

# *The Relationship Between Ease of Doing Business Indicators and Foreign Direct Investment in Africa*

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This study examines the impact of the business environment on foreign direct investment (FDI) inflows into Africa, utilising panel data from 39 African countries over the period 2005–2019. Institutional and regulatory dimensions are captured through selected indicators from the World Bank's Ease of Doing Business Index. A dynamic panel data approach is employed, applying the one-step difference Generalised Method of Moments (GMM) estimator to address potential endogeneity, autocorrelation, and unobserved heterogeneity. The results indicate strong persistence in FDI, with lagged inflows exerting a significant positive effect on current levels. Among the business environment indicators, registering property is positively and significantly associated with FDI, highlighting the importance of secure property rights. Conversely, getting credit shows a significant negative relationship, suggesting that inefficiencies in credit markets may deter investment. These findings underscore the need for policy reforms aimed at streamlining property registration and enhancing credit market infrastructure to foster a more conducive environment for sustained FDI inflows and economic development.

*Keywords:* foreign direct investment, business environment, ease of doing business, Africa

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## **Introduction**

Interest in the determinants of foreign direct investment (FDI) has grown substantially, particularly in the context of developing economies where FDI is viewed as a critical channel for capital accumulation and economic transformation. This perspective is rooted in the modernisation hypothesis, which posits that FDI can stimulate growth in underdeveloped

regions by facilitating the transfer of technology, managerial expertise, and access to international markets. The theoretical foundation for this view draws from both neoclassical and endogenous growth models, which emphasise the role of capital investment in driving long-run economic performance (Sanchez-Robles and Bengoa-Calvo 2003; Mengistu 2015). FDI is viewed not merely as a financial inflow but as a conduit for knowledge transfer, infrastructure development, and integration into global production networks. These dynamics are especially relevant for low-income countries, which often face structural constraints such as inadequate infrastructure and limited domestic capital formation, making external investment a vital component of their development strategy.

The percentage of FDI inflows to developing and transitional nations climbed from 19% in 2000 to 52% in 2010 (Hornberger et al. 2011). The FDI market database's analysis of nearly 30,000 FDI projects sorted by location revealed that the third-most significant investment rationale was the investment climate. Approximately 85% of emerging and transitional economies modified their business regulations, making it easier to do business (World Bank 2010). To attract FDI, governments in developing nations generally depended on offering fiscal incentives by decreasing tax rates and relaxing the laws governing the repatriation of property revenue. Research has demonstrated that the benefits of a stable investment environment can outweigh the advantages of lower effective tax rates by a factor of eight (James 2009). This is corroborated by Hornberger et al. (2011), who state that while business prospects demonstrated by the size and expansion of potential markets are major factors of FDI, a robust business environment and institutions are also required to maximise FDI gains. This is because a healthy business environment and institutions may make the beneficial spill-over effects more easily realised (Blalock and Gertler 2008).

Despite the widespread use of policy instruments such as trade liberalisation, investment incentives, and tax holidays, many developing countries continue to experience uneven FDI inflows. While some regions have successfully attracted substantial FDI, others, mainly in Africa, have lagged. Existing empirical literature has largely focused on traditional macroeconomic determinants of FDI such as market size, inflation, and trade openness. More recently, institutional and regulatory factors categorised through business environment indicators have gained prominence as potential drivers of investment decisions.

In Africa, existing research has predominantly emphasised natural resource endowments and market size as the primary determinants of FDI, often underestimating the significance of institutional, financial, and regulatory dimensions of the business environment (Akhtaruzzaman et al. 2018; Chen et al. 2020; Warsame 2021). This narrow focus has limited understanding of investment dynamics in countries with modest resource bases, where structural and institutional factors may play a more decisive role in shaping FDI inflows. Furthermore, the literature has not adequately explained the persistent disparities in FDI distribution across African economies or the continent's declining share of global investment relative to other developing regions (Krifa-Schneider and Matei 2010).

This study addresses these gaps by empirically examining how disaggregated dimensions of the business environment specifically the registering of property, getting credit, protecting minority investors, and paying taxes indicators affect FDI inflows across 39 African countries from 2005 to 2019. By employing a dynamic panel data approach, specifically the one-step difference Generalised Method of Moments (GMM) estimator, the study accounts for potential endogeneity and the dynamic behaviour of investment flows. In shifting the analytical focus from resource dependence to institutional and regulatory quality, this study provides a more nuanced understanding of FDI determinants in Africa. It contributes to the literature by offering disaggregated, context-specific evidence on how different aspects of the business environment shape investment decisions in the region.

This article is structured as follows. The next section provides an overview of the literature on the relationships between FDI and the business environment, followed by the data and methodology section, empirical results and interpretation, and finally, the conclusion.

## Literature Review

### THEORETICAL LITERATURE AND HYPOTHESES DEVELOPMENT

This study is grounded in the location-specific component of the OLI (Ownership–Location–Internalisation) paradigm (Dunning 2001) and institutional theory (North 1991). OLI theory posits that multinational enterprises (MNEs) base their investment decisions not only on firm-specific advantages and internalisation efficiencies, but also on host country characteristics that confer locational advantages (Dunning

2001). Within this framework, locational advantages encompass a range of country-specific attributes such as regulatory efficiency, market size, infrastructure quality, and investment-related policies that influence the relative attractiveness of a destination for foreign investment. To operationalise these locational factors, the study employs selected ease of doing business indicators such as protecting minority investors, registering property, getting credit and paying taxes. These indicators provide a theoretically grounded basis for examining how improvements in the regulatory environment affect FDI inflows, particularly in the context of African economies, where institutional heterogeneity and reform trajectories vary significantly across countries.

Kindleberger (1969) and Hymer (1976) were some of the first proponents to highlight the shortfalls of the neoclassical view in explaining FDI flows. Since the neoclassical model relies on perfect competition, the authors argued that this rendered it inefficient to explain FDI, which required structural market imperfections to succeed (Faeth 2009). Firms and entrepreneurs must follow business legislation regarding procedures such as daily operations, founding and closing a business, legal registration, and hiring people (Vogiatzoglou 2016). The quality, scope and number of these regulations vary greatly among countries, resulting in diverse business environments. These differences affect entrepreneurship and business performance internationally (Nystrom 2014).

Efficient property registration systems constitute a fundamental component of a country's institutional infrastructure and are widely recognised as a key determinant of investment attractiveness. Secure and easily transferable property rights reduce transaction costs, mitigate investment risks, and enhance investor confidence by ensuring legal predictability and regulatory efficiency (Gizaw et al. 2023). The ability to register property promptly and at low-cost signals institutional competence and facilitates collateral-based financing, thereby improving access to credit and safeguarding asset ownership. Countries with transparent and reliable land administration systems are thus better positioned to attract foreign direct investment (FDI).

*H1 Improvements in the Registering Property index are expected to have a positive and statistically significant effect on FDI inflows.*

Access to credit reflects the depth, efficiency, and inclusiveness of a country's financial system. Well-functioning credit markets reduce information asymmetries, support capital mobilisation, and lower financ-

ing constraints, thereby creating a more conducive environment for both domestic and foreign investment (Bosire 2019). Enhanced credit accessibility enables firms to finance operations more efficiently, while robust credit information systems strengthen investor trust and reduce perceived risk. Consequently, improvements in credit market infrastructure are likely to stimulate FDI inflows.

*H2 Improvements in the Getting Credit index are positively associated with FDI inflows.*

Investor protection is a critical institutional factor that reflects the strength of legal frameworks governing corporate governance and shareholder rights. According to institutional theory, transparent legal systems and effective enforcement mechanisms reduce opportunistic behaviour and expropriation risks, thereby lowering the cost of capital and increasing the credibility of the investment environment (North 1991; Nyathi and Mlobane 2024; Njuguna and Nnadozie 2022). Strong protections for minority investors enhance market integrity and encourage long-term capital commitments from foreign investors.

*H3 Enhancements in the Protecting Minority Investors index are expected to exert a positive and significant influence on FDI inflows.*

Tax policy plays a central role in shaping the profitability and regulatory burden faced by foreign investors. Empirical evidence suggests that transparent, predictable, and administratively efficient tax systems are conducive to FDI, while high tax rates and complex compliance procedures act as deterrents (Nketiah-Amponsah and Sarpong 2020). Simplified tax administration reduces compliance costs and uncertainty, thereby improving the host country's competitiveness in the global investment landscape.

*H4 Improvements in the Paying Taxes index are expected to positively influence FDI inflows.*

#### EMPIRICAL LITERATURE

Nnadozie and Njuguna (2011) examine the relationship between foreign direct investment (FDI) and the investment climate in Africa using a fixed effects panel data approach. Their findings underscore the importance of transparent and efficient regulatory frameworks in at-

tracting FDI. Similarly, Mottaleb and Kalirajan (2010) argue that a business-friendly environment is a key determinant of FDI inflows.

Researchers have also investigated the effect of the investment climate in attracting FDI inflows compared to traditional determinants, such as market size and natural resources. Understanding the importance of the investment climate is especially important for developing countries, because of the perception that developing countries without natural resources struggle to attract FDI. Morisset (2000) found that Sub-Saharan African countries could attract FDI if they could improve their investment climate. The findings highlight that African countries can attract FDI that does not rely on natural resources or the market size when they improve their investment climate. The researcher concluded that developing and transitioning countries lacking natural resources can become competitive enough to attract FDI by improving their business environment. The general understanding in the literature is that firms operating in countries with good investments are assumed to perform better (Soetan and Oke 2018).

Nangpiire et al. (2018) analysed the ease of doing business indicators to understand how they influence foreign direct investment inflows in Sub-Saharan African countries using cross-sectional data for 2014. They aimed to determine whether the ease of doing business indicators positively correlated with FDI inflows in a group of 44 Sub-Saharan African countries. The study utilised all the ease of doing business indicators. Their findings highlight that protecting minority investors, resolving insolvency and trading across borders are statistically significant in influencing regional FDI inflows.

*Janačković and Petrović-Randelović* (2019) analysed the effect of ease of doing business indicators on FDI inflows in the Republic of Serbia from 2010 to 2017. They utilised dynamic and correlation analyses to examine the interdependence of the individual ease of doing business indicators, namely: starting a business, dealing with construction permits, getting credit, registering property, getting electricity, paying taxes, trading across borders, enforcing contracts, and resolving insolvency with FDI inflows. Their findings highlight that starting a business, resolving insolvency, trading across borders, dealing with construction permits and paying taxes were significantly related to FDI inflows, with resolving insolvency and dealing with construction permits having the highest level of statistical significance. On the other hand, registering property, getting credit, getting electricity and contract enforcement negatively impacted

FDI inflows. This is in line with Hummels and Schaur's (2012) findings that infrastructure plays a critical role in a country's attractiveness for FDI inflows. The researchers add that each day in transit is estimated to result in 0.6 to 2% costs of the value of traded goods. Therefore, the efficiency of the port system, an extensive road network and the duration of container waiting times are considered when deciding on an investment destination's attractiveness.

Equally important is Bosire's (2019) study that analysed how improving the doing business environment influences FDI inflows in the East African region. The study utilised pooled ordinary least squares (OLS) regression for 12 East African countries from 2004 to 2017. Their findings show that all the ease of doing business indicators significantly impacted FDI inflows in the East African region, except for dealing with construction permits and starting a business. Registering property was positive and getting credit was negative. This is in line with Akame et al. (2016).

Hossain et al. (2018) investigated how the ease of doing business indicators influence FDI inflows in 177 countries, utilising least regression modelling and data from 2011 to 2015. Their findings highlighted that FDI inflows are significantly positively affected by the enforcement of contracts. Registering property and getting credit also have significance but have a negative impact on FDI in the countries. At the same time, paying taxes and starting a business do not influence FDI significantly. In the same fashion, Haliti et al. (2019) examined the effect of the ease of doing business indicators on FDI inflows into 16 transition countries in Europe using data from 2009 to 2016. They utilised the dynamic panel data methodology using pooled ordinary least squares (POLS), fixed effects (FE) and the two-step system generalised methods of moments (GMM) estimation techniques. Their findings show that starting a business, registering property, getting electricity and resolving insolvency have a significant positive effect on FDI inflows in the transition countries. On the other hand, getting credit, paying taxes, dealing with construction permits and protecting minority investors have a negative effect, while enforcing contracts and trading across borders do not affect FDI inflows in the countries under study. Choi et al. (2016) and Olival (2012) also show similar findings. These findings diverge from those of Bayraktar (2015), who posits that getting credit is a highly significant determinant of inward FDI, suggesting that countries with well-developed credit markets are more likely to attract foreign investment. Similarly, Morris and Aziz (2011) argue that consistent and reliable access to credit enhances a

country's attractiveness to foreign investors by facilitating capital mobility and reducing financing constraints.

Devereux (2007) investigates the influence of tax policy on the investment decisions of multinational enterprises, distinguishing between the initial decision to invest abroad, the choice of location, and the subsequent determination of investment scale. His analysis highlights the nuanced role of taxation across different stages of the investment process. In a cross-regional study covering 40 African, Caribbean, and Latin American countries from 1985 to 2004, Klemm and Van Parys (2012) find that reductions in corporate income tax rates have a statistically significant positive effect on FDI inflows in the Caribbean and Latin America, but not in Africa. This is supported by Fahmi (2012), who argues that taxation plays a role in the investment decisions of firms. This regional divergence suggests that tax incentives alone may be insufficient to attract FDI in African economies, where other institutional and structural factors may play a more dominant role.

Recent empirical studies underscore the pivotal role of the business environment, captured through disaggregated ease of doing business indicators in influencing FDI inflows across Africa and other emerging economies. Drawing on instrumental variable estimation to mitigate endogeneity bias, Njuguna and Nnadozie (2022) provide empirical evidence that improvements in business climate indicators exert a statistically significant and positive effect on FDI inflows. Their findings underscore the critical role of administrative efficiency and regulatory transparency in enhancing a country's investment attractiveness. Similarly, using a dynamic panel framework for Sub-Saharan African countries, Nketiah-Amponsah and Sarpong (2020) provide evidence that reforms targeting specific dimensions of the business environment, such as simplifying business registration and tax administration, exert a positive and statistically significant impact on FDI.

Extending the analysis to a broader set of emerging economies, Mundakkad (2021) demonstrates that progressive regulatory reforms, reflected in improved ease of doing business rankings, substantially promote inward FDI. However, the study observes that the marginal effects of such reforms decline as economies attain higher levels of business environment efficiency, indicating diminishing returns to regulatory improvement. Supporting this view, Gizaw (2023) finds that reducing bureaucratic impediments in areas such as registration, licensing, and contract enforcement significantly enhances FDI inflows within East Af-

rican economies. This is supported by Ajeigbe and Ganda (2023), who indicate that targeted improvements in specific regulatory dimensions, rather than aggregate ease of doing business scores, are more effective in attracting foreign investors. This underscores the importance of procedural efficiency in areas such as business entry, insolvency processes, and cross-border trade.

Nyathi and Mlobane (2024) present arguments to emphasise that indicators such as starting a business, trading across borders, and resolving insolvency are positively associated with FDI inflows in the Southern African Development Community (SADC), whereas dealing with construction permits and paying taxes display weaker or insignificant effects. These findings point to the heterogeneous influence of different regulatory aspects on investment performance across the region. Equally important, Abille and Mumuni (2023) advocate the view that improvements in ease of doing business measures may have limited or even adverse effects in the absence of strong governance structures, particularly with respect to regulatory quality and control of corruption.

By the same token, Fronzetti Colladon et al. (2024), using large sub-national data, conclude that local governance quality and administrative efficiency critically shape FDI location decisions, demonstrating that investment dynamics depend on both national and sub-national institutional frameworks. Furthermore, Alam et al. (2024) postulate that financial sector conditions, especially credit market risks and access to finance, mediate the extent to which business environment reforms translate into tangible FDI inflows. In a similar vein, Kayamba (2023) finds that institutional quality interacts with ease of doing business indicators, implying that effective governance amplifies the positive impact of regulatory reforms on foreign investment performance.

Although previous research provides important insights, several gaps remain that warrant further examination. Much of the existing evidence relies on aggregate ease of doing business scores, which obscure the distinct effects of individual regulatory and institutional components on FDI inflows. Studies that disaggregate these indicators often emphasise areas such as business entry or trade facilitation while overlooking dimensions like property registration, access to credit, investor protection, and tax administration. Moreover, few analyses integrate these factors within a coherent framework that captures the institutional, fiscal, and infrastructural aspects of the business environment. The limited incor-

poration of governance quality and financial-sector conditions further weakens the explanatory power of earlier findings.

To address these gaps, this study employs a disaggregated and integrated approach focusing on registering property, getting credit, protecting minority investors, and paying taxes as key indicators of the business environment influencing FDI inflows in Africa. This design enables a more refined assessment of the specific channels through which institutional quality, fiscal efficiency, and administrative reforms shape investment outcomes. By concentrating on African economies and applying dynamic panel estimation techniques, the study provides context-sensitive evidence that captures the temporal dynamics and structural diversity of investment behaviour. The findings are expected to deepen understanding of how targeted regulatory and institutional reforms can enhance the continent's attractiveness to foreign investors.

## Methodology

### METHODOLOGY AND DATA SPECIFICATIONS

In line with previous empirical studies that utilise the World Bank's Ease of Doing Business indicators to proxy the investment climate and regulatory efficiency (e.g. Njuguna and Nnadozie 2022; Nketiah-Amponsah and Sarpong 2020; Mundakkad 2021), this study adopts selected ease of doing business metrics to represent the business environment influencing FDI inflows across African economies. Earlier contributions by Buchanan et al. (2012) and Corcoran and Gillanders (2015) similarly underscore the significance of institutional quality, regulatory transparency, and business facilitation policies as key determinants of FDI location decisions. These indicators are particularly well suited for panel-data analysis, as they offer standardised, cross-country comparable, and temporally consistent measures of regulatory and institutional performance. This enables robust identification of the dynamic relationship between changes in the business environment and FDI inflows over time.

A review of the empirical literature for this study revealed that researchers use different proxies for business environments and foreign direct investment. The ease of doing business indicators used in this research are registering property, getting credit, protecting minority investors, and paying taxes, from the World Development Indicators (<https://databank.worldbank.org/source/world-development-indicators>).

The study utilises ease of doing business indicators expressed as Distance-to-Frontier (DTF) scores, scaled from 0 to 100, where higher values denote a regulatory environment more closely aligned with global best practices. All data are sourced from the World Bank's archived Doing Business 2020 dataset, which provides harmonised historical series spanning 2004 to 2019. By relying on a single, retrospective vintage that applies a consistent methodology and weighting scheme across years, the analysis ensures temporal comparability and methodological coherence. The use of DTF scores, rather than ordinal rankings, avoids distortions arising from relative performance shifts among countries and offers a continuous metric suitable for dynamic panel estimation over the 2005 to 2019 period for 39 African countries. The countries included are Algeria, Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Central African Republic, Chad, Republic of the Congo, Côte d'Ivoire, Egypt, Equatorial Guinea, Ethiopia, Gabon, Gambia, Ghana, Guinea-Bissau, Kenya, Lesotho, Madagascar, Malawi, Mali, Mauritania, Mauritius, Morocco, Mozambique, Namibia, Niger, Rwanda, Sao Tome and Principe, Senegal, Seychelles, South Africa, Tanzania, Togo, Tunisia, Uganda, and Zambia.

The Registering Property (RP) indicator captures the procedural and regulatory requirements involved when a business acquires real estate from another business entity. It reflects the efficiency and transparency of property registration systems, which are essential for securing property rights and facilitating investment.

The getting credit (GC) indicator is based on the framework developed by Djankov et al. (2002) and evaluates the legal rights of borrowers and lenders in secured transactions. It encompasses the strength of collateral laws and the availability of credit information, both of which are critical for financial market development and access to finance.

The protecting minority investors (PI) index assesses the extent to which legal frameworks safeguard minority shareholders from potential expropriation by corporate insiders. It focuses on three core dimensions of investor protection: the disclosure of related-party transactions, the liability of directors for self-dealing, and the rights of shareholders to hold executives accountable for misconduct (World Bank 2013).

The paying taxes (PT) indicator measures the total tax burden borne by a medium-sized firm, including corporate income taxes, labour taxes, and other mandatory contributions. It also accounts for the administrative complexity and time required to comply with tax regulations, which

can significantly influence the cost of doing business and investment decisions (World Bank 2017).

Gross domestic product (GDP) and the human capital index (HCI) are incorporated into the model as control variables to account for macroeconomic and structural differences across countries. Market size is proxied by GDP growth, which serves as an indicator of the overall economic performance and dynamism of a potential host country. A larger and more rapidly growing economy is generally expected to attract higher levels of Foreign Direct Investment (FDI), as it signals greater market potential and investment opportunities (Cuyvers et al. 2011).

UNCTAD's (2025) HCI captures the quality of a country's labour force by integrating measures of education, skills, and health outcomes. It also reflects the extent to which research and development are embedded within the economy, as indicated by the number of researchers and national R&D expenditures. This composite index provides a comprehensive view of a country's capacity to support and sustain productivity and innovation, which are critical determinants of long-term investment attractiveness.

#### MODEL SPECIFICATION

This study's research or equation model is as follows:

$$FDI_{it} = \alpha + \beta_1 FDI_{it-1} + \beta_2 RP_{it} + \beta_3 GC_{it} + \beta_4 PI_{it} + \beta_5 PT_{it} + \beta_6 GDP_{it} + \beta_7 HCI_{it} + \nu_{it} + n_t + \varepsilon_{it} \quad (1)$$

where  $FDI_{it}$  inflows are a percentage of the gross domestic product (GDP) for a country  $i$  at period  $t$ .

The right-hand side of the specification model includes the independent variables, which are defined as:

$RP_{it}$  The registering property index for country  $i$  at period  $t$ .

$GC_{it}$  Getting credit index for country  $i$  at period  $t$ .

$PI_{it}$  The protecting minority investor's index for country  $i$  at period  $t$ .

$PT_{it}$  The paying taxes index for country  $i$  at period  $t$ .

$GDP_{it}$  GDP growth (annual %) index for country  $i$  at time  $t$ .

$HCI_{it}$  Human capital index for country  $i$  at time  $t$ .

$\nu_i$  Denotes country fixed effects.

$\eta_t$  Denotes time fixed effects that capture common global shocks.

### ESTIMATION STRATEGY

The inclusion of a lagged dependent variable in the regression equation introduces dynamic features into the model, raising important econometric concerns. In particular, the lagged FDI term is likely to be correlated with the error term, thereby violating the assumption of strict exogeneity. Such correlation gives rise to endogeneity and autocorrelation problems, rendering conventional estimators such as fixed effects (FE) and random effects (RE) biased and inconsistent (Makhavikova 2018). To address these challenges, this study adopts the one-step difference GMM estimator proposed by Arellano and Bond (1991). This dynamic panel data approach is particularly well-suited for datasets with a relatively short time dimension (T) and a larger cross-sectional dimension (N), such as those covering multiple African countries over time.

The difference GMM estimator removes unobserved country-specific effects through first-differencing the regression equation and uses lagged levels of the endogenous variables as instruments for the differenced equations (Greene 2008). Although less efficient than the two-step variant, the one-step estimator remains robust and is widely applied in empirical research, particularly when concerns about instrument proliferation and finite sample bias are present. The methodology is particularly relevant for the present analysis, given the high likelihood of reverse causality and simultaneity between ease of doing business indicators and FDI inflows. For example, while improvements in business regulations may attract FDI, increased FDI can in turn stimulate further regulatory reforms. The GMM framework mitigates these endogeneity concerns by exploiting internal instruments derived from the panel structure.

While the system GMM estimator can improve efficiency when variables are highly persistent by augmenting difference equations with additional level equations, it also risks instrument proliferation and over-identification in finite samples (Arellano and Bover 1995; Blundell and Bond 1998; Roodman 2009). Given the moderate time dimension and potential weak instrument bias in the African country sample, this study adopts the one-step difference GMM for its parsimony, robustness, and effectiveness in addressing dynamic panel bias and endogeneity. By first-differencing the equations, difference GMM eliminates time-invariant unobserved heterogeneity, and by using lagged levels of endogenous regressors as instruments, it ensures instrument validity without overfitting. This balance between robustness and simplicity makes the one-

step difference GMM a rigorous and context-appropriate framework for examining the relationship between business environment reforms and FDI inflows in Africa.

The dynamic specification accounts for persistence in FDI inflows by including a lagged dependent variable, reflecting the gradual adjustment of investment decisions over time. The GMM estimator mitigates endogeneity concerns arising from reverse causality and omitted variable bias by employing lagged levels of the regressors as instruments for their first differences. This approach also eliminates unobserved country-specific effects through differencing, while accommodating the dynamic nature of the model via the inclusion of a lagged dependent variable. Instrument validity is assessed through Hansen's J-test of overidentifying restrictions, and serial correlation is examined using Arellano–Bond tests for AR (1) and AR (2) in first differences. Robust standard errors are employed to correct for finite-sample bias.

## Results

### DESCRIPTIVE STATISTICS

Descriptive statistics were conducted to examine the statistical properties of the variables used in the empirical analysis. These statistics provide insights into the distribution, variability, and potential outliers within the dataset, as presented in table 1. FDI inflows average approximately 4.27% of GDP, with a standard deviation of 6.11, indicating substantial variation across countries and time periods. The maximum value of 56.29% reflects exceptionally high inflows in certain contexts, while the minimum value is negative, signifying net disinvestment where FDI outflows exceeded inflows in some years.

Registering property (RP) has a mean score of 53.55, ranging from 18.35 to 93.71, indicating significant heterogeneity in property registration efficiency. Getting credit (GC) averages 36.99, with a standard deviation of 20.31, reflecting disparities in financial sector development and access to credit. Protecting minority investors (PI) and Paying taxes (PT) show mean values of 42.50 and 56.63, respectively, underscoring differences in investor protection and tax administration across countries. Macroeconomic controls further reveal that GDP averages 4.39% but spans a wide range from -36.39% to 18.33%, capturing episodes of both severe economic contraction and robust expansion. The Human capital index (HCI) has a mean of 26.04, with values ranging from 6.7 to 53.4, sug-

TABLE 1 Descriptive Statistics

Variable	Observation	Mean	Std. dev.	Min	Max
FDI	585	4.274	6.112	-11.192	56.288
RP	585	53.545	12.785	18.354	93.711
GC	585	36.987	20.314	5	95
PI	585	42.500	15.259	10	92
PT	585	56.626	19.118	11.978	93.964
GDP	585	4.394	4.072	-36.392	18.333
HCI	585	26.035	10.196	6.7	53.4

gesting uneven development in education and workforce capabilities. The presence of extreme values and wide ranges across several variables highlights the importance of considering country-specific contexts in empirical analyses.

### CORRELATION ANALYSIS

Pairwise relationships among the study variables were examined using the Pearson correlation coefficient, which measures the linear association between continuous variables. The correlation matrix in table 2 provides a comprehensive overview of the relationships between FDI and various indicators of the ease of doing business across 585 observations. FDI exhibits relatively weak correlations with most variables. It shows a modest positive correlation with RP at 0.1123, suggesting that improvements in property registration may slightly encourage FDI inflows. In contrast, FDI is negatively correlated with GC at -0.1177 and Protecting Minority Investors (PI) at -0.0433, indicating that enhancements in these areas do not necessarily correspond with increased FDI. Its correlation with PT is nearly zero (-0.0022) and similarly negligible with GDP growth at 0.0030 and an HCI of 0.0383 implying limited direct association between FDI and these macroeconomic or institutional factors.

GC and PI have a high positive correlation of 0.5958, and PI and PT are similarly correlated at 0.5976, suggesting that countries with better access to credit also tend to protect minority investors and maintain efficient tax systems. RP correlates moderately with GC of 0.4035, PI of 0.3319, and PT of 0.4097, indicating that improvements in property registration often accompany broader institutional reforms. HCI also shows moderate positive correlations with RP of 0.3226, GC of 0.3770, PI of 0.3822, and PT of 0.5195, implying that countries with stronger human capital tend to have more favourable business environments.

TABLE 2 Pearson Correlation Matrix

	FDI	RP	GC	PI	PT	HCI
RP	0.112					
GC	-0.118	0.404				
PI	-0.043	0.332	0.596			
PT	-0.002	0.410	0.434	0.598		
GDP	0.003	0.098	-0.013	0.024	0.115	
HCI	0.038	0.323	0.377	0.382	0.520	1

GDP shows weak or negative correlations with most variables, including a negative correlation with year ( $-0.1799$ ), suggesting a general decline in growth over time. It also has a slight negative correlation with HCI of  $-0.1168$ , which may reflect complex dynamics between human capital development and short-term economic performance.

The absence of strong correlations among the independent variables indicates that multicollinearity is not a concern in this dataset. Most correlation coefficients are of low magnitude, and while a few variables exhibit negative relationships, the overall pattern suggests weak linear associations. Caution is warranted when interpreting these correlations, as they do not account for the influence of other explanatory variables. To address this limitation the study proceeds with panel data analysis, which allows for more robust modelling and control of confounding factors.

#### RESULTS OF GMM AND DISCUSSION.

The empirical results of this study, based on the one-step difference GMM as the primary estimation method, are summarised in table 3.

Table 3 highlights that three variables are statistically significant based on the model estimation results produced using the one-step difference GMM technique, namely: a lag of inward FDI, getting credit (GC), and registering property (RP).

The lagged FDI (L.FDI) variable is consistently positive and statistically significant across all model specifications, with coefficients ranging from 0.286 to 0.308. A one-unit increase in FDI in the previous period is associated with a 0.286-unit increase in current FDI for Model 6. This confirms the presence of strong persistence in FDI inflows, indicating that countries receiving higher levels of investment in the previous period are more likely to attract additional FDI in subsequent periods. Such path dependence reflects the dynamic nature of investment decisions, where past inflows signal stability, profitability, and institutional familiarity to

TABLE 3 Estimation Results of One-Step Difference GMM

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
L.FDI	0.308*** (0.107)	0.300*** (0.106)	0.295** (0.111)	0.290** (0.111)	0.290** (0.114)	0.286** (0.117)
RP	0.028* (0.015)	0.036** (0.016)	0.033** (0.016)	0.035** (0.015)	0.037** (0.016)	0.032** (0.015)
GC		-0.029* (0.017)	-0.031* (0.017)	-0.032* (0.017)	-0.032* (0.017)	-0.032* (0.018)
PI			0.022 (0.023)	0.030 (0.025)	0.031 (0.025)	0.031 (0.025)
PT				-0.036 (0.032)	-0.038 (0.032)	-0.033 (0.031)
GDP					-0.057 (0.065)	-0.050 (0.062)
HCI						0.172 (0.141)
Diagnostic tests						
Sargan test	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***
Hansen test	0.147	0.236	0.267	0.247	0.362	0.27
AR (1)	0.020**	0.019**	0.017**	0.017**	0.017**	0.016**
AR (2)	0.363	0.371	0.367	0.369	0.363	0.391
Observations	507	507	507	507	507	507
Number of Country ID	39	39	39	39	39	39
Instruments	27	28	29	30	31	32
Time dummies	Yes	Yes	Yes	Yes	Yes	Yes

NOTES Standard errors in parentheses. \*\*\*  $p < 0.01$ . One-step Difference GMM with collapsed instruments.

foreign investors. This also suggests that FDI tends to accumulate in environments where investors have already established operations, reinforcing the importance of maintaining investor confidence and continuity in policy frameworks to sustain long-term capital inflows.

The variable GC exhibits a consistently negative relationship with FDI inflows across all model specifications, with coefficients ranging from  $-0.0290$  in Model 2 to  $-0.0320$  in Model 6. A one-unit increase in GC is associated with a  $0.0320$  unit decrease in FDI. Although the statistical significance is marginal, reaching the 10% level in the fully specified model, this finding suggests that improvements in credit accessibility, as measured by the World Bank's Ease of Doing Business Index, may paradoxically be associated with reduced FDI inflows in the African context. This counterintuitive result aligns with prior studies (Haliti et al. 2019; Bosire

2019), which also report a negative association between credit market indicators and FDI. One possible explanation is that credit market liberalisation in environments with weak financial regulation may heighten investor concerns about systemic risk, default probabilities, or inefficient capital allocation. Reinhart and Rogoff (2004) further argue that historical debt defaults and high credit risk in developing countries constrain external financial flows, particularly from developed economies. In this light, the negative coefficient on GC may reflect broader institutional weaknesses in financial governance rather than the mere availability of credit. The contrast between these results and some previous studies may reflect regional differences in financial sector development, institutional quality, or the interaction between credit market liberalisation and investor risk perceptions in African economies. These findings underscore the importance of not only expanding access to finance but also improving the quality, transparency, and regulatory oversight of credit markets to ensure they support rather than deter foreign investment.

RP consistently demonstrates a positive and statistically significant relationship with FDI inflows across all model specifications, with coefficient estimates ranging from 0.0281 in Model 1 to 0.0322 in Model 6. A one-unit improvement in the RP indicator is associated with a 0.0322-unit increase in FDI. The level of statistical significance improves from 10% in the initial specification to 5% in the fully specified model, indicating the robustness of this institutional variable in explaining FDI dynamics in Africa. These results align with theoretical expectations and existing empirical literature (Akame et al. 2016; Hossain et al. 2018; *Janačković and Petrović-Randelović* 2019), which emphasise the importance of secure and transparent property rights in attracting FDI. Efficient property registration reduces transaction costs, mitigates legal uncertainty, and enhances investor confidence, principally in environments where institutional risk is a key consideration. The consistent significance of RP across models suggests that reforms aimed at streamlining property registration procedures and strengthening land governance frameworks can serve as effective levers for improving Africa's investment climate and competitiveness in global capital markets.

Protecting minority investors (PI) enters the model in specification 3 and remains positive but statistically insignificant across all models. While the direction of the coefficient aligns with theoretical expectations, the lack of significance implies that minority investor protections do not exert a robust or consistent influence on FDI inflows in the Afri-

can context. This may reflect limitations in enforcement or investor prioritisation of other institutional factors. Paying taxes (PT) exhibits a negative but statistically insignificant relationship with FDI. Although the coefficient suggests that more burdensome tax procedures could deter investment, the absence of significance indicates that tax administration alone may not be a decisive factor in shaping FDI decisions across African economies. It is possible that investors weigh broader institutional and market conditions more heavily than tax compliance burdens.

GDP introduced in Model 5 shows a negative and statistically insignificant effect on FDI inflows. This result suggests that macroeconomic size or growth performance does not independently drive FDI when institutional variables are accounted for. The insignificance may be due to multicollinearity or the nature of FDI in Africa, which may be more influenced by sector-specific or regulatory factors than aggregate economic expansion. The human capital index (HCI) added in Model 6 is positive but statistically insignificant. While higher human capital is theoretically expected to attract FDI through improved labour productivity and absorptive capacity, the lack of significance in this sample suggests that human capital may not be a primary determinant of investment flows in the region, or that its effects are mediated by other institutional constraints. Year-specific dummies are statistically insignificant. This indicates that, after controlling business environment indicators and other covariates, there is no consistent pattern of time-related effects influencing FDI inflows. It suggests that country-level institutional factors are more influential than global or regional events in explaining FDI variation over time.

The empirical findings provide mixed support for the proposed hypotheses. H1, which posits that improvements in property registration positively influence FDI inflows, is confirmed, underscoring the importance of secure land governance and transparent administrative procedures in enhancing investor confidence. Conversely, H2, which hypothesised a positive association between access to credit and FDI, is rejected. The estimated negative and statistically significant coefficient suggests that deficiencies in financial regulation and credit market governance may deter rather than facilitate foreign investment. The remaining hypotheses are not statistically supported, indicating that their influence on FDI is either weak or mediated by broader institutional and macroeconomic conditions.

### DIAGNOSTICS

To ensure the robustness and validity of the one-step difference GMM estimation, a series of diagnostic tests were conducted. These include tests for instrument validity and serial correlation, which are critical for the reliability of dynamic panel data models. The Sargan test was employed to assess the validity of the over-identifying restrictions under the null hypothesis that the instruments are exogenous. In all model specifications, the Sargan test returned statistically significant p-values ( $p = 0.000$ ), suggesting a rejection of the null hypothesis. However, caution is warranted in interpreting these results, as the Sargan test is not robust to heteroscedasticity and may over-reject in finite samples. Given these limitations, reliance on the Hansen test which is robust to heteroscedasticity and autocorrelation, is more appropriate in the context of GMM estimation. The Hansen test results indicate p-values ranging from (0.147) to (0.362) across all models above the conventional 0.05 threshold. This implies that the null hypothesis of instrument validity cannot be rejected, and the instruments used in the estimation are considered valid. These results support the overall specification of the model and the appropriateness of the instrument set.

Serial correlation was assessed using the Arellano-Bond test for autocorrelation in the differenced residuals. The test for first-order autocorrelation AR (1) yielded statistically significant p-values ranging from (0.016) to (0.020), which is expected in difference GMM due to the transformation of the data. More importantly, the test for second-order autocorrelation AR (2) produced non-significant p-values ranging from (0.363) to (0.391), indicating the absence of second-order serial correlation. This confirms that the lagged instruments are appropriately uncorrelated with the error term. While the Sargan test suggests potential concerns with over-identification, the Hansen test provides stronger evidence of instrument validity. The absence of second-order autocorrelation further supports the reliability of the GMM estimates. These diagnostics reinforce the credibility of the empirical findings and the suitability of the one-step difference GMM approach for analysing the determinants of FDI in Africa.

### LIMITATIONS

While the empirical analysis presented in this study is methodologically robust, several limitations merit consideration. Firstly, the study period

is limited to the period 2005 to 2019, thereby excluding more recent developments in the business environment, such as the structural and institutional disruptions associated with the COVID-19 pandemic. Secondly, although the selected ease of doing business indicators capture key dimensions of regulatory efficiency and institutional quality, they do not fully account for other locational determinants such as political stability and sector-specific investment incentives. Finally, although the one-step difference GMM estimator effectively addresses endogeneity and unobserved heterogeneity, it remains susceptible to instrument proliferation and weak instrument bias, which could compromise the efficiency and precision of the estimated coefficients.

### **Conclusions**

This study has examined the relationship between the business environment and FDI inflows in Africa, using panel data from 39 countries over the period 2005 to 2019. Employing the one-step difference GMM estimator, the analysis addressed key econometric challenges such as endogeneity, autocorrelation, and unobserved heterogeneity, while capturing the dynamic nature of FDI behaviour.

The results confirm that FDI inflows in the region are path-dependent, with past investment levels significantly influencing current inflows. Among the business environment indicators assessed, registering property emerged as a consistently positive and statistically significant determinant of FDI, highlighting the importance of secure property rights and efficient land administration systems in fostering investor confidence. In contrast, getting credit was found to be a statistically significant negative predictor of FDI, suggesting that inefficiencies in credit markets such as limited access to finance, weak credit information systems, or regulatory opacity may deter foreign investors. Other indicators, such as protecting minority investors and paying taxes, while directionally aligned with theoretical expectations, did not exhibit statistically significant effects in the region. These findings suggest that while comprehensive environmental reform remains important, targeted improvements in specific regulatory areas, mainly property rights and financial sector governance, may yield more immediate and impactful results in attracting FDI.

For African economies to fully benefit from globalisation and deeper integration into the global economy, several structural and institutional challenges must be addressed. Increasing FDI inflows is a critical component of this process, as it can facilitate technology transfer, enhance

human capital development, expand access to international markets, and stimulate employment and productivity growth. However, realising these benefits requires the creation of a business environment that is conducive to private sector development and attractive to multinational enterprises. Policymakers should prioritise reforms that enhance the transparency, efficiency, and legal security of property registration systems. Streamlining administrative procedures, reducing transaction costs, and strengthening land tenure security can significantly improve the investment climate. At the same time, the negative association between getting credit and FDI underscores the need to improve credit market infrastructure. This includes strengthening financial regulation, expanding credit information systems, and promoting financial inclusion to reduce perceived investment risks.

Furthermore, both resource-rich and resource-poor African countries must ensure that FDI policies are inclusive and responsive to the needs of underrepresented sectors and regions. Reducing regulatory burdens, particularly in areas such as investor protections, and access to finance can help level the playing field and broaden the developmental impact of FDI. In addition, efforts to improve Africa's global rankings in governance and the business environment should be sustained, as these are increasingly important signals to international investors. The findings offer actionable insights for policymakers seeking to attract and retain FDI through targeted, context-sensitive reforms that strengthen institutional quality, reduce investment risk, and promote inclusive economic development.

Future research could examine post 2019 shifts in the business environment, particularly in response to the institutional disruptions caused by the COVID-19 pandemic. This would require the use of alternative institutional and regulatory datasets, given the discontinuation of the World Bank's Doing Business project. Additionally, sector-specific analyses could yield more granular insights into how business environment factors differentially affect FDI across industries, thereby capturing heterogeneity in investment behaviour.

Further research can be achieved by incorporating additional locational determinants such as political stability and targeted investment incentives which may interact with regulatory factors to shape FDI inflows. Future studies could enhance robustness by employing alternative dynamic panel estimators, including two-step system GMM or bias-corrected Least Squares Dummy Variable (LSDV) estimators. These tech-

niques offer improved efficiency and finite-sample properties relative to one-step GMM, particularly in contexts with limited time-series variation or small cross-sectional dimensions.

### **Author Contributions**

Conceptualisation, DC and EPJK; methodology, DC and EPJK; validation, EPJK; formal analysis, DC; investigation, DC; resources, DC; writing – original draft and preparation, DC; writing – review and editing, DC and EPJK.

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