Review of Socio-Economic Research and Development Studies 2024
Volume 8 No. 1, 29-51
https://reserds.vsu.edu.ph
Research Article

THE IMPACT OF PROPERTY RIGHTS ON FOREIGN DIRECT INVESTMENT: AN ANALYSIS ON A SELECT LIST OF AFRICAN COUNTRIES

Thabang Ndlovu[1*]

[1]*Department of Economics, University of the Witwatersrand, Johannesburg, South Africa*

Africa's share of total foreign direct investment flows and stock have been low and staggering over time relative to other regions. African policymakers have attempted to find ways of attracting foreign direct investment into the African continent. Existing economic literature suggests that weak property rights, institutions and economic freedoms discourage foreign investors from investing. In the African context, colonialism has led to a pluralistic form of property rights which has resulted in challenges in land tenure. Given this, the primary objective of this study was to investigate the relationship between property rights and foreign direct investment in the African region. Using data extracted from the World Bank Indicators and the Heritage foundation, this study employed annual panel data on 29 African countries over the period 1996 to 2022.

First, the study employed both a random effects and fixed effects model and found that the random effects model was the most appropriate. Further, the panel data exhibited the presence of autocorrelation and heteroskedasticity. As a result of this, the study also employed a Panel Estimated Generalized Least Squares model as it had the ability to overcome both autocorrelation and heteroskedasticity. The empirical results revealed that there is an ambiguous relationship between property rights and foreign direct investment in the African region. Moreover, the empirical results revealed that economic freedom, which measures the extent of a nation's openness and business friendless has a positive and statistically significant impact on foreign direct investment in the African

[*]Corresponding author: Dr. Thabang Ndlovu, Department of Economics, University of the Witwatersrand, Johannesburg, South Africa. Email: thabsam16@gmail.com

Received: February 15, 2024 | Revised: May 17, 2024 | Accepted: August 9, 2024

region. Given this, the study recommends that African policymakers should focus on formulating policies that promote and improve the economic and entrepreneurial environment in which they govern in order to attract foreign direct investment.

***Keywords*:** Property Rights, Foreign Direct Investment, Africa, Panel Data, Economic Freedom

***JEL Classification codes*:** C23, F23, R38

1. INTRODUCTION

According to the work of Acemoglu & Robinson (2013), nations fail as a result of extractive economic institutions that fail to create incentives for economic agents to save, invest and innovative. Acemoglu & Robinson (2013) indicate that nations become failed states not as a result of geography or culture, but as a result of the legacy of extractive institutions that concentrate power and wealth in the hands of those controlling the state. Further, extractive institutions contribute to the gradual failing nation by neglecting investment in the most basic public services.

Acemoglu & Robinson (2013) make a distinction between inclusive economic institutions and extractive economic institutions. Inclusive economic institutions are those that encourage the participation of the majority of people in economic activities that make best use of their talents and skills and enable individuals to make the choices they wish.

According to Acemoglu & Robinson (2013) inclusive economic institutions feature secure private property, an unbiased system of law and a provision of public services that offers a level playing field in which people can exchange and contract. Furthermore, Acemoglu & Robinson (2013) indicate that secure private property rights are central, given that only those with such rights will be willing to invest and increase production. In contrast, extractive economic institutions are seen to be structured to extract resources from the many by the few and fail to protect property rights or provide the incentives for economic activity. Naape (2023) indicates that the research on the quality of nations economic institutions has seen itself become an area of focus in economic literature given their apparent influence on factors such as decision making regarding resource allocation and use, trade patterns and property rights. To this end, this study adds

to the literature by assessing the relationship between property rights and foreign direct investment in the African region.

Inward foreign direct investment is believed to result in economic growth as foreign direct investment leads to enhanced capital formation, employment creation, the promotion of exports, management know-how, access to skilled labour, international production networks, technology transfers and spillover effects (Khan & Samad, 2010).

The existing literature however reveals that the benefits of foreign direct investment will tend to be weaker in countries with weak institutions and weak property rights. This is because weak property rights, institutions and economic freedom discourages foreign investors from investing (Khan & Samad, 2010).

In regard to property rights in the African context, Home (2013) found evidence suggesting that colonialism has led to a pluralistic form of property rights which has resulted in challenges in land tenure. Colonialism resulted in the creation of two parallel land tenure systems which are reinforced by separate administrative arrangements and a policy of separate development. To this end, colonizers took for themselves the majority of the best land and mineral resources in which different legal orders applied (Home, 2013).

In contrast, African native reserves or trust land was managed by colonial officials and/or local leaders whereby land disputes were handled by administrators and native courts in which lawyers and the judiciary were excluded as a matter of policy (Home, 2013). Further, Koch (2020) suggests that African cultures may not be culturally suited for property rights as some African societies do not view land as something to be owned by an individual but rather by the community for the benefit of society.

Given the above, land within Africa is under different systems of property ownership. Koch (2020) finds that only ten (10) percent of rural land in the African continent is formally documented in which only four (4) percent of countries in the African continent have documented the land in their respective capital cities. Koch (2020) suggests that establishing clear ownership of property has positive development impacts as foreign investors gain confidence in transactions that involve real property whereby they know that there exists a clear and transparent ownership of property.

In regard to foreign direct investment in the African context, Morgan et al. (2022) find that Africa's share of total foreign direct investment flows and stock have been low and staggering over time relative to other regions. As a result of this, African policy makers and the global community have attempted to find

ways of attracting foreign direct investment into the African continent. Foreign direct investment is believed to be crucial for the African continent as it is a source of capital, stimulates domestic investment, generates employment, promotes the transfer of technology and contributes to economic growth (Asiedu, 2004). Moreover, Asiedu (2004) finds that the African region has become less attractive as a destination for foreign direct investment as a result of poor development in terms of infrastructure development, openness to trade and investment and institutional quality.

Given this backdrop, this study assessed whether the African region has the necessary institutions and property rights to attract foreign direct investment. Using data extracted from the World Bank Indicators and the Heritage Foundation, this study employed annual panel data on 29 African countries over the period 1996 to 2022.

The rest of this study is organised as follows: Section 1 provided the introduction to the study and objective. Section 2 outlines the existing literature. Section 3 details the empirical strategy chosen. Section 4 discusses the empirical findings. Lastly, section 5 concludes the study.

2. LITERATURE REVIEW

The existing literature contains a number of studies that assess the relationship between property rights and foreign direct investment. One such study is Kapuria-Foreman (2007) which employed cross-country growth regressions using a sample of developing countries in order to examine the determinants of foreign direct investment. Further, the author assessed the role of institutional quality (enforcement of property rights, corruption, etc) and policy orientation factors. The empirical results revealed that foreign direct investment was found to vary positively with increases in certain components of economic freedom.

Ahlquist & Prakash (2008) assessed whether foreign direct investment influenced the confidence in commercial contracts in developing countries. The authors assessed how foreign direct investment influenced a host countries contract-intensive money ratio in a large panel time series of both developed and developing countries from 1980 to 2002. The study's empirical results revealed that higher levels of foreign direct investment inflows were associated with greater confidence in commercial contracts and, by extension, the protection of property rights in developing countries.

Ali et al. (2010) employed a panel data set of 70 developing countries for the period 1981 to 2005 in order to assess the relationship between foreign direct investment and property rights. The authors postulated that foreign direct investment contributes to economic development by improving institutional quality in the host country. The empirical results revealed that foreign direct investment inflows have a positive and highly significant impact on property rights.

Mathur & Singh (2011) aimed at showing that foreign investors cared more about economic freedom rather than political freedoms when making decisions on where to invest capital. The authors found that more democratic countries tended to receive less foreign direct investment if economic freedoms were not guaranteed. This suggested that democratising developing economies were unable to push through the economic reforms investors needed due to the presence of competing political interests. Given this, the authors postulated that this is why countries such as China and Singapore who ranked poorly in terms of democracy but were relatively high on property rights did well in terms of foreign direct investment inflows.

Gwenhawo (2011) examined the impact of property rights on foreign direct investment in Zimbabwe for the period 1964 to 2005. Employing a multivariate cointegration framework the author constructed a property rights index for Zimbabwe in order to determine the impact of property rights on foreign direct investment. The empirical results suggested that property rights were consistently an important explanatory variable of foreign direct investment in Zimbabwe.

Sikwila (2015) examined the factors that influenced foreign direct investment inflows into Zimbabwe between the period 1980 to 2012. The empirical results revealed that output, trade openness, political stability, domestic investment and inflation were significant factors that influenced foreign direct investment inflows in Zimbabwe. Importantly, the empirical results did not substantiate the hypothesis that property rights policies curtailed foreign direct investment inflows into Zimbabwe.

Vysotskaya et al. (2018) aimed at assessing the role of property rights protection on foreign direct investment. The authors developed a mathematical model that confirmed the existence of a positive impact of property rights protection on the efficient implementation of investment projects.

Nieman & Thies (2019) examined the relationship between foreign direct investment and property rights by employing a non-nested multilevel modelling

strategy with random coefficients on data from 1970 to 2009. The authors postulated that democratic institutions influence property rights in attracting foreign direct investment by providing a coherent logic to the property rights regime that is created in a state and a legitimate way to manage conflicts that arise in dynamic economies. The study's empirical results revealed that the effects of property rights on attracting foreign direct investment depended on democratic institutions for both developed and developing countries.

Lin et al. (2019) assessed the effect of property rights institutions in host nations, the institutions protecting investors from expropriating by host country agents on the geographic structure and valuation of American multinational corporations. Using firm-level data, the results revealed that better property rights attracted investment from multinational corporations.

Tag (2021) examined the relationship between foreign direct investment net inflows and three judicial institutions of property rights protection, that being, judicial contract enforcement, judicial independence and judicial impartiality. Using a system-generalized method of moments estimation approach to a sample of 150 countries over the period 2006 to 2016, the empirical results revealed positive relationships between foreign direct investment net inflows and both judicial independence and judicial impartiality. Further, the results revealed that the host country's institutions mattered for foreign direct investment.

3. EMPIRICAL STRATEGY

The primary objective of this study is to assess the impact of property rights on foreign direct investment in the African continent. To do so, this study employed annual panel data for the period 1996 to 2022. Due to data limitations, the selected African countries included in the study were Algeria, Botswana, Burkina Faso, Cape Verde, Cameroon, the Republic of Congo, Cote D'Ivoire, Egypt, Eswatini, Ethiopia, Gabon, Ghana, Guinea, Keyna, Lesotho, Madagascar, Malawi, Mali, Morocco, Mozambique, Niger, Nigeria, Senegal, South Africa, Tanzania, Tunisia, Uganda, Zambia and Zimbabwe.

Using data that was extracted from the World Development Indicators and the Heritage Foundation, this study employed a panel data estimation technique in the form of both a random effects model and a fixed effects model. In considering the most appropriate efficient estimators, this study employed the Hausman (1978) specification test.

The fixed effects model was employed in order to control for possible omitted variables that tend to be constant over time and differ across measurement units (Pesaran, 2015). This occurrence is often termed as unobserved heterogeneity or fixed effects. When employing panel data using a fixed effects model, it is assumed that the unobserved heterogeneity is correlated with the explanatory variables.

Further, it is assumed that the idiosyncratic error term is independent of the explanatory variables. To this end, Greene, (2018) indicates that removing the unobserved effect and reducing the omitted variable biases, the fixed effect model allows for more robust estimates.

In addition, Miller & Yang (2017) indicate that when the unobserved heterogeneity is independent of each explanatory variable, estimating using a fixed effects model to remove the unobserved heterogeneity will tend to result in inefficient estimators. As a result of this, a random effects model, which is often referred to as the variance components model considers the unobserved heterogeneity as random variables rather than fixed ones (Studenmud, 2016).
A random effects model is advocated when the cross-sectional units are randomly chosen from a large population. If the variance structure among groups is known, the random effects model is estimated by employing generalized least squares whereas if it is not known the random effects model is estimated using feasible generalized least squares (Miller & Yang, 2017).

In choosing which model to employ between the fixed effects and random effects, an important consideration is how to treat the unobserved heterogeneity and which estimation model is more efficient in treating the unobserved heterogeneity. The fixed effects model assumes that the unobserved heterogeneity is correlated with the explanatory variables whereas the random effects model does not (Miller & Yang, 2017).

The decision on which model to employ depends on whether or not the unobserved heterogeneity is independent of the explanatory variables. One method which helps in this decision is the Hausman specification test which is pioneered by Hausman (1978). The Hausman test involves estimating both the fixed effects and random effects models, which is followed by testing the statistical significance of the differences in the coefficients on the time-varying explanatory variables.

The Hausman test then compares the fixed effects against the random effects under the null hypothesis that the individual effects are independent of the other explanatory variables within the model. If the null hypothesis is rejected,

then the fixed effects model is preferred as it produces more efficient estimators (Hausman, 1978). In addition to the Hausman test, this study employed the Breusch and Pagan (1980) Lagrange Multiplier (LM) test in order to test for random effects. The null hypothesis for the Breusch and Pagan LM test is the variances across entities are determined to be zero and there is no significant differences across units. Should the null hypothesis be rejected, it could be concluded that there are significant random effects in the panel data therefore the random effect model is believed to be significant.
The following econometric model was employed in this study:

$$FDI_{it} = \alpha_i + \beta_1 GDP_{it} + \beta_2 PoP_{it} + \beta_3 EF_{it} + \beta_4 PR_{it} + \beta_5 TB_{it} + \beta_6 GS_{it} + \beta_7 TF_{it} + \beta_7 IF_{it} + \beta_9 FF_{it} + \varepsilon_t \quad (1)$$

Where

FDI_{it} represents foreign direct investment as a percentage of Gross Domestic Product ("GDP")

GDP_{it} represents GDP per capita

PoP_{it} represents population growth

EF_{it}represents an index which reflects the overall score for economic freedom in a country

The economic freedom index considers the key main aspects of a country's economic and entrepreneurial environment that governments tend to rule over. These elements include the rule of law, government size, regulatory efficiency and market openness.

$\beta_4 PR_{it}$ represents an index for property rights

The property rights index assess the extent to which a nation's legal framework allows individuals to acquire, hold and use private property and the extent to which these rights are secured by applicable laws that government enforces effectively.

TB_{it} represents an index for a country's tax burden

The tax burden index reflects marginal tax rates on both personal and corporate income and the overall level of taxation as a percentage of gross domestic product.

GS_{it} represents an index for government spending

The government spending index consists of the burden imposed by government expenditures which includes consumption by the state and all transfer payments related to various entitlement programs.

TF_{it} represents an index of a country's trade freedom

The trade freedom index reflects the extent of tariff and nontariff barriers that affect imports and exports of goods and services. The trade freedom index is based on both the trade-weighted average tariff and a qualitative evaluation of nontariff barriers.

IF_{it} represents an index of a country's investment freedom.

The investment freedom index reflects a variety of regulatory restrictions that are imposed on investment.

FF_{it} represents an index of a country's financial freedom.

The financial freedom index reflects both an indicator of banking efficiency and a measure of independence from government control and interference in the financial sector.

ε_t represents the idiosyncratic error term.

Further, the existence of autocorrelation and heteroskedasticity in the econometric model led to the use of a Panel Estimated Generalized Least Squares model as it allowed the study to overcome both autocorrection and heteroskedasticity. The study also employed a cross-section dependency test in order to determine both autocorrection and heteroskedasticity. Furthermore, the study employed panel causality tests advocated by Dumitrescu and Hurlin (2012) in order to assess the bivariate relationship among the variables.

A summary and descriptive statistics of these variables is found in Table 1 and Table 2 below. Moreover, this study employed panel unit root tests on the abovementioned variables through the Levin, Lin and Chu (2002) root test. Important to note however, is that according to Choi (2001) unit root tests are not required when employing panel data techniques.

Table 1. Data Description

Variable	Variable Description	Frequency	Data Source
Foreign Direct Investment	Foreign Direct Investment, net inflation (% of GDP).	Annual.	World Development Indicators.
GDP Per Capita	GDP Per Capita (Current US$).	Annual.	World Development Indicators.
Population Growth	Population Growth (Annual %)	Annual.	World Development Indicators.
Overall Score for Economic Freedom	An index of the overall economic freedom enjoyed by a country. This index considers key main aspects of the economic and entrepreneurial environment that governments tend to control. These elements are rule of law, government size, regulatory efficiency and market openness.	Annual.	The Heritage Foundation.
Property Rights	An index that assesses the extent to which a country's legal framework allows individuals to acquire, hold and use private property and the extent to which these rights are secured by applicable laws that the government enforces effectively.	Annual.	The Heritage Foundation.
Tax Burden	An index that reflects marginal tax rates on both personal and corporate income and the overall level of taxation (which includes both direct and indirect taxes imposed by all levels of government) as a percentage of gross domestic product.	Annual.	The Heritage Foundation.
Government Spending	An index that captures the burden imposed by government expenditures, which includes consumption by the state and all transfer payments related to various entitlement programs.	Annual.	The Heritage Foundation.
Trade Freedom	An index that reflects the extent of tariff and nontariff barriers that affect imports and exports of goods and services. The trade freedom score is based on both the trade-weighted average tariff and a qualitative evaluation of nontariff barriers.	Annual.	The Heritage Foundation.
Investment Freedom	An index that reflects a variety of regulatory restrictions that are imposed on investment.	Annual.	The Heritage Foundation.
Financial Freedom	An index that reflects both an indicator of banking efficiency and a measure of independence from government control and interference in the financial sector.	Annual.	The Heritage Foundation.

Table 2. Descriptive Statistics

Variable	Observations	Mean	Standard Deviation	Minimum	Maximum
Foreign Direct Investment	783	3.130874	4.512157	-17.29224	38.94287
GDP Per Capita	783	1854.417	1868.264	110.4609	10273.8
Population Growth	783	2.292895	0.8313924	-0.4017359	4.155897
Overall Score for Economic Freedom	783	55.62052	6.568993	21.4	72
Property Rights	783	40.68723	13.56125	5	75
Tax Burden	783	71.45742	9.578505	44.1326	91.1
Government Spending	783	74.22614	16.81987	0	96.5
Trade Freedom	783	61.75939	13.44631	0	88.9
Investment Freedom	783	50.21073	14.61528	0	80
Financial Freedom	783	45.17241	13.5865	10	70

Source: Author's Computations

4. RESULTS AND DISCUSSION

The results of the Levin-Lin-Chu unit root test are shown in Table 3 below. The majority of the variables appear to be stationary at levels, i.e., I(0) without a trend. This changes with a trend and with no constant. The author however notes that unit root tests are not a prerequisite when employing panel data techniques.

Table 3. Results of Panel Unit Root Tests

Variable	Levins-Lin-Chu		
	Without Trend	With Trend	None
Foreign Direct Investment	-3.1890[0.0007]	-2.9533[0.0016]	-4.2725[0.0000]
GDP Per Capita	-2.2672[0.0117]	-0.4147[0.3392]	6.6694[1.0000]
Population Growth	-4.8250[0.0000]	-4.9790[0.0000]	-2.0327[0.0210]
Overall Score for Economic Freedom	-3.3688[0.0004]	-2.4629[0.0069]	-0.7801[0.2177]
Property Rights	-2.4285[0.0076]	-1.5180[0.0645]	-1.9950[0.0230]
Tax Burden	-4.7923[0.0000]	-2.9749[0.0015]	3.1391[0.9992]
Government Spending	-3.3969[0.0003]	-2.0540[0.0200]	0.1523[0.5605]
Trade Freedom	-5.8849[0.0000]	-1.9694[0.0245]	0.9708[0.8342]
Investment Freedom	-2.5087[0.0061]	-2.6261[0.0043]	-0.9424[0.1730]
Financial Freedom	-5.7455[0.0000]	-4.1549[0.0000]	-2.6401[0.0041]

Source: Author's Computations

Table 4 below reflects the findings of the correlation analysis. It appears that in the African continent, population growth, the tax burden, trade freedom and financial freedom is positively correlated with foreign direct investment. In contrast, GDP per capita, the overall index score for economic freedom, property rights, government spending and investment freedom is negatively associated with foreign direct investment.

Table 4. Correlation Analysis

Probability	FDI	GDP	PoP	EF	PR	TB	GS	TF	IF	FF
Foreign Direct Investment	1.0000									
GDP Per Capita	-0.0169	1.0000								
Population Growth	0.1378*	-0.3597*	1.0000							
Overall Score for Economic Freedom	-0.0173	0.2929*	0.0614	1.0000						
Property Rights	-0.0871*	0.2596*	-0.2938*	0.6155	1.0000					
Tax Burden	0.0875	0.0548	0.1109*	0.3608*	0.0514	1.0000				
Government Spending	-0.0598	-0.1388*	0.4962*	0.2692*	-0.1531*	0.1435*	1.0000			
Trade Freedom	0.1250*	0.1480*	-0.0158	0.3636*	0.0287	0.3679*	-0.0124	1.0000		
Investment Freedom	-0.0002	0.1220*	-0.0329	0.7136*	0.5271*	0.1965*	0.0597	0.1624*	1.0000	
Financial Freedom	0.0305	0.1477*	-0.0510	0.7046*	0.4225*	0.1675*	0.1182*	0.1999*	0.5216*	1.0000

*Source: Author's computations Standard errors in parentheses*** p<0.01, ** p<0.05, * p<0.1*

Table 5 below reflects the panel regression results from both the random effects and fixed effects models. The index for property rights appears to have a negative and statistically significant impact on foreign direct investment for the random effects model and a negative and insignificant impact on foreign direct investment for the fixed effects model. The index for property rights represents a country's legal framework which allows individuals to acquire, hold and use property, and the extent to which their rights are secured. The results suggest that in the African continent, when the property right index increases, there is a

reduction in foreign direct investment. Moreover, the results suggest that there is an ambiguous relationship between property rights and foreign direct investment in the African continent.

In addition, the index for government spending also appears to be negative and statistically significant on foreign direct investment for both the random effects and fixed effects models. This index captures the burden imposed by government expenditures on countries. This suggests that higher government expenditures will result in a negative impact on foreign direct investment.

In contrast, the overall index score for economic freedom appears to be positive and statistically significant on foreign direct investment for both the random effects and fixed effects models. The economic freedom index measures the extent of a nation's openness and business friendliness. This suggests that economic freedom has a positive impact on foreign direct investment in the African continent.

Population growth also appears to have a positive and statistically significant impact on foreign direct investment for the random effects model. This suggests that as the population increases in a nation, the demand for goods and services also increases. In order to meet the increase in demand of goods and services, African countries need to attract foreign investment.

Table 5. Random and Fixed Effects Panel Regression Results

Variables	**Random Effects**	**Fixed Effects**
	Foreign Direct Investment	
GDP Per Capita	0.000112[0.000223]	0.000218[0.000264]
Population Growth	1.186*[0.684]	1.095[0.712]
Overall Score for Economic Freedom	0.150**[0.0688]	0.199**[0.0874]
Property Rights	-0.0367*[0.0209]	-0.0345[0.0203]
Tax Burden	0.0269[0.0211]	0.0234[0.0251]
Government Spending	-0.0590**[0.0281]	-0.0649*[0.0317]
Trade Freedom	0.0215[0.0222]	0.0161[0.0206]
Investment Freedom	-0.00754[0.0295]	-0.00939[0.0310]
Financial Freedom	-0.00191[0.0150]	-0.00812[0.0158]
Constant	-5.043**[2.417]	-6.477**[3.090]

$\boldsymbol{Wald\ X^2(9)}$	23.23	
$\boldsymbol{Prob > X^2}$	0.0057	
Prob > F		0.0239
Number of Observations	783	783
Number of Countries	29	29

*Source: Author's computations; Robust Standard errors in parentheses*** p<0.01, ** p<0.05, * p<0.1*

Table 6 below reflects the results of the Hausman (1978) specification test. The Hausman test favoured the random effects model. The null hypothesis, which suggests that that the random effects model is the most appropriate model cannot be rejected as the P-value is significantly higher that 5%.

Table 6. Hausman Test

Variables	**(b)**	**(B)**	**(b-B)**	**Sqrt(diag(V_b-V_B))**
	Fixed Effects	Random Effects	Difference	Standard Error
GDP Per Capita	0.0002176	0.0001123	0.0001053	0.0001287
Population Growth	1.094602	1.186011	-0.0914096	0.2558281
Overall Score for Economic Freedom	0.1993586	0.1498133	0.0495453	0.0308511
Property Rights	-0.0345007	-0.036708	0.0022073	0.0042385
Tax Burden	0.0233604	0.0268738	-0.0035134	0.0088091
Government Spending	-0.0648984	-0.0589621	-0.0059364	0.0076006
Trade Freedom	0.0161317	0.0215043	-0.0053726	0.0057844
Investment Freedom	-0.009388	-0.0075443	-0.0018437	0.0040427
Financial Freedom	-0.0081201	-0.0019065	-0.0062136	0.0063904

Source: Author's computations; Prob>chi2 = 0.9227

In addition to the above Hausman test, Table 7 below shows the results of the Breusch Pagan LM test for Random effects. The results reflect the rejection of the null hypothesis for foreign direct investment thus it can be concluded that there are significant random effects in the panel and therefore the Random effect model is significant.

Table 7: Breusch-Pagan Lagrange Multiplier (LM) Test for Random Effects

Breusch-Pagan Lagrange Multiplier (LM) Test for Random Effects		
Variable	Chi bar sq	p-value
Foreign Direct Investment	641.23	0.0000***

Source: Author's computations

Table 8 below shows the results of the cross section dependence test employed in this study. As reflected in Table 8 below, the Pesaran CD test and Friedman's test indicate that the residuals do not suffer from cross section dependence. This is shown by the probability values which are significantly above 5% for both the random effects and fixed effects models.

Table 8: Cross Section Dependence Test

Test	**Statistic**	**Probability**
	Random Effects	
Pesaran CD	0.143	0.8862
Friedman's Test	36.487	0.1306
	Fixed Effects	
Pesaran CD	0.233	0.8156
Friedman's Test	36.856	0.1221

Source: Author's computations

Figure 1 below reflects the results from the study's normality test. The kurtosis value is approximately 2.95 which is close to 3. This suggests that the data follows a mesokurtic distribution or normal distribution. Further, figure 1 reflects a skewness value of approximately 1.3. A skewness value greater than 1 suggests that the data is highly skewed.

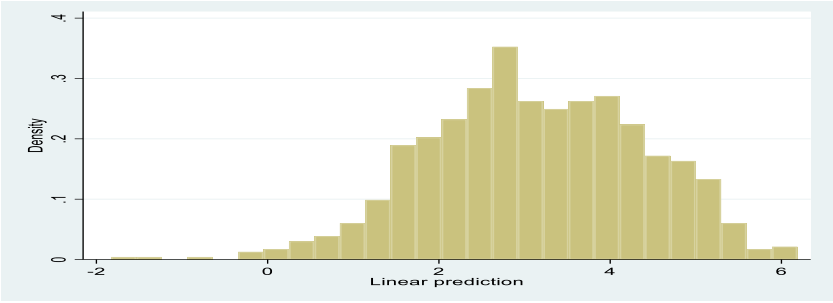

Figure 1: Normality Test

Table 8: Cross Section Dependence Test

Item	Statistic
Mean	3.130874
Median	3.107068
Maximum	6.18681
Minimum	-1.829413
Standard Deviation	1.255951
Skewness	1.255951
Kurtosis	2.94925
Jarque-Bera	5.161
Chi(2)	0.0757
Observations	783

Source: Author's computations

The study also employed the Woolridge Serial Auto-Correlation test of null hypothesis of first order autocorrelation in order to determine the presence of serial correlation in the panel data. Table 9 below shows the results of the Wooldridge test for Autocorrelation in Panel Data and it appears that the panel data suffers from the presence of autocorrelation and heteroskedasticity. As a result of this, in estimating both the random effects and fixed effects models, the study employed robust standard errors to control for heteroskedasticity and autocorrelation. In addition, the study also employed a Panel Estimated Generalized Least Squares model as it has the ability to overcome both autocorrelation and heteroskedasticity.

Table 9: Wooldridge test for Autocorrelation in Panel Data

F (1, 28)	54.907
Prob > F	0.0000

Source: Author's computations

Table 10 below shows the regression results from the Panel Estimated Generalized Least Squares model. The index for property rights appears to have a negative and statistically insignificant impact on foreign direct investment in the African continent. When the Generalized Least Squares model is used, it appears that a country's legal framework that allows individuals to acquire, hold and use property, and the extent to which their rights are secured does not have a significant impact on foreign direct investment in the African continent. Similarly

to the regression results for the random and fixed effects models, the overall index score for economic freedom appears to be positive and statistically significant on foreign direct investment. This suggests that economic freedom has a positive impact on foreign direct investment in the African continent. This finding is consistent in all the models employed in this study.

Further, the index for government spending also appears to be negative and statistically significant on foreign direct investment. This suggests that higher government expenditures will result in a negative impact on foreign direct investment. The index for investment freedom appears to be negative and statistically significant on foreign direct investment in the African continent. This index reflects a variety of regulatory restrictions that are imposed on investment. This suggests that strict regulatory restrictions on investments leads to a negative impact on foreign direct investment in the African continent.

GDP per Capita appears to have a negative and statistically significant impact on foreign direct investment. This suggests that a decrease in GDP per capita will lead to a decrease in foreign direct investment. In contrast, Population growth also appears to have a positive and statistically significant impact on foreign direct investment. This suggests that as the population increases in a nation, the demand for goods and services also increases. In order to meet the increase in demand of goods and services, African countries need to attract foreign investment.

Table 10: Regression Results for Panel Estimated Generalized Least Squares Model

	Coefficient	**Standard Error**	**z**	**P>|z|**	**[95% conf. interval]**	
GDP Per Capita	-0.000212***	0.0000478	-4.43	0.000	-0.0003055	-0.0001182
Population Growth	0.202*	0.1054021	1.92	0.055	-0.0045185	0.4086503
Overall Score for Economic Freedom	0.1000***	0.0239	4.18	0.000	0.0531082	0.1467943
Property Rights	-0.00237	0.0068129	-0.35	0.728	-0.0157198	0.0109862
Tax Burden	-0.000258	0.0067248	-0.04	0.969	-0.0134383	0.0129224
Government Spending	-0.0179***	0.0048413	-3.70	0.000	-0.0274181	-0.0084404
Trade Freedom	-0.00115	0.0056092	-0.21	0.837	-0.0121473	0.0098403
Investment Freedom	-0.0128**	0.0059833	-2.14	0.032	-0.0245288	-0.0010746
Financial Freedom	-0.00722	0.0061445	-1.17	0.240	-0.0192603	0.0048257
Constant	-1.233**	0.6197424	-1.99	0.047	-2.447569	-.0182236

Estimated covariances	29
Estimated autocorrelations	0
Estimated coefficients	10
Log Likelihood	-1753.657
Number of Observations	783
Number of Groups	29
Time periods	27
Wald chi2(9)	57.10
Prob > chi2	0.0000
Estimated covariances	29
Estimated autocorrelations	0

*Source: Author's computations; Standard errors in parentheses*** p<0.01, ** p<0.05, * p<0.1*

Furthermore, Table 11 below reflects the results from the panel data Granger causality test. The results reveal a bi-directional causality among property rights and foreign direct investment. This suggests that property rights and foreign direct investment are jointly determined The results also reveal a unidirectional causality relationship from foreign direct investment to economic freedom. Furthermore, the results also revealed an unidirectional causality relationship from; (i) foreign direct investment to population growth; (ii) foreign direct investment to the tax burden; (iii) foreign direct investment to government spending; (iv) trade freedom to foreign direct investment; and (v) investment freedom to foreign direct investment.

Table 11: Testing for Granger Causality in Panel Data

Null Hypothesis	**W-Stat**	**Zbar-Stat**	**Prob**
Property Rights does not Granger-cause Foreign Direct Investment.	1.7834	2.9832	0.0029
Foreign Direct Investment does not Granger-cause Property Rights	1.7599	2.8934	0.0038
GDP Per Capita does not Granger-cause Foreign Direct Investment	0.9481	-0.1976	0.8434
Foreign Direct Investment does not Granger-cause GDP Per Capita	1.3396	1.2932	0.1959
Population Growth does not Granger-cause Foreign Direct Investment	1.3702	1.4097	0.1586
Foreign Direct Investment does not Granger-cause Population Growth	2.0309	3.9257	0.0001
Overall Score for Economic Freedom does not Granger-cause Foreign Direct Investment	1.1306	0.4974	0.6189
Foreign Direct Investment does not Granger-cause Overall Score for Economic Freedom	1.8185	3.1167	0.0018
Tax Burden does not Granger-cause Foreign Direct Investment	1.0897	0.3417	0.7326
Foreign Direct Investment does not Granger-cause Tax Burden	1.6433	2.4495	0.0143
Government Spending does not Granger-cause Foreign Direct Investment	0.9129	-0.3317	0.7401

Foreign Direct Investment does not Granger-cause Government Spending	2.2467	4.7471	0.0000
Trade Freedom does not Granger-cause Foreign Direct Investment.	1.8546	3.2541	0.0011
Foreign Direct Investment does not Granger-cause Trade Freedom	1.3310	1.2604	0.2075
Investment Freedom does not Granger-cause Foreign Direct Investment	1.7350	2.7988	0.0051
Foreign Direct Investment does not Granger-cause Investment Freedom	1.2887	1.0992	0.2717

Source: Author's computations

5. CONCLUSION

This study examined the relationship between foreign direct investment and property rights in the African region. To do so, this study employed annual panel data on 29 African countries over the period 1996 to 2022. First, the study employed both a random effects and fixed effects model and found that the random effects model was the most appropriate. Further, the panel data exhibited the presence of autocorrelation and heteroskedasticity. As a result of this, in estimating both the random effects and fixed effects models, the study employed robust standard errors to control for heteroskedasticity and autocorrelation. In addition, the study also employed a Panel Estimated Generalized Least Squares model as it had the ability to overcome both autocorrelation and heteroskedasticity.

The results from the random effects model revealed that the index for property rights has a negative and statistical negative impact on foreign direct investment in the African region. This suggests that when there is an improvement in the property right infrastructure, there is a corresponding decrease in foreign direct investment in the African region which contradicts the results from other similar studies such as Ali et al. (2010), Lin et al. (2019) and Tag (2021). The results from the random effects model seems to suggest that there is an ambiguous relationship between property rights and foreign direct investment in the African region. Moreover, the results from the random effects model revealed that the index for economic freedom, which measures the extent of a nation's openness and business friendless has a positive and statistically significant impact on foreign

direct investment in the African region. This suggests that in the context of the African region, a nation's economic and entrepreneurial environment plays a positive role in attracting foreign direct investment in the African region.

Similar results were also found from the Panel Estimated Generalized Least Squares model. These results revealed that the index of property rights has a negative and statistically insignificant impact on foreign direct investment in the African region. Further, the results revealed that the economic freedom index appears to have a positive and statistically significant impact on foreign direct investment in the African region.

Given the empirical results, African leaders and African policymakers should focus on formulating policies that promote and improve the economic and entrepreneurial environment in which they govern. These policies should focus on ensuring that the business environment allows for entrepreneurship to prosper and flourish. African policymakers should take on a philosophy of governance that embraces a diverse variety of strategies for economic advancements that result in marketplaces that are open and encourage innovation. Economic freedom is defined as an individual's autonomy which is focused on the freedom of choice that individuals enjoy in acquiring and using goods and services. To achieve economic freedom, African leaders and policymakers should move towards more market-oriented policies and economies. This will in turn also lead to African nations being able to attract foreign direct investment in the region.

Doing so would ensure that the benefits of foreign direct investment, such as, enhanced capital formation, employment creation, the promotion of exports, management know-how, access to skilled labour, international production networks, technology transfers and spillover effects will be enjoyed in the African region. This will ensure that economic growth as a result of foreign direct investment will be achieved in the African region.

6. ACKNOWLEDGEMENT

The support of the Carnegie Diversifying the Academy (CTDA) program at the University of the Witwatersrand, Johannesburg in the Republic of South Africa towards this research is hereby acknowledged. Opinions expressed and conclusions arrived at are those of the author and are not to be attributed to the CDTA.

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