incomes in Africa, the effect is weak. This confirms that China FDI has been flowing into highly technical sectors such as the telecommunication, extractive and transportation industries (Cornia and Martorano, 2012; UNCTAD, 2016). In settings where exogenous developments such as the inflow of FDI do not automatically translate into shared opportunities as endogenous growth theory suggests, the systems, structures and frameworks of the receiving economies have two key roles to play. The first is the direct role captured in our first hypothesis, where we find that all our governance dynamics — economic, political and institutional — are crucial for moving African countries towards an equitable income distribution path. This result brings us to the indirect role of institutions for repacking or propelling China FDI to promote income equality. Overall, the evidence suggests that for China FDI to help bridge Africa's high income disparity gap, care has to be taken to address the continent's geopolitical fragility and protecting and safeguarding investors. Additionally, institutional frameworks for protecting the public purse, sharing the gains from FDI, providing the public good, and deepening the voices of the masses in governance are also crucial.

While our results on Objectives 1 and 2 can trigger relevant policy actions, we compute thresholds at which improving the various governance dynamics is necessary for engendering positive complementarities with other income inequality-reducing modules to equalise incomes in Africa. Since the Palma ratio is our headline income inequality indicator, we calculate our thresholds based on the estimates in Table 3. In light of the above, we proceed by computing the critical mass for corruption control in column 9 of Table 3. With the joint effect of corruption control and China FDI on income inequality being  $0.0005$  (Column 9) and the unconditional effect of China FDI being  $0.0004$  (absolute), a threshold score of  $0.8$  is obtained. This is calculated as:

$$\text{Threshold corruption-control (Column 9)} = 0.0004/0.0005 = 0.8 \text{ (score).}$$

Our result suggests that above a threshold of  $0.8$ , corruption control should be complemented with other favourable income inequality-reducing modules to reduce income inequality in Africa. Following the same narrative, governance thresholds for political stability, regulatory quality, the rule of law, governance effectiveness, and voice and accountability are computed. These attendant critical masses are reported in what follows:

$$\text{Threshold for Rule of law (Column 10)} = 0.0004/0.001 = 0.4 \text{ (score).}$$

$$\text{Threshold for Government effectiveness (Column 11)} = 0.0002/0.0005 = 0.4 \text{ (score).}$$

$$\text{Threshold for Regulatory quality (Column 12)} = 0.0002/0.0005 = 0.4 \text{ (score).}$$

$$\text{Threshold for Political stability (Column 13)} = 0.0005/0.001 = 0.5 \text{ (score).}$$

Threshold for Voice and accountability (Column 14) =  $0.0001/0.0007 = 0.1$  (score).

Overall, we find that for African countries to repackage China FDI towards income equality in Africa, more effort is needed to develop the continent's frameworks for fighting corruption and voice and accountability. Although vis-à-vis the other critical masses, those for corruption control, political stability, and voice and accountability require greater resource allocation, they connote the most crucial modules for propelling capital flows to contribute to income equality. However, the optimism with these findings is that, both from an economic and a resource perspective, these computed thresholds are achievable, since they fall within the minimum and maximum values reported in [Table 2](#). In other words, the computed governance thresholds have economic meaning and policy relevance because they are situated within their respective statistical ranges disclosed in the summary statistics.

## 5. Conclusion and policy recommendations

This study contributes to the debate on the need for African leaders to foster equitable income distribution in the light of achieving the United Nations' SDG 10 and Aspiration 1 of Africa's Agenda 2063. The study is premised on three key objectives. First, we investigated whether the remarkable inflow of Chinese FDI to Africa and good governance matter for bridging the continent's marked income inequality gap. Second, we analysed whether Africa's institutional fabric interacts with China's FDI towards the equalisation of income in Africa. Third, we computed the threshold levels necessary for the various governance indicators to get China FDI to equalise incomes in Africa. To this end, we used annual data spanning the period between 1996 and 2020 for 48 African countries for the analysis.

We provided evidence from the two-step system GMM estimator to affirm our hypotheses. In particular, we found that although China FDI reduces income inequality in Africa, the effect is modest. Additionally, the results reveal that institutional mechanisms for ensuring political stability, low corruption, and voice and accountability are remarkable for amplifying the income inequality-reducing effect of China FDI. Finally, we found that of all the governance modules, more effort is required in the fight against corruption and for political stability, considering their respective critical masses of 0.8 and 0.5. These critical masses are the thresholds at which governance is necessary but no longer sufficient to complement Chinese FDI to mitigate income inequality. Hence, at the attendant thresholds, complementary policies are worthwhile.

Our policy recommendations follow. First, for African leaders to take advantage of the AfCFTA to equalise incomes, we recommend that concerted efforts are made to support foreign investors and the continent's private sector to build the capacity to deepen indigenous upstream and downstream linkages. Also, considering the relevance of regulatory quality and governance effectiveness in the China FDI-income inequality relationship, we recommend that policymakers invest massively in building systems and structures that improve the cost-risk relation of doing business in Africa. This could be achieved if attention is focussed on improving the continent's infrastructure, particularly transport and energy, which are essential to support sustainable private sector growth and employment creation. This could also be enhanced if Africa's development partners, such as the World Bank and the Africa Development Bank, provide logistical and financial support for the course. Finally, African leaders should adhere to democratic practices, including respect for constitutional arrangements and public interest, while enhancing efforts to improve the fight against corruption. This could go a long way in building public confidence and self-esteem, which is essential to address public discontent and social unrest.

A drawback to this study is that we do not consider all African countries due to data limitations, which are marked in countries such as South Sudan, Somalia and Zimbabwe. We also do not investigate whether the FDI and governance interactions matter for reducing poverty. Besides, we do not test whether good governance plays a role in determining the flow/stock of China FDI to Africa. We leave these topics for future study.

## Declaration

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## Appendix

See [Figs. A.1 and A.2](#).

See [Table A.1](#).

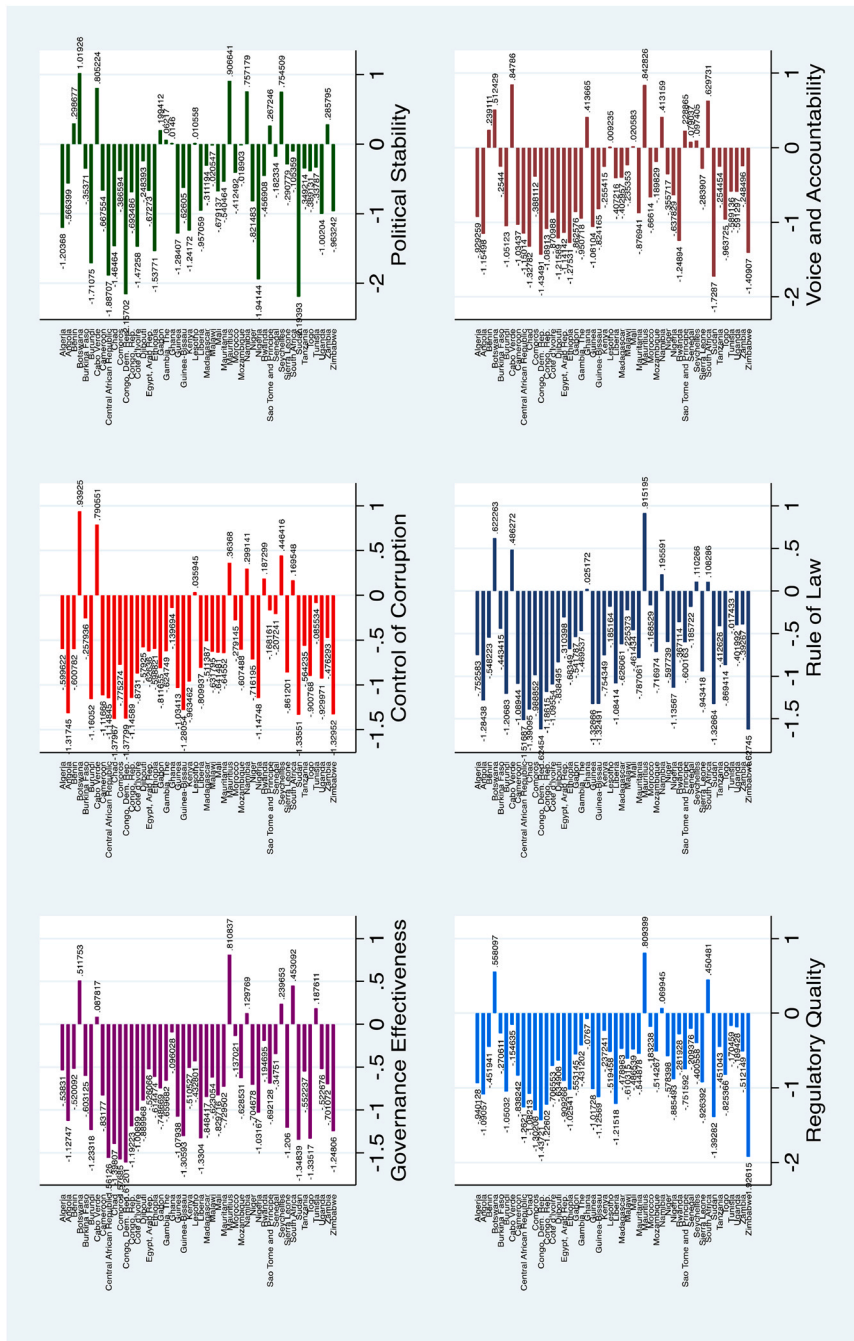


Fig. A.1. In-country average governance quality in Africa, 1996 – 2020.

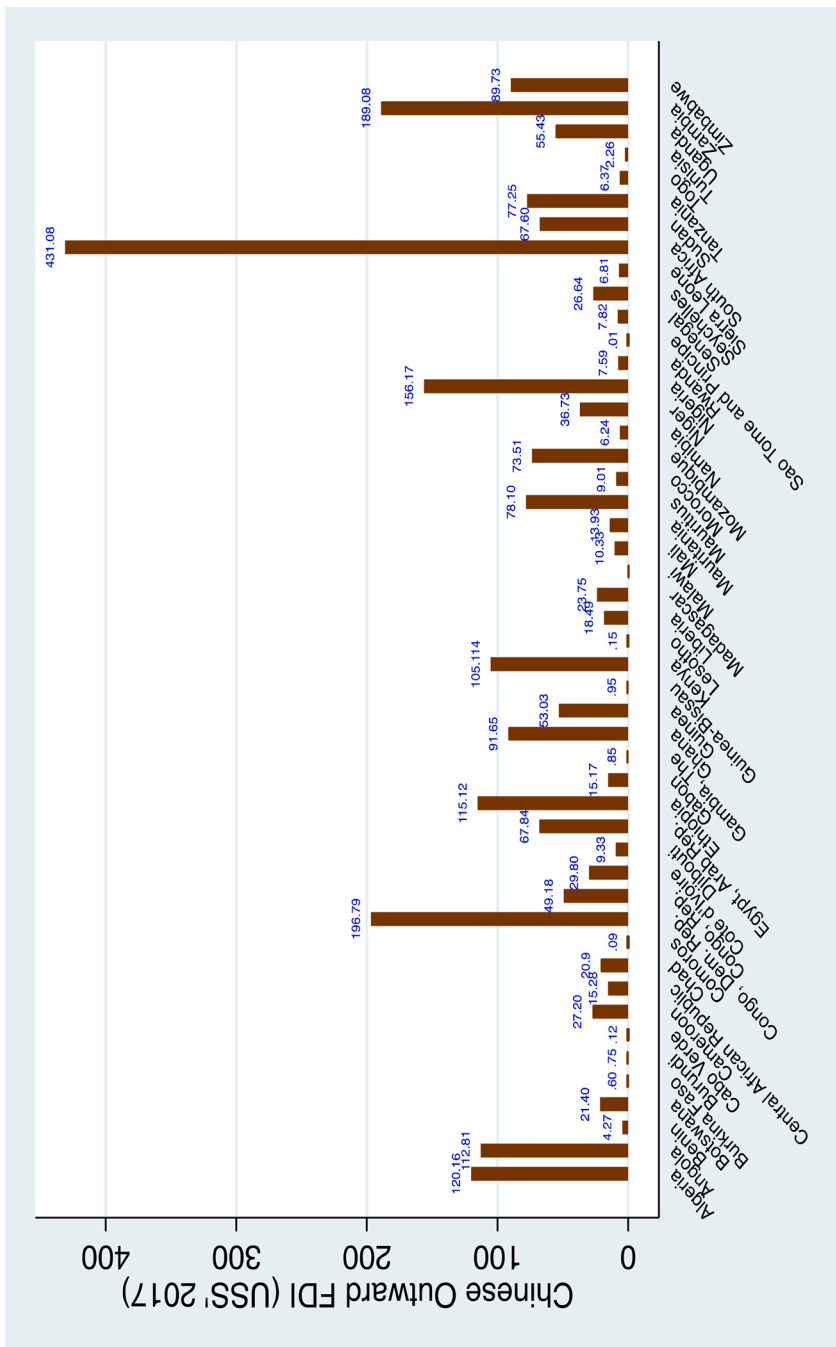


Fig. A.2. Inflow of Chinese FDI to Africa, 1996–2020.

**Table A.1**  
Correlation matrix.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
(1) Gini (net)	1													
(2) Palma ratio		1								0.717***				
(3) Urbanisation			1							0.116*	0.0180	1		
(4) Trade openness				1						0.0938	0.113	0.335***	1	
(5) Industrialisation					1					0.236***	0.0203	0.483***	0.134*	1
(6) Human capital						1				0.0159	0.0430	-0.113	0.122*	-0.184**
(7) GDP per capita							1			0.312***	0.0941	0.654***	0.302***	0.564***
(8) China Outward FDI								1		-0.0261	-0.114	0.105	-0.0784	0.143*
(9) Governance effectiveness									1	0.209***	1			
(10) Control of corruption										0.315***	0.213***	0.149*	0.0656	0.138*
(11) Political stability										0.592***	-0.0478	1		
(12) Regulatory quality										0.426***	0.306***	0.150*	0.181**	0.0525
(13) Rule of law										0.519***	-0.0192	0.887***	1	
(14) Voice accountability										0.471***	0.309***	0.190**	0.265***	0.0207
										0.382***	-0.137*	0.663***	0.727***	1
										0.332***	0.329***	0.0920	0.0824	0.0280
										0.489***	-0.0846	0.893***	0.833***	0.663***
										0.288***	0.165**	0.0926	0.159**	0.0647
										0.508***	-0.0348	0.918***	0.890***	0.768***
										0.345***	0.294***	0.117*	0.185**	-0.118*
										0.337***	-0.0346	0.693***	0.704***	0.742***
										0.763***	1			

\*  $p < 0.05$ ,\*\*  $p < 0.01$ ,\*\*\*  $p < 0.001$ 

## References

- Acemoglu, D. and Robinson, J.A. (2012). Why nations fail: The origins of power, prosperity, and poverty. Currency.
- Acemoglu, D., Johnson, S., & Robinson, J. (2004). Institutions as the Fundamental Cause of Long-Run Growth. NBER Working Paper No. 10481.
- Acemoglu, D., Johnson, S., Robinson, J.A., Yared, P., 2008. Income and democracy. *Am. Econ. Rev.* 98 (3), 808–842.
- Acemoglu, D., Robinson, J.A., 2010. Why is Africa poor? *Econ. Hist. Dev. Reg.* 25 (1), 21–50.
- Adams, S., Akobeng, E., 2021. ICT, governance and inequality in Africa. *Telecommun. Policy* 45 (10), 102198.
- Adams, S., Klobodu, E.K.M., 2016. Financial development, control of corruption and income inequality. *Int. Rev. Appl. Econ.* 30 (6), 790–808.
- Adelman, I., Robinson, S., 1989. Income distribution and development. *Handb. Dev. Econ.* 2, 949–1003.
- Adams, S., Klobodu, E.K.M., 2019. Urbanization, economic structure, political regime, and income inequality. *Soc. Indic. Res.* 197, 971–995.
- Adeleye, B.N., Adedoyin, F., Nathaniel, S., 2021. The criticality of ICT-trade nexus on economic and inclusive growth. *Inf. Technol. Dev.* 27 (2), 293–313.
- Adeleye, N., Osabuohien, E., Bowale, E., 2017. The role of institutions in the finance-inequality nexus in Sub-Saharan Africa. *J. Context. Econ.* 137 (1–2), 173–192.
- African Union, 2015. Agenda 2063: Framework document—The Africa We Want. [https://au.int/sites/default/files/documents/33126-doc-01\\_background\\_note.pdf](https://au.int/sites/default/files/documents/33126-doc-01_background_note.pdf).
- Ahn, S., Schmidt, P., 1995. Efficient estimation of models for dynamic panel data. *J. Econ.* 68 (1), 5–27.
- Anyanwu, J.C., 2016. Empirical analysis of the main drivers of income inequality in Southern Africa. *Afr. Dev. Rev.* 17 (2), 337–364.
- Anyanwu, J.C., Erhijakpor, A.E., Obi, E., 2016. Empirical analysis of the key drivers of income inequality in West Africa. *Afr. Dev. Rev.* 28 (1), 18–38.
- Arellano, M., Bond, S., 1991. Some tests of specification for panel data: Monte Carlo evidence and application to employment equations. *Rev. Econ. Stud.* 58 (2), 277–297.
- Asongu, S.A., Odhiambo, N.M., 2020. Foreign direct investment, information technology and economic growth dynamics in Sub-Saharan Africa. *Telecommun. Policy* 44 (1), 101838.
- Asongu, S.A., Odhiambo, N.M., 2019. How enhancing information and communication technology has affected inequality in Africa for sustainable development: an empirical investigation. *Sustain. Dev.* 27 (4), 647–656.
- Atitianti, P.A., Dai, Q., 2021. Does Chinese FDI improve the welfare of Africans? *J. Afr. Bus.* 1–20.
- Batuo, E.M., Asongu, S.A., 2015. The impact of liberalisation policies on income inequality in African countries. *J. Econ. Stud.* 42 (1), 68–100.
- Bicaba, Z., Brixiova, Z., Ncube, M., 2017. Can extreme poverty in Sub-Saharan Africa be eliminated by 2030? *J. Afr. Dev.* 19 (2), 93–110.
- Blundell, R., Bond, S., 1998. Initial conditions and moment restrictions in dynamic panel data models. *J. Econ.* 87, 115–143.
- Bernstein, H., 1971. Modernisation theory and the sociological study of development. *J. Dev. Stud.* 7 (2), 141–160.
- Bond, S.R., Hoeffler, a., Temple, J., 2021. GMM estimation of empirical growth models. Oxford Working Paper Series, University of Oxford No. 2001-W21.



- Bourguignon, F., 2016. Inequality and Globalisation. How the rich get richer as the poor catch up. *Foreign Affairs* 95, 11–16.
- Canh, N.P., Schinckus, C., Thanh, S.D., Hui Ling, F.C., 2020. Effects of the internet, mobile, and land phones on income inequality and The Kuznets curve: cross country analysis. *Telecommun. Policy* 44 (10), 102041. <https://doi.org/10.1016/j.telpol.2020.102041>
- Cornia, G.A. and Martorano, B. (2012). Development policies and income inequality in selected developing regions, 1980–2010 (No. 210). United Nations Conference on Trade and Development.
- Dafermos, Y., Papatheodorou, C., 2013. What drives inequality and poverty in the EU? Exploring the impact of macroeconomic and institutional factors. *Int. Rev. Appl. Econ.* 27 (1), 1–22.
- Feenstra, R.C., Hanson, G.H., 1997. Foreign direct investment and relative wages: evidence from Mexico's maquiladoras. *J. Int. Econ.* 42 (4), 371–393.
- Evans, P., 1976. Beyond Center and Periphery: A Comment on the World System Approach to the Study of Development. *Sociol. Inq.* 49 (4), 15–20.
- Feenstra, R.C., Hanson, G.H., 1996. Globalisation, outsourcing, and wage inequality. *Am. Econ. Rev.* 86 (2), 240–245.
- Fei, J.C., & Ranis, G. (1964). Development of the labor surplus economy; theory and policy. (No. 330 F4).
- Findlay, R., 1978. Relative backwardness, direct foreign investment, and the transfer of technology: a simple dynamic model. *Q. J. Econ.* 92 (1), 1–16.
- Lenski, G.E., 1966. Power and Privilege: A Theory of Social Stratification. McGraw-Hill, New York.
- Fosu, A.K., 2018. Economic structure, growth, and evolution of inequality and poverty in Africa: An overview. *J. Afr. Econ.* 27 (1), 1–9.
- Gangi, Y.A., Abdulrazak, R.S., 2012. The impact of governance on FDI flows to African countries. *World J. Entrep. Manag. Sustain. Dev.* 8 (3), 162–169.
- Girling, R., 2013. Dependency and persistent income inequality. *Struct. Depend* 183–101.
- Gossel, S.J., 2017. Democratic capital, democratic rights and FDI in Sub-Saharan Africa. *J. Int. Dev.* 29 (8), 1033–1061.
- Grossman, G.M., Helpman, E., 1991. Trade, knowledge spillover, and growth. *Eur. Econ. Rev.* 35 (2–3), 517–526. [https://doi.org/10.1016/0014-2921\(91\)90153-A](https://doi.org/10.1016/0014-2921(91)90153-A)
- Gossel, S., 2022. FDI and inequality in Sub-Saharan Africa: does democracy matter? *Int. J. Emerg. Mark.* <https://doi.org/10.1108/IJOEM-03-2021-0321>
- Grossman, G.M., Helpman, E., 1990. Trade, innovation, and growth. *Am. Econ. Rev.* 80 (2), 86–91.
- Gyimah-Brempong, K., 2002. Corruption, economic growth, and income inequality in Africa. *Econ. Gov.* 3 (3), 183–209.
- Hansen, L.P., 1982. Large sample properties of generalized method of moments estimators. *Econometrica: Journal of the Econometric Society* 50 (4), 1029–1054.
- Herzer, D., Hühne, P., Nunnenkamp, P., 2014. FDI and income inequality—evidence from Latin American Economies. *Rev. Dev. Econ.* 18 (4), 778–793.
- Huynh, C.M., 2021. FDI and income inequality: does institutional quality matter? *J. Int. Trade Econ. Dev.* 30 (8), 1231–1243. <https://doi.org/10.1080/09638199.2021.1942164>
- ILO (2020a). COVID-19 Cruelly Highlights Inequalities and Threatens to Deepen Them. ILO Newsroom.
- ILO (2020b). World Economic and Social Outlook Trends – 2020. International Labour Office – Geneva.
- IMF (2020a). World Economic Outlook: A Long and Difficult Ascent. October. Washington, DC, International Monetary Fund.
- Josifidis, K., Supić, N., Beker-Pucar, E., 2017. Institutional quality and income inequality in advanced countries. *Panoeconomicus* 64 (2), 169–188.
- Kaufman, D., Kraay, A., Mastruzzi, M. (2010). The Worldwide Governance Indicators: A Summary of Methodology, Data and Analytical Issues. World Bank Policy Research. *Working Paper*, No. 5430.
- Kaplinsky, R. and Morris, M. (2016). Chinese OFDI in Sub-Saharan Africa. The Power of the Chinese Dragon, (January 2016). <https://doi.org/10.1007/978-1-137-57449-7>.
- Kaulihowa, T., Adjasi, C., 2018. FDI and income inequality in Africa. *Oxf. Dev. Stud.* 46 (2), 250–265.
- Khan, I., Nawaz, Z., 2019. Trade, FDI and income inequality: empirical evidence from CIS. *Int. J. Dev. Issues* 18 (1), 88–108. <https://doi.org/10.1108/IJDI-07-2018-0107>
- Krueger, A.O., 1998. Why trade liberalisation is good for growth. *Econ. J.* 108 (450), 1513–1522.
- Kunawotor, M.E., Bokpin, G.A., Barnor, C., 2020. Drivers of income inequality in Africa: Does institutional quality matter. *Afr. Dev. Rev.* 32 (4), 718–729. <https://doi.org/10.1111/1467-8268.12473>
- Kuznets, S., 1955. Economic growth and income inequality. *Am. Econ. Rev.* 45 (1), 1–28.
- Kuznets, S., 1955. Towards Theory of Economic Growth. National Policy for Economic Welfare at Home and Abroad. Garden City, New York.
- Lahoti, R., Jayadev, A., Reddy, S., 2016. The global consumption and income project (GCIP): an overview. *J. Glob. Dev.* 7 (1), 61–108.
- Lee, C.C., Lee, C.C., Cheng, C.Y., 2022. The impact of FDI on income inequality: evidence from the perspective of financial development. *Int. J. Financ. Econ.* 27 (1), 137–157.
- Lufumpa, C.L., Letsara, N., Saidi, S. (2017). Infrastructure Development Index. Infrastructure in Africa: Lessons for Future Development, African Development Review.
- Lustig, N., Jellema, J., Pabon, V.M. (2019). Leaving No One Behind: Can Tax-Funded Transfer Programs Provide Income Floors in Sub-Saharan Africa? (No. 85). Tulane University, Department of Economics.
- Mihaylova, S., 2015. Foreign direct investment and income inequality in Central and Eastern Europe. *Theor. Appl. Econ.* 22 (2), 23–42.
- Milanovic, B., 2016. Inequality within countries. *Global Inequality: A New Approach for the Age of Globalization*. Harvard University Press, Cambridge, Massachusetts., pp. 1–320.
- Mutiiria, O.M., Ju, Q., Dumor, K., 2020. Infrastructure and inclusive growth in sub-Saharan Africa: an empirical analysis. *Prog. Dev. Stud.* 20 (3), 187–207.
- Nguyen, V.B., 2021. The difference in the FDI inflows – Income inequality relationship between developed and developing countries. *J. Int. Trade Econ. Development* VOL. 30 (NO. 8), 1123–1137. <https://doi.org/10.1080/09638199.2021.1925331>
- North, D.C., 1989. Institutions and economic growth: an historical introduction. *World Dev.* 17 (9), 1319–1332.
- Obeng, C.K., Mwinlaaru, P.Y., Ofori, I.K., 2022. Global value chain participation and inclusive growth in Sub-Saharan Africa. *The Palgrave Handbook of Africa's Economic Sectors*. Palgrave Macmillan, Cham, pp. 815–840.
- OECD, 2016. The Governance of Inclusive Growth. OECD Publishing, Paris. <https://doi.org/10.1787/9789264257993-en>
- Ofori, I.K. and Asongu, S.A. (2022). Repackaging FDI for Inclusive Growth: Nullifying Effects and Policy Relevant Thresholds of Governance. No. 248546. ZBW-Leibniz Information Centre for Economics. <http://hdl.handle.net/10419/248546>.
- Ofori, I.K., Asongu, S.A., 2021a. ICT diffusion, FDI and inclusive growth in Sub-Saharan Africa. *Telemat. Inform.* 65, 101718. <https://doi.org/10.1016/j.tele.2021.101718>
- Ofori, I.K., Armah, M.K., Taale, F., Ofori, P.E., 2021b. Addressing the severity and intensity of poverty in Sub-Saharan Africa: how relevant is the ICT and financial development pathway? *Heliyon* 7 (10), e08156. <https://doi.org/10.1016/j.heliyon.2021.e08156>
- Ofori, I.K., Gbolonyo, E., Dossou, M.A., Nkrumah, R.K., 2022a. Remittances and income inequality in Africa: financial development thresholds for economic policy. *Res. Glob.* 4, 100084. <https://mpr.ub.uni-muenchen.de/id/eprint/113015>.
- Ofori, I.K., Armah, M.K., Asmah, E.E., 2022b. Towards the reversal of poverty and income inequality setbacks due to COVID-19: the role of globalisation and resource allocation. *Int. Rev. Appl. Econ.* 1–28. <https://doi.org/10.1080/02692171.2022.2029367>
- Ofori, I.K., Dossou, T.A.M., Akadir, S.S., 2022c. Towards the quest to reduce income inequality in Africa: is there a synergy between tourism development and governance? *Curr. Issues Tour.* 1–21. <https://doi.org/10.1080/13683500.2021.2021157>
- Ofori, I.K., Cantah, W.G., Afful Jr, B., Hossain, S., 2022d. Towards shared prosperity in sub-Saharan Africa: how does the effect of economic integration compare to social equity policies? *Afr. Dev. Rev.* 34 (1), 97–113. <https://doi.org/10.1111/1467-8268.12614>
- Ofori, P.E., Grechyna, D., 2021. Remittances, natural resource rent and economic growth in Sub-Saharan Africa. *Cogent Econ. Financ.* 9 (1), 1979305.
- Ofori, I.K., Osei, D.B., Alagidede, I.P., 2022e. Inclusive growth in Sub-Saharan Africa: exploring the interaction between ICT diffusion, and financial development. *Telecommun. Policy* 46 (7), 102315. <https://doi.org/10.1016/j.telpol.2022.102315>
- Ohlin, B., 1933. *Interregional and International Trade*. Harvard University Press, Cambridge.
- Okafor, G., Piessse, J., Webster, A., 2015. The motives for inward FDI into Sub-Saharan African countries. *J. Policy Model.* 37 (5), 875–890.
- Okafor, C.E., Ujah, N.U., Elkassabgi, A.Y., Ajalie, W.U., 2011. Democracy and FDI inflow: evidence of discordance in Sub-Saharan Africa. *Int. Res. J. Financ. Econ.* 63, 140–149.
- Onyeiwu, S., Shrestha, H., 2004. Determinants of foreign direct investment in Africa. *J. Dev. Soc.* 20 (2), 89–106.

- Opoku, E. E. O., Ibrahim, M., Sare, Y. A., 2019. The causal relationship between financial development and economic growth in Africa. *Int. Rev. Appl. Econ.* 33 (6), 789–812.
- Rivera-Batiz, L.A., Romer, P.M., 1991. Economic integration and endogenous growth. *Q. J. Econ.* 106, 531–555.
- Roberts, J.T., Hite, A.B. (Eds.), 2000. *From modernisation to globalisation: Perspectives on Development and Social Change*. Wiley-Blackwell.
- Rossvoll, E.M. and Sparrman, V. (2015). Labor Market Institutions and Wage Inequality in the OECD countries. Discussion Paper 826 <<http://hdl.handle.net/11250/2602609>>.
- Roodman, D., 2009. How to do xtabond2: An introduction to difference and system GMM in Stata. *The Stata Journal* 9 (1), 86–136.
- Rostow, W.W., 1990. *The Stages of Economic Growth: A Non-communist Manifesto*. Cambridge University Press.
- Rubinson, R., 1976. The World-Economy and the Distribution of Income Within States: A Cross-National Study. *Am. Sociol. Rev.* 41 (4), 638–659.
- Sarkodie, S.A., Adams, S., 2020. Electricity access, human development index, governance and income inequality in Sub-Saharan Africa. *Energy Rep.* 6, 455–466.
- Shi, Y., Paul, S., Paramati, S.R., 2020. The impact of financial deepening on income inequality: empirical evidence from Australia. *Int. J. Financ. Econ.* 1–16. <https://doi.org/10.1002/ijfe.2338>
- Shimeles, A., Nabassaga, T., 2018. Why is inequality high in Africa? *J. Afr. Econ.* 27 (1), 108–126. <https://doi.org/10.1093/jae/ejx035>
- Solt, F., 2022. Measuring income inequality across countries and over time: The standardized world income inequality database. *Soc. Sci. Q.* 101 (3), 1183–1199.
- Song, Y., Paramati, S.R., Ummalla, M., Zakari, A., Kummitha, H.R., 2021. The effect of remittances and FDI inflows on income distribution in developing economies. *Econ. Anal. Policy*. <https://doi.org/10.1016/j.eap.2021.08.011>
- Stiglitz, J.E., 2002. *Globalisation and its Discontents* Vol. 500 Norton, New York.
- Stock, J.H., Watson, M.W., 1993. A simple estimator of cointegrating vectors in higher-order integrated systems. *Econometrica* 61 (4), 783–820.
- Stolper, W.F., Samuelson, P.A., 1941. Protection and real wages. *Rev. Econ. Stud.* 9 (1), 58–73.
- Sulemana, I., Nketiah-Amponsah, E., Codjoe, E.A., Andoh, J.A.N., 2019. Urbanisation and income inequality in Sub-Saharan Africa. *Sustain. Cities Soc.* 48, 101544. <https://doi.org/10.1016/j.scs.2019.101544>
- Suliman, A.H., Mollick, A.V., 2009. Human capital development, war and foreign direct investment in sub-Saharan Africa. *Oxf. Dev. Stud.* 37 (1), 47–61.
- Tchamyou, V.S., 2021. Financial access, governance and the persistence of inequality in Africa: mechanisms and policy instruments. *Public Aff.* 21 (2), e2201.
- Ujunwa, A., Okoyeuzo, C., Nkwor, N., Ujunwa, A., 2021. Potential impact of climate change and armed conflict on inequality in Sub-Saharan Africa. *South Afr. J. Econ.* 1–20. <https://doi.org/10.1111/saje.12271>
- UNCTAD. (2021). *World Investment Report*. In United Nations Conference on Trade and Development. <<https://unctad.org/topic/investment/world-investment-report>>.
- UNCTAD. (2020). *World Investment Report: International Production Beyond the Pandemic*. UNCTAD, Geneva.
- UNCTAD. (2019). *World Investment Report: Global Investment Trends and Prospects 2019: Special Economic Zones*. UNCTAD, Geneva.
- UNCTAD, 2016. *World Investment Report Investor Nationality: Policy Challenges*. United Nations Publication, Geneva.
- UNDP, 2017. *UNDP's strategy for inclusive and sustainable growth*, New York, USA. UNDP (2011). *Governance principles, institutional capacity and quality*. *Bur. Dev. Policy* 270–291.
- UNDP, 2011. *Governance principles, institutional capacity and quality*. *Bur. Dev. Policy N. Y.* 270–291.
- United Nations, 2015. Resolution adopted by the General Assembly on 25 September 2015, *Transforming Our World: the 2030 Agenda for Sustainable Development*. <https://sustainabledevelopment.un.org/post2015/transformingourworld/publication>.
- UNU-WIDER, 2021. *World Income Inequality Database (WIID)*. 31 May 2021. <https://doi.org/10.35188/UNU-WIDER/WIID-310521>.
- Windmeijer, F., 2005. A finite sample correction for the variance of linear efficient two-step GMM estimators. *J. Econ.* 126 (1), 25–51.
- World Bank (2021). *World Development Indicators*. April 2021. Washington, DC: World Bank.
- World Bank. (2020). *Poverty and Shared Prosperity 2020: Reversals of Fortunes*. October. Washington, DC: World Bank.
- World Bank (2013). *Inclusion matters: The foundation for shared prosperity*, Washington D.C.: World Bank.
- Wooldridge, J.M., 2010. *Econometric analysis of cross section and panel data*. MIT Press, Cambridge, Massachusetts.
- Xu, C., Han, M., Amegnonna, T., Dossou, M., Bekun, F.V., 2021. Trade openness, FDI, and income inequality: evidence from sub-Saharan Africa. *Afr. Dev. Rev.* 1–11. <https://doi.org/10.1111/1467-8268.12511>