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The impact of the investment climate on foreign direct investment in Africa

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Abstract

This paper investigates the impact of investment climate on FDI in Africa using a dataset that spans 2000 to 2018. It also hypothesised that the relationship between investment climate and FDI could vary by country classification as a landlocked, least developed (LDC), natural resource-abundant or has a developed financial market system (DFM). The system's GMM and the fixed-effect model with Driscoll-Kraay standard errors results show that investment climate is critical for FDI in Africa, resource-rich countries and those with DFM. Conversely, the role of the investment climate is less significant in landlocked countries, which underscores the need to consider the possibility of heterogeneity to avoid false-positive conclusions. We also find that the moderating role of the investment climate and GDP is nontrivial in the relationship. These results suggest that the LDCs and landlocked countries need to strengthen their investment climates by adopting policies that enhance the rule of law, fight corruption and build robust institutions to attract FDI. It also shows how researchers can navigate the considerable encumbrance of dealing with several constructs of the investment climate by employing principal components analysis, which gives the optimal granularity required for further investigation. This more specific definition is critical when the intent is to make generalities about the role of the investment climate.

Keywords: Investment climate; institutions; foreign direct investment; PCA.

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1. Introduction

Economic literature widely appreciates the crucial role of foreign direct investment (FDI) in enhancing technology spillover, employment creation and economic growth globally and in developing countries (Bopkin, 2017; Agbloyor *et al*., 2016). For most African countries, factors that can attract FDI remain of critical economic importance because the continent seems trapped in a vicious circle of low inflows (Tuomi, 2011). Global FDI rose from $57 billion to $1271 billion between 1982 and 2000 and reached $1.24 trillion in 2010 (Zghidi *et al*., 2016). Almsafir *et al*. (2011) even reported that the growth of FDI had surpassed that of trade, making it the most strategic type of capital flows. However, there was a sustained decline in FDI from 2014 to 2018. Within this period, Africa escaped the global decrease in 2018 when FDI to Africa rose by US$46 billion after experiencing a persistent contraction from 2016 to 2017 (UNCTAD, 2019).

Despite this progress, the continent accounts for less than 5% of the global FDI share that varies significantly across the region. For example, Ethiopia experienced an 18% decrease (to $3.3 billion) from 2017 to 2018, but FDI flows to 16 landlocked countries in Africa increased by 9% (to $8.9 billion) (UNCTAD, 2019). A conundrum under this rubric has been to explain why some countries and regions attract more investments than others. Among various factors considered in the literature is the investment climate, and there is nothing to suggest that it would cease to form part of the long-term tapestry in the locational decisions of foreign enterprises in particular countries.

Investment climate in this paper encapsulates the policy, governance, institutions or regulatory environment that determine investors willingness to operate businesses in a country (Dollar *et al*., 2005; Sekkat *et al*., 2007). Although it is often commonly associated with the quality of institutions (Acemoglu *et al.*, 2001; Fosu & Gafa, 2020), Hall and Jones (1999) regard it as the social infrastructure that enhances capital accumulation and worker's productivity. Some researchers classify these under political and economic institutional quality (Bénassy-Quéré *et al*., 2007; Contractor *et al*., 2020; Liedong & Frynas, 2018), which has the advantage that it takes a shorter period to make and implement reforms that can improve it to attract FDI.

All the same, what constitutes a 'good investment climate' is likely to depend on the investor and the type of investment. Some scholars argue that a good investment climate predicates political stability, property rights, democracy and other economic fundamentals (Tuomi, 2011; Sabir *et al.*, 2019). In Africa,

investment climate seems to be characterised by recurrent conflicts, widespread coups d'état, lack of respect for the rule of law, poor human rights records and most importantly, the poor and sometimes biased reporting from the mainstream media (Agbloyor *et al*., 2016), which could potentially hamper the much-needed inflow of FDI for social and economic development. In fairness, the record of much FDI typified by rent theft from Africa and ecological damage to the continent (for a more detailed analysis, see Obeng-Odoom, 2020, 2021) justifies existing widespread criticisms. Indeed, over the years, Marxist and dependency theorists have raised justifiable concerns about the deleterious ramifications of FDIs for Africa (Amin, 1985; Nwoke, 2020). This body of scholarship adds to the controversy around FDIs.

A fundamental puzzle is how to assess the impact of diverse FDIs. The existence of several measures of the investment climate implies that researchers face a challenge of which ones to choose for their studies since it is their combined index that makes sense about the average impact on the variable of interest (Shah *et al*., 2016). Notwithstanding the incertitudes in measurement, some studies focus on developing countries or carry out a comparative analysis of advanced and less developed countries (Dollar *et al.*, 2005; Sekkat *et al*., 2007; Peres *et al*., 2018). Although a few studies in Africa have shown that the investment climate matters for FDI (Bouchoucha & Benammou, 2020; Green, 2018; Kamal *et al*., 2020; Liedong & Frynas, 2018), their results may mask cross-country heterogeneity since foreign investors are motivated by different locational factors (market-seeking, resource-seeking, efficiency-seeking and strategic asset-seeking motives).

Failure to account for these differences could lead to bias because of the disparate characteristics of landlocked, least developed countries (LDCs), countries with developed financial markets and abundant natural resources. Landlocked countries do not have a coastline connected to an ocean. According to the United Nations, LDCs have the lowest indicators of social and economic development relative to other countries in the world (GDP per capita of less than US$1,025 in 2018, weak human resources and economic vulnerability). Countries with a developed financial market are those that remove restrictions on capital mobility and foreign ownership, and have efficient market institutions.

In this regard, the current study makes three contributions to the literature. First, it develops a global index that accounts for maximum variance with the help of principal component analysis by using several standard noneconomic variables to measure the investment climate. A subtle appeal of this method is

that it reduces dimensionality in the data while maintaining maximum variance. Previous studies defined the investment climate to mean either or some of the following variables: democracy/institutions (Green, 2018; Agbloyor *et al*., 2016), regulations (Contractor *et al.*, 2020), governance (Subasat & Bellos, 2013), human rights and the rule of law (Blanton & Blanton, 2007), political environment and corruption (Liu *et al*., 2018; Mathur & Sing, 2013). The paper consolidates these constructs into a single composite index to examine its impact on FDI, which complements the existing literature (Asongu *et al*., 2018; Sabir *et al*., 2019).

Secondly, it isolates and investigates the impact of the investment climate on FDI in the landlocked nations (15), least developed countries (LDCs) [33], countries with developed financial markets (23), and countries with abundant natural resources (19) (Agbloyor *et al*., 2016). The advantage of this approach is that it mitigates heterogeneity by bringing together countries with similar characteristics to ensure that results, on average, are generalisable. Finally, given that all panel data are dynamic, it is necessary to account for endogeneity which is a precursor to obtaining efficient estimates. This study goes beyond the GMM and estimate fixed-effect models with Driscoll-Kraay standard errors that control heterogeneity and cross-sectional dependence. The two approaches enable us to arrive at robust and conclusive results about the average impact of the investment climate on FDI in Africa.

Section 2 reviews the empirical literature, identifies the relevant theoretical debates and situates the study within Dunning's eclectic paradigm. Section 3 describes the data, estimation strategies, challenges and our novel approach in consolidating disparate measures of the investment climate with principal component analysis. Section 4 reports the results and engages the relevant literature for further discussions. Section 5 concludes the study and suggest areas for future research.

2. Theoretical underpinnings and literature review

Dependency theory, classical theory, and middle path theory are the three main theories on the relationship between FDI and economic development that we can isolate from economic literature (Asongu *et al.*, 2018). The dependency theory takes a pessimistic view on the role of FDI as an instrument of economic development. It argues that: a) benefits from FDI are not evenly distributed between developing countries and multinational companies (MNCs), and

the repatriation of profits to rich countries also deprives developing countries of resources that can power development, b) MNCs destroy the prospects of domestic enterprises that are unable to withstand fierce competition, which hinders economic growth (Taylor & Thrift, 2013). Critics such as Nwoke (2020) also argue that the norms and strategies of development in Africa are conceived and directed from outside of Africa – by institutions such as the World Bank and the IMF – that use foreign aid, development finance and trade schemes as instruments of dominance and exploitation, although Cline-Cole (2020) found these equivocations less substantive and convincing.

On the contrary, classical theories take an optimistic approach to the role of FDI on economic development. They argue that FDI is necessary for improving the balance of payment position of countries, enhancing the transfer of skills and technology, developing the domestic infrastructure and creating jobs needed for economic development (Asongu *et al.*, 2018; Toone, 2013). Finally, proponents of the middle path theory serve as a centripetal force against the centrifugal tendencies of the dependency and classical approaches. They analyse the pros and cons of FDI from both perspectives to find points of convergence between trade openness and regulations that can mitigate its side effects.

These three theories underscore the importance of the home country's investment policies, institutions, human capital and natural resources in attracting FDI. This study builds on the impact of the investment climate as an extrinsic factor that determines FDI location, explicit in the eclectic paradigm of Dunning (1980). Accordingly, the extent, geographical distribution and industrial composition of MNEs are a function of three interdependent factors, also derived from three sub-paradigms, known as the OLI – ownership, internalisation and location – paradigm (Dunning, 2000). Each of these components was a theory and still maintains meaningful explanatory power on FDI location even within heightened globalisation.

Buckley and Casson (1976) originally developed the internalisation theory to explain how multinational enterprises organise their internal activities to generate specific advantages. Accordingly, when a firm acquires ownership advantages, it is always profitable to use them (internalisation) rather than sell or lease to foreign firms through licensing, franchising or contracting (Makoni, 2015). It is one of the most important of the trio in Dunning's taxonomy as it critically explains why some production activities happen within a firm and others outside (outsourced).

On its part, ownership advantages are the tangible and intangible assets of firms or their ability to coordinate assets with others across national boundaries in a way that benefits them more than their competitors (Dunning, 2001). These assets – for instance, information and technology, trademarks, management skills, patents and copyrights – reduce production costs that enable multinationals to compete with others in foreign countries (Makoni, 2015).

Finally, locational factors are country-specific advantages of host nations relative to others (Dunning, 1980). These may include scarce human and natural resources, market size and policies on foreign investments, and often grouped into market-seeking, resource-seeking, efficiency-seeking and strategic asset-seeking motives. This theory implies that the extent to which MNEs can exploit these advantages is determined significantly by the host government's policies which can either make a good or bad investment climate. Therefore, the more profitable it is for a firm to exploit its ownership and internalisation advantages outside its home country because of a better investment climate, the higher the probability of investing abroad.

Among various measures of the investment climate, the quality of institutions is crucial for the location of FDI. Generally, institutions shape the form and substance of economic activities. Although African countries are still facing challenges in building robust institutions that reflect their socio-cultural realities and meet contemporary dynamics, Green (2018) opined that democracy – a type of political institution – can obviate civil wars through more inclusive politics by creating conducive environments that encourage capital accumulation. Li and Resnick (2003) suggested that democracies provide a shield on foreign investment from the haul of dictators, and as such, investors would favour such regimes. Arias *et al.* (2018) argued that since most African autocrats depend on the West for their political survival, policies that threaten their interests can jeopadise economic relations. This example suggests that investors may care more about political stability and not the nature of institutions.

A substantial literature has shown that an impressive performance of the investment climate in most countries successfully pools foreign investment. Using a system of simultaneous equations, Blanton and Blanton (2007) found that human rights were a significant determinant of FDI in non-OECD countries. Lipsey and Fredrik (2011) established that the poor business climate, coupled with weak institutions were responsible for the low inflow of FDI in Indonesia compared to other East Asian countries. Similarly, Bannaga *et al.* (2013) employed a gravity model and found evidence lending credence to the crucial

role played by governance indices in attracting FDI. Rjoub *et al.* (2017b) found that political constraints, natural resource endowment and GDP had a positive nexus with FDI in landlocked countries. Asiedu (2002) attributed the low inflow of FDI in a panel of 71 developing countries to low return on capital, geographic location of some countries in SSA and poor infrastructural development.

On its part, the role of corruption is still mixed as some studies find that it is essential for investors to circumvent institutional barriers in some countries (Quazi *et al*., 2014), while others argue that it leads to operational inefficiencies that negatively affect FDI (Mathur & Sing, 2013; Quazi, 2014; Hossain, 2016). In their study, Quazi *et al*. (2014) found supporting evidence for the helping hand hypothesis that corruption enhances the inflow of FDI. However, Moosa (2017) argued that existing results were just a product of scientific manoeuvres that are contrived to justify the unscrupulous practices of MNCs.

Similarly, studies using economic freedom convincingly show that it significantly explains variations in patterns of FDI inflow. Bayraktar (2013) employed nine measures of the investment climate – ease of doing business – to demonstrate its positive association with FDI from developed to developing countries over 2004 to 2010. Bouchoucha and Benammou (2020) and Rodríguez-Pose & Cols (2017) showed that the five measures of governance were associated with FDI attraction in SSA. Finally, Cleeve (2012) employed twelve institutional variables and underscored their importance in attracting FDI in a panel of 40 countries drawn from SSA.

While these results are insightful, they re-echo the complexity in measuring the investment climate with several constructs and the need for a composite index that can collapse them while at the same time retaining sufficient explanatory power. Additionally, there is a likelihood that a model with all these constructs could suffer from multicollinearity and over-parameterization because the indices measure different dimensions of governance and institutions (Asongu *et al*., 2018).

To this end, Sabir *et al*. (2019) suggested using the principal components analysis (PCA) to to circumvent these challenges. In their study, together with results from Peres *et al*. (2018), the strong performance of FDI in developed countries compared to developing ones was attributed to existing inefficiencies in institutions of the latter. Results from Asongu *et al*. (2018) – which used PCA of governance indices to measure the investment climate – showed that institutional quality did not affect FDI in BRICS (Brazil, Russia, India, China, and South Africa) and MINT (Mexico, Indonesia, Nigeria, and Turkey) countries.

Similarly, a study by Rjoub *et al*. (2017a) found that FDI had a positive impact on economic growth in landlocked countries in SSA. Mijiyawa (2015) examined the determinants of FDI to establish that economic growth, trade openness, natural resource rents were its relevant drivers. A striking similarity between these studies is that they mostly use static models or the GMM technique, which masks unobserved heterogeneity stemming from geographic specificities (landlocked), level of development and natural resource abundance. We address these issues by conflating the data to form a composite index using principal component analysis.

3. Data and estimation procedure

3.1. Data

The objective of this paper is to investigate the thesis that 'investment climate' induce FDI in Africa. Our final dataset is a balanced panel with 50 countries observed from 2000 to 2018. We generated missing observations using the hyperbolic sine transformation given by the formula $x = \ln [x + \sqrt{(x^2 + 1)}]$. This transformation did not lead to any qualitative difference in the data. We employ the following variables for our analyses:

- **FDI stock**

Our dependent variable is FDI stock, gleaned from UNCTAD. FDI inflow is the most commonly used measure of FDI in empirical studies (Sabir *et al*., 2019), but it does not capture the value of investments in host countries financed from domestic banks through loans, which can underestimate its volume (Beri & Nubong, 2021; Beugelsdijk *et al*., 2010; Wacker, 2016). Data on FDI inflow in Africa is also positively skewed because a few countries receive extreme volumes than others. There are also negative inflows due to the movement of capital into and out of most countries, which compound econometric problems when transforming those negatives into positives (Fan *et al.*, 2009). Therefore, data on FDI stocks was preferred because it more closely measures the activities of MNEs in a country. Some studies also use FDI as a percentage of GDP (Hossain, 2016; Bouchoucha & Benammou, 2020). We do not use this measure because it captures the relative importance of FDI to GDP and not the activities of MNEs in a country.

- **Investment climate**

The investment climate is measured using multiple constructs collected from the World Governance Index (WGI). These include control of corruption, government effectiveness, political stability and absence of violence/terrorism, regulatory quality, the rule of law and voice and accountability. We subjected

these constructs to the principal component analysis (PCA) and developed a composite index that accounts for maximum variance (Asongu *et al*., 2018; Sabir *et al*., 2019). We retained one component for further analysis based on a threshold of 1 expected from the eigenvalues. This component accounted for 78.62 per cent of the explained variation. The KMO measure of sampling adequacy was 0.8909, which justified its use for data reduction.

Table 1: Principle Components / Correlation

Component	Eigenvalue	Proportion	Difference	Cumulative
Comp1	4.71691	4.21616	0.7862	0.7862
Comp2	0.500745	0.118767	0.0835	0.8696
Comp3	0.381978	0.152288	0.0637	0.9333
Comp4	0.22969	0.130138	0.0383	0.9716
Comp5	0.099552	0.0284249	0.0166	0.9881
Comp6	0.0711272		0.0119	1

Source: Authors' estimates

We control for gross domestic product, trade openness, exchange rate and natural resource rents in all estimations (Beri & Nubong, 2021; Kamal *et al*., 2020; Sabir *et al*., 2019). Data on all control variables come from the world development indicators. Table 2 presents summary statistics for all variables in the study. FDI and gross domestic product are in millions of US dollars at current prices, while trade openness, exchange rate and natural resource rents are in percentages of GDP.

Table 2: Summary Statistics of Variables in the Estimation

	Mean	Standard deviation	Minimum	Maximum
FDI	10190.73	22107.80	1.3	179564.8
GDP	3.38e+10	7.17e+10	3.5e+08	5.7e+11
TRADE	83.19	87.52	19.1	1053.4
EXR	4.70e+08	4.90e+09	0.0	7.4e+10
NATR	13.30	13.38	0.0	84.2
I(PCA)	6.84e-09	2.171844	-4.682754	5.829412
CC	-0.64	0.58	-1.8	1.2
GE	-0.73	0.59	-1.9	1.1
POLSTAB	-0.56	0.85	-2.7	1.2
REGQ	-0.67	0.60	-2.3	1.1
RoL	-0.68	0.61	-2.0	1.1
VOC	-0.65	0.72	-2.2	1.0

Source: Authors' estimates

3.2. Procedure

As a prelude to the analysis, a poolability test based on Chow's approach shows that not all cross-section effects are equal to zero [F (49, 893) = 27.51, Prob > F = 0.000]. Therefore, cross-sections do not have a common intercept. Similarly, the joint significance of time dummies – F (18, 924) = 6.37 with Prob > F = 0.000)—implies that not all time fixed-effects are equal to zero. Therefore, there is a need to control for time effects in the estimations. Results from the Breusch and Pagan test for heteroscedasticity – [(chi2 (1) = 2921.90, Prob > chi2 = 0.000] – shows that the variances are not constant. Finally, the Pesaran CD test for cross-sectional dependence shows evidence of its existence [z = 20.8766, p-value = 0.000].

Results from the cross-sectional dependence test suggest that a second-generation unit root test would be more appropriate. They also imply that the least-squares dummy variable estimator with fixed-effects will not produce consistent parameters due to the Nickell bias and cross-sectional dependence. To circumvent this econometric challenge, we estimate a fixed-effect model based on Driscoll and Kraay (1998) standard errors whose Monte Carlo simulations are often robust to heteroscedasticity, autocorrelation, cross-sectional and temporal dependence.

To determine the level of stationarity, we employ a second-generation test for unit root. It follows an AR (1) process in equation (1).

$$y_{it} = \mu_i + \gamma_i t + \rho_i y_{i,t-1} + \varepsilon_{i,t} \quad (1)$$

Where $t = 1,\ldots, T$ is the time period and $i = 1,\ldots, N$ is the number of cross-sections, y_i is the individual trend, μ_i represents the entity or country-specific fixed effects, ρ_i is the autoregressive parameter ε_{it} when there is a unit root and is the idiosyncratic error. The test assumes that ρ_i varies across included entities (heterogeneous).

The reason for choosing a heterogeneous test for unit root is that African countries are grouped into economic blocks and may respond differently to various political, economic and spatial stimuli (Gaibulloev *et al*., 2014). Im, Pesaran and Shin (IPS) tests are the most common for panels assuming heterogeneity. Its null hypothesis assumes the existence of unit root across cross-sections.

Table 3 shows that FDI is I (1), while our independent variable (global index of investment climate) is I (0). All control variables except for natural resource rents are I (1). In our models, we include the first differences for all variables that are I (1).

Table 3: Im-Pesaran-Shin Unit Root Test

Variable	Level		Decision	1st Difference		Decision
	Statistic	p-value	H_0	Statistic	p-value	Do not reject
FDI	-0.256	0.399	Reject	-5.347	0.000	H_0
GDP	2.772	0.997	Reject	-6.320	0.000	H_0
TRADE	1.102	0.865	Reject	-2.175	0.015	H_0
EXR	0.584	0.720	Reject	-1.614	0.053	H_0
NATR	-5.896	0.000	Do not reject	-	-	-
I (PCA)	-3.164	0.001	Do not reject	-	-	-

Source: Authors' estimates

3.3. Dynamic panel data estimation strategy

The systems-GMM estimator is the main technique used to examine the impact of the investment climate on FDI (Arellano & Bover, 1995; Blundell & Bond, 1998). Our empirical model in equation (1) is motivated by Beri and Nubong (2021), Kamal *et al*. (2020), Sabir *et al*. (2019), and Zergawu *et al*. (2020).

$$FDI_{i,t} = C_0 + \beta_0 FDI_{i,t-1} + \gamma_k I_{i,t} + \phi_k X_{i,t} + \rho_k GxI_{it} + \delta_k Z_{i,t} + \mu_i + \nu_{i,t} \quad (2)$$

Where $FDI_{i,t-1}$ is the first period lag of FDI, $I_{i,t}$ is a composite index of the investment climate, $X_{i,t}$ is a vector of control variables and *GxI* is the joint impact of gross domestic product and investment climate on FDI. μ_i is the unobserved individual heterogeneity and v_{it} is the idiosyncratic errors. The Z_{it} matrix represents a set of internal instruments that are orthogonal to the residuals.

The introduction of $FDI_{i,t-1}$ in (2) presupposes the possibility of endogeneity and autocorrelation (Beri & Nubong, 2021; Zergawu *et al*., 2020). This endogeneity is due to its correlation with the unobserved individual effects absorbed in the error term. Second, the assumption of exogeneity in static models is potentially misleading because of no feedback effect from FDI and the investment climate. However, economic openness could happen because of pressure from MNEs for reforms to improve the investment climate (Bénassy-Quéré *et al*., 2007). This openness may result in reverse causality from FDI determinants such as economic growth and the investment climate to FDI (Chang, 2011). Therefore, although improvements in the investment climate can increase FDI, an increase in FDI also enhances the likelihood of improving the investment climate. Thus, ignoring reverse causality can result in biased estimates.

In such a situation, GMM provides consistent and efficient parameter estimates than traditional moment estimators. It also controls for omitted variable bias

and measurement errors in the data (Hansen, 1982). Literature has shown that using the two-step systems GMM reduces the bias often associated with the differenced GMM (Nayan *et al*., 2013). However, it is always difficult to find instruments that perfectly correlate with the endogenous regressors and are orthogonal to the error term. Green (2018) used the spatial lags of polity scores as valid instruments for the quality of institutions, while Acemoglu *et al.* (2001) used longitudes because they correlate with institutional variables but have no direct influence on FDI. In this study, we used internal instruments derived from the lags of our explanatory variables.

Although the ideal period for GMM is when T is less than ten (10) years and $n > 100$, Hayakawa (2015) has found support for the use of GMM when both N and T are large. Similarly, although the GMM method is rigorous and yields more efficient results, the presence of heteroscedasticity, heterogeneity and cross-sectional dependence established above can result in bias. To avoid these challenges, we present results from the Driscoll-Kraay FE and GMM.

4. Results

4.1. Investment climate and FDI in Africa

Tables 4 presents results of the GMM and FE based on Driscoll-Kraay robust standard errors. The number of observations in every estimation varies because of differences in sample size. The investment climate (I) represents the first principal component of the investment climate. Each coefficient represents the partial effect of the investment climate on FDI when all other variables are equal to zero. We present results for the entire sample, resource-rich countries, LDCs, landlocked and those with well-developed financial markets.

In Table 4A, the investment climate has a positive and significant impact on FDI in the GMM and Driscoll-Kraay's method. These results are similar for subsamples in resource-rich and the LDCs. Table 4B shows only estimates for the FE model because the number of panels with developed financial markets and landlocked countries retained were relatively small (23 and 15, respectively). Accordingly, the investment climate was a significant determinant of FDI in countries with developed financial markets. However, the investment climate did not have a robust effect on FDI in landlocked countries. Finally, the coefficients of economic growth, trade openness and natural resource rents are fairly significant determinants of FDI in the entire sample, resource-rich and LDCs.

Post estimation results based on the Arellano-Bond test show none of the models has second-order serial correlation [AR (2)]. Similarly, the Hansen tests for

exogeneity of instruments subsets statistics are insignificant and in agreement with theoretical expectations (Roodman, 2009).

Analyses of specific measures of the investment climate showed that the coefficients of control of corruption and regulatory quality were positive and significant – the GMM method – at 10% and 5% levels, respectively. Similarly, political stability and the absence of violence/terrorism was nontrivial at 5% using Driscoll-Kraay. Political stability seems to be the most critical institutional determinant of FDI in the LDCs. It is worth noting that we do not present these additional results in this paper.

Table 4a: Systems-GMM and Driscoll and Kraay Estimation

	Full sample		**Resource-rich countries**		**LDCs**	
	S-GMM	Driscoll and Kraay	S-GMM	Driscoll and Kraay	S-GMM	Driscoll and Kraay
LD.FDI	0.191*** (0.0555)		0.189*** (0.0595)		0.137** (.0500)	
D.GDP	0.114* (0.0581)	0.168*** (0.0459)	0.102** (0.0455)	0.183** (0.0816)	0.0918 (0.0891)	0.183** (0.0816)
D.TRADE	0.114 (0.0699)	0.131** (0.0495)	0.166* (0.0845)	0.178*** (0.0527)	0.125 (0.109)	0.178*** (0.0527)
D.EXR	-0.0074 (0.0057)	-0.00210 (0.00503)	-0.00627* (0.00312)	0.00146 (0.00537)	-0.137 (0.167)	0.00146 (0.00537)
NATR	0.00769 (0.0059)	0.0169** (0.00713)	0.0217*** (0.00535)	0.0291*** (0.00822)	0.00244 (0.0131)	0.0291*** (0.00822)
I	0.0316*** (0.00787)	0.0409*** (0.0073)	0.0404** (0.0174)	0.0420*** (0.0135)	.0278 (.0182)	0.0420*** (0.0135)
Constant	0.0935** (0.0401)	-0.00534 (0.0196)	0.0622*** (0.0221)	0.0487* (0.0238)	0.121*** (0.0372)	0.0487* (0.0238)
Obs	850	900	561	594	530	594
Instruments	48	-	32	-	32	-
AR1	0.00123	-	0.0193	-	0.00731	-
AR2	0.467	-	0.471	-	0.525	-
Sargan	0.645	-	0.901	-	0.496	-
Hansen	0.234	-	0.445	-	0.369	-
Time-effects	Yes	Yes	No	Yes	No	Yes

Notes: Standard errors in parentheses, * p<0.10, ** p<0.05, *** p<0.010
Source: Authors' estimates

These estimates conform to the research results by Rodríguez-Pose & Cols, (2017), Asongu *et al*. (2018), and Sabir *et al*. (2019) that used composite indices of governance and institutional quality to establish a positive association with

FDI. In the case of Sabir *et al.* (2019), their results – which used 20 low-income, 39 lower-middle-income, 44 upper-middle-income and 45 high-income countries – showed that institutional quality was a significant determinant of FDI in all groups of countries, despite having a stronger effect in developed countries. Rodríguez-Pose & Cols (2017) argued – based on a sample of 22 countries from SSA – that the impact of institutions was not only more important than market size, but it had a long-lasting effect on the capacity of countries to attract FDI.

Asongu *et al.* (2018), Agbloyor *et al*. (2016), Bouchoucha and Benammou (2020) also found a positive and significant role of the investment climate on FDI. On the contrary, Asiedu (2002) found a weak nexus between the investment climate and FDI and argued that the geographical location of some countries in SSA was a major deterrence. However, the use of Driscoll and Kraay makes a subtle difference that adds value to these studies. Our results are also unique in their delineation of countries by geographical location, natural resource and level of financial market development, making them more generalisable across the continent.

Table 4b

	Developed financial markets	**Landlocked countries**
	Driscoll and Kraay	Driscoll and Kraay
D.GDP	0.297** (0.129)	0.231 (0.171)
D.TRADE	0.349* (0.174)	0.124 (0.204)
D.EXR	0.000482 (0.00603)	-0.00231 (0.00510)
NATR	0.00260 (0.00512)	-0.00809 (0.0440)
I	0.0361** (0.0158)	0.0507 (0.0453)
Constant	0.0136 (0.00951)	
Observations	414	270
Time-effects	Yes	Yes

Notes: Standard errors in parentheses, * p<0.10, ** p<0.05, *** p<0.010

Source: Authors' estimates

4.2. The moderating role of GDP and the investment climate on FDI

Table 5A presents results on the moderating role of the investment climate and GDP on FDI in Africa. Accordingly, the combined effects of the investment climate and GDP are concomitant with improvements in FDI across all models

in GMM and Driscoll-Kraay approaches, except for output from the GMM in the LDCs. In Table 4B, the moderating role of the investment climate and GDP on this relationship is significant at 5% in the entire sample, resource-rich countries, LDCs, those with developed financial markets and in landlocked countries.

Additional analyses of components of the investment climate showed that control of corruption, government effectiveness and political stability were the most important determinants of FDI in countries with developed financial markets. Finally, political stability was weakly significant in landlocked countries (10% level), while regulatory quality was significant at 5%. Again, the conclusion from using the PCA is analogous to results from individual constructs of the investment climate.

Table 5a: Interactive Effects of the Investment Climate on FDI

	Full sample		**Resource-rich countries**		**LDCs**	
	S-GMM	Driscoll and Kraay	S-GMM	Driscoll and Kraay	S-GMM	Driscoll and Kraay
LD.FDI	0.210***		0.198***		0.155***	
	(0.0545)		(0.0638)		(0.0479)	
D.TRADE	0.133	0.164***	0.157	0.219***	0.151	0.157**
	(0.0942)	(0.0488)	(0.0938)	(0.0536)	(0.114)	(0.0549)
D.EXR	-0.00765	-0.00497	-0.00688	-0.00178	-0.0596	0.0288
	(0.00570)	(0.00321)	(0.00425)	(0.00442)	(0.133)	(0.0335)
NATR	0.00806	0.0179**	0.0214***	0.0309***	0.00729	0.0181**
	(0.00727)	(0.00735)	(0.00636)	(0.00813)	(0.00847)	(0.00755)
I	0.0231**	0.0360***	0.0351*	0.0348**	0.0269	0.0421***
	(0.00992)	(0.00861)	(0.0174)	(0.0162)	(0.0181)	(0.0141)
D.GDP	0.194**	0.273***	0.170**	0.373**	0.184	0.237***
	(0.0771)	(0.0606)	(0.0724)	(0.141)	(0.134)	(0.0510)
I x D.GDP	0.0578**	0.0688***	0.0484*	0.0951**	0.0667	0.0623***
	(0.0257)	(0.0233)	(0.0279)	(0.0382)	(0.0481)	(0.0210)
Constant	0.0344	0.0503*	0.0576**	0.0420	0.104***	0.0571***
	(0.0518)	(0.0270)	(0.0232)	(0.0247)	(0.0299)	(0.0183)
Obs	850	900	561	594	530	562
Instruments	47		31		31	
AR1	0.000699		0.0181		0.00476	
AR2	0.521		0.496		0.580	
Sargan	0.491		0.910		0.599	
Hansen	0.351		0.239		0.385	
Time-effects	Yes	Yes	No	Yes	No	Yes

Notes: Standard errors in parentheses, * p<0.10, ** p<0.05, *** p<0.010
Source: Authors' estimates

These results are similar to those obtained by Zergawu *et al.* (2020) that estimated regression models with a panel of 99 countries from 1980–2015, which showed that the impact of infrastructure and institutional quality was positive and statistically significant. Our results further lend credence to those obtained by Agbloyor *et al.* (2016) for a panel of 47 countries in SSA. Their results for a subsample of countries with developed financial markets and abundant natural resources showed that institutions were significant for economic growth.

Our study differs from theirs in that it covers the most recent data over a longer period. Unlike Bouchoucha and Benammou (2020) and Agbloyor *et al*. (2016), our analysis transcended the impact of FDI to establish the complementarity between GDP and the investment climate in FDI attraction. The immediate implication of these findings is that landlocked and the least developed countries may increase their share of FDI into Africa by enhancing economic growth.

Table 5b

	Developed financial markets	**Landlocked countries**
	Driscoll and Kraay	Driscoll and Kraay
D.GDP	0.470** (0.197)	0.273 (0.177)
D.TRADE	0.381* (0.183)	0.123 (0.202)
D.EXR	-0.00356 (0.00496)	-0.00656 (0.00509)
NATR	0.00267 (0.00555)	-0.00481 (0.0431)
I	0.0263 (0.0194)	0.0448 (0.0446)
I x D.GDP	0.102** (0.0416)	0.0671** (0.0291)
Constant	0.273*** (0.0366)	
Observations	414	270
Time-effects	Yes	Yes

Notes: Standard errors in parentheses, * p<0.10, ** p<0.05, *** p<0.010

Source: Authors' estimates

5. Concluding remarks

This study was motivated by the heated debates on FDI in Africa. Apart from the seemingly vicious circle of low FDI inflows to Africa, the mixed record of FDIs in the resources sector raise political-economic questions. We observed that

the growth of resource-seeking FDI in Africa had dominated empirical studies, neglecting the role of the investment climate more broadly. Given that substantial literature demonstrates a weak association between natural resources and socio-economic transformation in Africa, countries need to explore alternate avenues to attract FDI, and the investment climate has potentials because reforms to improve it often take a shorter period.

Therefore, this paper examined the impact of investment climate and its moderating role with economic growth on FDI in 50 African countries from 2000 to 2018. It further hypothesised that the role of the investment climate depends on whether the country is landlocked, least developed, natural resource-abundant or has a developed financial market. This approach differed from existing literature, which typically focuses on Africa in its entirety (Rodríguez-Pose & Cols, 2017; Bouchoucha & Benammou, 2020). Splitting our samples based on these criteria also helped to mitigate existing heterogeneity across the continent. Finally, we hypothesised that the investment climate does not matter for FDI and that an increase in GDP should complement the role of the investment climate in its attraction.

We observed a strong correlation between measures of the investment climate, and to circumvent the challenge, we constructed a single index using principal components analysis because it accounts for a maximum variance. To address the problem of cross-sectional dependence, we estimated a fixed effect model based on corrected standard errors by Driscoll-Kraay (1998) in addition to the traditional GMM approach. The approach checked for robustness and also added a layer of lucid originality to the study.

The results show that investment climate is a critical determinant of FDI in the entire sample, resource-rich countries and those with well-developed financial markets. Conversely, this effect was not robust in landlocked countries when considering both methods for the analysis. Furthermore, our moderator variable demonstrates the complementarity of the investment climate and gross domestic product in enhancing FDI in Africa and across various sub-samples. These results suggest a need for the least developed and landlocked countries in Africa to strengthen their domestic investment climates by adopting policies that enhance the rule of law, fights corruption and build more robust institutions that can facilitate governments' effectiveness. Finally, policies that catalyse economic growth can also attract FDI, especially across landlocked and the least developed countries.

The study also shows how researchers can navigate the considerable encumbrance of dealing with several constructs of the investment climate by employing principal components analysis, which gives the optimal granularity required for further investigation. This more specific definition may be critical when the intent is to make generalities about the role of the investment climate but not a substitute for the constructs that are often prototypical in specific analyses.

Theoretically, our results lend credence to Dunning's locational advantages in his eclectic paradigm with the assumption that investments into Africa are more of resource, market and efficiency-seeking than strategic asset-seeking. In essence, a good investment climate is critical for FDI inflow, irrespective of whether we look at the entire sample, LDCs, those with well-developed financial markets or natural resource-abundant countries. Future studies should examine the joint impact of investment climate and FDI on economic growth. It would also be nice to extend such research at firm-specific levels across a myriad of sectors to understand the implications of various dimensions of the investment climate on the performance of multinational enterprises. Hopefully, these studies will enable African countries to find a lasting solution to the sustainable inflow of FDI for macroeconomic development.

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Conflict of interest

The authors declare no conflict of interest.

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