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ORIGINAL ARTICLE

Financial development, globalisation and foreign direct investment nexus: an empirical study from Africa

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Abstract

This study examined the relationship between financial development, globalisation, and foreign direct investment (FDI) in 49 African countries from 1997 to 2020. Using two-stage least squares, the findings revealed that both financial development and globalisation attract FDI in Africa. However, when financial development was broken down into financial institution development (FII) and financial market development (FMD), only FMD attracted FDI inflows. The findings also show that globalisation form synergy with financial development to further promote FDI inflows. In terms of the components of globalisation, political globalisation synergized with the financial development index, while economic globalisation attracts more FDI than other components. Policymakers should focus on developing stock exchanges, banking systems, and insurance industries, reducing trade barriers, and enhancing access to global markets.

Keywords Globalisation · Financial development · Africa · 2SLS · FDI

JEL Classification D31 · D63 · E44 · 043

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Introduction

Numerous nations proactively strive to lure foreign direct investment (FDI) as they perceive that Multinational Corporations (MNCs) will aid in economic growth through the creation of job opportunities, heightened capital accumulation, and increased overall productivity (Eicher et al. 2012; Blonigen and Piger 2014). FDI is seen as a crucial component in modernisation theory, as it is believed to bring capital, technology, and managerial expertise to developing countries. This has caused most developing economies to implement policies that have attracted FDI. In Africa for example, there is the implementation of various policies such as the New Partnership for Africa's Development (NEPAD), the African Continental Free Trade Area (AfCFTA) and other trade policies to attract most FDI into the region (World Bank 1997; Aitken and Harrison 1999; Alagidede et al. 2013; Opoku and Boachie 2020). While other regions like East Asia and the Pacific, South Asia, Europe and Central Asia experienced a longer recovery after the 2008/9 global financial crisis, Africa recovered faster (UNCTAD 2015; Opoku et al. 2019). Although coronavirus disease 2019 (COVID-19) caused a reduction in FDI flows in other continents, Africa had already been experiencing a decline in FDI prior to the pandemic as there was a 10% decrease in FDI flow to $45 billion in 2019 (UNCTAD 2020). COVID-19 and Middle East and North Africa (MENA) vulnerabilities further declined FDI by 23% in 2020 (UNCTAD 2020; Iddrisu et al. 2023a). After the decline in 2020, the continent witnessed a robust rebound in FDI by US$83 billion which created a hope that FDI in 2022 will increase (UNCTAD 2022). However, FDI inflows to Africa decreased to $45 billion in 2022 from a record $83 billion in 2021 (UNCTAD 2023). In 2023, Africa's FDI flows remained relatively stable, with an estimated US$44 billion, representing only a slight 1% decrease compared to the previous year (UNCTAD 2023).

Although there has been some level of FDI inflows, it is inadequate to look at the growth and needs of Africa (Adegboye and Okorie 2023). Figure 1 also reveals that within the African sample, FDI inflows for the majority of countries tend to hover between 4 and 24% of GDP. Consequently, there is a pressing need to establish concrete measures for promoting FDI inflows in Africa. Africa Agenda 2063 (i.e., The Africa We Want) aims to use financial development and globalisation but lacks sufficient empirical backing. Therefore, the study test empirically if financial development and globalisation can attract sufficient FDI.

Financial development refers to the increased availability of financial goods and services to citizens and businesses within a country (Gesaka 2013). The financial system plays a crucial role in allocating resources, providing information, and reducing costs (Mahmood et al. 2018). The internalisation theory by Coase (1937) and the eclectic theory by Dunning (1977, 1980, 2000, 2009) stipulate that one of the important factors that attract FDI is financial development. This is because a well-developed financial system provides easier access to capital for foreign investors. This includes robust banking systems, capital markets, and financial institutions that facilitate the flow of funds and

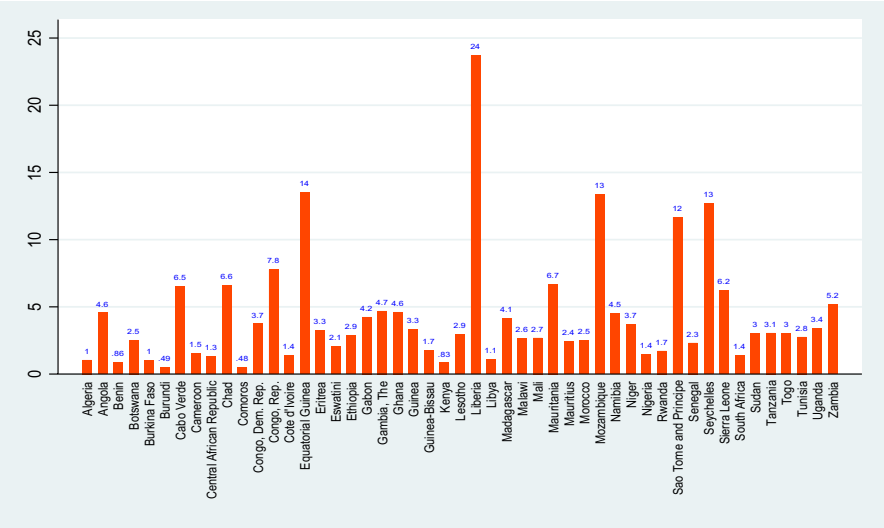

Fig. 1 In-Country foreign direct investment (% GDP), 1997–2020

provide various financing options for investment projects. For example, during the lockdown periods, financial institutions played a crucial role in supporting governments' social protection efforts in Africa (Ofori et al. 2022). Their ability to allocate resources efficiently and stimulate economic growth became even more apparent as they assisted vulnerable households, facilitated online transactions, and provided aid to the extensive informal sector (Sam Quarm et al. 2020; Ofori et al. 2022). Although the financial sector is less developed in Africa, efforts are made to develop it (Iddrisu et al. 2022, 2023b). Since Africa is making an effort to develop the financial sector, we test empirically if financial development can induce more levels of FDI inflows.

On the other hand, globalisation has led to the integration of less globalised economies with highly globalised economies, resulting in increased export and import of goods and services. By reducing trade barriers, globalisation encourages FDI by making it easier and more cost-effective for firms to trade across borders, facilitating the growth of global supply chains and multinational corporations (Bojnec and Fertő 2018). Additionally, globalisation provides increased access to cheap labour markets in developing countries, making it more appealing for firms to invest in these markets, thereby contributing to the growth of export-oriented industries and increased FDI. During the pandemic era, most African countries received financial aid from international bodies due to globalisation. For example, in 2020, the International Monetary Fund (IMF) provided financial assistance to Ghana and Mongolia to help them address the impact of the COVID-19 pandemic. Ghana borrowed $10 million, part of which was used to support SMEs in partnership with the National Small Business Industries (Sam Quarm et al. 2020). Mongolia received emergency financial assistance of approximately $99 million from the IMF to provide urgent budgetary and balance of payment support to the sectors and groups

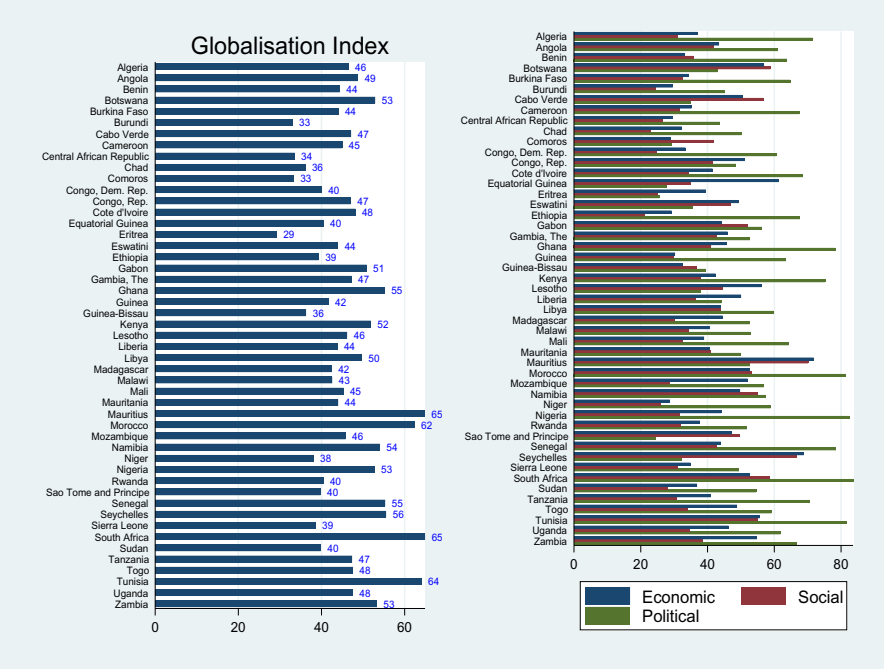

Fig. 2 In-Country globalisation, 1997–2020

most affected by the pandemic (Utsunomiya 2020). Therefore, the question the study seeks to answer is "Does a high level of globalisation enhance FDI?" Globalisation also acts as a catalyst for financial development, which can further enhance FDI. By facilitating the flow of capital across borders, globalisation provides opportunities for financial institutions to access funds from various sources, enabling them to offer financing to businesses, including FDI (Kaminsky 2005). Globalisation encourages technology transfer, enhancing financial sector operations and services, boosting inclusion, broadening global market access, diversifying portfolios, and lowering risk costs for businesses (Demirguc-Kunt and Levine 2008; World Bank 2020). By implication, globalisation can help financial development to further allow more inflow of FDI. Therefore, the study examines if this is possible in the case of Africa.

There are similar studies that focus on either the direct or indirect link between financial development or globalisation and FDI (see Bitzenis 2012; Bojnec and Fertő 2018; Chirila-Donciu 2013; Desbordes and Wei 2014, 2017; Drahokoupil 2009; Gholizadeh Keykanloo et al. 2020; Islam et al. 2020; Leitao 2012; Majeed et al. 2021; Sarbu 2015). A common shortcoming in the above studies is that the assessments are mainly based on direct relationships between financial development, FDI, and macroeconomic outcomes. However, this research contends that merely providing policymakers with determinants of macroeconomic variables based on estimated coefficients is insufficient. It delves deeper by assessing the nexus between financial development and FDI, incorporating globalisation as a moderating policy variable. The choice of globalisation as an indicator stems from its significant presence

in Africa, where most countries exhibit an average globalisation index of 46% (see Fig. 2). By employing globalisation as a moderator, policymakers gain insight into its role in enhancing the absorption capacity of financial development to attract FDI inflows. This approach offers a nuanced understanding beyond simple correlations, facilitating more informed policy decisions to leverage globalisation for increased FDI. Hence, this study fills this gap by answering this question; "how does globalisation moderate the effect of financial development on FDI inflows?".

In addressing these important gaps in the literature, this study contributes to knowledge and policy discourse on private capital flow on several fronts. First, the study deepens the understanding of the implication of financial integration for private capital flows. We do so by outlining whether unconditionally financial development is relevant for promoting FDI inflows in Africa. This study is relevant as African leaders are identifying strategies to attract foreign investors without adequate empirical backing. Second, this study contributes to knowledge by scrutinising and determining the impact of globalisation on financial development-FDI nexus. We inform African governments and their development partners on the extent to which globalisation conditions the effect of financial development on FDI inflow. This is because although African countries are making an effort to develop their financial sector, when financial institutions get access to international capital, they will be able to provide financial needs for foreign investors. Additionally, the disaggregation of globalisation into social, political and economic is novel and imperative for policy-specific recommendations. This study reveals a new insight where it identifies that the joint effects of financial development and globalisation attract FDI. The findings can serve as policy implications for the African Union policy that seeks to use financial development and globalisation to attract FDI but lacks empirical findings.

We organized the rest of the paper as: reviewed literature is captured in "Literature review" section, "Materials and method" section for methods and data whereas presentation and discussion of results are shown in the "Empirical results" section and we end the paper with a conclusion and practical implication in "Conclusion and policy implication" section.

Literature review

We utilised Dunning (1977, 1980, 2000, 2009) eclectic theory, which integrates internalization theory, industrial organization theory, and location theory into a comprehensive framework. The Ownership Location and Internalisation (OLI) paradigm focused on explaining the motives behind international flows and foreign direct investment, rather than prescribing the level and structure of such investment. It combines macroeconomic location advantages and microeconomic ownership advantages into a single framework, recognizing that both are necessary to fully explain FDI (Spagat 2006). Furthermore, the paradigm acknowledges that government policies, market size, and the motivation of MNCs can also play a role in determining the location of FDI in a host country (Vasyechko 2012). The eclectic theory provides a general framework for understanding the motivation behind

international flows and foreign direct investment and highlights the importance of both macroeconomic and microeconomic factors, including government policies and human nature.

Financial development has been empirically proven to have a significant impact on FDI (e.g., Agbloyor et al. 2013; Desbordes and Wei 2014, 2017; Sahin and Ege 2015; Gholizadeh Keykanloo et al. 2020; Nguyen 2020; Islam et al. 2020). According to these countries, financial development attracts FDI by creating a ready financial market for these foreign investors and ensuring efficient allocations. Most of these studies employed different estimation techniques and samples but still had similar results. For example, Agbloyor et al. (2013) used two different samples such as 42 and 16 African countries from 1970 to 2007 and 1990 to 2007 respectively using two-stage least squares (2SLS). Islam et al. (2020) employed 79 Belt and Road Initiative (BRI) partner countries from 1990 to 2017 using GMM whereas Nguyen and Lee (2021) also used a different sample of 116 countries from 1996 to 2017 which also used GMM.

Some other studies also showed that financial development either deterred or did not attract FDI (e.g., Tsaurai 2014; Hanif and Shariff 2016; Bayar and Gavriletea 2018; Meivitawanli 2021). These variations in the results can be attributed to diverse estimation techniques, samples and the measurement of financial development. For example, Hanif and Shariff (2016) found that using domestic credit by the banking sector as a measure of financial development hampers FDI flows in five ASEAN countries. However, when domestic credit to the private sector was utilized as a proxy for financial development, it attracted FDI. In Botswana, Tsaurai (2014) also found no causal relationship between financial development proxied with banking sector development and FDI flows. Hanif and Shariff (2016) support the findings of Tsaurai (2014), despite using different samples but similar measurements of financial development. Meivitawanli (2021) also found that in Indonesia financial development proxy with financial market capitalisation does not promote the inflows of FDI. The author reported that although financial development did not have a significant impact on FDI inflows when employing fixed effect estimations, different results were obtained through Granger causality testing. Bayar and Gavriletea (2018) found no significant long-run or short-run effects on FDI in Central and Eastern European Union countries, but unidirectional causality from financial sector development to FDI.

The effect of globalisation on FDI has received little attention in the literature as compared to its effect on other macroeconomic variables such as economic growth, standard of living, health and among others. The scant literature revealed that globalisation attracts more FDI into countries. For instance, Bojnec and Fertő (2018) find that globalisation attracts FDI using the knowledge-capital (KK) model for 22 OECD countries. The findings of Bojnec and Fertő (2018) supported the study of Chirila-Donciu (2013) who determined the inflows of global FDI in Europe and Romania. Aluko et al. (2021) also revealed a bi-directional relationship globalisation and FDI flows to Africa which support prior studies despite different method and data. Similarly, Aluko et al. (2023) reveal that globalisation induces FDI.

From the reviewed studies, it is evident that only a few have focused on the relationship between financial development and FDI and globalisation-FDI nexus.

While some studies used a composite measure for financial development, others employed only certain aspects of financial development. Hence, the current study aims to contribute to the literature on financial development and FDI by using a composite index. Also, from reviewed studies, no studies have examined the joint effect of financial development and globalisation on FDI. As noted by Shittu et al. (2020), countries in Africa that are less globalisation receive little inflow of FDI. Hence the a need to examine its impact on FDI and how it can form synergy with financial development to further promote FDI.

Materials and method

Data

This research utilises yearly time-series data for 49 African nations[1] spanning 1997 to 2020 due to the availability of data, where the data was comprehensively acquired from several sources such as the World Bank [including World Development Indicators (WDI), Global Financial Database (GFD), and World Governance Indicators (WGI)], International Monetary Fund (IMF), Konjunkturforschungsstelle (KOF) and Human Development Office (HDRO). FDI which is the dependent variable is measured with FDI inflows (% GDP) and is sourced from WDI (see Table 1).

The variables of interest were captured using financial development and globalisation as shown in Table 1. Financial development was measured with the financial development index (MFD) and later used the two main components of MFD—the financial market index (FMI) and financial institutions index (FII) to see which components can promote the inflow of FDI. MFD, which is our main variable of interest, measures the depth (market size and liquidity), access (the ability of individuals and businesses to access financial services), and efficiency (the ability of institutions to provide financial services at low cost and with sustainable revenues, as well as the level of capital market activity) of the financial sector (Svirydzenka 2016). It is worth noting that, in contrast to some studies, we utilise a more contemporary and enhanced measure of globalisation known as the KOF globalisation index. The globalisation index is calculated as a weighted average of economic globalisation (36%), social globalisation (38%), and political globalisation (26%), making it a far more informative metric than alternative indicators such as trade openness (Dreher 2006; Dreher et al. 2008; Gygli et al. 2019). The KOF globalisation index combines de facto and de jure aspects. Our focus is on the main globalisation indices, integrating both components, and disaggregating them into social, economic, and political

[1] The countries include Algeria, Angola, Benin, Botswana, Burkina Faso, Burundi, Cabo Verde, Cameroon, Central African Republic, Chad, Comoros, Congo D.R, Congo, Cote d'Ivoire, Equatorial Guinea, Eritrea, Eswatini, Ethiopia, Gabon, Gambia, Ghana, Guinea-Bissau, Kenya, Lesotho, Liberia, Libya, Madagascar, Malawi, Mali, Mauritania, Mauritius, Morocco, Mozambique, Namibia, Niger, Nigeria, Rwanda, Sao Tome, Senegal, Seychelles, Sierra Leone, South Africa, Sudan, Tanzania, Togo, Tunisia, Uganda, Zambia.

Table 1 Variables and data sources

Variables	Measurement	Source
Dependent variable		
FDI	FDI inflows (% GDP)	WDI
Variable of interests		
Financial development index	Svirydzenka (2016) financial development index	IMF
Financial institutions	Financial institutions index	IMF
Financial market	Financial market index	IMF
Globalisation index	The weighted average of economic, social and political globalisation	KOF
Economic globalisation	The level of economic interdependence and integration between countries	KOF
Social globalisation	How far social factors have been globalized and integrated	KOF
Political globalisation	The degree to which countries are politically interdependent and integrated	KOF
Control variables		
Trade openness	Net trade (%GDP)	WDI
Economic growth	GDP growth (% annual)	WDI
Domestic capital	Gross capital formation	WDI
Infrastructure	Mobile phone subscribers per 100 people	WDI
Inflation	Inflation, consumer prices	WDI
Institutional quality index	Averages of 6 institutional quality variables	WGI

Note: *WDI* is World Development Indicators, *KOF* denotes Konjunkturforschungsstelle, *IMF* is International Monetary Funds

dimensions to analyse their influence on FDI inflow in policy discussions. Economic globalisation signifies international economic interconnection via cross-border trade, FDI, and capital flow. Social globalisation refers to global cultural, information, and human capital exchange. Political globalisation measures international political integration, including UN involvement and diplomatic presence (Dreher 2006).

We have incorporated six (6) control variables into our analysis, taking into account demographic factors of Africa (including data availability) and literature (e.g., Bojnec and Fertő 2018; Chirila-Donciu 2013; Islam et al. 2020; Nguyen and Lee 2021). These include trade openness, economic growth, domestic capital, infrastructure, inflation and institutional quality. We incorporated trade openness into our model, as it plays a crucial role in facilitating FDI flow to a country. This suggests that FDI is more likely to occur in countries that are open to international trade. Net trade (% GDP) was used as a proxy for trade openness and is sourced from WDI as shown in Table 1. As shown in Table 1, we proxy economic growth with GDP growth (% annual). According to the eclectic theory, MNCs may relocate to other countries in pursuit of various advantages, such as the level of economic growth. Africa is growing, with the World Bank (2020) reporting an average growth rate of at least 5% in SSA over the past two decades, exceeding the global average of 3%. As such, we test empirically if this growth can attract more FDI. We inculcate domestic capital into our model to see how it can attract enough FDI

into Africa. This is because there exists a complementary relationship between domestic investment (gross capital formation) and FDI (Sghaier and Abida 2013; Nkoa 2018). As indicated in Table 1, this variable is sourced from WDI. Consumer price inflation (% annual), presented in Table 1, is used as a proxy for inflation. It assesses the macroeconomic stability of the host countries and its potential impact on attracting more FDI to Africa (Sghaier and Abida 2013; Nkoa 2018; Iddrisu et al. 2022). Infrastructure availability and quality significantly impact the location choices of multinational corporations by affecting business costs, productivity, and competitiveness (Ang 2008; Walsh and Yu 2010). Hence, we control infrastructure (i.e., mobile subscribers per 100 people). Investor confidence in a host country can be influenced by its institutions (Acemoglu and Robinson 2010; Staats and Biglaiser 2012). Therefore, institutional quality was used to see if it could help attract FDI. We used a composite index that combined the average of six available institutional quality measures sourced from WGI: corruption control, voice and accountability, rule of law, political stability and absence of violence, government effectiveness, and regulatory quality (see Table 1).

Model specification

The study is mostly based on eclectic theory since it accommodates the study's important variables in its assumptions. This is because these theories showed how a country's potential enhances its inflow of FDI. Therefore, we followed these theories and some empirical studies in the context of Africa (Dunning 2009; Chirila-Donciu 2013; Agbloyor et al. 2013; Bojnec and Fertő 2018; Islam et al. 2020; Nguyen and Lee 2021) and specify our model as follows;

$$FDI_{it} = \alpha_0 + \alpha_1 FD_{it} + \alpha_2 TO_{it} + \alpha_3 GDP_{it} + \alpha_4 GCF_{it} + \alpha_5 INF_{it} + \alpha_6 CPI_{it} + \alpha_7 INSQ_{it} + e_{it} \quad (1)$$

$$FDI_{it} = \tau_0 + \tau_1 FD_{it} + \tau_2 TO_{it} + \tau_3 GDP_{it} + \tau_4 GCF_{it} + \tau_5 INF_{it} + \tau_6 CPI_{it} + \tau_7 INSQ_{it} + \tau_8 GLO_{it} + \tau_9 (FD \times GLO)_{it} + \varepsilon_{it} \quad (2)$$

Equation (1) shows how financial development influences the level of FDI in Africa. Equation (2) on the other hand focuses on the joint effect of financial development and globalisation on FDI in Africa. In both Eq. (1) and (2), FDI_{it} denotes FDI in Africa over time whereas FD denotes financial sector development. Whilst lag of FDI is captured as FDI_{it-1}, the control variables such as trade openness, economic growth, domestic capital, infrastructure, inflation, and institutional quality are represented by *TO, GDP, GCF, INF, CPI and INSQ* respectively. α_{1-7} and τ_{1-9} are the parameters to be estimated. GLO and $(FD \times GLO)_{it}$ in Eq. (2) represents globalisation and the interaction term between financial development and globalisation respectively. We test the significance of our interaction term by partially differentiating Eq. (3) concerning financial development to obtain the net effect of financial development on FDI. The study specifies the partial differential as;

$$\frac{\partial FDI_{it}}{\partial FD_{it}} = \tau_1 + \tau_9 \overline{GLO}_{it} \tag{3}$$

Where $\overline{GLO}_{it}$ is the mean of globalisation for the Africa sample.

Estimation technique

There is a potential issue of endogeneity in the relationship between financial development and FDI (Agbloyor et al. 2013). The issue of endogeneity arises due to the strong association between past and present values of the dependent variable (Ofori and Asongu 2021; Oduola et al. 2022). This problem stems from the conventional econometric assumption that endogeneity arises when the independent variables are not independent of the error term, and this can lead to biased or inconsistent estimates of the coefficients (Oduola et al. 2022). Some common causes of endogeneity include omitted variables, measurement error, simultaneity, and reverse causality. To address the potential issue of endogeneity in the relationship between financial development and FDI, the study employs a panel instrumental variable estimator, specifically 2SLS. The instruments used include the following; lag of FDI, lag of financial development, lag of GDP, lag of mobile and telephone subscribers, lag of institutional quality, arable land, and lag of GDP per capita (both annual growth and constant 2017). This estimator is robust to the presence of heteroskedasticity (Agbloyor et al. 2013; Mogstad et al. 2021). To show that the results are robust, there were various robustness checks such as the Hansen test to prove that a good instrument was used to solve endogeneity and the Kleibergen-Paap rk LM test for under-identification.[2]

Empirical results

Descriptive statistics and correlation matrix

Table 2 provides a descriptive summary of the variables, including their respective means median, standard deviations, minimum, maximum values and normality statistics. Table 2 shows an average FDI of about 4.2% with a standard deviation of 8%. This indicated that FDI grows by 4.2% of GDP which is quite minimal as to China which has an average FDI inflow of 6.3%.[3] At the country level, Liberia stands out with the highest FDI inflow, accounting for 24% of its GDP. However, Burundi (4.8%) and Comoros (4.9%) display the lowest levels of FDI inflow (see Fig. 1). Although the MFD indicates that the African sample generally has a less developed financial sector with a mean of 13.737, breaking

[2] Since, the p-value for Hansen test and Kleibergen–Paap rk is insignificant (see Tables 4 and 5), it suggests that our instruments are valid in dealing with the endogeneity problem.

[3] https://www.china-briefing.com/news/china-records-steady-fdi-growth-in-2022/#:~:text=FDI%20inflows%20in%202022,growth%20rate%20of%208%20percent.

Table 2 Descriptive statistics

	Obs	Mean	Median	Max	Min	SD	Skewness	Kurtosis	Jarque–Bera
Foreign direct investment	1160	4.200	2.341	103.337	−18.918	8.009	6.008	54.784	136,590***
Financial development index	1176	0.137	0.100	0.640	0.000	0.107	2.143	8.058	2154.214***
Financial institution index	1176	0.217	0.180	0.730	0.000	0.132	1.806	6.261	1160.222***
Financial market index	1176	0.057	0.010	0.540	0.000	0.097	2.264	8.219	2338.968***
Globalisation index	1176	46.156	45.771	72.047	22.473	9.507	0.242	3.069	11.726***
Economic globalisation	1176	43.633	43.290	84.887	21.031	11.084	0.588	3.782	97.785***
Political globalisation	1176	55.911	57.375	89.152	14.829	16.776	−0.172	2.230	34.846***
Social globalisation	1176	38.793	38.165	78.315	10.466	13.405	0.451	2.797	41.825***
Trade openness	1104	71.234	60.670	230.958	0.757	37.229	1.390	5.338	607.141***
Economic growth	1153	4.163	4.230	149.973	−50.339	7.543	7.225	142.831	949,369.5***
Domestic capital	1047	22.700	21.498	79.401	−2.424	10.053	0.866	5.174	337.028***
Infrastructure	1154	44.971	33.482	185.559	0.000	43.909	0.809	2.653	131.631***
Inflation	1152	9.019	5.048	513.907	−78.562	27.659	10.741	154.073	1,117,662***
Institutional quality index	1176	−0.616	−0.642	0.876	−2.008	0.599	0.346	2.637	30.000***

Note: Obs is observation; SD is the standard deviation; Min is the minimum value and Max is the maximum value. *** $p < 0.01$

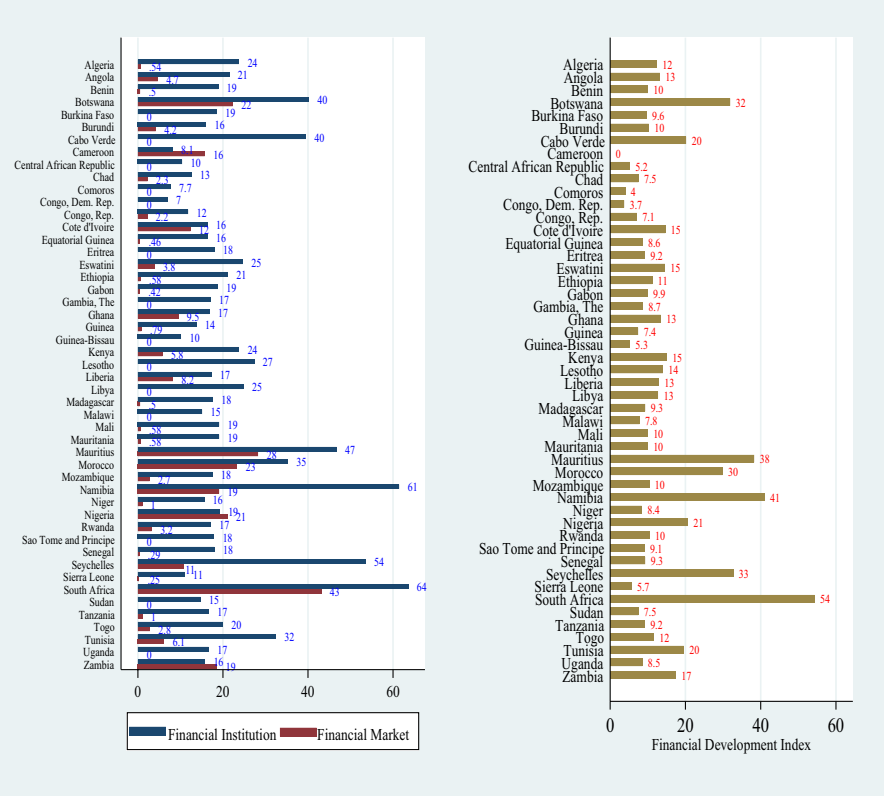

Fig. 3 In-Country Financial Development, 1997–2020

down the index into FII and FMI reveals a different story. Specifically, FII is comparatively high with a mean of 21.744%, while FMI has a mean of 5.659%. This implies that although the African sample may excel in terms of FII, their FMI may still be lacking. At the country level, South Africa (55.5%) has a financial development whereas Sierra Leone (6.7%) has a low-developed financial sector (see Fig. 3). Out of the different measures of globalisation, political globalisation exhibits the highest mean value of 55.911%, while social globalisation presents the lowest level of globalisation (i.e., mean of 38.793%). Mauritius and South Africa stand out as highly globalised economies, each scoring 65% whilst Eritrea (29%) demonstrates a lower level of globalisation (see Fig. 2).

The degree of trade openness has a mean value of 71.234, with a minimum of 0.757 and a maximum of 230.958. The GDP growth of the African sample is 4.16% with its minimum and maximum value of -50% and 149.073% respectively. The average value of domestic capital is 24.028, with a maximum of 53.988 and a minimum of 1.097. This information suggests that there may be considerable variation in domestic capital across the African countries included in the analysis. The high maximum value indicates that some countries may be

investing heavily in domestic capital, while the low minimum value suggests that other countries may be allocating fewer resources to domestic capital. Roughly 45% of individuals, as measured by mobile phone subscribers, have access to infrastructure. This level of infrastructure development has the potential to attract increased foreign investment. On average, the inflation rate (with a mean of 9.019) remains below the acceptable single-digit limit. However, certain countries experience extreme fluctuations with the highest rate recorded at 513.907 and the lowest at −78.562. Meanwhile, the composite index of institutions has a mean value of −0.616, indicating weak institutions and governance in Africa, as the mean value falls within the low range of institutions and governance.

Table 3 presents the correlation matrix which examines the relationships among the variables used for the study. While all variables exhibit a positive correlation with FDI, political globalisation had a negative relationship with FDI. The different proxies of globalisation all exhibit a positive correlation with FDI, but they are also highly correlated with one another. For example, economic globalisation and social globalisation are highly correlated, with a correlation coefficient of 0.778. Likewise, the study observed a strong correlation with the disaggregated measure of financial development. As a result, to avoid the issue of multicollinearity, the study included these variables separately in the estimations of the study. The study went ahead and tested multicollinearity with (variance inflation factor) VIF which is presented in Table 4. The results revealed no multicollinearity since the individual VIFs are less than 5 and mean VIFs are less than 10.

The results in Table 2 reveal that the Jarque–Bera normality test fails to reject the null hypothesis of univariate normality across all variables. These findings contribute to the rationale for extending the analysis beyond ordinary least squares (OLS), as coefficients derived from this method may no longer uphold the principle of being Best Linear Unbiased Estimators (BLUE). Therefore, we first estimated pooled OLS as the baseline model whereas the main estimation results was the 2SLS which is one of the best estimators when the assumptions of OLS is violated.

Baseline results using pooled OLS

The empirical findings were systematically presented, beginning with an examination of the baseline regressor estimated via pooled OLS, as showcased in Tables 5 and 6. Table 5 outlines the direct effects (without interaction) of financial development and globalisation on FDI, while Table 6 delves into the moderating role (with interaction) of globalisation on the relationship between financial development and FDI. Given the recognised econometric limitations, particularly the presence of endogeneity (see Tables 5 and 6), associated with pooled OLS, our focus on elucidating these baseline results was relatively brief. Instead, the primary emphasis of this study lies in the insights derived from the 2SLS estimation, as presented in Tables 7 and 8.

The baseline estimates, as seen in the OLS results, showcase coefficients that diverge in both magnitude and sign from the main findings derived from 2SLS. For example, Tables 5 and 6 illustrate that neither financial development nor

Table 3 Pairwise correlation matrix

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
(1) FDI	1.000													
(2) FDi	0.012	1.000												
(3) FI	0.028	0.938***	1.000											
(4) FM	−0.024	0.828***	0.625***	1.000										
(5) GI	0.045	0.667***	0.631***	0.585***	1.000									
(6) EcGI	0.243***	0.585***	0.587***	0.433***	0.677***	1.000								
(7) SoGI	0.097***	0.673***	0.716***	0.461***	0.778***	0.677***	1.000							
(8) PoGI	−0.156***	0.219***	0.125***	0.342***	0.632***	−0.029	0.091***	1.000						
(9) TO	0.410***	0.294***	0.383***	0.085***	0.289***	0.664***	0.464***	−0.315***	1.000					
(10) GDPg	0.144***	−0.054*	−0.059**	−0.036	−0.060**	0.016	−0.099***	−0.029	0.128***	1.000				
(11) GCF	0.422***	0.223***	0.262***	0.109***	0.361***	0.367***	0.319***	0.134***	0.348***	0.039	1.000			
(12) Inf	0.047	0.363***	0.397***	0.244***	0.613***	0.404***	0.651***	0.259***	0.197***	−0.102***	0.287***	1.000		
(13) CPI	0.063**	−0.060**	−0.086***	−0.020	−0.052*	−0.074**	−0.094***	0.037	0.024	−0.059**	−0.051	−0.133***	1.000	
(14) insq	0.025	0.639**	0.676***	0.435***	0.531***	0.548***	0.638***	0.044	0.321***	0.011	0.194***	0.237***	−0.177***	1.000

Note FDI denotes foreign direct investment, *FDi* is financial development index, *FI* denotes financial institution index, *FM* represent financial market index, *GI* is the globalisation index, *EcGI* is the economic globalisation, *SoGI* is the social globalisation, *PoGI* is the political globalisation, *TO* is trade openness, *GDPg* represent the economic growth, *GCF* is the domestic capital; inf represent infrastructure, *CPI* is the inflation, *Insq* represent institutional quality index

*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 4 Variance inflation factor

Variables	VIF_1	VIF_2	VIF_3	VIF_4	VIF_5	VIF_6	VIF_7
FDi	2.040						
FI		2.38					
FM			1.35				
GI				2.38			
EcGI					2.88		
SoGI						3.82	
PoGI							1.27
TO	1.31	1.34	1.32	1.31	1.90	1.49	1.57
GDPg	1.03	1.20	1.02	1.02	1.03	1.04	1.03
GCF	1.20	1.20	1.19	1.25	1.21	1.20	1.24
Inf	1.25	1.28	1.21	1.67	1.32	2.04	1.27
CPI	1.06	1.05	1.06	1.06	1.05	2.04	1.06
insq	2.03	2.14	1.56	1.67	1.61	2.01	1.25
Mean VIF	1.42	1.49	1.25	1.48	1.57	1.81	1.24

FDi is financial development index, *FI* denotes financial institution index, *FM* represent financial market index, *GI* is the globalisation index, *EcGI* is the economic globalisation, *SoGI* is the social globalisation, *PoGI* is the political globalisation, *TO* is trade openness, *GDPg* represent the economic growth, *GCF* is the domestic capital, *inf* represent infrastructure, *CPI* is the inflation, *Insq* represent institutional quality index, *VIF* is variance inflation factor

globalisation appears to stimulate FDI, a contrast to the primary results elucidated in Tables 7 and 8. This disparity can be ascribed to the presence of endogeneity, which has been adequately addressed in the 2SLS results.

2SLS Results on financial development index, globalisation and FDI *Nexus*

This sub-section explores the interplay among financial development, globalisation, and FDI which is presented in Tables 7 and 8. We start by discussing the effect of financial development on FDI. The findings in Table 7 indicate that the MFD has a significant coefficient of 0.0552 in attracting FDI (shown in Column 1). This suggests that all things being equal, a one-unit increase in the MFD will result in a 0.0552-unit increase in FDI. This could mean that a well-developed financial system in a country can lower transaction cost and reduce risks for foreign investors, making the country more attractive for FDI (Islam et al. 2020). The results could also mean that financial development can facilitate the allocation of resources towards productive investments, improve access to credit and capital for local firms, and enhance the capacity of local firms to engage in international trade and investment. These factors can lead to increased investment and economic growth, creating a more conducive environment for foreign investment and promoting FDI inflows. Despite the descriptive summary indicating that the financial sector in the African

Table 5 OLS results for financial development, globalisation and FDI nexus

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Financial development index	−0.0730***(0.0115)						
Financial institution index		−0.0702***(0.0124)					
Financial market index			−0.0447***(0.0101)				
Trade openness	0.0474***(0.0081)	0.0497***(0.0082)	0.0452***(0.0081)	0.0472***(0.0081)	0.0457***(0.0091)	0.0535***(0.0086)	0.0421***(0.0082)
Economic growth	0.0585**(0.0289)	0.0545*(0.0281)	0.0642**(0.0302)	0.0650**(0.0299)	0.0661**(0.0307)	0.0521*(0.0282)	0.0710**(0.0315)
Domestic capital	0.1897***(0.0300)	0.1918***(0.0301)	0.1862***(0.0300)	0.1954***(0.0311)	0.1852***(0.0302)	0.1898***(0.0300)	0.1920***(0.0307)
Infrastructure	0.0002(0.0037)	0.0011(0.0035)	−0.0017(0.0038)	0.0035(0.0040)	−0.0034(0.0040)	0.0085*(0.0044)	−0.0011(0.0037)
Inflation	0.0115**(0.0052)	0.0111**(0.0051)	0.0107**(0.0051)	0.0112**(0.0053)	0.0094*(0.0048)	0.0102**(0.0052)	0.0106**(0.0052)
Institutional quality	0.2590(0.3231)	0.3980(0.3148)	−0.2228(0.3201)	−0.1323(0.3281)	−0.6408**(0.3138)	0.2221(0.3509)	−0.5217*(0.3008)
Globalisation Index				−0.0687***(0.0223)			
Economic Globalisation Index					0.0058(0.0208)		
Social Globalisation Index						−0.0804***(0.0223)	
Political Globalisation Index							−0.0220**(0.0090)
Constant	−3.2394***(0.8651)	−2.8722***(0.8524)	−3.9765***(0.8892)	−1.5779(1.0161)	−4.6875***(1.0041)	−1.9337**(0.8713)	−3.1261***(0.9253)
Observations	1.009	1.009	1.009	1.009	1.009	1.009	1.009
R-squared	0.2645	0.2667	0.2584	0.2593	0.2532	0.2638	0.2563
Hausman Test of Exogeneity P-vales	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Note Robust standard errors in parentheses; *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 6 OLS results for the moderation role of globalisation on financial development-FDI nexus

Variables	(1)	(2)	(3)	(4)	(5)	(6)
Financial development index (Fd)	−0.148** (0.068)			−0.189***(0.065)		
Financial institution index (Fi)		−0.145**(0.064)			−0.204***(0.065)	
Financial market index (Fm)			0.026(0.056)			−0.056(0.036)
Trade openness	0.048***(0.008)	0.051***(0.008)	0.046***(0.008)	0.042***(0.009)	0.044***(0.008)	0.040***(0.010)
Economic growth	0.061**(0.029)	0.057**(0.029)	0.063**(0.030)	0.063**(0.029)	0.059**(0.028)	0.067**(0.031)
Domestic capital	0.196***(0.031)	0.200***(0.032)	0.193***(0.032)	0.193***(0.031)	0.201***(0.031)	0.184***(0.031)
Infrastructure	0.004(0.004)	0.005(0.004)	0.003(0.004)	−0.002(0.004)	−0.000(0.004)	−0.003(0.004)
Inflation	0.012**(0.006)	0.012**(0.006)	0.011**(0.005)	0.011**(0.005)	0.010*(0.005)	0.011**(0.005)
Institutional quality	0.449(0.333)	0.661**(0.334)	−0.023(0.328)	0.087(0.319)	0.263(0.314)	−0.363(0.323)
Globalisation index (Gi)	−0.054(0.035)	−0.075*(0.042)	−0.045(0.029)			
Economic globalisation index (Eg)				0.005(0.033)	−0.034(0.039)	0.029(0.027)
Social globalisation index (Sg)						
Political globalisation index (Pg)						
Fd × Gi	0.001(0.001)					
Fi × Gi		0.001 (0.001)				
Fm × Gi			−0.001(0.001)			
Fd × Eg				0.002(0.001)		
Fi × Eg					0.003**(0.001)	
Fm × Eg						0.000(0.001)
Fd × Sg						
Fi × Sg						
Fm × Sg						
Fd × Pg						
Fi × Pg						

Table 6 (continued)

Variables	(1)	(2)	(3)	(4)	(5)	(6)
Fi × Pg						
Constant	−0.924(1.311)	0.414(1.646)	−2.266**(1.110)	−2.953***(1.113)	−0.950(1.390)	−4.849***(1.022)
Observations	1.009	1.009	1.009	1.009	1.009	1.009
R-squared	0.267	0.270	0.261	0.268	0.273	0.260
Hausman Test of Exogeneity P-values	0.000	0.000	0.000	0.000	0.000	0.000
Variables	(7)	(8)	(9)	(10)	(11)	(12)
Financial development index (Fd)	−0.153***(0.053)			−0.033(0.058)		
Financial institution index (Fi)		−0.213***(0.058)			0.010 (0.048)	
Financial market index (Fm)			0.008 (0.032)			−0.023 (0.051)
Trade openness	0.052***(0.009)	0.052***(0.008)	0.052***(0.009)	0.044***(0.008)	0.043***(0.008)	0.042***(0.008)
Economic growth	0.053*(0.028)	0.051*(0.027)	0.052*(0.029)	0.062**(0.030)	0.056*(0.029)	0.068**(0.031)
Domestic capital	0.195***(0.030)	0.201***(0.030)	0.189***(0.030)	0.194***(0.031)	0.197***(0.031)	0.191***(0.031)
Infrastructure	0.008*(0.005)	0.009**(0.005)	0.008*(0.004)	0.001(0.003)	0.001(0.003)	−0.001(0.004)
Inflation	0.011**(0.006)	0.009*(0.006)	0.011**(0.005)	0.012**(0.005)	0.011**(0.005)	0.011**(0.005)
Institutional quality	0.643*(0.349)	0.809**(0.342)	0.373(0.354)	0.159(0.342)	0.221(0.331)	−0.249(0.333)
Globalisation index (Gi)						
Economic globalisation index (Eg)						
Social globalisation index (Sg)	−0.081**(0.032)	−0.115***(0.039)	−0.065**(0.026)			
Political globalisation index (Pg)				−0.006 (0.014)	0.011(0.017)	−0.013(0.010)
Fd × Gi						
Fi × Gi						
Fm × Gi						

Table 6 (continued)

Variables	(7)	(8)	(9)	(10)	(11)	(12)
Fd × Eg						
Fi × Eg						
Fm × Eg						
Fd × Sg	0.002*(0.001)					
Fi × Sg		0.003***(0.001)				
Fm × Sg			−0.001(0.001)			
Fd × Pg				−0.000(0.001)		
Fi × Pg					−0.001*(0.001)	
Fi × Pg						−0.000(0.001)
Constant	−0.631(1.046)	1.465(1.348)	−2.107**(0.891)	−2.977***(1.152)	−3.590***(1.293)	−3.235*** (0.983)
Observations	1.009	1.009	1.009	1.009	1,009	1,009
R-squared	0.271	0.278	0.266	0.266	0.271	0.260
Hausman Test of Exogeneity (P-values)	0.000	0.000	0.000	0.000	0.000	0.000

Note Robust standard errors in parentheses; *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 7 2SLS results for financial development, globalisation and FDI

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Financial development index	0.0552**(0.0261)						
Financial institution index		−0.0317(0.0768)					
Financial market index			0.1841***(0.0662)				
Trade openness	0.0815***(0.0136)	0.0766***(0.0144)	0.0815***(0.0134)	0.0453***(0.0150)	0.0217(0.0198)	0.0734***(0.0161)	0.0717***0.0173)
Economic growth	0.0153(0.0243)	0.0155(0.0221)	0.0147(0.0240)	0.0280(0.0205)	0.0400*(0.0228)	0.0083(0.0233)	0.0173(0.0233)
Domestic capital	0.2271***(0.0354)	0.2379***(0.0305)	0.2288***(0.0365)	0.1929***(0.0366)	0.2118***(0.0375)	0.1844***(0.0523)	0.2025***(0.0422)
Infrastructure	−0.0048*(0.0027)	−0.0013(0.0052)	−0.0064**(0.0032)	−0.0401***(0.0104)	−0.0193***(0.0049)	−0.0580*(0.0305)	−0.0229***(0.0086)
Inflation	0.0121***(0.0034)	0.0129***(0.0039)	0.0123***(0.0035)	0.0112***(0.0025)	0.0126***(0.0043)	0.0106***(0.0040)	0.0113***(0.0024)
Institutional quality	0.3080(0.3372)	0.4815(0.3545)	0.2690(0.3395)	−0.0326(0.3976)	−0.7744(0.6048)	0.3070(0.4145)	0.3165(0.3186)
Globalisation Index				0.4404***(0.1377)			
Economic Globalisation Index					0.3997***(0.1096)		
Social Globalisation Index						0.4152*(0.2336)	
Political Globalisation Index							0.2700**(0.1211)
Observations	921	920	914	895	895	908	914
R-squared	0.2251	0.2240	0.2205	0.1908	0.1574	0.1597	0.1589
F-Statistic	16.40***	14.79***	24.51***	63.68***	103.6***	44.43***	50.46***

Table 7 (continued)

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Hansen Test P-Value	0.936	0.847	0.778	0.899	0.840	0.911	0.900
Kleibergen-Paap rk Test P value	0.959	0.885	0.842	0.930	0.889	0.939	0.955

Notes Robust standard errors in parentheses; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 8 2SLS results for the moderation role of globalisation on financial development-FDI nexus

Variables	(1)	(2)	(3)	(4)	(5)	(6)
Financial development index (Fd)	1.6141***(0.4836)	0.3514(0.7035)	−0.199(0.8760)	1.8161***(0.5799)		
Financial institution index (Fi)					0.0194(0.2564)	−0.6720(0.4652)
Financial market index (Fm)						
Trade openness	0.0665***(0.0121)	0.0562***(0.0150)	0.0610***(0.0181)	0.0891***(0.0143)	0.0723***(0.0125)	0.0698***(0.0141)
Economic growth	0.0236(0.0203)	0.0278(0.0218)	0.0237(0.0192)	0.0226(0.0287)	0.0173(0.0227)	0.0155(0.0219)
Domestic capital	0.2095***(0.0331)	0.2276***(0.0434)	0.2285***(0.0366)	0.2291***(0.0267)	0.2268***(0.0330)	0.2577***(0.0469)
Infrastructure	−0.0277***(0.0042)	−0.0127(0.0093)	−0.0203***(0.0077)	−0.0180***(0.0069)	−0.0067(0.0050)	0.0083(0.0068)
Inflation	0.0135***(0.0033)	0.0120***(0.0036)	0.0114***(0.0034)	0.0166***(0.0044)	0.0125***(0.0034)	0.0093**(0.0040)
Institutional quality	−0.0868(0.5117)	0.2481(0.5509)	0.4228(0.4272)	−0.5220(0.5288)	0.2640(0.3830)	0.4099(0.4400)
Globalisation index (Gi)	0.3408***(0.0703)				0.1049(0.0756)	
Economic globalisation index (Eg)		0.1455(0.1454)				−0.1739(0.1576)
Social globalisation index (Sg)			0.1115***(0.0319)			
Political globalisation index (Pg)				0.2364**(0.0986)		
Fd × Gi	−0.0211***(0.0054)					
Fd × Eg		−0.0045(0.0091)				
Fd × Sg			0.0032(0.0096)			
Fd × Pg				−0.0217***(0.0075)		
Fi × Gi					−0.0012(0.0033)	
Fi × Eg						0.0088(0.0064)
Fi × Sg						
Fi × Pg						
Fm × Gi						
Fm × Eg						
Fm × Gg						

Table 8 (continued)

Variables	(1)	(2)	(3)	(4)	(5)	(6)
Fm × Pg						
Observations	901	901	901	931	931	931
R-squared	0.1708	0.2227	0.2334	45	0.2260	0.2018
F-Statistic	122.6***	137.2***	104.6***	50.39***	69.08***	123.1***
Hansen P-Value	0.909	0.905	0.907	0.906	0.784	0.788
Kleibergen-Paap rk LM Test-P value	0.928	0.932	0.933	0.931	0.825	0.826
Net effect	0.6402	n.a	n.a	0.6028	n.a	n.a
Variables	(7)	(8)	(9)	(10)	(11)	(12)
Financial development index (Fd)						
Financial institution index (Fi)	−1.1430***(0.3152)	1.1229*(0.5879)				
Financial market index (Fm)			0.1885***(0.0495)	−0.1156(0.2702)	−0.0309(0.0701)	1.1070**(0.4558)
Trade openness	0.0334***(0.0111)	0.0775*** (0.0171)	0.0733*** (0.0130)	0.0747***(0.0164)	0.0656***(0.0111)	0.0689***(0.0103)
Economic growth	0.0197(0.0216)	0.0236(0.0225)	0.0190(0.0233)	0.0198(0.0237)	0.0233(0.0202)	0.0262(0.0224)
Domestic capital	0.2457***(0.0364)	0.2297***(0.0293)	0.2264***(0.0292)	0.2364***(0.0318)	0.2247***(0.0300)	0.2306***(0.0304)
Infrastructure	0.0032(0.0055)	−0.0163(0.0105)	−0.0107**(0.0052)	−0.0061(0.0041)	−0.0210***(0.0040)	−0.0054(0.0039)
Inflation	0.0094**(0.0042)	0.0154***(0.0038)	0.0120***(0.0032)	0.0118***(0.0035)	0.0110***(0.0029)	0.0118***(0.0034)
Institutional quality	−0.1591(0.7919)	0.0568(0.4079)	0.1716(0.3445)	0.2167(0.3574)	0.4076(0.4289)	−0.0092(0.6282)
Globalisation index (Gi)			0.0846(0.0539)			
Economic globalisation index (Eg)				0.0175(0.0623)		
Social globalisation index (Sg)	0.1176***(0.0260)				0.1082***(0.0262)	
Political globalisation index (Pg)		0.2648*(0.1568)				0.0524*(0.0305)
Fd × Gi						
Fd × Eg						

Table 8 (continued)

Variables	(7)	(8)	(9)	(10)	(11)	(12)
Fd × Sg						
Fd × Pg						
Fi × Gi						
Fi × Eg						
Fi × Sg	0.0118***(0.0032)					
Fi × Pg		−0.0143**(0.0071)				
Fm × Gi			−0.0019**(0.0008)			
Fm × Eg				0.0030(0.0041)		
Fm × Gg					0.0017(0.0011)	
Fm × Pg						−0.0149**(0.0059)
Observations	931	912	931	931	912	912
R-squared	0.1091	0.1776	0.2263	0.2256	0.2347	0.2015
F-Statistic	38.06***	35.89***	53.30***	65.61***	94.48***	25.97***
Hansen P-Value	0.970	0.977	0.909	0.896	0.978	0.987
Kleibergen-Paap rk LM Test-P value	0.975	0.987	0.931	0.931	0.987	0.993
Net effect	−0.6852	0.3234	0.1008	n.a	n.a	0.2739

Note: Robust standard errors in parentheses*** $p<0.01$, ** $p<0.05$, * $p<0.1$; n.a means there is No net effect results for column because either the direct effect is insignificant or the interaction term is insignificant

sample is more developed than the financial market (see Table 2), the regression results demonstrate that it is the financial market that attracts FDI whereas FII does not (see Table 7). Specifically, FMI has a significant positive effect on FDI inflows, as indicated by a coefficient of 0.1841 as shown in Column (3) of Table 7. The positive effect of the FMI aligns with the hypothesis of market-seeking FDI and other empirical studies (Bilir et al. 2019; Donaubauer et al. 2020; Otchere et al. 2016). The insignificant effect of FII on FDI may be because their impact is not necessarily direct or immediate. This finding is supported by some empirical studies conducted in Africa and other developing countries (Tsaurai 2014; Phung and Mishra 2016).

The findings from Table 7 reveal that globalisation regardless of the proxy promotes the inflow of FDI. This means that if globalisation is achieved by one unit there will be an increase of FDI in the economy by 0.4404, 0.3997, 0.4152 and 0.27 units, ceteris paribus. By implication, globalisation eliminates obstacles to foreign trade and fosters the attraction of FDI (Incekara and Savrul 2012). Globalisation also facilitates the transfer of technology and expertise. MNCs bring advanced technology and management skills to African markets, which can lead to economic growth and innovation. Hence, policymakers must give careful consideration to this valuable variable and leverage its advantages. The empirical findings in Table 7 indicate that among the three components of the globalisation index, namely economic (0.3997 at 1% sig. level), social (0.4152 at 10% sig. level), and political globalisation (0.2700 at 5% sig. level), economic globalisation has a greater propensity to attract inflows of FDI compared to the other two components. The result implies that economic globalisation has the potential to attract FDI through the creation of a more receptive and dynamic environment for foreign investors. The results also mean that economic globalisation opens up African markets to the world. As countries become more integrated into the global economy, they offer larger consumer bases and potential profits for foreign investors.

Economic globalisation allows foreign companies to access and extract Africa's resources for export to other parts of the world. For example, in some countries like Angola, Ghana, DR. Congo, Guinea, Nigeria and among others, the governments gave some resource development rights to some foreign companies to extract and export Africa's natural resources.[4] Global companies may build roads, ports, and factories in Africa, improving the overall business environment. This mostly occurs in Africa where countries like Angola, Ghana, Nigeria and others build their roads, dams, buildings and other infrastructure with the help of foreign investment due to economic globalisation.[5]

Our findings support the hypothesis that globalisation catalyses financial development to further promote the inflow of FDI as shown in Table 8. For instance, in Column (1) of Table 8, the study observes that financial development leads to an increase in the inflow of FDI, which is further amplified by the presence of the globalisation index. The joint impact of MFD and the globalisation index

[4] https://www.afdb.org/fileadmin/uploads/afdb/Documents/Publications/%28E%29%20AfricanBank%202007%20Ch4.pdf.

[5] https://www.imf.org/en/Blogs/Articles/2014/10/28/infrastructure-investment-part-of-africas-solution.

on the inflow of FDI is suggested by the coefficient of the net effect of financial development, which is determined as 0.6402 through Eq. (3). The results suggest that globalisation can facilitate the flow of capital and information across borders, thereby reducing transaction costs and improving the efficiency of international investment, which attracts foreign investors. Upon disaggregating the MFD into FII and FMI, we found a joint between the globalisation index and FMI (see Table 8). The net effect of FMI implies that in the presence of globalisation, FMI enhances the inflow of FDI by 0.6028 units. By implication, when financial markets are developed, firms have better access to capital, which can help them finance investments, expand operations, and enter new markets. This can make a country a more attractive destination for FDI. Globalisation can further enhance this effect by increasing the availability of capital across borders Additionally, developed financial markets also offer better risk management tools such as insurance, hedging, and derivatives. This can reduce the risks associated with investing in foreign markets and make FDI more attractive. Globalisation can further enhance this effect by increasing the availability and diversity of these risk management tools.

We disaggregated the globalisation index into economic, social, and political dimensions and analysed which of these variables could work in tandem with financial development variables to further enhance FDI inflows. Table 8 shows that political and social globalisation forms synergies with certain financial development variables to enhance FDI inflows. However, economic globalisation does not have a joint effect with any of the financial development variables. Additionally, the study found that political globalisation forms synergies with all of the financial development proxies examined, while social globalisation only forms synergies with FII. Political globalisation plays a moderation role by creating a more stable political environment and improving regulatory frameworks. This can reduce the risks associated with investing in foreign markets, making FDI more attractive. Political globalisation can incentivize the African nations to embrace clear and investor-welcoming legal and regulatory systems. This includes establishing well-defined property rights, enforcing contracts, and implementing mechanisms for resolving disputes, all of which serve to bolster investor confidence. Governments can use political globalisation platforms to promote their countries as investment destinations. Participation in international forums and organisations can increase a country's visibility and attractiveness to investors.

On the other hand, Table 8 shows that FII rather dampens FDI inflows whereas social globalisation reduces this effect. This suggests that the development of financial institutions can dampen FDI inflows by creating more stringent regulatory environments and increasing bureaucratic hurdles for foreign investors. In contrast, social globalisation, with its increased cultural integration and information exchange, can mitigate these negative effects, making it easier for foreign investors to navigate the business landscape.

Turning to the control variables, the findings in Table 7 show that the inflow of FDI is significantly impacted by trade openness, domestic capital, infrastructure, and inflation. However, the study did not observe any influence of economic growth and institutional quality on the inflow of FDI. The positive effect of trade openness on FDI inflows supports the assertions that certain African nations have pursued

various macroeconomic policies, including trade liberalization, to encourage greater inflows of foreign investment such as FDI (see Aitken and Harrison 1999; Alagidede et al. 2013; World Bank 1997). Our findings indicate that the domestic investment variable in African countries has a positive and highly significant impact on FDI inflows (see Tables 7 and 8). This suggests that domestic investment is not simply a supplement, but rather a complement to FDI. When domestic investment increases, it can stimulate the development of infrastructure and create a favourable and sustainable business environment in the host country. This, in turn, can make the country more appealing to foreign investors, who may perceive it as having a lower risk profile and greater potential for growth and profitability. The empirical results conform with some empirical studies (e.g., Islam et al. 2020; Nkoa 2018; Sghaier and Abida 2013). The infrastructure of a country plays a major role in creating favourable conditions for businesses to operate effectively and efficiently (Islam et al. 2020). However, the results showed an opposite outcome where the study found infrastructure to dampen the inflow of FDI (see Table 7). This can be attributed to the fact that most of the infrastructure systems in Africa is less developed. For example, African countries often have inadequate road networks, unreliable power supplies, and limited access to telecommunications, which puts them at a disadvantage compared to other developing countries (Lakmeeharan et al. 2020; Myovella et al. 2020; Ayetor et al. 2021). Table 7 reveals that inflation rather attracts FDI. This could be that high inflation may create opportunities for speculative investments in assets like real estate. This result predicts the reality in Africa where most countries are associated with high inflation but still have some inflow of FDI. For instance, countries like Ghana, Nigeria, and Kenya are battling with their inflation rate but keep encouraging FDI.[6]

Conclusion and policy implication

The study aimed to investigate how globalisation moderates the relationship between financial development and FDI in Africa for 49 African countries. This is because as prior literature has examined either how financial development or globalisation directly attracts FDI, none of these studies determine how globalisation plays a moderation role in the relationship between financial development and FDI inflows. Therefore, this current study fills this gap. The study first examines the direct effect of financial development on FDI, then examines the relationship between globalisation and FDI, before it investigates how globalisation can influence the link between financial development and FDI.. Using 2SLS, the study found that both financial development and globalisation had a positive impact on FDI in Africa. When financial development was disaggregated into FII and FMI, we found that only FMI promotes the flow of FDI.

These results suggest that while other studies found the development of financial institutions to attract more FDI in some countries (see, Desbordes

[6] https://www.worldbank.org/en/region/afr/overview.

and Wei 2014, 2017; Sahin and Ege 2015; Gholizadeh Keykanloo et al. 2020; Nguyen 2020; Islam et al. 2020) this study showed that in Africa it is rather the financial market that attracts more FDI. The important contribution of this study is by showing that financial development conditions on globalisation attract more FDI. However, the results on the disaggregated globalisation show that, political globalisation forms more synergy with financial development to further attract FDI into Africa.

The findings of the study have important policy implications for African countries that seek to attract more FDI. First, since, financial development is needed for the inflow of FDI into Africa, policymakers should make more effort to develop the financial system. This can be achieved through prioritising policies. This may include implementing policies to encourage the development of financial markets, such as the stock exchange, banking system, and insurance industry. More importantly, Africa should make effort to develop their financial sector since it attract FDI. Policymakers should encourage regional integration and cooperation in financial markets to attract more investment and create economies of scale. African leaders should also develop and strengthen stock exchanges to provide a platform for companies to raise capital. There should be strong legal and regulatory frameworks to protect investors and encourage confidence in the financial market. Second, African leaders should take advantage of globalisation policies such as Paris Agreement, energy transition agenda and among others to attract more FD. African countries with more natural resources should take advantage of resource finance infrastructure and resource-backed infrastructure agreements to attract more FDI. Possibly, an expansion of trading partnerships from Asia to markets on other continents could attract additional FDI. Finally, as political globalisation paly a moderation role with financial development, governments and policymakers should take advantage of high level of political globalisation to boost financial development to further attract more FDI. Achieving this goal can be realized by strengthening bonds with the international community, including the United Nations, European Union, and regional alliances, to bolster their financial sector.

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Data availability The data on globalisation was taken from Konjunkturforschungsstelle database through this link: https://kof.ethz.ch/prognosen-indikatoren/indikatoren/kof-globalisierungsindex.html; financial development from the International Monetary Funds which can be accessed from this link: https://data.imf.org/?sk=F8032E80-B36C-43B1-AC26-493C5B1CD33B&sId=1480712464593. The rest of the data were sourced from World Development Indicators of the World Bank with the following link: https://databank.worldbank.org/source/world-development-indicators#. Code availability and all data compiled for our econometric estimates are available on request from the corresponding author.

Declarations

Conflict of interest The authors have declared that they have no potential conflicts of interest in relation to the research, authorship and publication of the article.

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