“Impact of intellectual property rights on foreign direct investment in Africa”

AUTHORS	Kunofiwa Tsaurai

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Kunofiwa Tsaurai (South Africa)

IMPACT OF INTELLECTUAL PROPERTY RIGHTS ON FOREIGN DIRECT INVESTMENT IN AFRICA

Abstract

The study investigated the impact of intellectual property rights on foreign direct investment (FDI) in selected African countries (Burkina Faso, Ivory Coast, Nigeria, Cameroon, Mali, Kenya, Burundi, Central African Republic, Rwanda, Senegal, Zimbabwe, and Tanzania). The purpose of the study is to develop property rights policies that encourages FDI in African countries. How FDI is influenced by the combination of trade openness and intellectual property rights was also examined using the same data set and econometric methods such as the dynamic generalized method of moments (GMM), fixed effects, and pooled ordinary least squares (OLS). Panel data ranging from 2005 to 2019 were used for the purposes of this study. A 1% increase in intellectual property rights led to a 22.73% increase in FDI inflows under the dynamic GMM and a 45.55% increase in FDI inflows under the random effects. These results show that intellectual property rights significantly enhanced FDI under the random effects and dynamic GMM. FDI was insignificantly enhanced by intellectual property rights under the pooled OLS and fixed effects methods. A 1% increase in complementarity between intellectual property rights and trade openness (complementarity term) pushed up FDI inflows by 17.78% under the dynamic GMM, whilst a 1% increase in the complementarity term increased FDI inflows by 16.72% under the fixed effects. In other words, dynamic GMM and fixed effects approaches show that the complementarity component significantly improved FDI inflows. The paper recommends implementing the best property rights strategies to improve FDI inflows into African countries.

Keywords property rights, African countries, foreign investment, panel data

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Kunofiwa Tsaurai, Ph.D., Full Professor, Economic and Management Sciences Faculty, Finance, Risk Management and Banking Department, University of South Africa, South Africa.

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INTRODUCTION

Blomstrom et al. (1994) agreed that economic growth is achieved through FDI's ability to transfer technology, bring managerial skills, train skills, create employment, and, along with it, bring the much-needed additional capital into the host countries. Hundreds of existing studies on the topic concur that the former is a critical element of the latter. In other words, the positive influence of FDI on the economy is now conclusive in the field of development economics and finance. What remains unresolved and is the subject of this study is the role of institutions' quality in attracting FDI. These institutions in the host country include corruption, property rights, and the rule of law, among others.

Given the undisputable importance of FDI as one of the engines for economic growth, serious economic growth planning requires authorities to possess knowledge of host country FDI determinants. One of such determinants of FDI is intellectual property rights, which is in line with Dunning (1973), whose study noted that it is a locational advantage of FDI in host countries. This is because intellectual property rights assure foreign investors that their inventions are safe in the

host country. Intellectual property rights spur economic growth and development, which provides a conducive environment that attracts FDI into the host nation. Adams (2010) noted that the impact of property rights on FDI is quite ambiguous and requires further study. Although there are several related prior studies, they are characterized by methodological deficiencies. These include failure to consider that FDI data are affected by their prior position, inability to address the endogeneity problem, shying away from African countries, use of outdated data, and failure to capture the non-linearity aspect between these two variables, which is consistent with Arshad and Ghulam (2010). These methodologically related issues are considered in this study.

1. LITERATURE REVIEW

Theoretically, property rights are essential in the economic growth process of any country in various aspects. Property rights, according to Cooter and Ulen (2012), create incentives, allocate resources, and stimulate production-related activities in the economy. Their study argued that property rights determine limited resource distribution. In the same vein, they argued that property rights encourage people to save and invest their money, leading to the existence of an efficient market. According to Gwartney and Lawson (2006), strong property rights give individuals and companies a higher degree of economic freedom. This entices them to engage in long-term investments, which ultimately feed into the country's development agenda. Their study also noted that property rights ensure the availability of free resources, which would have been freed from the monopoly of government agencies. This helps to spread political and economic power in the society. When businesses feel their investments are safe and secure due to the existence of property rights, welfare increase in societies is observed (Rodrick, 2004).

There are four theoretical rationales explaining the importance of property rights in influencing the inflow of FDI into host countries. According to Javorcik (2004), strong property rights spur FDI because they reduce the risk or probability of breaching the contract by the licensee. The same author also argued that strong property rights deter the licensee from directly competing with the seller, which encourages FDI. However, Yang and Maskus (2001) argued that strong property rights may have a deleterious influence on FDI by ensuring that licensing becomes a viable alternative to FDI.

According to Hu et al. (2021), intellectual property rights ensure an improved business environment, which in itself is a strong feature of the host country and attracts FDI. On the contrary, stronger intellectual property rights increase the cost of learning for developing nations, and this may end up cutting down the chain of supply in developed nations (Hu et al., 2021, p. 1). According to Adams (2010), strong property rights promote trade and investment because foreign investors are assured of the absence of their new technology leakages and imitation. The same author argued that the easy and quick flow of new international technology happens when the host countries respect intellectual property rights.

Yuldoshboy et al. (2022) argued that high-quality intellectual property rights indices show that shareholders of multinational firms feel safeguarded that debt default risk is reduced. They also guarantee these shareholders that any transfer of knowledge between nations is performed in a legal manner. This also ensures that any illegal poaching of intellectual property rights can be addressed in a satisfactory way (Borovitsky, 2020).

Dunning (1973) developed the eclectic paradigm hypothesis. It says that OLI (ownership, location, and internalization) advantages influence the quality and quantity of FDI flowing into host countries. Dunning (1980) also further explained the OLI advantages of FDI. Ownership advantage is the edge a firm enjoys over its rivals even if it is a foreign company. These include patents, brand names, knowledge, intellectual property rights, and technology, which is in line with Wahid et al. (2009). "A firm that possesses the technology, monopoly, and economies of large size advantages can enjoy higher profitability margins coupled by lower marginal costs of production if it decides to operate from abroad" (Dunning, 1973). Government policies shape political benefits, transport, size of the market, and telecommunications constitute economic benefits, whilst people's

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attitude towards strangers and the rate at which people embrace cultural diversity are locational advantages (Denisia, 2010).

Empirical research on intellectual property rights led FDI inflows is summarized next. Employing a recent qualitative model, Tanaka and Iwaisako (2014) noted that strengthening intellectual property rights promoted both FDI and innovation worldwide. Olaniyi (2018) conducted a panel data (2000–2016) analysis to investigate the intellectual property rights-FDI nexus in Sub-Saharan Africa (SSA). Intellectual property rights significantly improved FDI in Sub-Saharan African countries. Using the literature review analysis approach, Seyoum (1996) explored the linkage between FDI and property rights in 27 nations. The study notes that property rights play a more important role in increasing FDI in 27 countries than many economic variables.

Using disaggregated analysis, Nunnenkamp and Spatz (2004) noted that intellectual property rights improved the quantity and quality of FDI in countries that are still developing. Using panel data (2000–2015), Kumar et al. (2018) explored the FDI and property rights relationship in BRICS. Patent granted, intellectual property usage, and research and development expenditure as a ratio of gross domestic product were all used as a proxy of intellectual property rights. The study observed that FDI inflow into the technology industry was enhanced by strong intellectual property rights. A critical literature review analysis by Gathii (2016) noted that FDI in least developed countries was attracted by strong intellectual property rights in the least developed countries.

A panel data (1970–2005) analysis was done by Arshad and Ghulam (2010) to find out the nexus between FDI and property rights in South East Asian countries. Their study revealed that sound institutions, protection of property rights, and increased economic freedom significantly improved FDI inflow into Southeast Asian countries. Ho et al. (2017, p. 29) also explored the relationship between property rights and FDI using panel data (1998–2007) in the Republic of China. Strong intellectual property rights enhanced FDI's positive effect on local innovation mainly in the pharmaceutical sector. A critical literature review analysis by Wang et al. (2016) observed that intellectual property rights enhance FDI. Hu et al. (2021) investigated the influence of property rights policies on technological innovation and FDI inflows into Northern and Southern countries. Intellectual property rights were found to be the bedrock behind increased technological innovation and FDI inflows in a literature critical review by Hu et al. (2021, p. 1).

Danai (2018) used the gravity model and the meta-analysis approach with data spanning from 2001 to 2011 to establish the connection between FDI and property rights in the Organization for Economic Cooperation and Development (OECD) countries. FDI was enhanced by the strict implementation of intellectual property rights in the OECD group of countries. Employing panel data (2003–2015), Papageorgiadis et al. (2019) noted that intellectual property rights had a significant enhancing effect on FDI in China. Using the same approach (literature review analysis), Lundquist (2011) revealed that intellectual property rights were instrumental in attracting foreign direct investment.

Ayappan and Chin (2018) used a system GMM using panel data (1998–2013) to explore the FDI-property rights nexus in 103 group of nations? The finding was that intellectual property rights enhanced both the economy and FDI. Rozilee et al. (2012) employed the ARDL (Autoregressive Distributive Lag) using time series data (1970–2005) to explore the relationship between property rights and FDI in Malaysia. Their study revealed that intellectual property rights improved the economy and attracted FDI into Malaysia.

Sabir and Abbas (2019) explored the role of institutions (property rights included) in FDI in developing economies employing the generalized method of moments (GMM) with panel data (1996–2016). The influence of institutional quality on FDI was found to be positive and significant across all groups of countries during the period under study. Using panel data, Yuldoshboy et al. (2022) explored the linkage between FDI and intellectual property rights in Kazakhstan, Uzbekistan, and Kyrgyzstan. FDI was found to have gone up by 0.004 percentage points in response to a 1 percent increase in quality of intellectual property rights across all the countries studied.

The influence of property rights on FDI was also studied by Mahram and Reinholdsson (2010) using panel methods with data spanning from 1970 to 2005. They investigated the topic because prior studies had inadequately investigated the wholesome influence of property rights on FDI. A significant positive effect of property rights on FDI was observed. Using panel methods with data from 1985 to 2003, Adams (2010) investigated the intellectual property rights-FDI nexus in developing countries. The study observed that FDI was strongly enhanced by strengthening intellectual property rights in developing nations. Apart from intellectual property rights, other variables were found to have attracted FDI in a significant manner, including trade openness, investment, and economic growth.

Fang et al. (2019) studied the interrelationship between intellectual property rights and FDI in developing countries using panel data analysis (2003–2017). The impact of intellectual property rights on FDI was found to be significantly positive. Intellectual property rights had a U-shaped impact on outward China's FDI.

Only one study (Borovitsky, 2020) supported the argument that property rights negatively influence FDI. Borovitsky (2020, p. 1) explored the nexus between FDI and intellectual property rights in middle to low-income countries using panel data analysis. The study noted that FDI was negatively affected by intellectual property rights.

Other empirical studies have shown that certain conditions must be in place in FDI recipient countries before property rights can have a meaningful impact on FDI. In Asia, a literature review analysis by Lee and Park (2013) observed that intellectual property rights attracted FDI in nations characterized by strong institutions. Kyrkilis and Koboti (2015) carried out an extensive literature review on intellectual property rights as a determinant of FDI inflows in Greece. The study reviewed that the diffusion of international technology enhanced intellectual property rights' influence on FDI inflows into Greece.

Using a theoretical model, Minsoo et al. (2018) investigated the influence of intellectual property rights on FDI in Asian developing nations. They noted that intellectual property rights attracted more FDI in developing Asian nations characterized by strong institutions. On the contrary, the impact of intellectual property rights on FDI was quite low in developing Asian nations characterized by weak institutions.

Using a non-nested multilevel model with panel data (1970–2009), Nieman and Thies (2019) examined the property rights-FDI nexus in developed and developing nations. The influence of property rights on FDI was found to have been more pronounced in developing and developed countries characterized by quite strong democratic institutions. Maskus (2000) noted that intellectual property rights alone are not an incentive to attract FDI. Factors that should interact with intellectual property rights to attract significant FDI were found to be technology development, market deregulation, and strong competition in the economy.

Saravia et al. (2017) used threshold panel regression analysis to explore the relationship between FDI, intellectual property rights, and economic freedom in developing countries. Their study noted that intellectual property rights' impact on FDI was more pronounced in countries characterized by a higher-quality institutional environment.

The bi-directional causality relationship between FDI and property rights was confirmed by Branstetter and Saggi (2010). FDI and intellectual property rights affected each other in a literature review study by Branstetter and Saggi (2010).

Empirical studies that show that property rights' impact on FDI is minimal also exist. Hammami (2019) explored the interactions between intellectual property rights, economic growth, and FDI in low to middle-income countries using panel methods (two-stage least squares and fixed effects). FDI was insignificantly enhanced by the intellectual property rights in middle and low-income countries. The same study noted that FDI was not influenced by intellectual property rights reforms specifically in developing countries.

A literature review by Noon et al. (2018) noted that intellectual property rights' influence on FDI was positive, fragmented, inconclusive, and unable to define the foreign direct investment location deci-

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sions worldwide. Granath and Sluiter (2018) used panel methods to study the relationship between property rights and FDI in 20 middle-income countries. The study revealed that FDI was insignificantly enhanced by property rights across all the countries studied.

These empirical studies show that property rights influence foreign direct investment in a mixed, diverse, and divergent way. The empirical literature does not reach a consensus on the relationship between foreign direct investment and property rights. This study investigates the impact of property rights on FDI in an African context based on this.

2. METHOD

This paper used secondary data for all the variables ranging from 2005 to 2019. World Development Indicators is the source of secondary data used. The advantages of these sources are: (1) they have an international stature, (2) they are reputable, (3) they are reliable, and (4) they are easily verifiable.

The general model specification of the FDI function is represented below in the form of equation (1).

$$FDI = f\begin{pmatrix} PR,\ OPEN,\ UNEMPL, \\ FIN,\ GROWTH,\ POP \end{pmatrix}, \quad (1)$$

where *FDI*, *PR*, *OPEN*, *UNEMPL*, *FIN*, *GROWTH,* and *POP* are the independent variables. Property rights are represented by *PR*, whilst *OPEN* represents openness to trade. Unemployment is abbreviated by *UNEMPL*, *FIN* represents financial management, whilst *GROWTH* is economic growth. *POP* is population growth. *FDI* (% of GDP) is the proxy of foreign investment used. Property rights are measured by property rights and rule-based governance rating (1 = low to 6 = high).

The total of exports and imports (% of GDP) was used as a measure of trade openness. The ratio of domestic credit provided by financial intermediaries to GDP is the financial sector development proxy. Population growth (annual %) was used as a proxy for population growth. GDP per capita is the economic growth proxy, while the percentage of the total labor force is the measure of unemployment.

According to Adams (2010), strong intellectual property alone cannot be enough to attract FDI. This is the reason why even the BRICS economic grouping received one of the largest shares of FDI despite the high prevalence of questionable respect for intellectual property rights among the group's individual countries. The choice of control variables of FDI to be included in this study is informed by another similar study by Rozilee et al. (2012), Ayappan and Chin (2018), Lundquist (2011), Branstetter and Saggi (2010), Papageorgiadis et al. (2019), and Danai (2018). These control variables are population growth, trade openness, economic growth, unemployment, and financial development. These are discussed next.

Denisia (2010) argued that locational advantages of FDI include trade openness of the host country, among other factors. Openness to trade is either a political or economic factor determining the location of FDI, with high trade openness attracting foreign investors. Consistent with Jorgenson (1963), high unemployment levels attract FDI because foreign investors are attracted by low labor costs. Low unemployment levels mean the market size (buying power of the customers) is high thereby attracting more foreign investors (Jorgenson, 1963).

According to Bartels et al. (2009), financial markets that are developed tend to attract more FDI because of their ability to cut the cost of transactions, smoothen the flow of information and confidence building factor in the economy. According to Jorgenson's (1963) market size hypothesis, high economic growth as an indicator of market size attracts FDI. Moosa (2010) also echoed the same sentiment with regard to the economic growth-FDI nexus. The bigger size of the population enhances FDI inflows by attracting a huge skill base, enough labor force, and a market for products and services (Aziz & Makkawi, 2012).

In econometric terms, equation (1) is transformed into equation (2), as presented below.

$$FDI_{i,t} = \beta_0 + \beta_1 PR_{i,t} + \beta_2 X_{i,t} + \mu_{i,t} + \varepsilon_{i,t}, \quad (2)$$

where *FDI* is proxied by net foreign direct investment (% of GDP), and control variables are represented by *X*. β_0 is the intercept. β_1 and β_2, re-

spectively, stand for the coefficients of property rights and control variables. ε is an error term, and $\mu_{i,t}$ is an unobserved country-specific effect and time-invariant.

Equation (3) addresses the question of the influence of the complementarity variable on FDI in selected African countries.

$$\begin{aligned} FDI_{i,t} &= \beta_0 + \beta_1 PR_{i,t} + \beta_2 OPEN_{i,t} \\ &+ \beta_3 \left(PR_{i,t},\ldots,OPEN_{i,t}\right) + \beta_4 UNEMPL_{i,t} \\ &+ \beta_5 FIN_{i,t} + \beta_6 GROWTH_{i,t} + \beta_7 POP_{i,t} \\ &+ \mu + \varepsilon, \end{aligned} \quad (3)$$

where β_3 is the co-efficient of the complementarity variable $\left(PR_{i,t},\ldots,OPEN_{i,t}\right)$. A significant positive sign of the interaction variable implies that FDI is enhanced by the complementarity between property rights and trade openness. The study introduced the interaction term $\left(PR \cdot OPEN\right)$, which is in line with Lee and Park (2013) and Kyrkilis and Koboti (2015), whose studies showed that certain characteristics must be present in the host country to allow property rights to significantly enhance FDI.

Equation (4) was introduced to consider an argument by Krugman (1991) and Wheeler and Mody (1992) that foreign investments follow each other (the lag of FDI). In other words, FDI is positively attracted by already existing foreign investment in the host country.

$$\begin{aligned} FDI_{i,t} &= \beta_0 + \beta_1 FDI_{I,t-1} + \beta_2 PR_{i,t} \\ &+ \beta_3 OPEN_{i,t} + \beta_4 \left(PR_{i,t},\ldots,OPEN_{i,t}\right) \\ &+ \beta_4 UNEMPL_{i,t} + \beta_5 UNEMPL_{I,T} + \beta_6 FIN_{i,t} \\ &+ \beta_7 GROWTH_{i,t} + \beta_8 POP_{i,t} + \mu + \varepsilon. \end{aligned} \quad (4)$$

Equation (3) was econometrically estimated employing random effects, pooled OLS, and fixed effects, whereas equation (4) was estimated using a dynamic GMM.

3. RESULTS

According to Table 1, Burkina Faso, Burundi, Cote d'Ivoire, Central African Republic, Nigeria, Rwanda, Cameroon, Senegal, Mali, Zimbabwe, Kenya, and Tanzania are the African countries whose mean net FDI inflows (% of GDP) were lower below the overall mean net FDI inflow of 5.56% of GDP. African countries which average FDI (% of GDP) was greater than the overall mean FDI inflow value of 3.56% of GDP included Mozambique, Sierra Leone and Zambia. Burundi (0.67% of GDP), Mozambique (17.35% of GDP), and Sierra Leone (8.78% of GDP) are clear outliers as their mean FDI inflows deviated from overall mean net FDI inflow of 3.56% of GDP by a wider margin.

Table 1. Mean trends in FDI and intellectual property rights in chosen African nations (2005–2019)

Source: Author compilation.

Country	Net FDI (% of GDP)	Property rights and rule-based governance rating (1 = low to 6 = high)
Burundi	0.67	2.33
Mozambique	17.35	2.77
Burkina Faso	1.43	3.27
Central African Republic	1.65	1.83
Cote d'Ivoire	1.54	2.57
Cameroon	1.77	2.50
Sierra Leone	8.78	2.80
Nigeria	1.58	2.50
Rwanda	2.56	3.33
Senegal	2.36	3.57
Mali	2.96	2.93
Zimbabwe	1.67	1.57
Zambia	5.35	3.00
Kenya	1.33	2.83
Tanzania	3.28	3.43
Overall mean	3.56	**2.76**

Mozambique, Burkina Faso, Sierra Leone, Rwanda, Senegal, Mali, Zambia, Kenya, and Tanzania are among the selected African countries whose mean net property rights index exceeded the overall mean property rights index of 2.76. On the other hand, selected African nations like Burundi, Cote d'Ivoire, Central African Republic, Nigeria Cameroon, and Zimbabwe had their mean property rights index below the overall mean property rights index of 2.76. Central African Republic (1.83) and Zimbabwe (1.57) are the clear outliers because their mean property rights index was lower than the overall mean property rights index of 2.76 by a much wider margin.

Table 2 presents the results, both at level and first difference.

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Table 2. Panel stationarity tests – Individual intercept

Source: EViews.

Variable	Levin, Lin, and Chu	Im, Pesaran, and Shin	ADF Fisher Chi-Square	PP Fisher Chi-Square tests
Level				
LFDI	–1.5428	–0.1328	2.1783	1.8429
LPR	–2.5483	–2.6295	4.8217	3.0327
LOPEN	–2.2186*	–2.7439**	8.6329**	11.8328***
LUNEMPL	1.7342	2.1286	1.6328	0.9426
LFIN	–2.6329	–1.5285	3.7219	5.9327
LGROWTH	–2.5265**	–3.3217***	8.7529***	7.9426***
LPOP	–0.8438	–1.7753	–2.0683	–1.5413
First difference				
LFDI	–5.6732**	–4.9327***	25.9326***	4.0008***
LPR	–6.5437***	–5.5421***	7.1432***	8.0043***
LOPEN	–1.6543*	–3.0054***	12.7693***	14.3421***
LUNEMPL	–4.0659**	–4.4313**	13.3276**	12.2316***
LFIN	–4.2316***	–6.3217***	27.0054***	16.6521***
LGROWTH	–5.4326***	–7.6317***	16.4317***	17.1543***
LPOP	–3.4765***	–4.0021***	–5.4387***	–6.4315***

Note: ***, **, and * stand for significant levels of 1 percent, 5 percent, and 10 percent, respectively.

This study performed panel co-integration tests (Table 3) using Kao (1999). The main purpose of the panel co-integration tests was to establish whether there is a long-run relationship between variables used in the study. Tembo (2018) used the same approach to test the existence of a co-integrating relationship (see Table 3). Table 4 summarizes the results.

Table 3. Kao's (1999) co-integration results

Source: Author compilation.

Series	ADF t-statistic
FDI PR OPEN UNEMPL FIN GROWTH POP	–3.9125***

Table 4. Results

Source: EViews.

Variable	Dynamic GMM	Fixed effects	Random effects	Pooled OLS
FDI LAG	0.3426***	–	–	–
PR	0.2273*	0.1743	0.4555*	0.0016
OPEN	0.1892**	0.1117	–0.2811	0.4217
COMPLEMENTARITY TERM	0.1778***	0.1672*	0.3327	0.1672
UNEMPL	–0.1789	0.2316	–0.5473	0.0328**
FIN	0.4388***	0.1927***	0.1782*	0.0895*
GROWTH	0.0082*	0.1004*	0.2176	0.4299
POP	0.1198***	0.3279***	0.2897	0.1009*
J-statistic	163.00	163.00	163.00	163.00
Prob (J-statistic)	0.00	0.00	0.00	0.00
Adjusted R-squared	0.7001	0.6717	0.6102	0.5913

4. DISCUSSION

Tables 3 and 4 present the pre-estimation diagnostics that must be performed before the main data analysis. The former is done to understand the nature of data and to establish whether the data being used are stable and not volatile. Co-integration analysis establishes the existence of long-run relationships between the variables being studied. In line with Borko (2017), the paper noted that variables were stationary at first difference. A co-integration relationship was established at a one percent significant level (Table 3), hence allowing final data analysis to be undertaken (see Table 4).

The dynamic GMM indicates FDI was enhanced by its own lag, which is in line with Krugman (1991), whose study argued that foreign direct investment is positively attracted by already existing foreign direct investment. The impact of property rights on FDI under the dynamic GMM and random effects was significantly positive, whilst property rights enhanced FDI non-significantly using pooled OLS and fixed effects. The findings agree with Dunning (1980), who argued that intellectual property rights are an FDI locational advantage. They also resonate with Rozilee et al. (2012), Tanaka and Iwaisako (2014), Olaniyi (2018), Nunnenkamp and Spatz (2004), and Seyoum (1996).

Dynamic GMM indicates that FDI was strongly improved by trade openness, whilst pooled OLS and fixed effects noted that FDI was non-significantly influenced by openness to trade. These results resonate with Denisia's (2010) reasoning that openness to trade is a political and/or economic variable that influences FDI inflow. In other words, Denisia (2010) is of the view that openness to trade is a locational benefit of FDI from a host country point of view. Random effects noted that FDI was enhanced by openness in an insignificant way, contrary to the majority of the literature. The author, however, thinks that higher levels of openness to trade in the host country dissuade FDI inflows because firms can manufacture in their home countries and still find it easy to export to other nations.

The combination of property rights and openness to trade significantly improved FDI under fixed effects and dynamic GMM. Pooled OLS and random effects, however, indicate that the complementarity variable non-significantly enhanced FDI inflows into the selected African countries. The findings support Arshad and Ghulam's (2010) study, which observed that property rights protection and increased economic freedom (trade openness) enhanced FDI in Southeast Asian countries.

Unemployment insignificantly reduced FDI, according to fixed effects and dynamic GMM, which is in line with Jorgenson (1963), who argued that high unemployment levels in the host country reduce buying power (market size), hence dissuading the inflow of FDI. Fixed effects show that unemployment non-significantly increased FDI, whilst pooled OLS indicates a positive but significant correlation between unemployment and FDI. These results are consistent with Jorgenson (1963), whose argument is that high unemployment levels attract FDI because foreign investors are attracted by low labor costs.

Financial development significantly increased FDI under all four panel methods, supporting Bartels et al. (2009), who argued that developed financial markets attract FDI because they allow easy information flow.

Pooled OLS and random effects indicate that economic growth insignificantly enhanced FDI, while the dynamic GMM and fixed effects noted that economic growth significantly increased FDI. The result generally agrees with Moosa (2010), who observed that high economic growth is a proxy for a large market size, which attracts FDI.

Population growth increased FDI insignificantly, according to pooled OLS and random effects, while dynamic GMM and fixed effects noted that FDI was significantly increased by population growth. This finding is generally in line with Aziz and Makkawi (2012), who noted that a bigger population enhances FDI inflows by attracting a huge skill base, enough labor force, and a market for products and services.

CONCLUSION

The study investigated the effect of intellectual property rights on FDI in selected African countries using panel data (2005–2019). The paper also studied the impact of complementarity of trade openness and intellectual property rights on FDI in selected African countries using a similar research methodology. Intellectual property rights significantly increased FDI, according to random effects and dynamic GMM approaches. Pooled OLS and fixed effects show that intellectual property rights insignificantly increased FDI. Selected African countries are therefore urged to strengthen all forms of property rights to attract more FDI inflow and, consequently, economic growth. Dynamic GMM and fixed effects approaches show that the complementarity variable significantly improved FDI. Selected African countries must, therefore, design and implement policies that enhance intellectual property rights and trade openness if they intend to significantly attract FDI. Other variables that need to be increased via policy design and implementation by BRICS nations to attract more FDI include financial development, population growth, and economic growth. Future research should focus on the threshold levels that intellectual property rights must reach before any meaningful and significant inflow of FDI into these selected African countries can occur.

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AUTHOR CONTRIBUTIONS

Conceptualization: Kunofiwa Tsaurai.
Data curation: Kunofiwa Tsaurai.
Formal analysis: Kunofiwa Tsaurai.
Investigation: Kunofiwa Tsaurai.
Methodology: Kunofiwa Tsaurai.
Project administration: Kunofiwa Tsaurai.
Resources: Kunofiwa Tsaurai.
Software: Kunofiwa Tsaurai.
Validation: Kunofiwa Tsaurai.
Writing – original draft: Kunofiwa Tsaurai.
Writing – review & editing: Kunofiwa Tsaurai.

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