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**University of
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University of Nottingham Ningbo China, 199 Taikang East Road, Ningbo, 315100, Zhejiang, China.

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Is foreign direct investment globalization-induced or a myth? A tale of Africa

Olufemi Adewale Aluko¹ | George S. Chen² | Eric Evans Osei Opoku³

¹Department of Finance, University of Ilorin, Ilorin, Kwara State, Nigeria

²UNE Business School, University of New England, Armidale, Australia

³Nottingham University Business School China, University of Nottingham Ningbo China, Ningbo, China

Abstract

Foreign direct investment (FDI) provides many African countries an important source of capital inflow. Despite notable improvements in these capital-scarce countries' economic, political, and social conditions, foreign investors have not considered them viable host locations. Since FDI brings enormous spillovers to its host, some countries have recently institutionalized globalization as the catalyst for reversing the trend. Against this backdrop, we examine the FDI–globalization nexus across 47 African countries for the 1996–2016 period. Using the augmented mean group estimator, the results suggest that FDI in Africa is indeed globalization-induced. Moreover, we find this positive nexus to be driven by the economic dimension of globalization. Overall, we demonstrate the potential of globalization in stimulating an FDI boom in Africa.

Keywords: FDI; Globalization; Multinational corporations; Augmented Mean Group; Panel data; Africa

1. INTRODUCTION

Globalization entails the process of creating network connections among actors at intra- or multi-continental distances, mediated through a variety of flows, including capital, goods, ideas, and people (Clark, 2000). In defense of globalization, Bhagwati (2004) argues that globalization is instrumental in improving the quality of life. As an indispensable component of globalization, foreign direct investment (FDI) has received considerable attention over the past three decades. However, Bhagwati (1978) suggests that FDI has mostly benefited highly-globalized countries than their lowly-globalized counterparts.

FDI emerges as an outcome of the resource-, market-, efficiency- and strategic asset-seeking investment activities of multinational corporations (MNCs).¹ Narula and Dunning (2010) identify FDI as the most effective way for MNCs to enter developing countries. They argue that MNCs' activities in these countries stimulate domestic capital accumulation (Cipollina et al., 2012; Thangavelu et al., 2009; Gorg and Greenaway, 2004) and narrows the financing gap in investment that impedes economic growth (UNCTAD, 2013).² While FDI flows to developing and transitional countries fell in 2018, developing countries still hosted a record 54% of global FDI inflows (UNCTAD, 2019a).

The extant literature holds the view that FDI is primarily driven by globalization. In part, globalization offers MNCs better access to the international factor market (UNCTAD, 1998) and re-shapes the organization of MNCs' offshore activities (Cantwell and Narula, 2001). Empirically,

¹ UNCTAD (1998) argues that globalization has changed the way MNCs pursue their investment objectives.

² Jude (2019) demonstrates that FDI crowds out domestic investment in the transitional countries in the short run, but in the long run, it crowds in domestic investment. Noting the importance of the mode of FDI entry, Chen et al. (2017) find that greenfield FDI crowds out domestic investment in China while cross-border mergers and acquisitions (M&As) crowd it in.

Flores and Aguilera (2007) identify globalization to be the motivation behind the top-100 US MNCs' locational choice.

Over the years, many African countries have attempted to attract FDI by institutionalizing globalization as part of the economic reform package during the post-colonial era. However, the amount of FDI in Africa remained abysmal relative to other regions. According to UNCTADStat (2019), Africa's share of the global FDI inflows stood between 0.71% and 4.83% during the 1990–2018 period. This trend was in sharp contrast to an average of 3.92% reported before 1990. These observations suggest that a positive FDI–globalization nexus might be a myth in Africa.

In this paper, we examine the possible nexus between FDI and globalization in Africa. To date, the extant literature (see, for example, Chinn and Ito 2006, 2008; Quinn et al., 2011) has mostly captured globalization in terms of trade and financial openness or capital mobility restrictions. However, these measures are unidimensional that neglect the social and political aspects of globalization. With this in mind, we capture globalization by the KOF Globalization Index. The index is an ideal choice because it not only encompasses the economic, political, and social dimensions of globalization but also provides the *de facto* and *de jure* measures of globalization (Gygli et al., 2019). This multidimensional index was also used by Aluko et al. (2020) who demonstrate asymmetry in the Dumitrescu-Hurlin panel Granger non-causality test between globalization and FDI in Africa. We depart from Aluko et al. (2020) in that we apply the augmented mean group (AMG) estimator to ascertain the direct effect of globalization on FDI. In theory, this estimator is robust to endogeneity and employs an unobserved common factor to control for cross-sectional dependence and time-variant heterogeneity in the relationship. Moreover, we distinguish between the *de jure* and the *de facto* measures of globalization to

ascertain whether the *de jure* measure is only stringent on paper but ineffectual in reality, making *de facto* globalization more important (Kose et al., 2009).

Using the data from 47 African countries for the 1996–2016 period, we find globalization to be an important FDI driver in Africa. We decompose globalization into different dimensions and show that economic globalization exerts the most significant effect on FDI. We argue that the strength of the FDI–globalization nexus reflects the dominance of a particular globalization dimension in the host country. As such, the policymakers should reorientate their effort to improving economic globalization, which serves as a precondition for an FDI boom on the continent. Before empirically assessing the FDI–globalization nexus, we now present some stylized facts on the context of FDI inflows in Africa.

2. THE CONTEXT

From the outset, Africa is the world's second most populous continent and has an ample reserve of natural resources, both of which make it an attractive host location for the market- and resource-seeking FDI (Adams & Opoku, 2017; Sakyi & Opoku, 2014). However, FDI flows to Africa remained significantly lower than those reported for the rest of the world. According to UNCTADStat (2019), Africa accounted for less than 5% of the annual global FDI inflows throughout the 1970–2018 period. Broadly, this relatively poor performance reflected perhaps the lack of a coherent FDI strategy adopted by many African governments and the perception issue that that might have clouded the foreign investors' locational choice.³ Despite these concerns, FDI always superseded other forms of foreign capital inflows into the region. Historically, the primary sector was the leading FDI recipient in Africa, although its dominance was under threat from the

³ Asiedu (2002) argues that MNCs find Africa less attractive for their investments compared to other continents because of its geographical location as well as their perception of Africa being a high-risk business environment partly caused by their narrow knowledge of African countries.

services sector in recent years. Based on these observations, Agbloyor (2019) argues that FDI represents the most important development finance for Africa.

Africa's highest share of global FDI inflows occurred in 2009, which might have reflected the limited investment opportunities in the developed world following the global financial crisis. Despite a decline in global FDI inflows in 2018, FDI in Africa surged from US\$41 billion in 2017 to US\$46 billion in 2018 (UNCTAD, 2019a). In general, this favorable trend can be attributed to the boom in resource-seeking FDI, the rise of diversified FDI portfolios, and an FDI resurgence in South Africa (UNCTAD, 2019a). For example, in 2018, South Africa accounted for approximately 41% of greenfield FDI projects and 88% of cross-border mergers and acquisitions (M&As) on the continent (UNCTAD, 2019a). Although intracompany cross-border transfers underpinned the FDI boom in South Africa, Egypt remained the leading FDI recipient in Africa (UNCTAD, 2019b). What makes this trend even more striking is that by 2012 Egypt had recovered from the fall of \$0.5 billion in FDI inflows during the 2011 Arab Spring (OECD, 2020). In fact, relative political stability in the subsequent 2012–2016 period saw Egypt enjoying an annual average of 24% growth rate in FDI inflows (OECD, 2020). In a latest report by RMB (2020), it identifies a large market, a sophisticated business sector, and favorable policies to be the competitive advantages that propel Egypt as the most desirable FDI destination in Africa.

Table 1 shows that Africa's share of the global FDI inflows remained very low relative to global performance for the 1990–2018 period. With an average of US\$4,346 million in the 1990–1994 period, Africa accounted for 2.18% of the global inflows. While its average inflows in the 1995–1999 period slightly doubled from the previous period to US\$8,925 million, it only represented 1.5% of the global inflows. In the 2000–2004 period, its share of the global inflows surged to an average of US\$16,048 million. This upward trend continued into the 2005–2009

period as the average inflows grew almost threefold from its previous record to US\$45,967 million. In the 2010–2014 period, the average inflows again increased slightly to US\$50,618 million or 3.52% of the global inflows. However, the trend was reversed in the 2015–2018 period, with the average inflows of US\$47,662 million or 2.83% of the global FDI inflows. In short, the average FDI inflows consistently grew for most of the 1990–2018 period, but its share never exceeded 4% of the global inflows across all periods. In part, this dismal performance reflects the MNC's perception that investing in locations with inherently weak economic institutions and macroeconomic conditions is a risky proposition (Asiedu, 2002; Dupasquier & Osakwe, 2006).

[Table 1 here]

Table 2 shows that the FDI inflows are unevenly distributed across Africa. Between the years 1990 and 2018, North Africa was the largest FDI recipient, followed by West Africa. These two regions regularly swapped places as the leading recipients during this period. For example, except in the 2010–2014 period, North Africa ranked as either the first or second leading recipient on the continent. Specifically, its share of Africa's FDI inflows fell drastically from an average of 42.05% or US\$ 19,330 million in the 2005–2009 period to an average of 25.15% or US\$12,729 million in the 2010–2014 period. Undoubtedly, this decline reflected the political turmoil of the Arab Spring. For East Africa, its dominant second place in the 2010–2014 period echoed the investment in Tanzania's gas sector and Ethiopia's textiles sector (UNCTAD, 2015). Despite the Ebola outbreak in West Africa during the 2010–2014 period, its average FDI inflows were US\$14,891 million, making it the leading recipient in Africa. In the subsequent 2015–2018 period, North Africa overtook West Africa by an average of US\$ 13,391 million. Although FDI flows to East Africa marginally declined, it retained second place behind North Africa. The 2015 recession and legal disputes between the government and MNCs in Nigeria caused significant capital flights

(UNCTAD, 2019).⁴ Consequently, West Africa came third when its inflows drastically fell from an average of US\$14,8901 million in the 2010–2014 period to US\$10,916 million in the 2015–2018 period.

[Table 2 here]

We now describe our research methodology, including the model, data, and preliminary analyses.

3. METHODOLOGY

3.1. The model

In this paper, we examine the relationship between FDI and globalization in Africa through Dunning’s (1978, 1979, 1998) eclectic paradigm of international production. In essence, the paradigm argues that FDI serves as a vehicle for a firm to combine locational advantages with its ownership and internalization advantages. Since locational advantages include the comparative and competitive advantages that a country possesses over its rivals, they are country-specific and must be controlled for when examining globalization as an FDI attractor. Therefore, we propose the following model:

$$FDI_{it} = \sigma_i + \gamma Globalization_{it} + \alpha Z'_{it} + \varepsilon_{it} \quad (1)$$

where FDI_{it} stands for FDI inflows, $Globalization_{it}$ denotes the globalization measure, Z' is a vector containing a set of host country-specific factors, and ε_{it} is the error term. We are interested in the sign and statistical significance of the coefficient on globalization, γ . Specifically, a positive

⁴ Nigeria is the highest recipient of FDI in West Africa until it was displaced from this position by Ghana in 2018 (UNCTAD, 2019).

and significant γ indicates that globalization induces FDI in Africa. To control for endogeneity and path dependency, we extend Equation (1) by including the lagged FDI as an additional regressor:⁵

$$FDI_{it} = \sigma_i + \rho FDI_{it-1} + \gamma Globalization_{it} + \alpha Z'_{it} + \varepsilon_{it} \quad (2)$$

To select the host country-specific factors captured by Z' , we identify the robust determinants of MNCs' locational choice from the extant literature. For example, Du et al., (2008a,b) and Asiedu (2006) find that foreign investors prefer locations with strong institutional quality that protects private property rights in Africa. Meanwhile, Asiedu (2006) and Agbloyor (2019) show that investment uncertainty under macroeconomic instability deters FDI in Africa. As expected, Asiedu (2006) and Agbloyor (2019) find that those resource-rich African countries attract more resource-seeking FDI. Meanwhile, Anyanwu (2012) and Asiedu (2006) identify a strong positive correlation between FDI and market size in Africa. Since stronger financial development sends a signal to foreign investors that the domestic financial sector faces fewer financial market frictions (Desbordes and Wei, 2017; Yao et al., 2021), Agbloyor (2019) finds it to be a significant FDI attractor in Africa. Finally, Ibrahim et al. (2019) and Agbloyor (2019) show that infrastructural development, such as stable utility supplies and accessible transportation networks, stimulates FDI inflows in Africa. Following this, our control variable set includes institutional quality, macroeconomic instability, natural resources, market size, and infrastructure accessibility.

3.2. Data

⁵ Path dependency in FDI occurs when the level of present FDI inflows increases with the amount of accumulated FDI stock in the host location.

We utilize a panel comprising of annual observations for 47 African countries over the period 1996–2016. We are unable to extend the sample (countries and period) due to unavailability of data. For example, the governance indicator only became available from 1996 and onwards. Similarly, the most recent publication of the globalization index was in 2016. Table A1 in the Appendix presents a list of countries included in this study.

In line with the extant literature, we measure FDI by the net inflows of FDI as a share of GDP. We obtain the series from the World Development Indicators (WDI). We capture globalization by the KOF Globalization Index constructed by Gygli et al. (2019). Unlike the traditional measures of globalization like trade openness, the KOF Index approaches globalization through a multidimensional lens by including international trade and capital flows, as well as cross-border interactions between citizens and governments. As a result, the index can be further decomposed into economic, social, and political globalization. Specifically, the economic globalization index is constructed based on information from the long-distance flow of goods, capital, services, and information and the perception about market exchanges. Meanwhile, the political globalization index is developed from information that reflects the degree of government policy diffusion. Finally, the social globalization index is built on information that indicates the spread of ideas, information, images, and people. For consistency, each index is scaled between 0–100, with a larger value representing a higher degree of globalization. Another feature of the KOF Index is that it reports the *de facto* and *de jure* measures of each globalization dimension. Whereas, the *de facto* measure recognizes the realized international flows and activities relating to trade, capital, people, and information and ideas, the *de jure* measure encapsulates the policies, resources, conditions, and institutions that influence these realized flows and activities (Gygli et al., 2019). For completeness, we separately examine the effect of each globalization dimension as

an FDI driver. We obtain the data from the KOF database administered by the Swiss Economic Institute (<http://www.kof.ethz.ch/globalisation/>).⁶

In line with Kaufmann et al. (2011), we measure institutional quality by averaging the six governance dimensions from the World Governance Indicators (WGI).⁷ The estimates of the governance indicators occupy a range between -2.5 and 2.5 . Since many studies have gauged macroeconomic instability by the volatility of the inflation rate, we select the annual growth rate of the implicit GDP deflator (Feeny et al., 2014; Gui-Diby, 2014; Wisniewski and Pathan, 2014; Habyarimana and Opoku, 2018). We measure the availability of natural resources as the ratio of natural resources rent to GDP (Asiedu, 2013; Agbloyor, 2019). We capture market size by the share of the urban population, on the basis that a large urban population provides a stable labor force supply and represents a huge virgin market for MNCs (Poelhekke and van der Ploeg, 2009). We represent financial development by the Svirydzenka (2016) index, which assesses the accessibility, depth, and efficiency of the financial system. This index is scaled between 0 and 1, with a larger value indicating stronger financial development. Finally, we characterize infrastructure accessibility by the fixed telephone subscriptions per 100 people (Agbloyor, 2019; Ibrahim et al., 2019).

Table 3 presents the descriptive statistics and data sources for the variables in the model. From 1996 to 2016, FDI is averaged at 4.74%. Globalization has an average of 46.81, which falls below the world average of 56.72, suggesting that many African countries are not well integrated

⁶ Interested readers are advised to refer to Gygli et al. (2019) for a comprehensive discussion on the KOF indexes.

⁷ The six governance dimensions are voice and accountability, political stability and absence of violence, government effectiveness, regulatory quality, control of corruption, and rule of law.

into the global economy.⁸ Meanwhile, the coefficient of variation suggests little variations across the countries in various globalization measures considered in this study.

[Table 3 here]

3.3. Preliminary analyses

Although conventional estimators typically assume stationarity during the analysis, they can generate spurious results if the variables are nonstationary (Greene, 2003). Since it is not uncommon for macroeconomic time series to exhibit nonstationarity (Hamilton, 1989), we employ the Pesaran (2007) cross-sectionally augmented Im-Pesaran-Shin (CIPS) panel unit root test. Essentially, the CIPS test is a cross-sectional augmented Dickey-Fuller (CADF) regression model with the cross-sectional means of the lagged levels and first differences of the variable. According to Im et al. (2003), the CADF model is given by:

$$\Delta y_{it} = a_i + b_i y_{it-1} + c_i \bar{y}_{t-1} + d_i \Delta \bar{y}_t + e_{it} \quad (3)$$

where $\bar{y}_t = N^{-1} \sum_{j=1}^N y_{jt}$. The CIPS test statistic is calculated as the mean of individual-country

CADF test statistics:

$$CIPS(N, T) = N^{-1} \sum_{i=1}^N t_i(N, T) \quad (4)$$

where $t_i(N, T)$ is the CADF for the i th cross-section unit given by the t -ratio of the coefficient of y_{it-1} in Equation (4).

Apart from testing for the panel unit root, we also test for cross-sectional dependence (CSD) in the error terms, which can arise from common shocks to, and unobserved idiosyncrasies

⁸ Table A1 reports that 42 countries in Africa record a mean value of the KOF overall globalization index that falls below the world mean value.

of, the cross-sectional units (De Hoyos & Sarafidis, 2006). If CSD is present in the model, standard panel data estimation could produce inconsistent estimates (Kapetanios et al., 2011). To address this concern, we select the Pesaran (2004) CSD test, which is based on the average of the pairwise correlation coefficients of the ordinary least squares (OLS) residuals from the cross-sectional unit regressions. Specifically, the CD test statistic is given by:

$$CSD = \sqrt{\frac{2T}{N(N-1)}} \left(\sum_{i=1}^{N-1} \sum_{j=i+1}^N \hat{\rho}_{ij} \right) \rightarrow N(0,1) \quad (5)$$

where T is the time interval, N is the number of cross-sectional units, and $\hat{\rho}_{ij}$ is the pairwise correlation coefficient between cross-sectional units.

Table 4 presents the CIPS and CSD results. The CIPS test suggests political globalization to be the only stationary variable in levels. Meanwhile, globalization and *de jure* globalization are only stationary when the trend component is included. The CSD test suggests that, except institutional quality, all variables in the model exhibit CSD.

[Table 4 here]

3.4. Estimation approach

Since our model includes variables exhibiting non-stationarity and CSD, we employ the augmented mean group (AMG) estimator (Eberhardt & Bond, 2009; Eberhardt & Teal, 2010). Specifically, AMG controls for non-stationarity and accounts for the slope heterogeneity common in cross-country panels. It also controls for CSD by introducing the cross-sectional means of the unobservable factors over time into the regression.

The AMG estimator is best described by a two-stage process:

$$\text{Stage I: } \Delta FDI_{it} = \beta' \Delta X_{it} + \sum_{t=2}^T c_t \Delta D_t + \varepsilon_{it} \Rightarrow \hat{c}_t = \hat{\rho}_t \quad (6)$$

$$\text{Stage II: } FDI_{it} = \sigma_i + \beta' X_{it} + d_i \hat{\rho}_t + \varepsilon_{it} \Rightarrow \hat{\beta}_{AMG} = N^{-1} \sum_i \beta_i \quad (7)$$

where X is a vector of the independent variables consisting of lagged FDI, globalization, and the control variables, σ_i is the constant term, ε_{it} is the error term, $\hat{\rho}_t$ is the common dynamic process, and $\hat{\beta}_{AMG}$ is the AMG estimate. To carry out the AMG estimator, we begin by estimating the first-difference ordinary least squares (OLS) model and obtain the coefficients on the year dummies, $\hat{\rho}_t$. Next, we add $\hat{\rho}_t$ to the individual-country OLS regressions and compute the AMG estimates by averaging the coefficients on all regressions.

4. EMPIRICAL RESULTS

4.1. The benchmark results

In this section, we discuss the significant results of the FDI–globalization nexus in Africa.⁹ Specifically, we only focus on the models that passed the Wald test, yielded zero-order integration in residuals, and exhibited weak CDS.¹⁰ In Table 5, each column represents a model, and a bold number denotes a model with significant results. In general, we find that the coefficient on globalization is positive and significant in columns (1) and (2), suggesting that globalization induces FDI inflows in Africa. Our finding challenges Bitzenis (2003) who argues that MNCs' locational choice is only influenced by firm-specific motives and downplays the effect of the

⁹ We do not report and discuss the results of the control variables but are accessible from the authors upon request.

¹⁰ Pesaran (2015) notes that, in panel model estimation, residuals that are weakly cross-sectionally dependent do not pose serious limitation to estimation and statistical inference. However, statistical inference may be inaccurate when strong cross-sectional dependence in the residuals exists. Pesaran (2015) further notes that assuming cross-sectional independence in residuals, in Lagrange Multiplier (LM)-based CD tests, may be quite limited for large N panels and it would be more appropriate to hypothesize weak cross-sectional dependence in the residuals. Thus, due to the application of large N panels, we test for weak cross-sectional dependence in the residuals.

globalization agenda on FDI. Our finding does not utterly debunk these arguments; however, we provide evidence to suggest that globalization encourages the internationalization of MNCs' activities. We argue that MNCs are likely to invest more in countries with higher flows of people, information and ideas, capital, and goods.

[Table 5 here]

Next, we examine how globalization influences FDI inflows in two subsamples; sub-Saharan Africa (SSA) sample and non-highly-globalized African countries sample.¹¹ We are interested in SSA because it hosted an average of 71% of the FDI inflows over the 1970–2018 period (UNCTADStat, 2019). In defining the highly-globalized countries, we refer to countries with a mean globalization index exceeding the world globalization mean value of 57.62. Columns (3)–(6) in Table 5 show that overall globalization exerts a positive and significant effect on FDI in both subsamples. This finding indicates that globalization promotes FDI inflows and echoes our earlier assertion for the full-sample case. Overall, our results suggest that the positive FDI–globalization nexus in Africa is not sensitive to sample selection bias.

4.2. Unbundling globalization: *de facto* versus *de jure* measures

Next, we decompose globalization by the *de facto* and *de jure* measures of the KOF overall globalization index. Table 6 shows that the coefficients on *de facto* globalization are positive across all the samples, indicating a positive FDI–globalization nexus. However, these coefficients are only statistically significant at the 5-10% level when the trend component, which captures

¹¹ We create the SSA sample by dropping Algeria, Egypt, Morocco, and Tunisia from the full sample. In terms of the non-highly-globalized countries sample, we exclude Egypt, Mauritius, Morocco, South Africa, and Tunisia.

time-variant unobservables (Eberhardt, 2012; Eberhardt et al., 2013) is excluded from the estimations.

[Table 6 here]

In a similar vein, Table 7 shows that the coefficients on *de jure* globalization remain positive and statistically significant across all estimations and subsamples. *de jure* globalization attracts more FDI than its *de facto* counterpart. For example, in the overall sample, the coefficient on *de jure* globalization is 0.208 compared to 0.124 for *de facto* globalization. We also observe a similar pattern for the SSA countries (0.225 for *de jure* globalization compared to 0.186 for *de facto* globalization) and for the non-highly-globalized countries (0.209 for *de jure* globalization compared to 0.180 for *de facto*). In other words, the positive FDI–globalization nexus may reflect the dominance of the *de jure* measure. Hence, the policies, resources, conditions and institutions that enhance actual flows and activities of globalization matter more for FDI inflows in Africa than the actual flows and activities. For policymakers, our finding suggests that the direction of FDI inflows in Africa is heavily influenced by the perception of favorable conditions and policies on trade, capital, people, and information and ideas. Host countries are foreign to MNCs; thus, it is host countries’ *de jure* policies that MNCs use to form a perception of their business environment. Our results buttress that of Gygli et al. (2019), Quinn et al. (2011) and Aluko et al. (2021) who show that the effect of the *de jure* measure of globalization is more pronounced than the *de facto* measure. In short, the positive effect of globalization on FDI inflows is not sensitive to the *de facto* or *de jure* measure.

[Table 7 here]

4.3. Unbundling globalization: Economic, political, and social dimensions

Since globalization is a multidimensional concept, we separately examine the effect of economic, political, and social globalization in this section. Table 8 shows that economic globalization exerts a positive and significant impact on FDI inflows. This finding is consistent with Majocchi and Strange (2007), who identify trade openness and capital mobility as the key determinants of FDI in a country. We also find that the coefficient on political globalization is positive and statistically significant, indicating stronger political globalization exerts positive influence on FDI inflows. This catalytic role of political globalization supports Büthe and Milner (2008), who show that developing countries with international political engagements like international trade agreements record more FDI inflows than those which do not. Unlike the previous two dimensions, we find a negative but statistically insignificant coefficient on social globalization. The statistically insignificant impact of social-globalization that we find may follow from the fact that African countries are not well socially integrated into the world. Their cultures are not diffused into the world relative to some western countries and Asian countries such as China.

In comparing the results of the various dimensions of globalization, the effect of economic globalization is found to be more pronounced. For example, Table 8 shows that the coefficient on economic globalization (0.158) is more than 1.5 times larger than the coefficient on political globalization (0.093). The coefficient of social globalization is however statistically insignificant. The results therefore imply that higher economic globalization is more important in attracting FDI relative to political and social globalization. Thus, the policymakers should embrace economic globalization by improving trade and financial openness, market exchanges, market competition and production, all which will not only benefit the domestic economy but also generate spillovers in attracting FDI inflows.

[Table 8 here]

5. CONCLUSION

The advocates of globalization believe that increasing globalization is a necessary condition for attracting FDI inflows. This belief has led to many African countries embracing globalization since the 1990s. However, the evidence suggests that FDI inflows to the continent remained relatively low during this period. An attempt to understand this mismatch between belief and reality is what motivated our paper.

Using the data from 47 African countries from 1996 to 2016 and the AMG estimator, we find a significant effect of globalization on FDI. This finding remains robust to either the SSA countries or the non-highly-globalized countries sample. Undoubtedly, these findings suggest that FDI is globalization-induced in Africa. Against this backdrop, we argue that policymakers must prioritize globalization on their agenda. Moreover, our findings on *de jure* globalization suggest that policymakers must create a favorable perception that they are designing policies and regulations to narrow the gap between the domestic market and the global economy.

In terms of globalization dimensions, we show that economic globalization is, by far, the largest force shaping FDI inflows in Africa. This finding suggests that African countries should continue to open their borders for investment and trade. Although social globalization yields no effect on FDI inflows, it could be the case that its level is too low to jump start the FDI–globalization nexus. In other words, it would be a missed opportunity for African countries not to pursue social globalization, and in the process, improve overall globalization. We also find that political globalization fosters FDI inflows, suggesting that broadening the international engagement profile could be a useful strategy.

This paper examines the effect of globalization on FDI inflows in Africa. A worthwhile area for future research is investigating the transmission channels through which globalization influences FDI inflows to the continent.

Data Availability Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

References

- Adams, S. & Opoku, E.E.O. (2017). BRIC versus OECD Foreign Direct Investment Impact on Development in Africa," in Evelyn F. Wamboye and Esubalew A. Tiruneh (Eds.), *Foreign Capital Flows and Economic Development in Africa*. Palgrave Macmillan, New York.
- Agbloyor, E. K. (2019). Foreign direct investment, political business cycles and welfare in Africa. *Journal of International Development*, 31(5), 345–373.
- Aluko, O. A., Opoku, E. E. O., & Ibrahim, M. (2021). Investigating the environmental effect of globalization: Insights from selected industrialized countries. *Journal of Environmental Management*, 281, 111892.
- Aluko, O. A., Ibrahim, M., & Atagbuzia, M. O. (2020). On the causal nexus between FDI and globalization: Evidence from Africa. *The Journal of International Trade & Economic Development*. <https://doi.org/10.1080/09638199.2020.1823460>
- Anyanwu, J. C. (2012). Why does foreign direct investment go where it goes?: New evidence from African countries. *Annals of Economics and Finance*, 13(2), 425–462.
- Asiedu, E. (2013). Foreign direct investment, natural resources and institutions. International Growth Centre (IGC) Working Paper Series.
- Asiedu, E. (2006). Foreign direct investment in Africa: The role of natural resources, market size, government policy, institutions and political instability. *World Economy*, 29(1), 63–77.
- Asiedu, E. (2002). On the determinants of foreign direct investment to developing countries: Is Africa different? *World Development*, 30(1), 107–119.
- Bhagwati, J. N. (2004). In defense of globalization: With a new afterword. Oxford: Oxford University Press.
- Bhagwati, J. N. (1978). *Anatomy and consequences of exchange control regimes*. Cambridge: Ballinger Publishing Co.
- Bitzenis, A. (2003). Universal model of theories determining FDI: Is there any dominant theory? Are the FDI inflows in the CEE countries and especially in Bulgaria a myth? *European Business Review*, 15(2), 94–104.
- Borensztein, E., De Gregorio, J., & Lee, J. W. (1998). How does foreign direct investment affect economic growth? *Journal of International Economics*, 45(1), 115–135.
- Büthe, T., & Milner, H. V. (2008). The politics of FDI into developing countries: Increasing FDI through international trade agreements. *American Journal of Political Science*, 52(4), 741–762.

- Cantwell, J., & Narula, R. (2001). The eclectic paradigm in the global economy. *International Journal of the Economics of Business*, 8(2), 155–172.
- Chen, G. S., Yao, Y., & Malizard, J. (2017). Does foreign direct investment crowd in or crowd out private domestic investment in China? The effect of entry mode. *Economic Modelling*, 61, 409–419.
- Chinn, M., & Ito, H. (2006). What matters for financial development? Capital controls, institutions, and interactions. *Journal of Development Economics*, 81(1), 163–192.
- Chinn, M., & Ito, H. (2008). A new measure of financial openness. *Journal of Comparative Policy Analysis*, 10(3), 309–322.
- Cipollina, M., Giovannetti, G., Pietrovito, F., Pozzolo, A.F., 2012. FDI and growth: what cross-country industry data say. *World Economy*, 35 (11), 1599–1629.
- Clark, W. C. (2000). Environmental globalization. In Nye, J. S., & Donahue, J. D. (Eds). *Governance in a globalizing world* (pp. 86-108). Washington DC: Brookings Institution Press.
- De Hoyos, R.E. & Sarafidis, V. (2006). Testing for cross-sectional dependence in panel-data models. *Stata Journal* 6(4): 482–496.
- Desbordes, R., & Wei, S. (2017). The effects of financial development on foreign direct investment. National Bureau of Economic Research (NBER) Working Paper No. 23309.
- Du, J., Lu, Y., & Tao, Z. (2008a). FDI location choice: agglomeration vs institutions. *International Journal of Finance & Economics*, 13(1), 92–107.
- Du, J., Lu, Y., & Tao, Z. (2008b). Economic institutions and FDI location choice: Evidence from US multinationals in China. *Journal of Comparative Economics*, 36(3), 412–429.
- Dunning, J. H. (1998). Location and the multinational enterprise: A neglected factor. *Journal of International Business Studies*, 29(1), 45–66.
- Dunning, J. H. (1979). Explaining changing patterns of international production: In defence of the eclectic paradigm. *Oxford Bulletin of Economics and Statistics*, 41(4), 269–296.
- Duspasquier, C., & Osakwe, P. N. (2006). Foreign direct investment in Africa: Performance, challenges, and responsibilities. *Journal of Asian Economies*, 17(2), 241–260.
- Eberhardt, M. (2012). Estimating panel time-series models with heterogeneous slopes. *The Stata Journal*, 12(1), 61–71.
- Eberhardt, M., & Bond, S. (2009). Cross-section dependence in nonstationary panel models: A novel estimator. MPRA Paper No. 17870. <http://mpra.ub.uni-muenchen.de/17870/>.
- Eberhardt, M., Helmers, C., & Strauss, H. (2013). Do spillovers matter when estimating private returns to R&D? *The Review of Economics and Statistics*, 95(2), 436–448.

- Eberhardt, M., & Teal, F. (2010). Productivity analysis in global manufacturing production. Discussion Paper Series No. 515, Department of Economics, University of Oxford.
- Feeny, S., Iamsiraroj, S. & McGillivray, M. (2014). Growth and Foreign Direct Investment in the Pacific Island countries. *Economic Modelling*, 37, 332–339.
- Flores, R. G., & Aguilera, R. V. (2007). Globalization and location choice: an analysis of US multinational firms in 1980 and 2000. *Journal of International Business Studies*, 38(7), 1187–1210.
- Gorg, H., & Greenaway, D. (2004). Much ado about nothing? Do domestic firms really benefit from foreign direct investment? *World Bank Research Observer*, 19 (2), 171–197.
- Greene, W. H. (2003). *Econometric analysis*. India: Pearson Education
- Gui-Diby, S.L. (2014) Impact of foreign direct investments on economic growth in Africa: Evidence from three decades of panel data analyses. *Research in Economics*, 68, 248–256.
- Gygli, S., Haelg, F., Potrafke, N., & Sturm, J. E. (2019). The KOF globalization index-Revisited. *The Review of International Organizations*. <https://doi.org/10.1007/s11558-019-09344-2>.
- Habyarimana, J-B. & Opoku, E.E.O. (2018). Technological progress, worker efficiency, and growth in Africa: Does China's economy matter? *China Economic Review*, 52, 151–164.
- Hamilton, J. D. (1989). A new approach to the economic analysis of nonstationary time series and the business cycle. *Econometrica*, 57(2), 357–384.
- Ibrahim, M., Adam, I. O., & Sare, Y. A. (2019). Networking for foreign direct investment in Africa: How important are ICT environment and financial sector development? *Journal of Economic Integration*, 34(2), 346–369.
- Im, K. S., Pesaran, M. H., & Shin, Y. (2003). Testing for unit roots in heterogeneous panels. *Journal of Econometrics*, 115(1), 53–74.
- Jude, C. (2019). Does FDI crowd out domestic investment in transition countries? *Economics of Transition and Institutional Change*, 27(1), 163–200.
- Kapetanios, G., Pesaran, M. H., & Yamagata, T. (2011). Panels with nonstationary multifactor error structures. *Journal of Econometrics*, 160(2), 326–348.
- Kaufmann, D., Kraay, A., & Mastruzzi, M. (2011). The worldwide governance indicators: Methodology and analytical issues. *Hague Journal on the Rule of Law*, 3(2), 220–246.
- Kose, M. A., Prasad, E., Rogoff, K., & Wei, S. (2009). Financial globalization: A reappraisal. *IMF Staff Papers*, 56(1), 8–62.
- Majocchi, A., & Strange, R. (2007). The FDI location decision: Does liberalization matter? *Transnational Corporations*, 46(2), 1–40.
- Narula, R., & Dunning, J. H. (2010). Multinational enterprises, development and globalization: Some clarifications and a research agenda. *Oxford Development Studies*, 38(3), 263–287.

- OECD (2020). OECD Review of Foreign Direct Investment Statistics: Egypt
www.oecd.org/investment/OECD-Review-of-Foreign-Direct-Investment-Statistics-Egypt.pdf
- Pesaran, M. H. (2015). Testing weak cross-sectional dependence in large panels. *Econometric Reviews*, 34(6-10), 1089–1117.
- Pesaran, M. H. (2007). A simple panel unit root test in the presence of cross-section dependence. *Journal of Applied Econometrics*, 22(2), 265–312.
- Pesaran, M. H. (2006). Estimation and inference in large heterogeneous panels with a multifactor error structure. *Econometrica*, 74(4), 967–1012.
- Pesaran, M. H. (2004). General diagnostic tests for cross section dependence. IZA Discussion Paper No. 1240.
- Poelhekke, S., & van der Ploeg, F. (2009). Foreign direct investment and urban concentrations: Unbundling spatial lags. *Journal of Regional Science*, 49(4), 749–775.
- Quinn, D. P., Schindler, M., & Toyoda, M. A. (2011). Assessing measures of financial openness and integration. *IMF Economic Review*, 59(3), 488–522.
- Sakyi, D. & Opoku, E.E.O. (2014). Regionalism and Economic Integration in Africa: A Conceptual and Theoretical Perspective. *The African Capacity Building Foundation Occasional Paper 22*.
- Svirydzhenka, K. (2016). Introducing a new broad-based index of financial development. IMF Working Paper No. 16/5, International Monetary Fund.
- RMB (2020). Where to invest in Africa 2020. Rand Merchant Bank, South Africa.
https://www.rmb.co.za/files/pdf/Where_to_Invest_in_Africa_2020.pdf
- Thangavelu, S.M., Yong, Y.W., & Chongvilaivan, A. (2009). FDI, growth and the Asian financial crisis: the experience of selected Asian Countries. *World Economy* 32 (10), 1461–1477.
- UNCTAD (2013). Capital flows to developing countries: When are they good for development? Geneva: United Nations Conference on Trade and Development.
- UNCTAD (2019a). *World investment report*. Geneva: United Nations Conference on Trade and Development.
- UNCTAD (2019b). Foreign direct investment to Africa defies global slump, rises 11%.
<https://unctad.org/news/foreign-direct-investment-africa-defies-global-slump-rises-11>
- UNCTAD (2015). *World investment report: Reforming international investment governance*. Geneva: United Nations Conference on Trade and Development.
- UNCTAD (1998). *World investment report*. Geneva: United Nations Conference on Trade and Development.

UNCTADStat (2019). *Online UNCTAD statistics*. Retrieved from <https://unctadstat.unctad.org/wds/ReportFolders/reportFolders.aspx>.

Wisniewski, T.P. & Pathan, SK (2014) Political environment and foreign direct investment: Evidence from OECD countries. *European Journal of Political Economy*, 36, 13–23.

Yao, Y., Chen, G. S., & Zhang, L. (2021). Local financial intermediation and foreign direct investment: Evidence from China. *International Review of Economics & Finance*, 72, 198–216.

Table 1. FDI flow to Africa (million, US dollar)

	1990-1994	1995-1999	2000-2004	2005-2009	2010-2014	2015-2018
Global	199,351	595,643	792,412	1,379,052	1,437,039	1,686,751
Africa	4,346	8,925	16,049	45,967	50,618	47,662.12
America	58,315	216,330	236,792	357,814	434,792	551,430
Asia and Oceania	50,562	116,901	166,315	373,625	512,882	584,928
Europe	86,119	253,487	373,256	601,647	438,748	502,731
Share in global FDI (%)						
Africa	2.18	1.50	2.03	3.33	3.52	2.83
America	29.25	36.32	29.88	25.95	30.26	32.69
Asia and Oceania	25.36	19.63	20.99	27.09	35.69	34.68
Europe	43.20	42.56	47.10	43.63	30.53	29.81

Source: Author's computation with data culled from UNCTADStat (2019).

Table 2. Regional distribution of FDI inflows in Africa (million, US dollar)

	1990-1994	1995-1999	2000-2004	2005-2009	2010-2014	2015-2018
Africa	4,346	8,925	16,049	45,967	50,618	47,662
Central Africa	281	1,128	3,833	3,985	3,394	6,720
East Africa	310	1,189	1,828	5,285	13,232	13,045
North Africa	1,671	2,357	4,837	19,330	12,729	13,391
Southern Africa	238	1,844	2,723	7,197	6,373	3,590
West Africa	1,846	2,408	2,828	10,170	14,8901	10,916
Share in Africa's FDI (%)						
Central Africa	6.46	12.63	23.88	8.67	6.70	14.10
East Africa	7.13	13.32	11.39	11.50	26.14	27.37
North Africa	38.45	26.41	30.14	42.05	25.15	28.10
Southern Africa	5.48	20.66	16.97	15.66	12.59	7.53
West Africa	42.48	26.98	17.62	22.12	29.42	22.90

Source: Author's computation with data culled from UNCTADStat (2019).

Table 3. Descriptive statistics

	Source	Mean	Std. dev	CV	Skewness	Kurtosis
FDI	WDI	4.74	10.76	2.25	6.00	73.18
Globalization	SEI	46.81	9.71	0.21	0.23	2.86
Globalization (<i>de facto</i>)	SEI	44.92	10.55	0.24	-0.06	2.67
Globalization (<i>de jure</i>)	SEI	48.73	10.07	0.21	0.46	3.04
Economic globalization	SEI	45.79	12.35	0.27	0.59	3.35
Political globalization	SEI	57.65	16.64	0.29	-0.03	2.21
Social globalization	SEI	37.32	14.11	0.38	0.50	2.66
Institutional quality	WGI	-0.59	0.60	-1.02	0.30	2.69
Macroeconomic instability	WDI	17.87	177.25	9.92	23.28	586.38
Natural resources	WDI	13.01	13.03	1.00	1.96	7.83
Market size	WDI	39.31	16.35	0.42	0.33	2.70
Financial development	IMF	0.15	0.10	0.67	1.92	7.09
Infrastructure accessibility	WDI	3.33	5.78	1.74	2.84	11.38

Notes: Std. dev and CV denote standard deviation and coefficient of variation, respectively. IMF denotes International Monetary Fund, SEI stands for Swiss Economic Institute, WDI denotes World Development Indicators, and WGI is World Governance Indicators.

Table 4. Preliminary analyses, by Pesaran (2007) CIPS test and Pesaran (2004) CD test.

	CIPS test		Stationary	CD test	
	Intercept	Intercept and trend		Test statistic	Cross-sectional dependence
FDI	0.033 (0.513)	1.637 (0.949)	No	12.024*** (0.000)	Yes
Globalization	-1.838** (0.033)	1.700 (0.955)	Yes/No	128.672*** (0.000)	Yes
Globalization (<i>de facto</i>)	-0.244 (0.404)	1.070 (0.858)	No	82.91*** (0.000)	Yes
Globalization (<i>de jure</i>)	-3.249*** (0.001)	-1.274 (0.101)	Yes/No	137.88*** (0.000)	Yes
Economic globalization	0.198 (0.579)	4.131 (1.000)	No	9.891*** (0.000)	Yes
Political globalization	-2.622*** (0.004)	-3.055*** (0.001)	Yes	110.326*** (0.000)	Yes
Social globalization	-0.046 (0.481)	-0.780 (0.218)	No	144.871*** (0.000)	Yes
Institutional quality	2.565 (0.995)	3.960 (1.000)	No	-0.502 (0.615)	No
Macroeconomic instability	-0.108 (0.457)	0.359 (0.640)	No	15.92*** (0.000)	Yes
Natural resources	0.973 (0.835)	-0.017 (0.493)	No	23.513*** (0.000)	Yes
Market size	3.594 (1.000)	10.557 (1.000)	No	119.861*** (0.000)	Yes
Financial development	-0.265 (0.605)	4.674 (1.000)	No	53.776*** (0.000)	Yes
Infrastructure	4.641 (1.000)	6.212 (1.000)	No	25.679*** (0.000)	Yes

Notes: *** and ** indicate that the null hypothesis is rejected at 1% and 5% significance level, respectively. The null hypothesis of the Pesaran (2007) CIPS test is that the series is nonstationary. The null hypothesis of the Pesaran (2004) CD test is that the series is free from cross-sectional dependence. Values in parenthesis are *p-values* of the test statistics. The lag length for the Pesaran (2007) CIPS test is selected following the Newey-West procedure, i.e.

$$\left[4 * \left(\frac{T}{100} \right)^{\frac{2}{9}} \approx 3 \right].$$

Table 5. FDI and globalization

	All		SSA		Excluding highly-globalized countries	
	(1)	(2)	(3)	(4)	(5)	(6)
FDI _{t-1}	-0.225*** (0.057)	-0.129** (0.059)	-0.218*** (0.062)	-0.143** (0.062)	-0.209*** (0.063)	-0.126** (0.063)
Globalization	0.299*** (0.105)	0.302*** (0.084)	0.306*** (0.110)	0.352*** (0.102)	0.307*** (0.110)	0.346*** (0.105)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Trend	No	Yes	No	Yes	No	Yes
Number of countries	47	47	43	43	42	42
Model diagnostics						
I(0)	Yes	Yes	Yes	Yes	Yes	Yes
CD test (<i>p</i> -value)	0.936	0.216	0.843	0.340	0.983	0.210
Wald test (<i>p</i> -value)	0.001***	0.002***	0.001***	0.001***	0.000***	0.001***

Notes: ***, **, and * indicate statistical significance at 1%, 5%, and 10% levels, respectively. Values reported in parenthesis are standard errors. The Pesaran (2007) CIPS unit root test is employed to determine the order of integration, $I(d)$, of the residuals. Meanwhile, the Pesaran (2015) CD test is used to test for weak cross-sectional dependence in the residuals, with the null hypothesis that the residuals are weakly cross-sectionally dependent. We focus on our main variables of interest and hence do not report and discuss the control variables, but the results are accessible from the author upon request.

Table 6. FDI and *de facto* globalization

	All		SSA		Excluding highly-globalized countries	
	(1)	(2)	(3)	(4)	(5)	(6)
FDI _{t-1}	-0.157** (0.062)	-0.199*** (0.059)	-0.157** (0.065)	-0.205*** (0.066)	-0.126** (0.064)	-0.184*** (0.063)
Globalization	0.124** (0.059)	0.031 (0.116)	0.186*** (0.062)	0.029 (0.126)	0.180*** (0.060)	0.037 (0.118)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Trend	No	Yes	No	Yes	No	Yes
Number of countries	47	47	43	43	42	42
Model diagnostics						
I(0)	Yes	Yes	Yes	Yes	Yes	Yes
CD test (<i>p</i> -value)	0.803	0.252	0.472	0.093*	0.362	0.063*
Wald test (<i>p</i> -value)	0.060*	0.044**	0.004***	0.059*	0.009***	0.143

Notes in Table 5 also apply here.

Table 7. FDI and *de jure* globalization

	All		SSA		Excluding highly-globalized countries	
	(1)	(2)	(3)	(4)	(5)	(6)
FDI _{t-1}	-0.104*	-0.196***	-0.125*	-0.205***	-0.101	-0.195***
	(0.061)	(0.059)	(0.065)	(0.064)	(0.066)	(0.065)
Globalization	0.208***	0.227***	0.225***	0.217***	0.209***	0.220***
	(0.067)	(0.064)	(0.076)	(0.065)	(0.078)	(0.067)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Trend	No	Yes	No	Yes	No	Yes
Number of countries	47	47	43	43	42	42
Model diagnostics						
I(0)	Yes	Yes	Yes	Yes	Yes	Yes
CD test (<i>p</i> -value)	0.660	0.183	0.498	0.153	0.626	0.290
Wald test (<i>p</i> -value)	0.004***	0.001***	0.004***	0.003***	0.008***	0.001***

Notes in Table 5 also apply here.

Table 8. FDI and globalization dimensions

	(1)	(2)	(3)	(4)	(5)	(6)
FDI _{t-1}	-0.246***	-0.161***	-0.163***	-0.080	-0.179***	-0.108**
	(0.057)	(0.059)	(0.059)	(0.061)	(0.059)	(0.055)
Economic globalization	0.158***	0.108***				
	(0.052)	(0.036)				
Political globalization			0.093*	0.107*		
			(0.052)	(0.063)		
Social globalization					-0.091	-0.032
					(0.109)	(0.080)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Trend	No	Yes	No	Yes	No	Yes
Number of countries	47	47	47	47	47	47
Model diagnostics						
I(0)	Yes	Yes	Yes	Yes	Yes	Yes
CD test (<i>p</i> -value)	0.228	0.621	0.308	0.465	0.295	0.384
Wald test (<i>p</i> -value)	0.000***	0.003***	0.036**	0.353	0.068*	0.349

Notes in Table 5 also apply here.

Appendix

Table A1. KOF overall globalization index, by mean and rank, 1996–2016.

Country	Region	KOF overall globalization index		Country	Region	KOF overall globalization index	
		Mean	Rank			Mean	Rank
Algeria	North Africa	52.68	13	Liberia	West Africa	46.78	23
Angola	Southern Africa	41.80	34	Madagascar	East Africa	42.28	32
Benin	West Africa	44.93	27	Malawi	Southern Africa	42.23	33
Botswana	Southern Africa	52.82	11	Mali	West Africa	44.8	28
Burkina Faso	West Africa	43.30	31	Mauritania	West Africa	43.87	30
Burundi	Central Africa	31.87	47	Mauritius	East Africa	63.94	3
Cameroon	Central Africa	45.22	26	Morocco	North Africa	61.55	5
Cape Verde	West Africa	46.45	24	Mozambique	Southern Africa	45.48	25
Central African Republic	Central Africa	33.32	46	Namibia	Southern Africa	55.15	7
Chad	Central Africa	35.95	44	Niger	West Africa	38.49	39
Comoros	East Africa	33.41	45	Nigeria	West Africa	53.14	10
Congo, DR	Central Africa	38.91	37	Rwanda	East Africa	38.19	40
Congo, Republic	Central Africa	47.50	19	Senegal	West Africa	56.10	6
Cote d'Ivoire	West Africa	49.71	16	Seychelles	East Africa	54.73	8
Egypt	North Africa	63.46	4	Sierra Leone	West Africa	36.75	42
Equatorial Guinea	Central Africa	40.86	35	South Africa	Southern Africa	64.55	1
Ethiopia	East Africa	37.83	41	Sudan	North Africa	38.53	38
Gabon	Central Africa	52.69	12	Swaziland	Southern Africa	44.61	29
Gambia	West Africa	48.08	17	Tanzania	East Africa	47.47	20
Ghana	West Africa	54.36	9	Togo	West Africa	47.89	18
Guinea	West Africa	39.93	36	Tunisia	North Africa	64.22	2
Guinea–Bissau	West Africa	36.24	43	Uganda	East Africa	46.83	22
Kenya	East Africa	51.91	15	Zambia	Southern Africa	52.14	14
Lesotho	Southern Africa	46.90	21				