An Econometric Analysis
of the Determinants of Foreign Direct
Investment in Africa

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Abstract
This paper provides an empirical analysis on the determinants of FDI inflows in Africa. The dataset used for this paper spans from 1996-2016 and involves 48 African countries. For inferential analysis the paper employs random (RE) effect model. Both structural factors and the quality of institutions and governance indices are examined. The key findings of the paper is that openness of the economy, GDP per capita and population growth have a substantial positive explanatory power over FDI in Africa. Similarly, control of corruption and political stability tend to exert a positive influence on FDI inflows in Africa. These findings provide some valuable insights into policy makers, practitioners, and foreign investors' decision making. More so, to attract foreign investment in the less trade liberalized countries, Government policy should encourage further market liberalization. In the same vein, an effective policy on FDI in all economies should focus on improving production efficiency so as to raise GDP per capita and increase the market size. African Governments should also improve the quality of institutions and governance, especially in terms of enhancement of corruption control and political stability.

Keywords: Foreign direct investment, structural factors, institutional quality

JEL C33, E20, F23, O16

1. Introduction

Foreign Direct Investment (FDI) plays a significant role in the economies of African countries. Many previous studies, for example Epaphra & Massawe (2017); Epaphra (2016); Epaphra & Massawe (2016); Epaphra & Mwakalasya (2017); Chen & Démurger (2002); Buckley *et al., (*2006); Kabelwa (2003, 2004); Blomström & Kokko (2003); Smith (1997); Quazi (2007), Dupasquier & Osakwe (2003) and Anyanwu (2006) show that the benefits of FDI in the receipt economies include transfer of modern technologies, job creation opportunities, productivity improvements and accelerating growth and development. Recognizing the importance of FDI in accelerating development, economists and policy makers tend to attract more FDI; as a result FDI has experienced a dramatic rise over the last two decades in most developing economies. This expansion is associated with the

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globalization, the increased economic integration and the reductions of barriers to trade and cross-border investment (Severiano, 2011). For example, an increased Africa's trade with emerging and developing economies contributes to increasing diversification of production and exports, that would, in turn, stimulate market-seeking FDI. According to Ibrahim et al. (2011), FDI has since 2005 become the main source of foreign capital inflows to Africa, overtaking official development assistance (ODA) in terms of size. In fact, FDI contributed 20 percent of gross fixed capital formation in Africa over the 2000-2016 period (UNCTAD STAT, 2017). Notably however, Africa has never been a major recipient of FDI flows and so lags behind other regions of the world. On an annual average basis, as Table 1 reports, the Africa's share of world FDI inflows was 1.8 percent in the 1991-00 period; 3.9 percent in the 2001-10 period; and 4.4 percent in the 2011-16 period. During the same periods, Asia received FDI inflows of 20.7 percent, 24.9 percent, and 30.6 percent of total world FDI inflows, respectively. Low inflows of FDI to Africa, despite its significant role in fostering the dynamism of the economies, undoubtedly, attracts an increasing interest of academics to assess the motivations that lead foreign multinational enterprises to invest in a specific place. This in turn calls for further analysis of the forces that drive FDI.

Table 1. FDI annual average, 1970-2016

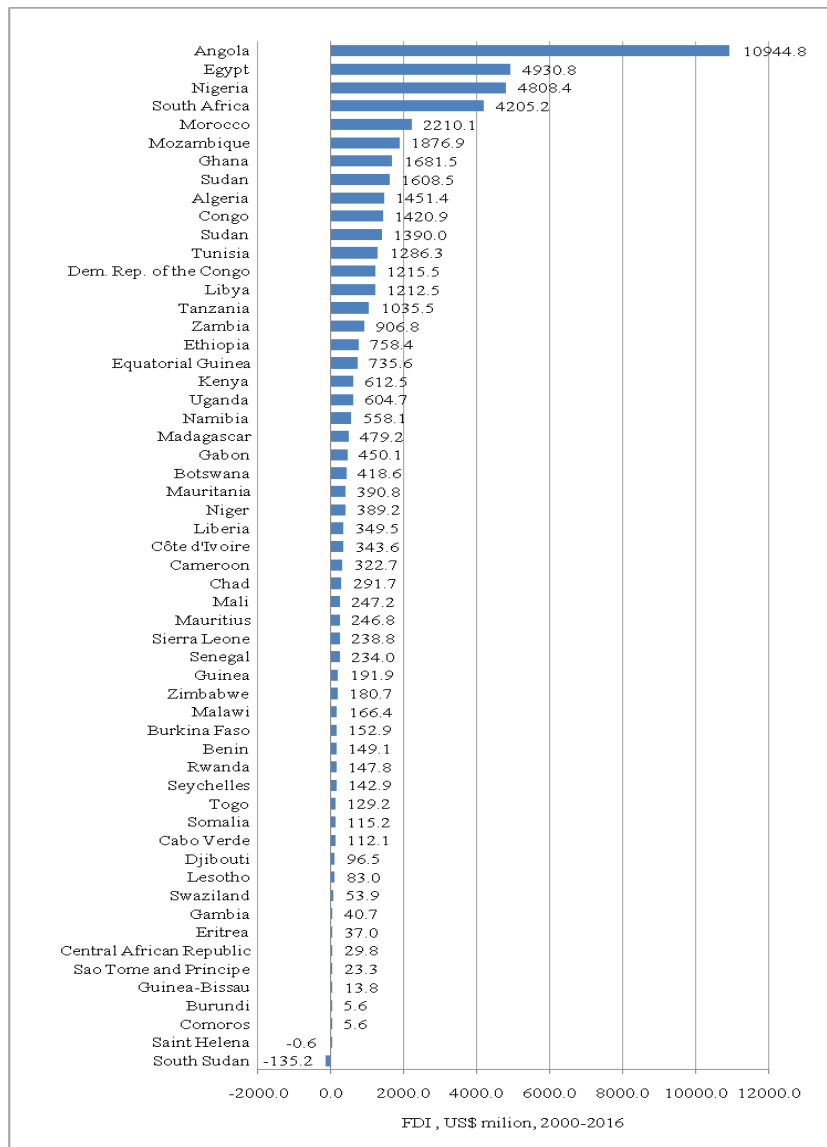|	1970-80	1981-90	1991-00	2001-10	2011-16
Africa	4.9	2.6	1.8	3.9	4.4
America	38.6	45.4	32.3	26.3	30.2
Asia	8.1	15.9	20.7	24.9	30.6
Europe	42.9	31.5	42.6	42.8	31.4

UNCTAD Statistics (2017)

This paper therefore aims at examining the determinants of FDI inflows to Africa. Analysis is done by using a panel of 48 African countries, over the 1996-2016 period and it covers a number of both structural factors, and institutional and governance indicators. With the information obtained in this empirical analysis, it would be possible to find better measures for FDI promotion in Africa. The rest of the paper is organised as follows. Section 2 presents an overview of FDI inflows to African countries. Section 3 reviews some important literature on the determinants of FDI inflows while section 4 presents data, definitions of variables and sample size. The baseline regression analysis is presented and discussed in section 5. The last section, section 6 concludes the paper with some policy implications aiming at increasing FDI inflows to Africa.

1. Overview of FDI inflow to African countries

Despite efforts to attract more FDI inflows to African countries, FDI flows to the continent in the last five years has been declining. According to the United Nations Conference on Trade and Development (UNCTAD (2017), FDI flows to Africa fell by 23.39 percent from US$ 77501.15 million in 2012 to US$ 59372.98 million in 2016, but with variance across regions and countries. Similarly, Africa's share of world FDI declined from 5.38 percent in 2014 to 3.40 percent in 2016. The overall decline of FDI flows to Africa is largely due to weak commodity prices (Anyanwu, 2011). Furthermore, FDI inflows remain unequally distributed across African countries, with only five countries namely Angola, Egypt, Nigeria, South Africa, and Morocco constituting 54.06 percent of Africa's total FDI inflows over the 2000-16 period. Figures 1 and 2 provide the FDI inflows to Africa measured in US$ and percent of total world FDI. The general observation is that, although Angola, Egypt, Nigeria, South Africa, and Morocco constitute the largest share of FDI inflows to Africa, their share in total world FDI, during the 2000-2016 period, is less than 3 percent. This implies that Africa is not a major recipient of FDI flows. It also implies that, the overwhelming majority of FDI inflows into Africa go into natural resources exploitation such as oil, gas and mining projects.
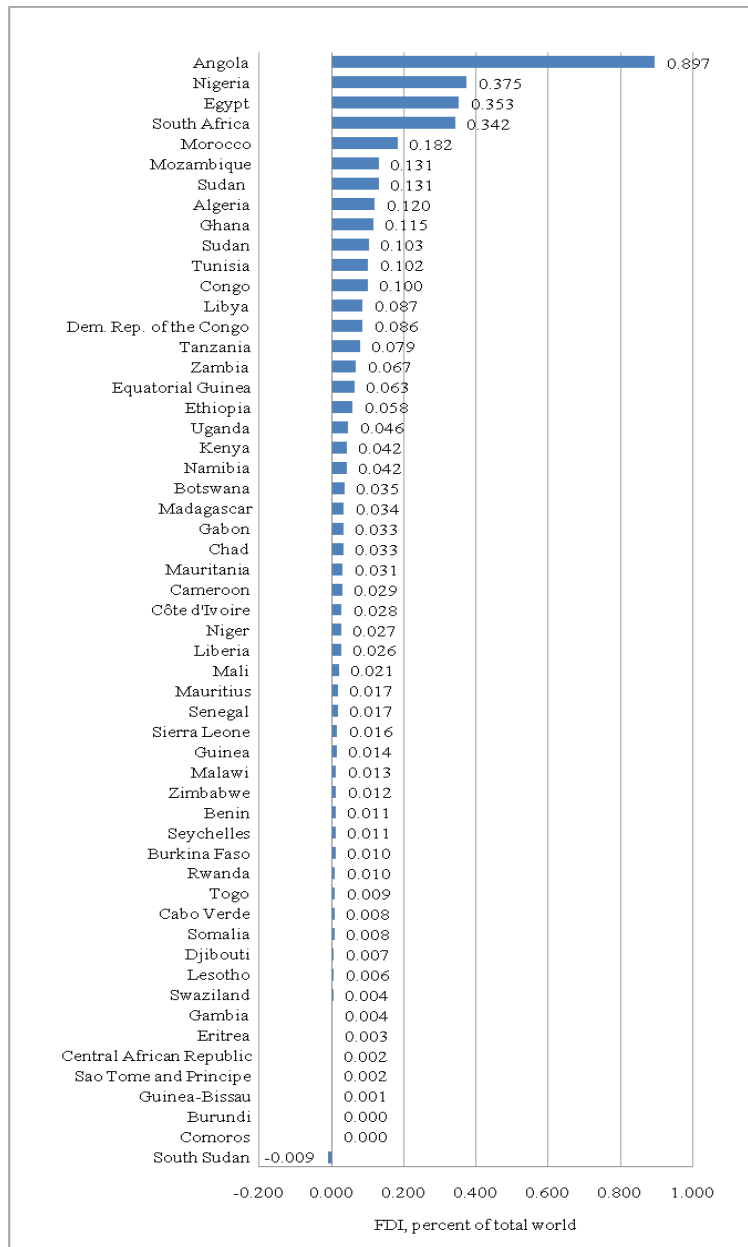
As has been mentioned, Africa lags behind other regions of the world in attracting FDI inflows. As Figure 3 shows, Africa's share in world FDI received over the 1970-2016 period, ranges from a minimum value of 0.74 percent, received in 1980 to a maximum value of 9.56 percent achieved in 1970. Africa's FDI share in 2014 was 5.38 percent while in 2015 and 2016 was 3.47 and 3.40 percent respectively. Apart from decreasing, Africa's share of world FDI flows is very small in view of its huge untapped natural and human resources, attractive investment opportunities, and growth potential. By contrast, Asia's share in the world FDI inflows, increased from 7.52 percent in 1970 to 37.60 percent in 2014, albeit with several years of fluctuations. Similarly, America's share in the world FDI inflows is considerably high. In recent years for example, America's FDI share, rose from 21.13 percent in 2009 to 32.48 percent in 2016. In the same vein Africa's FDI share in GDP, especially during the 1970-2000 period has been disappointing (Figure 4). It reached a minimum value of 0.07 percent in 1980. Factors such as political and macroeconomic instability, low growth, weak infrastructure, poor governance, inhospitable regulatory environments, and ill-conceived investment promotion strategies, are identified as responsible for the poor FDI record of the region (Dupasquier & Osakwe, 2006). An improved Africa's FDI as percent of GDP is observed over the 2000-2016 period. It rose from 1.68 percent in 2000 to a maximum value of 4.12 percent in 2008, although it went down to 3.07 percent in 2016. However, an increase in Africa's FDI inflows as percent of GDP may be due to the fact that Africa's GDP is relatively lower than many other regions.

Figure 1. FDI, net inflows (US$ million), 2000-2016

Country	FDI
Angola	10944.8
Egypt	4930.8
Nigeria	4808.4
South Africa	4205.2
Morocco	2210.1
Mozambique	1876.9
Ghana	1681.5
Sudan	1608.5
Algeria	1451.4
Congo	1420.9
Sudan	1390.0
Tunisia	1286.3
Dem. Rep. of the Congo	1215.5
Libya	1212.5
Tanzania	1035.5
Zambia	906.8
Ethiopia	758.4
Equatorial Guinea	735.6
Kenya	612.5
Uganda	604.7
Namibia	558.1
Madagascar	479.2
Gabon	450.1
Botswana	418.6
Mauritania	390.8
Niger	389.2
Liberia	349.5
Côte d'Ivoire	343.6
Cameroon	322.7
Chad	291.7
Mali	247.2
Mauritius	246.8
Sierra Leone	238.8
Senegal	234.0
Guinea	191.9
Zimbabwe	180.7
Malawi	166.4
Burkina Faso	152.9
Benin	149.1
Rwanda	147.8
Seychelles	142.9
Togo	129.2
Somalia	115.2
Cabo Verde	112.1
Djibouti	96.5
Lesotho	83.0
Swaziland	53.9
Gambia	40.7
Eritrea	37.0
Central African Republic	29.8
Sao Tome and Principe	23.3
Guinea-Bissau	13.8
Burundi	5.6
Comoros	5.6
Saint Helena	-0.6
South Sudan	-135.2

FDI , US$ milion, 2000-2016

Source: UNCTAD Stat (2017)

Figure 2. FDI, percent of total world FDI, 2000-2016

Country	FDI, percent of total world
Angola	0.897
Nigeria	0.375
Egypt	0.353
South Africa	0.342
Morocco	0.182
Mozambique	0.131
Sudan	0.131
Algeria	0.120
Ghana	0.115
Sudan	0.103
Tunisia	0.102
Congo	0.100
Libya	0.087
Dem. Rep. of the Congo	0.086
Tanzania	0.079
Zambia	0.067
Equatorial Guinea	0.063
Ethiopia	0.058
Uganda	0.046
Kenya	0.042
Namibia	0.042
Botswana	0.035
Madagascar	0.034
Gabon	0.033
Chad	0.033
Mauritania	0.031
Cameroon	0.029
Côte d'Ivoire	0.028
Niger	0.027
Liberia	0.026
Mali	0.021
Mauritius	0.017
Senegal	0.017
Sierra Leone	0.016
Guinea	0.014
Malawi	0.013
Zimbabwe	0.012
Benin	0.011
Seychelles	0.011
Burkina Faso	0.010
Rwanda	0.010
Togo	0.009
Cabo Verde	0.008
Somalia	0.008
Djibouti	0.007
Lesotho	0.006
Swaziland	0.004
Gambia	0.004
Eritrea	0.003
Central African Republic	0.002
Sao Tome and Principe	0.002
Guinea-Bissau	0.001
Burundi	0.000
Comoros	0.000
South Sudan	-0.009

FDI, percent of total world

Source: UNCTAD Stat (2017)

Equally important, FDI inflows to Africa vary across sub-regions. As Figure 5 illustrates, between 1991 and 2000, Northern Africa and Western Africa dominated with FDI annual average of US$222.36 million and US$2184.74 million respectively. Over the 2001-2010 period, Northern Africa still dominated with FDI annual average of US$13333.19 million, followed by Middle Africa with FDI annual average of US$ 12659.38 million. During the 2010-16 period, though all sub-regions experienced declines in some years, Middle Africa took the premier position again with a record FDI annual average of US$22161million while Eastern Africa was the second dominant sub-region with FDI annual average of 13566.68 million. Overall, FDI inflows to Africa are expected to increase as a result of liberalization measures and planned privatizations of State-owned enterprises such as Greenfield projects. In 2016, announced FDI projects are services industry such business services, infrastructure, real estate and electricity, gas and water; and manufacturing such as chemicals, renewable energy, textile and clothing, and automotives while projects in the primary sector fell sharply reflecting the commodity prices slump. Also, as has been mentioned, many reasons have been given in the literature for Africa's small share in the world FDI flows. However, the myriad of explanations vary from bias against Africa because of its risks, inappropriate environment, political instability, governance failures, and problems of policy credibility, macroeconomic policy failures and poor liberalization (Olatunji & Shahid, 2015).

More importantly, African countries take important steps to improve their investment climate such as increasing the quality of the structure of institutions and governance, human capital and infrastructure, and overall macroeconomic management and services aiming at boosting the FDI inflows (UNECA and AUC, 2011). In fact, given appropriate policies and basic level of development, FDI can play a key role in the process of creating a better economic environment. However, potential drawbacks of FDI such as a deterioration of the balance of payments, as profits are repatriated having negative impacts on competition in national markets cannot be ignored. Thus, this paper is particularly timely and relevant in the context of the increasing role of FDI as a source of investment and development in Africa, but the continent needs to address a number of economic and policy constraints in order to attract a substantial proportion of world FDI.

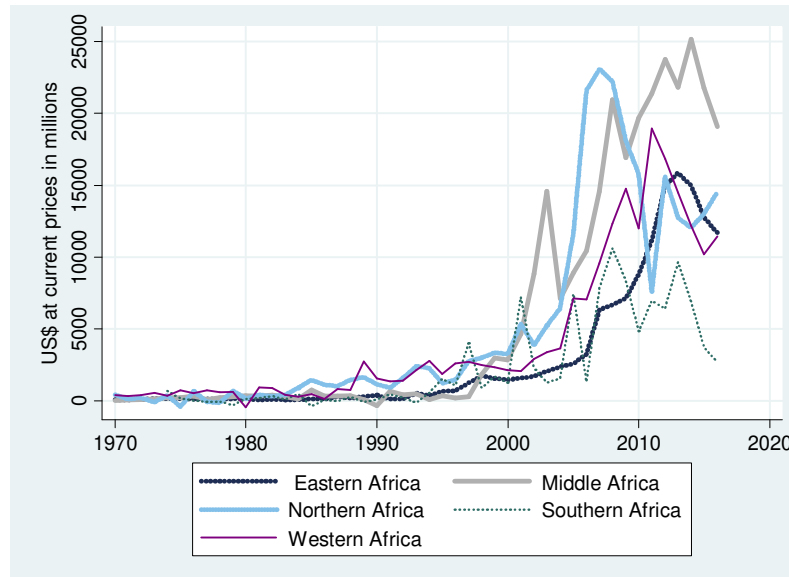**Figure 3. FDI, percent of total world FDI, 1970-2016**
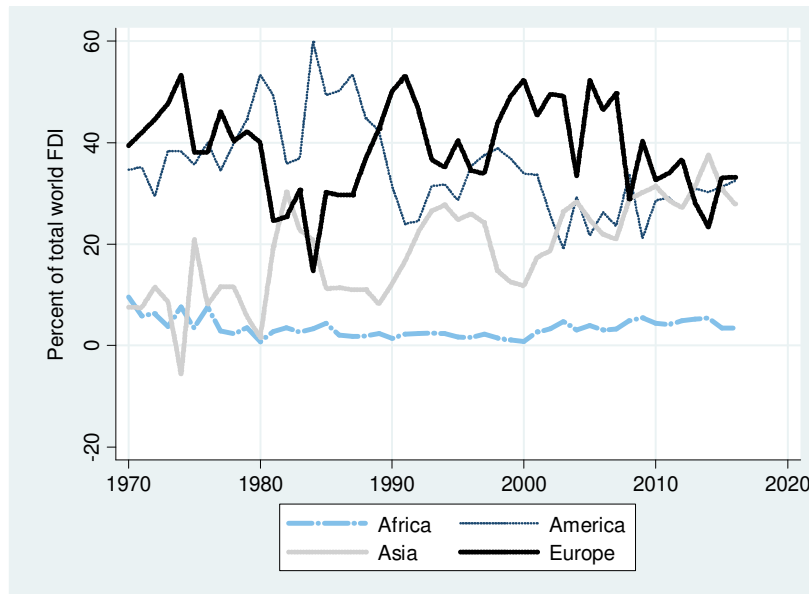
Figure 4. FDI, percent of GDP, 1970-2016
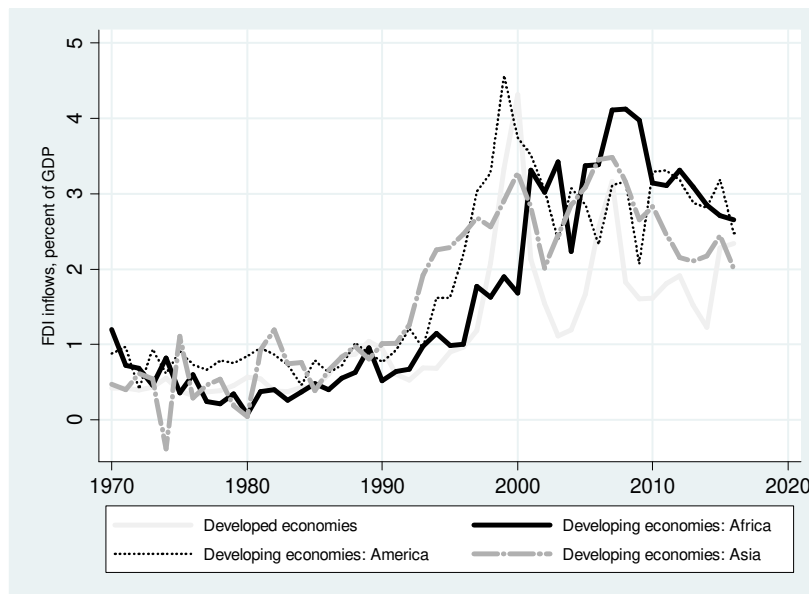
Figure 5. FDI flows, US$ million, 1970-2016

Source: UNCTAD Stat (2017)

2. Literature review on the determinants of foreign direct investment

A popular theoretical framework for the determinants of FDI is the OLI paradigm or eclectic theory, attributed to Dunning (1993). According to Petrović-Ranđelović et al. (2017), this paradigm of FDI is the most reliable theoretical framework for analyzing the determinants of international production. As a comprehensive and internationally accepted concept of FDI, the OLI paradigm represents a synthesis of the key elements of the three partial theoretical explanations: Ownership (O), Location (L), and Internalization (I) advantages; hence, the OLI framework. The main importance of OLI is that it implicitly indicates the conditions under which FDI is realized. It is worth noting that ownership advantages of the company, internalization advantages and locational advantages of the host country in themselves, do not represent a direct incentive for the transfer of business activities abroad, but a precondition for achieving adequate profits (also see Petrović-Ranđelović et al, 2017).

The ownership-specific advantages, which relate to the possession of a particular product which other firms do not have the right to use, and parts of intangible capital of the company, such as managerial, marketing and entrepreneurial knowledge and skills, and organizational skills, allow a firm to compete with firms

in the markets it serves regardless of the disadvantage of being foreign because it is able to have access to, and exploit and export natural resources and resource-based products that are available to it. Notably, the ownership advantages either increase revenue or minimize the cost of doing business to the extent that is sufficient to neutralize the adverse circumstances in the investment environment of the host country. The location advantages are the specific advantages of the host country, including labour advantages, availability of natural resources, socio-economic and political factors, such as the size of the market and its structure, the achieved level of economic development and prospects for future growth. They also include government regulations, transport costs, macroeconomic stability, and cultural, legal, political and institutional factors. Undoubtedly, the host country with locational advantages will make it a profitable attractive for foreign investment. Internalization advantages provide the answer to the question of which model of entering the foreign markets the company should choose. They arise from exploiting imperfections in external markets. In the conditions of the existence of market imperfections, companies find it more useful to exploit internally their specific ownership advantages, rather than to sell, or transfer the right to use through the market (Petrović-Ranđelović et al, 2017). Internalization reduces uncertainty and transaction costs with the aim of generating knowledge and efficiency. It also leads to reduction in state-generated imperfections such as tariffs, foreign exchange controls, and subsidies (Anyanwu, 2011).

Dunning (1993) identifies four categories of motives for foreign direct investment: resource seeking (to access raw materials, labour force, and physical infrastructure resources); market seeking (horizontal strategy to access the host-country domestic market); efficiency seeking (vertical strategy to take advantage of lower labour costs, especially in developing countries); and strategic-asset seeking (to access research and development, innovation, and advanced technology)(also see Cleeve, 2008; Anyanwu, 2011; Olatunji & Shahid, 2015).

Also, empirical studies on the determinants of FDI highlight various structural determinants that include economic growth, market size, degree of openness, inflation, population growth, and exchange rate however, great debates are led in the FDI literature about the determinants of foreign direct investment inflows. GDP and population growth rate capture the market size of the economy. As the market size of a country grows, it is expected that FDI inflows will also increase as more goods and services can be produced, making investors eager to invest in a growing economy with efficient utilization of resources from the large market size. GDP and GDP per capita usually are considered in many empirical studies to represent the location or internalization advantages of the host countries. They influence the business climate for FDI as they reflect an improvement in economic

performance. The coefficient on GDP represents the patterns of overall distribution of FDI, which is market seeking rather than resource-seeking (Dauti, 2015). Studies such as Anderson (1979), Buch et al. (2003), Dunning (1980), and Kim (2000) employ GDP and GDP per capita as proxies for market size and national income respectively. According to Gopinath & Echeverria (2004), GDP, GDP per capita, or the GDP growth rate is the national income indicator of the size of economies, which is related to total of production, consumption, and distribution of goods and services of a country. Many other studies for example, Billington (1999), Walsh & Yu (2010); and Jaumotte (2004) also support the importance of the economic growth and income of a certain country in attraction of FDI. In addition, Lipsey, (2000) and Barrios (2000) find that the rate of economic growth in the host country is positively related to FDI. In fact, Aliber (1993) shows that capital moves from countries experiencing a slowdown or a downturn in their economic growth towards countries with higher economic growth rate.

Similarly, large populations provide a large market for products and services offered by MNEs. Certainly, Africa has advantages of a large population that provide large labor force. Considering the advantages of a large population, it was hypothesized that MNEs would make larger investments in countries with larger populations (also see Aziz & Makkawi, 2012). By and large, market size is found to play an important role in FDI inflows (Barrell & Pain, 1996; Nigh, 1986; Anyanwu, 1998; Fedderke & Romm, 2006; Tarzi, 2005; Khair-UZ-Zaman et al., 2006; Zhang, 2001). A larger market size means that the total quantity sold will be higher. Hence, it may become more profitable for foreign firms to locate their productive units in the region where goods are consumed. In addition, a large market is necessary for efficient utilization of resources and exploitation of economies of scale (Chakrabarti, 2001). In this context, market size can be measured by the country's total income and population growth, since both imply a higher number of units sold. However, some studies such as Kyereboah-Coleman & Agyire-Tettey (2008) find that most foreign investors do not consider this factor in making a decision to invest or otherwise. According to Asiedu (2002), market size is not a determinant for a developing country due to low income. Moreover, Chakrabarti (2001) states that absolute GDP is a poor indicator since it reflects the size of the population rather than the income per capita.

The openness of the economies is another important factor that may influence FDI inflows to Africa. Openness of the region is expected to motivate all the business entities to learn the background, culture, regulations from the cooperation partners. The degree of a country's openness to trade, which is usually measured by the ratio of export plus import to GDP, can have a positive effect on foreign investors through trade liberalization and higher competitiveness. Many empirical studies on

openness and FDI demonstrate a strong positive effect of openness on inward FDI (see for example Edwards, 1990 and Kravis & Lipsey, 1982). However, the effect of openness on inward FDI may depend on the type of investment. In principle, an open economy is associated with higher inflows of vertical FDI, as low trade or transport costs are regarded as cheaper factor prices for the multinational firm (also see Dauti, 2015). Many studies show that, the higher openness is, the more favorable attracting FDI inflow will be, especially for the export oriented FDI inflow. Multinational firms engaged in export-oriented investments may prefer to locate in a more open economy since increased imperfections that accompany trade protection generally imply higher transaction costs associated with exporting.

Macroeconomic stability creates certainty for investors with regards to their profits and viability of their investments. Macroeconomic uncertainty implies higher costs for the companies, since they need to incur in extra expenditures to ensure protection against risks and to establish and enforce contracts (Thaddeus &Yadirichukwu, 2013). Since there is a strong positive correlation between inflation rate and economic instability, inflation is used to capture the macroeconomic instability of an economy. In fact, high inflation reflects lack of fiscal and monetary discipline. Inflation affects profitability due to high cost of capital. Empirical studies show that relatively low average inflation rate means lower macroeconomic risk and therefore a higher capital flow is expected to be attracted. By contrast, high inflation rate indicates high macroeconomic risk and unstable economic policy and consequently, risk averse investors would tend to reduce their investments in the regions with high inflation rate. However, it worth noting that if the investment has happened before the inflation period, it is expected that the growth of product prices, the investor has invested in, should be positively associated with further FDI. Unsurprisingly, empirical studies such as Sayek (2009) find that high inflation periods in developing countries are coincident with low FDI inflows and vice-versa while other studies for example Walsh & Yu (2010) do not confirm a significant impact of inflation on the attraction of FDI flows in any economic sector. However, this may be due to the fact that the countries covered in the sample are relatively stable.

Exchange rates, defined as the domestic currency price of a foreign currency, matter both in terms of their levels and their volatility. Exchange rates can influence both the total amount of FDI that takes place and the allocation of this investment spending across a range of countries (Goldberg, 2009). Empirically, however, the exchange rate effect on FDI inflows is ambiguous. When a local currency depreciates, meaning that its value declines relative to the value of another currency, it will reduces that country's wages and production costs relative to those of its foreign counterparts. Thus, the country that experiences real currency depreciation

will enhance locational advantages for receiving productive capacity investments (also see Klein & Rosengren, 1994 and Goldberg, 2009). To shed more light on this proposition, Aliber (1993) argues that a depreciation of the host country's exchange rate will have a positive influence on the flows of horizontal FDI it receives through reduced cost of capital. Contrary, the appreciation of a local currency will have negative effect on vertical FDI inflows because items produced locally are becoming expensive abroad.

Interestingly, as mentioned above, the effect of exchange rate on FDI inflows is not straight away. Although it is widely acceptable that exchange rate can affect FDI by lowering the costs of production by MNC and thus affects the competitiveness of goods produced and yields higher profits from foreign firms, a decrease in the exchange rate, meaning an appreciation, would imply more foreign currency earnings for the foreign investors hence would increase FDI inflow as well (Lim, 2001). In fact, Lim (2001) also argues that depreciation of a currency could imply that foreign firms would be able to purchase assets and technology in the host country cheaply, leading to an increase in FDI. However, Brahmasrene &Jiranyakul (2001) and Dewenter (1995) find no statistically significant relationship between the level of the exchange rate and FDI inflows.

The quality of institutions and governance can also influence FDI inflows. Notably, a number of empirical studies show that good governance has a positive effect on FDI inflows. For example, Alfaro et al. (2008), show that, the quality of institutions is the major factor for the differential inflows of capital between rich and poor countries. Specifically, Alfaro et al. (2008) reveal that if institutional quality of a country such as political stability, property rights, law and order reduction in corruption, improves, foreign investment will increase. Many studies identify institutional and governance indicators that tend to attract FDI flows. For example Saidi et al. (2013) find that regulatory quality improvement has significant positive effect on FDI while Busse & Hefeker, (2007) show that government stability, the absence of internal and ethnic conflict, and basic democratic rights tend to attract inward FDI. Similarly, Gangi & Abdulrazak (2012) show that government effectiveness, rule of law and, voice and accountability have a positive effect on FDI, while Alvares (2015) reveals that FDI depends on regulatory quality and government effectiveness. Moreover, Ibrahim et al. (2011) and Wei (2000) find a negative relationship between corruption and FDI inflows.

Like many other determinants of FDI, the relationship between good governance and quality of institutions and FDI inflows, is not so direct. Some studies for example, Ezeoha & Cattaneo (2011), show that the relationship between good governance and FDI inflows is negative. Surprisingly, Ezeoha & Cattaneo (2011), reveal a positive effect of corruption on FDI flows. The main reason to this

relationship is that corruption can serve to attract FDI as it greases the wheels in the presence of preexisting government failures. Nonetheless, Egger & Winner (2005), argue that inviting effect of corruption on FDI declines, as other factors, such as market size, become increasingly more important. In a different paper, Sy & Sow (2017) find no significant relationship between governance and FDI inflows. Also, Ibrahim et al. (2011) reveal no significant relationship between political and institutional risk indicators and FDI.

3.   Data, variables and sample size

This paper uses a panel dataset that covers 48 African countries over the 1996-2016 period. The choice of countries and study period is primarily motivated by the availability of data. The total number of observation is 1008. Table 2 presents a list of countries that are included in the empirical analysis of this paper by income group, geographical location and region and in terms of natural resources. The fact that the paper adopts a balanced panel data countries such as Djibouti, Eritrea, Sao Tome & Principe, Somalia, South Sudan, and Zimbabwe are excluded in the regressions due to lack of one or more observations. Nonetheless, some of these countries may have been included in the descriptive analysis because such an analysis does not necessarily require all observations.

The paper uses the ratio of FDI to GDP as the dependent variable. The ratios of FDI to GDP for all countries included in the analysis are obtained from *World Development Indicators* (WDI, 2017). The independent variables include the structural variables namely, GDP per capita growth, degree of openness, inflation, exchange rate and population growth. Per capita GDP is known as a good indicator for the overall development of the economy while inflation captures the effect of macroeconomic policy. Data on these structural variables are obtained from *World Development Indicators* (WDI, 2017). Equally important, the paper examines the effect of the institutional variables namely, control of corruption, Government effectiveness, political stability & absence of violence /terrorism, regulatory quality, rule of law, and voice & accountability on FDI inflows in Africa. Information on institutional variables is from *Worldwide Governance Indicators* (WGI, 2017). All these indices range from -2.5 to 2.5, with higher values corresponding to better quality of institutions and better business environment in the host countries. Thus, the indices are expected to have a positive relationship with the FDI inflows. Table 3 summarizes the definitions, measurements and sources of the variables used in the empirical analysis.

It is interesting to analyze the possible effect of both structural and institutional factors on FDI inflows in Africa. Prior to the baseline regression results however,

we present the observed correlation in Africa between FDI and structural variables and the quality of institutions, using scatter diagrams (Figures 6-16). Understandably, these scatter plots provide a rough indication of importance of the selected determinants in explaining FDI inflows in the countries in consideration. The observed positive correlation between FDI and GDP per capita growth, degree of openness and population growth in Figures 6-8 is in line with most of the findings in the literature. Clearly, countries such as Mozambique, Seychelles, Cabo Verde, Chad and Angola that have a relatively higher GDP per capita growth tend to have a higher ratio of FDI to GDP. Similarly, countries such as Republic of Congo, Seychelles, Lesotho and Angola seem to have higher degree of trade openness and subsequently, tend to have higher ratio FDI to GDP than other countries, for example Rwanda, Burundi, Sudan, Burkina Faso, Nigeria, Tanzania, and Uganda whose degree of trade openness is less than 50 percent. Intuitively, larger market, higher level of economic development and higher degree of openness tend to attract and motivate FDI.

Another observation is that all the indicators of the quality of institutions except regulatory quality have positive correlation coefficients suggesting that countries with improved quality of institutions and governance tend to attract more FDI. However, the values of the degree of correlation, except for political stability indicator, are relatively low indicating weak correlations between institutional indices and FDI. By and large, countries that are more corrupt, for example Burundi, Libya, Nigeria, Guinea-Bissau, Sudan, Kenya, and Democratic Republic of Congo, and countries that are politically unstable, for example Burundi, Democratic Republic of Condo, Sudan and Nigeria tend to have lower FDI inflows relative to GDP.

Table 2. Sample countries used in the empirical analysis, 1996-2016

	Country	Natural resources	Income group	Region	Geo-Access
1	Algeria	Resource rich	Upper middle income	North Africa	Coastal country
2	Angola	Resource rich	Upper middle income	Southern Africa	Coastal country
3	Benin	Not resource rich	Low income	West Africa	Coastal country
4	Botswana	Resource rich	Upper middle income	Southern Africa	Landlocked country
5	Burkina Faso	Not resource rich	Low income	West Africa	Landlocked country
6	Burundi	Not resource rich	Low income	East Africa	Landlocked country
7	Cabo Verde	Not resource rich	Lower middle income	West Africa	Coastal country
8	Cameroon	Resource rich	Lower middle income	Central Africa	Coastal country
9	CAR	Not resource rich	Low income	Central Africa	Landlocked country
10	Chad	Resource rich	Low income	Central Africa	Landlocked country
11	Comoros	Not resource rich	Low income	East Africa	Coastal country
12	Congo	Resource rich	Lower middle income	Central Africa	Coastal country
13	Congo, D.R.	Resource rich	Low income	Central Africa	Coastal country
14	Côte d'Ivoire	Resource rich	Lower middle income	West Africa	Coastal country
15	Egypt	Resource rich	Lower middle income	North Africa	Coastal country
16	E. Guinea	Resource rich	High income	Central Africa	Coastal country
17	Ethiopia	Not resource rich	Low income	East Africa	Landlocked country
18	Gabon	Resource rich	Upper middle income	Central Africa	Coastal country
19	Gambia	Not resource rich	Low income	West Africa	Coastal country
20	Ghana	Resource rich	Lower middle income	West Africa	Coastal country
21	Guinea	Resource rich	Low income	West Africa	Coastal country
22	G.Bissau	Not resource rich	Low income	West Africa	Coastal country
23	Kenya	Not resource rich	Lower middle income	East Africa	Coastal country
24	Lesotho	Not resource rich	Lower middle income	Southern Africa	Landlocked country
25	Liberia	Resource rich	Low income	West Africa	Coastal country
26	Libya	Resource rich	Upper middle income	North Africa	Coastal country

	Country	Natural resources	Income group	Region	Geo-Access
27	Madagascar	Not resource rich	Low income	Southern Africa	Coastal country
28	Malawi	Not resource rich	Low income	Southern Africa	Landlocked country
29	Mali	Not resource rich	Low income	West Africa	Landlocked country
30	Mauritania	Resource rich	Lower middle income	North Africa	Coastal country
31	Mauritius	Not resource rich	Upper middle income	Southern Africa	Coastal country
32	Morocco	Not resource rich	Lower middle income	North Africa	Coastal country
33	Mozambique	Not resource rich	Low income	Southern Africa	Coastal country
34	Namibia	Resource rich	Upper middle income	Southern Africa	Coastal country
35	Niger	Not resource rich	Low income	West Africa	Landlocked country
36	Nigeria	Resource rich	Lower middle income	West Africa	Coastal country
37	Rwanda	Not resource rich	Low income	East Africa	Landlocked country
38	Senegal	Not resource rich	Lower middle income	West Africa	Coastal country
39	Seychelles	Not resource rich	High income	East Africa	Coastal country
40	Sierra Leone	Resource rich	Low income	West Africa	Coastal country
41	South Africa	Resource rich	Upper middle income	Southern Africa	Coastal country
42	Sudan	Resource rich	Lower middle income	East Africa	Coastal country
43	Swaziland	Not resource rich	Lower middle income	Southern Africa	Landlocked country
44	Tanzania	Not resource rich	Low income	East Africa	Coastal country
45	Togo	Not resource rich	Low income	West Africa	Coastal country
46	Tunisia	Not resource rich	Upper middle income	North Africa	Coastal country
47	Uganda	Not resource rich	Low income	East Africa	Landlocked country
48	Zambia	Resource rich	Lower middle income	Southern Africa	Landlocked country

Source: Author's construction with the help of African Economic Outlook, 2017

Table 3. Definitions of variables and source of data, 1996-2016

| Variable	Abbrev	Definition	Source	Exp. Sign.
Foreign direct investment	*FDI*	FDI to GDP ratio	WDI, 2017	
GDP Growth	*Y*	GDP per capita, annual growth	WDI, 2017	$\psi_1 > 0$
Degree of openness	*Trade*	Sum of exports and imports of goods and services, percent of GDP	WDI, 2017	$\psi_2 > 0$
Inflation	π	Consumer prices, annual percent	WDI, 2017	$\psi_3 < 0$
Population growth	*P*	Population, annual growth,	WDI, 2017	$\psi_4 > 0$
Exchange rate	*EX*	Local currency/US$	WDI, 2017	$\psi_5 > 0$
Control of corruption	*CC*	Perceptions of the extent to which public power is exercised for private gain, including petty and grand forms of corruption. (-2.5:2.5 scale)	WGI, 2017	$\psi_6 > 0$
Government effectiveness	*GE*	Perceptions of the quality of public services, civil service and the degree of its independence from political pressures (-2.5:2.5 scale)	WGI, 2017	$\psi_7 > 0$
Political stability & absence of violence/ terrorism	*PS*	Perceptions of the likelihood of political instability and/or politically-motivated violence, including terrorism (-2.5:2.5 scale)	WGI, 2017	$\psi_8 > 0$
Regulatory quality	*RQ*	Perceptions of the ability of the government to formulate & implement sound policies and regulations that permit and promote private sector development (-2.5:2.5 scale)	WGI, 2017	$\psi_9 > 0$
Rule of law	*RL*	Extent to which agents have confidence in and abide by the rules of society (-2.5:2.5 scale)	WGI, 2017	$\psi_{10} > 0$

Variable	Abbrev	Definition	Source	Exp. Sign.
Voice and accountability	*VA*	Perception of the extent to which citizens are able to participate in selecting their government, freedom of expression, association, and a free media (-2.5:2.5 scale)	WGI, 2017	$\psi_{11} > 0$

Notes: WDI: World development indicators
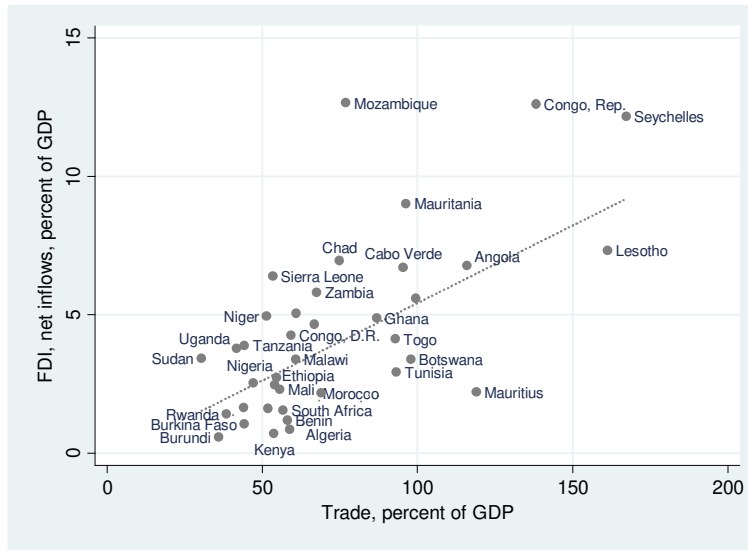
WGI: World governance indicators

Source: Author's construction

Figure 6. FDI vs. GDP per capita growth, 1996-2016
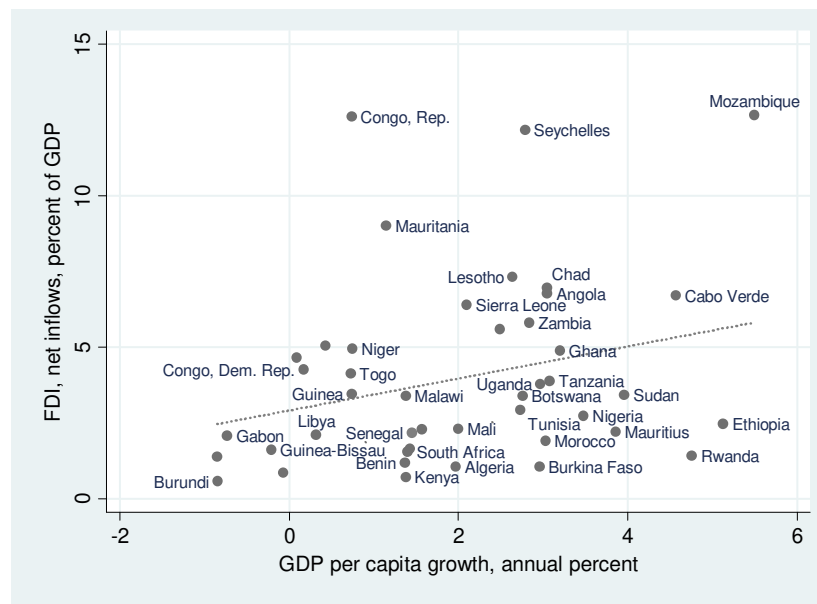
Source: Author's estimates

Figure 7. FDI vs. Trade, 1996-2016

Source: Author's estimates

Figure 8. FDI vs. Population Growth, 1996-2016
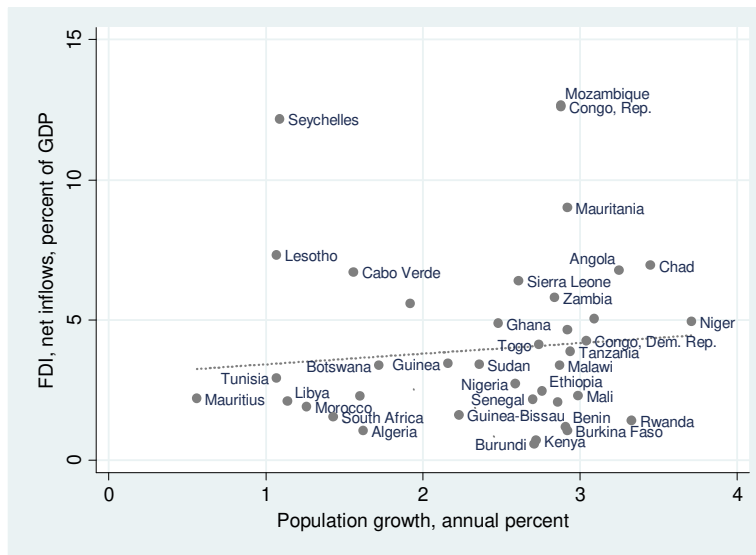
Source: Author's estimates

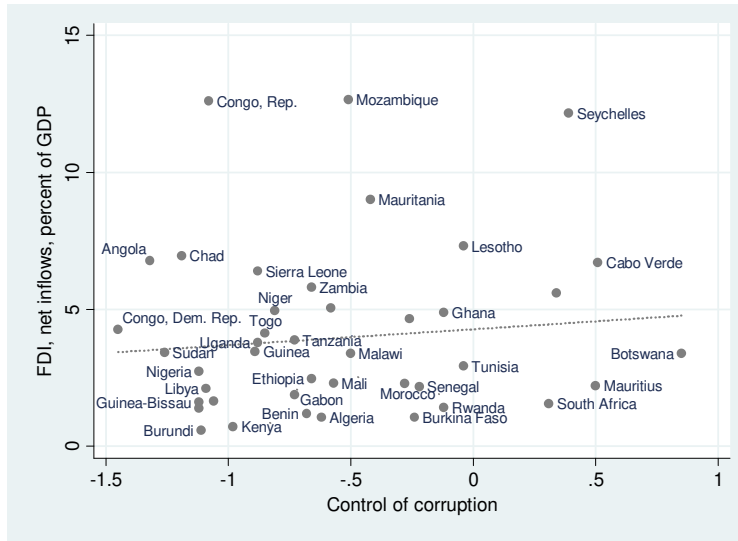**Figure 9. FDI vs. Exchange Rate, 1996-2016**
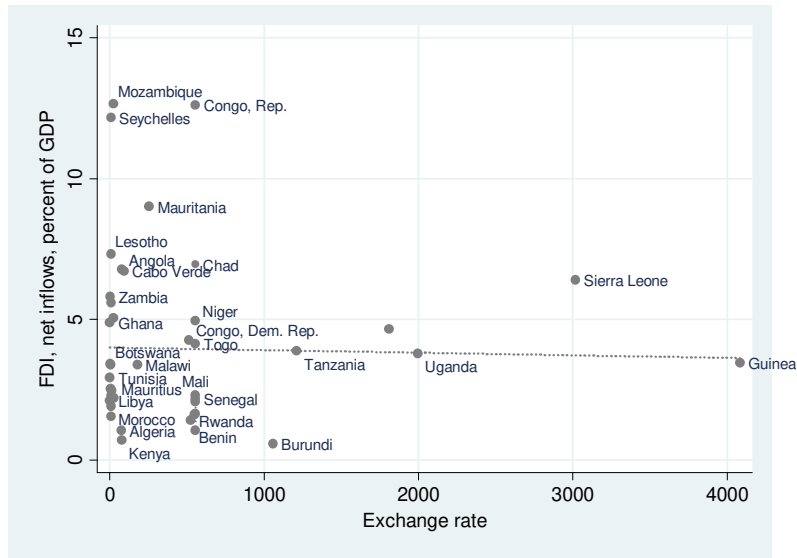
Source: Author's estimates

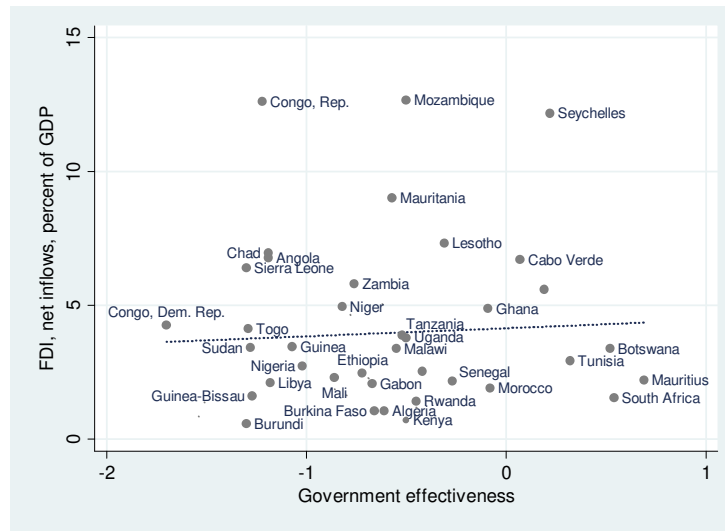**Figure 10. FDI vs. Inflation, 1996-2016**
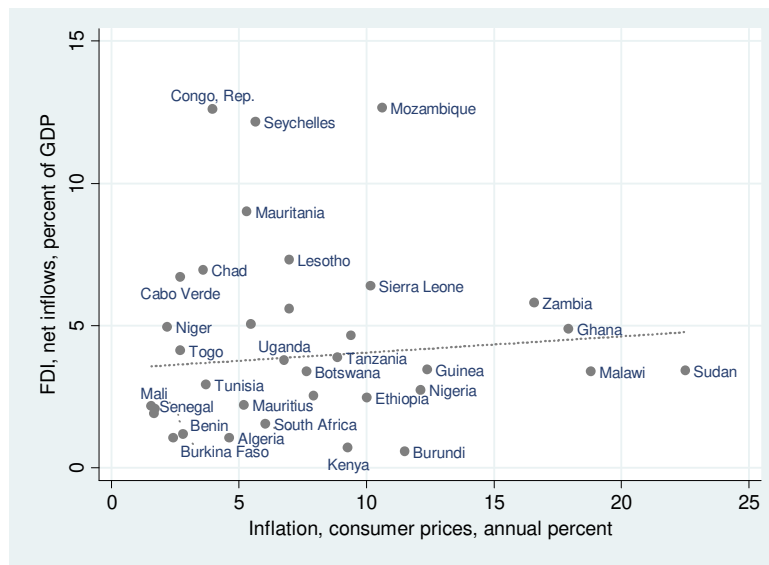
Source: Author's estimates

Figure 11. FDI vs. Control of Corruption, 1996-2016
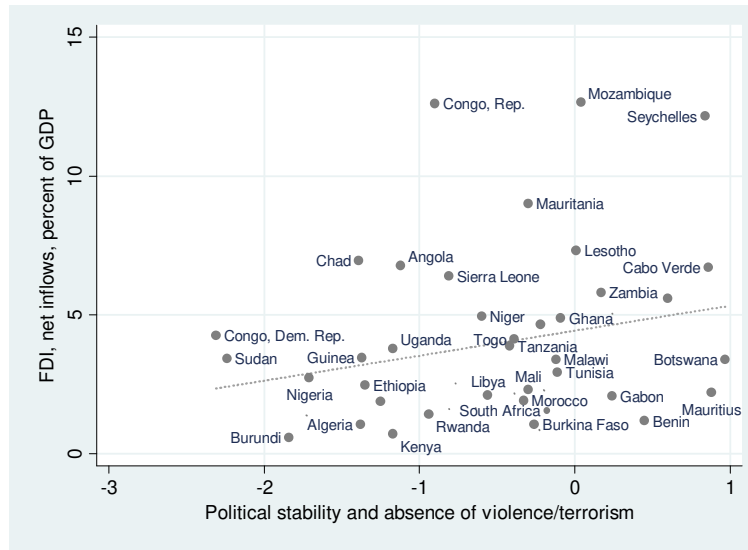

Source: Author's estimates

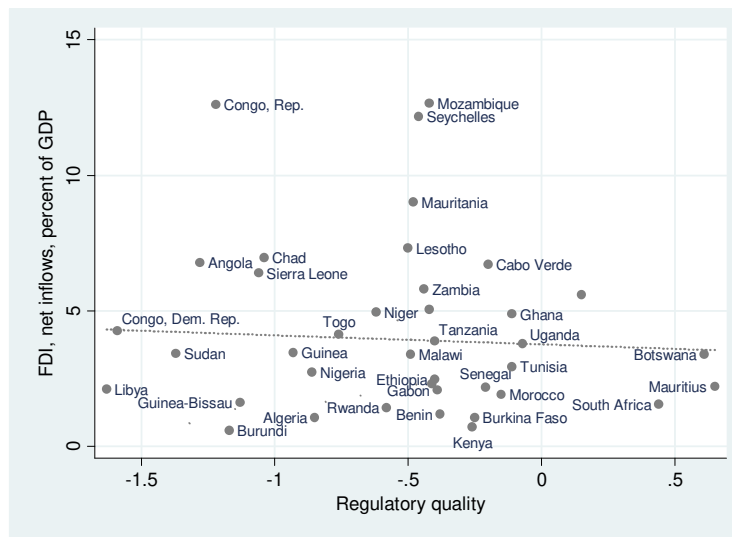**Figure 12. FDI vs. Government effectiveness, 1996-2016**

Source: Author's estimates

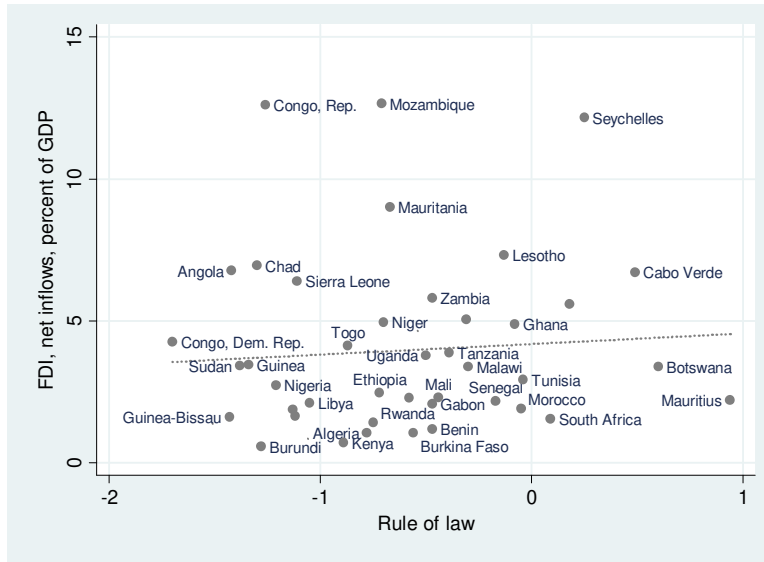**Figure 13. FDI vs. Political stability, 1996-2016**

Source: Author's estimates

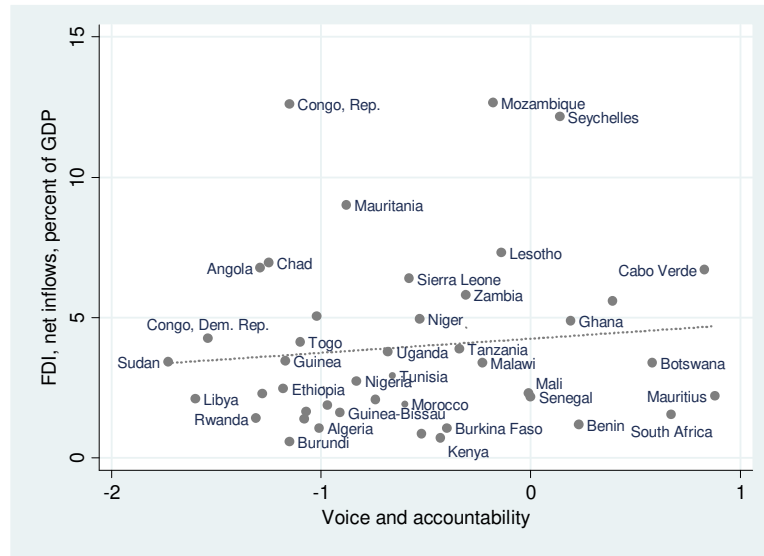**Figure 14. FDI vs. Regulatory quality, 1996-2016**

Source: Author's estimates

Figure 15. FDI vs. Rule of law, 1996-2016

Source: Author's estimates

Figure 16. FDI vs. Voice and accountability, 1996-2016

Source: Author's estimates

The observed positive correlation between inflation that conventionally measures the level of macroeconomic stability and FDI on one hand and the lack of clear direction of the correlation between exchange rate and FDI on the other hand are unexpected. Notwithstanding, zero correlation does not necessarily imply independence. In fact, the respective scatter diagrams do not include all the countries in the sample, thus, it is very important to examine these relationships in a multivariate regression analysis.

4. Baseline regression analysis

Structural factors such as GDP per capita growth (Y), openness of the economy $(Trade)$, inflation (π), exchange rate (ER) and population growth (PG) are identified as the most important determinants of FDI inflows. In addition, previous research show that institutional and governance indicators such as control of corruption (CC), government effectiveness (GE), political stability and absence of violence (PS), regulatory quality (RQ), rule of law (RL) and voice and accountability (VA) can potentially affect FDI inflows. Thus, the base line analysis of this paper includes both structural variables and the indicators of the quality of institutions. To examine the effect of structural and institutional variables on FDI inflows in Africa, the paper uses panel data estimation methods. The panel data estimation techniques are considered as efficient analytical techniques, since they allow combining different cross sections and time periods, and provide more reliable, valid and robust inferences (also see Epaphra & Massawe, 2017).

In our baseline panel regressions, we employ fixed effects (FE) and random effects (RE) models. FE assumes that the individual specific effect is correlated to the independent variables while RE assumes the individual specific effects are uncorrelated with the independent variables. Specifically, the FE is expressed as

$$
\begin{aligned}
\ln(FDI/GDP)_{i,t} = \psi_i &+ \psi_1 \ln Y_{i,t} + \psi_2 \ln Trade_{i,t} + \psi_3 \pi_{i,t} + \psi_4 \ln PG_{i,t} \\
&+ \psi_5 \ln ER_{i,t} + \psi_6 CC_{i,t} + \psi_7 GE_{i,t} + \psi_8 PS_{i,t} + \psi_9 RQ_{i,t} \\
&+ \psi_{10} RL_{i,t} + \psi_{11} VA_{i,t} + u_{it}
\end{aligned}
\tag{1}
$$

where FDI/GDP is the ratio of FDI to GDP in country i during period t. ψ_i is the country fixed effect, $\psi_1, \Lambda, \psi_{11}$ are unknown parameters to be estimated, and u_{it} is the usual random disturbance term. A set of structural and institutional variables are as defined above. Alternatively, the RE is specified as

$$\ln\left(FDI/GDP\right)_{i,t} = \psi + \psi_1 \ln Y_{i,t} + \psi_2 \ln Trade_{i,t} + \psi_3 \pi_{i,t} + \psi_4 \ln Pg_{i,t}$$
$$+ \psi_5 \ln ER_{i,t} + \psi_6 CC_{i,t} + \psi_7 GE_{i,t} + \psi_8 PS_{i,t} + \psi_9 RQ_{i,t} \quad (2)$$
$$+ \psi_{10} RL_{i,t} + \psi_{11} VA_{i,t} + \eta_i + u_{it}$$

where η_i is the random effect or the unobserved country-specific effects. Definitions and descriptions of the variables are as reported in Table 3.

It should be highlighted that endogenity arises when explanatory variables are correlated with the random error term of the model. Likewise, model uncertainty arises when we cannot fully capture the determinants of FDI. Thus, to test for endogeneity in the models, the Housman test (Hausman, 1978) is used in this paper. This takes the form of a comparison between the parameter estimates in both the fixed effect and the random effect model (also see Greene, 2012 and Wooldridge, 2002). The Hausman test is regularly deployed as a test for whether fixed effect or random effect can be used. Based on Hausman test, the random effect model is appropriate and the results are summarized in Table 4. The fixed effect regression results are presented in appendix Table 4A. Because of the high degree of collinearity between the institutional variables, we use those variables in separate specifications. On that account, we report in Table 3 and Table 3A regression results for FDI in 6 models, in which the indicators of the quality of institutions and governance are regressed separately.

Table 4. Regression Results: *Random Effect Models*

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Y	0.145***	0.147***	0.145***	0.147***	0.146***	0.144***
	(0.03)	(0.03)	(0.03))	(0.03)	(0.03)	(0.03)
	[4.45]	[4.51]	[4.47]	[4.52]	[4.48]	[4.44]
Trade	9.405***	9.328***	9.974***	9.265***	9.459***	9.548***
	(0.83)	(0.82)	(0.85)	(0.80)	(0.82)	(0.85)
	[11.31]	[11.44]	[11.77]	[11.62]	[11.53]	[11.30]
π	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
	[-0.24]	[-0.27]	[-0.56]	[-0.47]	[-0.38]	[-0.26]
PG	0.850**	0.911**	0.960**	0.889**	0.872**	0.853**
	(0.43)	(0.42)	(0.41)	(0.42)	(0.43)	(0.42)
	[1.96]	[2.15]	[2.33]	[2.14]	[2.05]	[2.01]
ER	0.345*	0.292	0.327*	0.299*	0.298*	0.394*
	(0.21)	(0.20)	(0.20)	(0.19)	(0.20)	(0.21)
	[1.68]	[1.43]	[1.66]	[1.56]	[1.49]	[1.92]

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
CC	1.306** (0.45) [2.92]					
GE		1.005 (0.73) [1.36]				
PS			1.869*** (0.71) [2.64]			
RQ				0.829 (0.75) [1.10]		
RL					1.205* (0.71) [1.69]	
VA						0.953* (0.63) [1.52]
Cons.	-8.328*** (1.26) [-6.60]	-8.383*** (1.26) [-6.65]	-8.758*** (1.26) [-6.95]	-8.437*** (1.24) [-6.79]	-8.392*** (1.26) [-6.67]	-8.422*** (1.28) [-6.56]
No. of obs	1008	1008	1008	1008	1008	1008
No of group	48	48	48	48	48	48
R-sq: within	0.102	0.100	0.105	0.101	0.101	0.106
between	0.514	0.532	0.543	0.559	0.536	0.501
overall	0.212	0.216	0.222	0.223	0.217	0.211
Wald chi2(6)	173.52	178.20	185.74	189.32	180.08	172.48
Prob>F	0.000	0.000	0.000	0.000	0.000	0.000

Notes: Regressions are estimated using panel data over the period 1996-2016 across 48 African countries. (.) denotes standard errors, [.] denotes t statistics and *, **, *** means significance at the 10% , 5% , 1% levels.
Source: Author's estimates

Based on our results, the coefficients on GDP per capita growth, degree of trade openness and population growth are positive and statistically significant in all specifications. These results are in conformity with our expectation and, they suggest income level, market size and openness of the economy are important determinants of foreign investors. To shed more light, the positive and significant relationship between GDP per capita and population growth, and FDI inflows is consistent with a transaction cost analysis of FDI in which large economies and

large markets attract more FDI inflows. Intuitively, as the market size of a country grows, FDI inflows also increase as more goods and services can be produced, leading to further more foreign investment. It is worth mentioning that the coefficient on openness of the economy is substantial. This suggests that openness of the region motivates business entities to learn the background, culture, regulations from the cooperation partners, which in turn lead to more foreign investments, especially export oriented FDI inflows and vertical FDI, as low trade are regarded as cheaper factor prices for the multinational firm.

Empirical results also show that the coefficient on exchange rate is positive and statistically significant at 10 percent across all models. These results suggest that depreciation of a currency lowers cost of production and yields more profits for foreign firm. It also makes foreign firms able to purchase assets and technology in the host country cheaply leading to an increase in FDI. Moreover, contrary to expectations, results show that inflation rate, which captures macroeconomic stability, does not exert any influence on FDI inflows in Africa over the 1996-2016 period.

Among the quality of institutional indicators, the coefficients on control of corruption and political stability are positive and statistically significant at 1 percent and 5 percent respectively. Other indicators namely, rule of law and voice and accountability are positive and statistically significant at 10 percent. Overall these results suggest that improved quality of institutions and better business environment in the host countries would attract foreign investment. Indeed, politically stable and less corrupt economies would substantially attract FDI inflows. Surprisingly, some institutional indices namely Government effectiveness and regulatory quality seem to have no explanatory power over FDI inflows in Africa for the period under analysis.

5. Conclusions and policy implications

This paper investigates the determinants of FDI inflows in Africa. The paper uses a set of variables that captures both structural factors and the quality of institutions indices. The panel data analysis covers 48 countries over the 1996-2016 period. The paper employs both fixed effects and random effect models. However, based on Hausman test, the *RE* estimation results have been discussed. The key finding is that openness of the economy, GDP per capita and population growth have a positive and significant effect on FDI inflows in Africa. Among these three determinants, openness of the economy seems to have more explanatory power over FDI inflows. Meanwhile, exchange rate tends to have positive but weak effect on FDI while inflation does not appear to be an important determinant of FDI in

Africa. Furthermore, regarding the effect of quality of institutions, which also capture the investment environment in the host countries, empirical results show that control of corruption and political stability of the economies, have a positive and significant effect on FDI inflows. Other indices such rule of law and voice and accountability have also positive but weak explanatory power over FDI in Africa. Also, no significant impacts are found for the Government effectiveness and regulatory quality.

It is worth mentioning that panel data models yield more precise and robust estimates. Together with this statistically robust empirical methodology, the use of large sample and more recent data provide empirical evidence that can provide practitioners and policy makers with more precise and far reaching implications. The implication for policy makers from these findings is that the Government should have different emphasis when promoting FDI in different African countries. For example, in order to attract foreign investment in the less trade liberalized countries, Government policy should encourage further market liberalization. Equally important, an effective policy on FDI in all economies should focus on improving production efficiency so as to raise GDP per capita and increase the market size. Undoubtedly, improving the quality of institutions and governance in terms of enhancement of corruption control, political stability, rule of law and accountability will attract more foreign investors in Africa. More importantly, good institutions may lead into a sound and smooth running inclusive economic growth and development, which in turn lead to an increase in FDI inflows.

We believe that the model and data used in this paper produce robust results as borne out by relative high value of *F*-statistics, *R*-squared and individual coefficients. In this case the objective of the paper is successfully achieved. However, it is also worth pointing out that literature suggests several other possible explanatory variables of FDI of which it was not possible to include in our model. Thus, factors such as taxation, labour cost, gross fixed capita formation, availability of resources and infrastructure can serve as a basis for further research. Also, different methodologies such as sectoral segregated approach and gravity models can be employed in the future.

Reference

Alfaro, L., Kalemli-Ozcan, S., & Volosovych, V. (2008). Why doesn't capital flow from rich to poor countries? An empirical investigation. *Review of Economics and Statistics*, *90*(2), 347-368.

Aliber, R. Z. (1993). *The multinational paradigm*. The MIT Press, Cambridge, Massachusetts

Álvarez, I. A. (2015). Institutional drivers of capital flows. Banco de Espana, Documentos de Trabajo no. 1531.

Anderson, J. E. (1979). A theoretical foundation for the gravity equation. *American Economic Review,* 69(1), 106-116. jstor.org/stable/1802501.

Anyanwu, J. C. (1998). An econometric investigation of the determinants of foreign investment in Nigeria, in *Nigerian economic society (1998), rekindling investment for economic development in Nigeria*, Ibadan, 219-241.

Anyanwu, J. C. (2006). Promoting of investment in Africa. *African Development Review*, *18*(1), 42-71. doi.10.1111/j.1467-8268.2006.00132.x

Anyanwu, J. C. (2011). Determinants of foreign direct investment inflows to Africa, 1980-2007. African Development Bank Group Working Paper, 136.

Asiedu, E. (2002), On the determinants of foreign direct investment to developing countries: Is Africa different?. *World Development*, *30*(1), 107-119. doi.org/10.1016/S0305-750X(01)00100-0.

Aziz, A. & Makkawi, B. (2012). Relationship between foreign direct investment and country population. *International Journal of Business and Management, 7*(8), 63-70. doi:10.5539/ijbm.v7n8p63.

Barrell, R, & Pain, N. (1996). An econometric analysis of U.S. foreign direct investment. *Review of Economics and Statistics*, *78*(2), 200-207. doi.10.2307/2109921.

Barrios, S. (2000). Are there positive spillovers from foreign direct investment? Evidence from the Spanish experience (1990-1994). mimeo, University of Manchester.

Billington, N. (1999). The location of foreign direct investment: An empirical analysis. *Applied Economics*, *31*(1), 65-76.

Blomström, M. & Kokko, A. (2003). The economics of foreign direct investment incentives. *EIJS Working papers 168*. Stockholm, Sweden.

Brahmasrene T. & Jiranyakul , K. (2001). Foreign direct Investment in Thailand: What factors matter? *Proceedings of the Academy for International Business*, 1(2), 13.

Buch, C., Kokta, R., Piazolo, D. (2003). Does the East get what would otherwise flow to the South? FDI diversion in Europe. *Journal of Comparative Economics*, 31(1), 94-109. doi.org/10.1016/S0147-5967(02)00013-6.

Buckley, J. P., Clegg, J. & Wan, C. (2006). Inward FDI and host country productivity: evidence from China's electronic industry. *Transnational Corporations*, 15(1), 13-37.

Busse, M. & Hefeker C. (2007). Political risk, institutions and foreign direct investment. *European Journal of Political Economy,* 23(2), 397-415. doi.org/10.1016/j.ejpoleco.2006.02.003.

Chakrabarti, A. (2001). The determinants of foreign direct investment: sensitivity analysis of cross-country regressions. *Kyklos 54*(1), 89-114. doi.10.1111/1467-6435.00142.

Chen, Y. & Démurger, S. (2002). Foreign direct investment and manufacturing productivity in China. CEPII Research Project on the competitiveness of China's economy.

Cleeve, E. (2008). How effective are fiscal incentives to attract FDI to sub-Saharan Africa?. *The Journal of Developing Areas*, *42*(1), 135-153, jstor.org/stable/40376198.

Dauti, B. (2015). Determinants of foreign direct investment in transition economies, with special reference to Macedonia: Evidence from gravity model. *South East European Journal of Economics and Business*, 10 (2), 7-28, doi.10.1515/jeb-2015-0007.

Dewenter K. L. (1995). Do exchange rate changes drive foreign direct investment?. *The Journal of Business*, 68(3), 405-433, jstor.org/stable/2353334. doi.org/10.1080/000368499324561. doi.org/10.1108/20425961211247761.

Dunning, J. H. (1980). Toward an eclectic theory of international production: Some empirical tests. *Journal of International Business Studies*, *11*(1), 9-31, doi.org/10.1057/palgrave.jibs.8490593.

Dunning, J.H. (1993). *Multinational enterprises and the global economy*. Workingham.: Addison-Wesley.

Dupasquier, C. & Osakwe, P. N. (2003). Performance, promotion, and prospects for foreign investment in Africa: National, regional, and international responsibilities. Promotion of investment in Africa. Tokyo.

Dupasquier, C. O. & Osakwe, N. P. (2006). Foreign direct investment in Africa: Performance, challenges, and responsibilities. *Journal of Asian Economics,* 17(2), 241-260. doi.org/10.1016/j.asieco.2005.07.002.

Edwards, S. (1990). Capital flows, foreign direct investment, and debt-equity swaps in developing countries. Working paper series, no. 3497. Cambridge, MA: National Bureau of Economic Research.

Egger, P. & Winner, H. (2005). Evidence on corruption as an incentive for foreign direct investment. *European Journal of Political Economy, 21* (4), 932-952, doi.org/10.1016/j.ejpoleco.2005.01.002.

Epaphra, M. & Massawe, J. (2017). The effect of corruption on foreign direct investment: A panel data study. *Turkish Economic Review, 4(1), 19-54.* doi.org/10.1453/ter.v4i1.1234.

Epaphra, M. & Massawe, J. (2016). Investment and economic growth: an empirical analysis for Tanzania. *Turkish Economic Review*, 3(4), 578-609. doi.org/10.1453/ter.v3i4.1019.

Epaphra, M. & Mwakalasya, A. H. (2017). Analysis of foreign direct investment, agricultural sector and economic growth in Tanzania. *Modern Economy*, 8(1), 111-140.doi.org/10.4236/me.2017.81008.

Epaphra, M. (2016). Foreign direct investment and sectoral performance in Tanzania. *Journal of Economics and Political Economy*, 3(4), 670-719. doi.org/10.1453/jepe.v3i4.1113.

Ezeoha, A. & Cattaneo, N. (2012). FDI flows to sub-Saharan Africa: The impact of finance, institutions, and natural resource endowment. *Comparative Economic Studies, 54* (3), 597-632 doi.org/10.1057/ces.2012.18.

Fedderke, J. W, and Romm, A. T. 2006. Growth impact and determinants of foreign direct investment into South Africa, 1956-2003. *Economic Modelling, 23 (5)* 738-760, doi.org/10.1016/j.econmod.2005.10.005.

Gangi, Y. A. & Abdulrazak, R. S. (2012). The impact of governance on FDI flows to African countries. *World Journal of Entrepreneurship, Management and Sustainable Development, 8* (2/3), 162-169.

Goldberg, L. S. (2009). Exchange rates and foreign direct investment. *The Princeton Encyclopedia of the World Economy,* Princeton University Press.

Gopinath, M. & Echeverria, R. (2004). Does economic development impact the foreign direct investment-trade relationship? A gravity-model approach. *American Journal of Agricultural Economics*, 86(3), 782-787. doi.org/10.1111/j.0002-9092.2004.00625.x.

Hausman, J. A. (1978). Specification Tests in Econometrics. *Econometrica, 46*(6), 1251-1271, doi.10.2307/1913827.

Ibrahim, G., Elhiraika, A., Hamdok, A. & Kedir, A. (2011). Revisiting the determinants of foreign direct investment in Africa: The role of institutions and policy reforms. United Nations Economic Comission for Africa.

Jaumotte, F. (2004). Foreign direct investment and regional trade agreements: The market size effect revisited. *IMF working paper,* wp/04/206.

Kabelwa, G. (2003). Technology transfer and South African investment in Tanzania. Dar es Salaam: *ESRF, Globalization and East Africa Working Paper Series* No. 5.

Kabelwa, G. (2004). South African FDI in East Africa: The case of Tanzania. Dar es Salaam: *ESRF, Globalization and East Africa Working* Paper Series No.10.

Khair-UZ-Zaman, Hashim, S., & Awan Z. (2006). Economic determinants of foreign direct investment in Pakistan. *Gomal University Journal of Research,* 22, 49-57.

Kim, Z. (2000). The comparison of geographic and industrial patterns of Japanese and United States foreign direct investment from the 1970s to the 1990s: Toward convergence? PhD Thesis, Rutgers the State University of New Jersey- Newark.

Klein, M. & Rosengren, E. (1994). The real exchange rate and foreign direct investment in the United States: Relative wealth vs. relative wage effects. *Journal of International Economics, 36*(3-4), 373-389, doi.org/10.1016/0022-1996(94)90009-4.

Kravis, I. B. & Lipsey, R. E. (1982). Location of overseas production and production for exports by U.S. multinational firms. *Journal of International Economics, 12* (3-4), 201-223, doi.org/10.1016/0022-1996(82)90036-8.

Kyereboah-Coleman, A. & Agyire-Tettey, K. F. (2008). Effect of exchange-rate volatility on foreign direct investment in Sub-Saharan Africa: The case of Ghana. *The Journal of Risk Finance, 9*(1), 52-70, doi.org/10.1108/15265940810842410.

Lim. E. (2001). Determinants of and relationship between foreign direct investment and growth: A summary of recent literature. IMF working paper no. 175. International Monetary Fund, Washington, D. C.

Lipsey, R. E. (2000). Inward FDI and economic growth in developing Countries. *Transnational Corporations,* 9(1), Geneva, UNCTAD, 67-96.

Nigh, D. (1986). Political events and the foreign direct investment decision: An empirical examination. *Managerial and Decision Economics*, *7*(2), 99-106. doi:10.1002/mde.4090070205.

Olatunji, L.A., & Shahid, M. S. (2015). FDI and economic growth in Nigeria: A co-integration analysis. Business and Economic Research, 5(2), doi.10.5296/ber.v5i2.6291.

Petrović-ranđelović, M., Janković-milić, V., & Kostadinović, I. (2017). Market size as a determinant of the foreign direct investment inflows in the Western Balkans countries. *Economics and Organization*, *14*(2), 93-104, doi:10.22190/fueo1702093p.

Quazi, R. M. (2007). Investment climate and foreign direct investment: A study of selected countries in Latin America. Global Journal of Business Research, 1(1), 1-13, 2007. https://ssrn.com/abstract=1542844.

Saidi, Y., Ochi, A. & Ghadri, H. (2013). *Governance and FDI attractiveness: Some evidence from developing and developed countries. Global Journal of Management and Business Research Finance, 13*(6), 14-24.

Salvador, B. (2000). Are there positive spillovers from foreign direct investment? Evidence from the Spanish experience (1990- 1994). University of Manchester and University College Dublin.

Sayek, S. (2009). Foreign direct investment and inflation. *Southern Economic Journal*, 76(2), 319-443. doi.10.4284/sej.2009.76.2.419.

Severiano, A.(2011). The determinants of FDI in Portugal: A sectoral approach.Master of Science in Economics, Universidade Católica Portuguesa.

Smith, S., (1997). Restrictive policy toward multinationals: Argentina and Korea. *Case Studies in Economic Development*, 2nd Edition, 178-189.

Sy, A. & Sow, M. (2017). Does good governance matter more for energy investment? Evidence from sub-Saharan Africa. aercafricaevents.org.

Tarzi, S. (2005). Foreign direct investment flows into developing countries: Impact of location and government policy. *Journal of Social, Political and Economic Studies*, 30(4), 497-515.

Thaddeus, E. O. & Yadirichukwu, E. (2013). Determinants of foreign direct investment inflow: A focus on Nigeria. *European Journal of Business and Management*, 5(24), 41-53.

UNCTAD Stat (2017). United Nations Conference on Trade and Development. Geneva, Switzerland.

United Nations Economic Commission for Africa (UNECA) and African Union Commission (AUC) (2011). The economic report on Africa 2011: Governing development in Africa-the role of the sate in economic transformation. UNECA. AddisAbaba, Ethiopia.

Walsh, J. & Yu, J. (2010). Determinants of foreign direct investment: A sectoral and institutional approach. IMF Working Paper, WP/10/187, *International Monetary Fund*, Asia Pacific Department.

Wei, S-J. (2000). How taxing is corruption on international investors?. *Review of Economics and Statistics, 82*(1), 1-11, doi.org/10.1162/003465300558533.

World Bank (2017). World development indicators data base. *World Bank* .

World Bank (2017). Worldwide governance indicators data base. *World Bank*.

Zhang, K. H. (2001). Does foreign direct investment promote economic growth? Evidence from East Asia and Latin America. *Contemporary Economic Policy, 19*(2), 175-85. doi.10.1111/j.1465-7287.2001.tb00059.x.

Table 4A. Regression Results: *Fixed Effect Models*

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Y	0.126***	0.124***	0.129***	0.128***	0.128***	0.129***
	(0.03)	(0.03)	(0.03))	(0.03)	(0.03)	(0.03)
	[3.88]	[3.80]	[3.96]	[3.93]	[3.93]	[3.95]
Trade	10.657***	10.689***	10.596***	10.569***	10.519***	10.662***
	(1.20)	(1.20)	(1.20)	(1.20)	(1.20)	(1.21)
	[8.87]	[8.91]	[8.83]	[8.80]	[8.76]	[8.80]
π	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
	-[0.26]	[-0.18]	[-0.25]	[-0.30]	-[0.26]	[-0.30]
Pop	0.203	0.232	0.284	0.325	0.217	0.280
	(0.39)	(0.52)	(0.52)	(0.52)	(0.523)	(0.52)
	[0.52]	[0.45]	[0.55]	[0.62]	[0.42]	[0.54]
EX	0.956*	0.941*	1.126**	1.046**	0.872**	1.074**
	(0.50)	(0.50)	(0.51)	(0.51)	(0.51)	(0.51)
	[1.91]	[1.88]	[2.22]	[2.05]	[1.70]	[2.10]
CC	1.500					
	(1.15)					
	[1.30]					
GE		2.682**				
		(1.31)				
		[2.05]				
PS			0.845			
			(0.63)			
			[1.33]			
RQ				-0.530		
				(1.26)		
				[-0.42]		
RL					1.445	
					(1.32)	
					[1.10]	
VA						0.751
						(1.16)
						[0.65]
Cons.	-6.292***	-5.190***	-6.952***	-6.200***	-5.460***	-7.154***
	(1.64)	(1.75)	(1.610)	(1.65)	(1.70)	(1.79)
	[-3.83]	[-2.97]	[-4.32]	[-3.75]	[-3.21]	[-3.99]
No. of obs	1008	1008	1008	1008	1008	1008
No of group	48	48	48	48	48	48
R-sq: within	0.115	0.117	0.115	0.113	0.114	0.114

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
between	0.305	0.241	0.360	0.363	0.300	0.360
overall	0.157	0.137	0.176	0.175	0.156	0.174
F-test all$_{u\_i=0}$	4.08	4.05	3.83	3.77	3.96	4.10
F(6, 954)	20.62	21.09	20.63	20.33	20.52	20.38
Prob>F	0.000	0.000	0.000	0.000	0.000	0.000

Notes: Regressions are estimated using panel data over the period 1996-2016 across 48 African countries. (.) denotes standard errors, [.] denotes *t* statistics and *, **, *** means significance at the 10% , 5% , 1% levels.
Source: Author's estimates