Investment Climate Reforms and Foreign Direct Investment Flows to Africa

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Abstract

Purpose-The purpose of this paper is to examine the impact of investment climate reforms on FDI flows to Africa. It seeks to address the shortrun and longrun implications of policies adopted in the 1980s that aimed to terminate those that barricaded the inflow of capital. Hitherto, studies have been full of theoretical disputes and methodological pitfalls. The paper contributes to the debate by using the most recent data and statistical tools considered superior to those previously employed by conventiaonal papers.

Design/Method/Approach-We employ an ex-post facto design within a panel framework cutting across 46-African countries. The two-step systems generalised method of moments underpines the main econometric technique for the study.

Results-Investment climate reform variables are a signficant determinant of FDI, albeit the coefficients of estimated parameters are generally less elastic. Furthermore, fundamental macroeconomic variables continue to exhibit a significant effect on FDI flows. Consequently, a good investment climate gives investors an opportunity to receive optimal benefits from improving levels of infrastructure, macroeconomic stability, market size and growth potentials.

Originality/Value-No known study to the researchers has previously employed the generalised method of moments to examine the impact of investment climate on FDI. The study, therefore, provides novel empirical evidence using the most recent dataset on a well refined econometric technique.

Keywords: Foreign Direct Investment, Investment Climate, Generalised Method of Moments

[1]This paper is part of an ongoing PhD thesis at North-West University by *Beri Parfait Bihkongnyuy*

Introduction

The importance of foreign direct investment(FDI) on the economic growth of less developed countries cannot be overemphasised. Today, many African nations see FDI as an engine of growth and the way out of poverty. This is because it provides a vital source of foreign finance to the domestic economy, by filling the gap between domestic savings and the high levels of investments needed to enhance economic growth. It is also a prominent source of technology spillover and improvement in efficiency(Bayraktar, 2013). In spite of these, FDI figures have now fallen short of the required levels to offset domestic investment; as their flows to Africa have reduced relative to other regions of the world(Shiells, 2003).

Hitherto, natural resources have been the primary driver of FDI flows to most African nations(Anyanwu, 2012; Asiedu, 2006; Botrić & Škuflić, 2006). In 2013 for instance, FDI to resource-rich SSA accounted for 95-percent of the increase in FDI. Countries like Nigeria, South Africa, Angola and Mozambique, that when combined account for almost three-quarters of Africa's commodity export received about three-quarters of the inflows between 2001 and 2007(Kafayat Amusa, 2016). Besides natural resources and economic factors shown in the literature to exhibit a significant impact in attracting FDI, there is now a burgeoning interest on the non-economic determinants.

These include institutional capital (security and judicial systems, property rights, and regulatory standards), corruption, freedom of doing business etc., which may inhibit inflows of FDI. However, corruption does not seem to hinder FDI in absolute terms outside Africa which presents a paradox. For instance, Brazil, China, Thailand and Mexico attract very large flows of FDI irrespective of their perceived corruption. This is similar in the industrialised nations as Italy, a relatively corrupt nation, also receives substantial amounts of inflows in FDI. Belgium with similar ratings on corruption also receive modest levels of FDI. The problem of low inflows in FDI may therefore be multifaceted, and addressing such a paradox requires careful analysis in different contexts(Habib & Zurawicki, 2002).

Since the 1980s, developing countries have continuously been terminating policies that barricade the inflow of capital. Some African countries have succeeded to attract FDI inflows as an outcome of these reforms in their investment climate (Egypt, Ethiopia, Mauritius etc.), albeit others that conducted comparable reformations in their investment policies still did not succeed to pull the desired levels of investment(see figure 1).

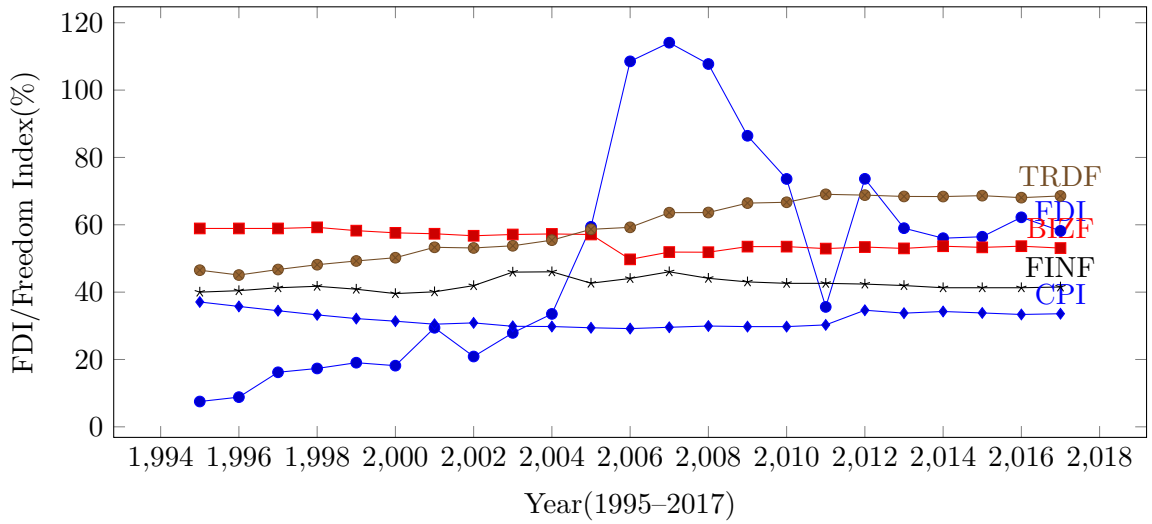

Figure 1. Trend of FDI & Economic Freedom Indices in SSA
Source:Authors (2019), Aggregate Freedom indices are Authors' Estimates

Figure (1) shows the trend of foreign direct investment and measures of business climate from 1995-2017. It would be observed that FDI has a positive secular trend with cyclical peaks and troughs. Trade freedom has a slightly positive trend while business freedom, financial freedom and corruption perception index look seasonal but with tentative negative slopes. The net improvements of trade freedom, financial freedom and business freedom from 1996-2004 aligns with increasing flows of FDI into SSA, albeit amidst deteriorating levels of corruption. Similarly, the decreasing slopes of Business, financial & trade freedoms and the worsening levels of corruption from 2006-2011 correspond with a sharp decline in FDI flows to SSA.

Empirical evidence on whether investment climate reforms invigorate private sector

development and effective state-business relations is weak and highly contested(Aboal, Noya, & Rius, 2012; Cox, 2008). Some studies have shown that businesses in Africa lose larger shares of their sales due to government regulations, inadequate infrastructure and corruption which results in lower output and productivity(Bah & Fang, 2015). Others posit that investment climate reforms rely on multifarious unrealistic assumptions not supported by empirical evidence(Altenburg & Von Drachenfels, 2006). Thus far, literature has been full of theoretical disputes and methodological pitfalls.There exist a strong association between investment climate reforms and inflows of foreign direct investment, in the sense that a good investment climate acts as an incentive to foreign firms and guarantees profits for the future. However, association does not immediately imply causation, and the causal chains could be difficult to disentangle(Cox, 2008). It could be that it is FDI that drives the investment climate. Consequently, limited evidence exist on what works well especially in Africa flanked by conflict-affected nations with flimsy institutions and notably weak business environments.

Alternate approaches of investment climate reforms such as "Doing Development Differently" have been proposed, but there is not yet sufficient evidence to show that they have recorded success in private sector development, particularly attracting FDI. Consequently, factors that make a successful investment climate reform[2] remain to be fully explored in the experience of most African countries. This situation justifies a fresh look at the relationship between investment climate reforms and the inflow of FDI into the continent with the aim of drawing lessons from the experience of selected African countries.

In the preceding paragraphs, we have presented the problem, emphasising why it is relevant and with brief literature that shows the existing debates and our main objective. The remainder of this paper is organized as follows. Section 2 presents the methodology which covers research design, definition of variables & sources of data, technique of analysis, model justification and validation. Section 3 presents the results while the last section

[2]These are regulatory reforms that promote private sector growth by reducing bureaucratic obstacles, costs and time constraints to doing business and improving the efficiency of legal institutions(World-Bank, 2014)

focuses on conclusions and policy implications.

Method

We employ the ex-post factor design within a panel framework. Thus, the study is more of a cross-sectional time series study. It cuts across the entire Africa, covering the years 1995–2017. Countries were selected based on data availability. The data was collected from multiple sources such as the World Development Indicators, United Nations Conference on Trade and Development, Transparency International and the Heritage Foundation in collaboration with the Wall Street Journal(see Table 1). The Heritage Foundation has an extensive database on Economic Freedom Indices covering 186 countries which include variables like Business freedom, financial freedom, investment freedom and trade reforms since 1995. Data on corruption perception index was collected from the annual publications of Transparency International(TI)

Variable Definitions & Data Management

Table 1 presents all the variables used in the study, sources of data and their expectations. Our dependent variable is foreign direct investment. We measure it using net FDI as a percentage of gross domestic product, which is consistent with most empirical studies. In other to examine the impact of investment climate reforms on inflows of FDI, we control for fundamental economic determinants. These include $FDI_{it_{-1}}$, the lag of our DV, which we use as the first independent variable. The intuition behind lagging FDI is that new investors may be attracted to countries with existing foreign investments as their presence perhaps imply possibilities for business growth.

Prospects for market growth and the degree of development are vital factors that attract market seeking multinationals to establish factories in a country. This is in line with the principle of rationality, which craves that investors locate their foreign plants in countries with favourable growth prospects, larger market size and economic development

since they provide better opportunities to exploit their locational advantages and enjoy economies of scale. Some researchers even suggest the creation of economic blocks for small countries to expand their market potentials(Asiedu, 2006).

While FDI has provided a vigorous impetus for economic development across many countries; by serving as a source of supply of funds for domestic investment, and promoting capital formation in host countries, it is believed that higher levels of economic development accelerate business activities and provide a conducive environment for inflows of FDI(Haftel, 2010). Furthermore, countries with a sustainable and stable financial system, prudent fiscal policies, low inflation, devoid of both exchange & interest rate fluctuations are likely to attract foreign investments(Strat, Davidescu(Alexandru), & Paul(Vass), 2015).

Table 1
Definition of Variables

Variable	**Measurement**	**Source**	**Exp Sign**
FDI	% FDI in GDP	UNCTAD	
$FDI_{it_{-1}}$	Lag of FDI	UNCTAD	+
Market Size & Dev't	GDP Growth Rates	WDI	+
	GDP Per K Growth	WDI	+
Stability			
Inflation	CPI	WDI	–
Infrastructure	GFCF	WDI	+
Capital Formation	Capital formation to GDP	WDI	+
Human Capital			
Quality of Labour Force	Secondary School leavers	WDI	+
Natural Resources	Mineral Rents		+
Investment Climate			
	Business Freedom	HF	+
	Investment Freedom	HF	+
	Financial Freedom	HF	+
	Trade Freedom	HF	+
	Corruption Perception	TI	–

*Source:*Authors (2019)

The pivotal role of infrastructure in economic growth and development is lucid, and can hardly be exaggerated. Aschauer (1989) asserted that the stock of public

infrastructure capital is an important driver of aggregate total factor productivity and increases growth. Investments in infrastructure enhance private sector activities by lowering the cost of production and opening new markets, presenting new production opportunities and attracting foreign investors(Becerril Torres, Alvarez Ayuso, del Moral Barrera, & Vergara GonzAlez, 2009). Monetary and physical units have been employed in the literature to measure infrastructure. Yet, sceptics argue that monetary units do not present a direct relationship between cost of investment and service capacity(Rojas-RamÃrez & Molina-Vargas, 2018). Consequently, they employ measures such as taking the logarithm of number of electricity power production, telephone, mobile phone lines or internet users per 1,000 inhabitants etc.,(Banga, 2006; Campos & Kinoshita, 2010; Clougherty & Grajek, 2006). We argue that such measures only consider a part of economic infrastructure and are thus, not truly representative. We therefore used the percentage of gross fixed capital formation to GDP as our measure of infrastructure. However, we cautioned that its coefficient should be interpreted with care since it could overestimate infrastructural endowments.

Human resource development, productivity and cost have also been regarded as main drivers of innovation and development. One major channel of knowledge transfer and the acquisition of skills is through foreign direct investment. Research has shown that the stock of human capital available in a country attracts foreign direct investment(Romer, 1986, 1990; Suliman & Mollick, 2009). This is particularly true for resource-seeking and efficiency-seeking FDI. Availability and high quality labour also shows that a country is ready to benefit from technological and scientific progress, since it can learn and adopt it faster. Labour quality can be reflected in the level of academic attainment in the labour force. In this study, we use the total number of secondary school enrolment expressed as a ratio of the total labour force to measure quality of labour force.

Furthermore, the nexus between natural resources and FDI has been well investigated in the literature. Because of the high capital and sophisticated technology required to extract natural resources, most of its activities in developing countries are often financed

by foreign MNCs. Asiedu (2013) notes that the share of oil production by foreign firms was 57% in SSA compared to countries like Kuwait, Mexico, and Saudi Arabia where its done solely by domestic firms. Anecdotal evidence further suggests that investments in natural resources particularly in the oil sector have been widely successful in SSA despite its associated risks. This makes discussions on FDI flows almost not sound without natural resources, which often make up a great portion of its inflows, particularly in resource rich SSA. In this study, the percentage of *mineral resource rents* to gross domestic product is employed as a measure of natural resources.

Business opportunities as indicated in these classical economic variables are dominant drivers of foreign direct investments. However, prominent features of investment climate like effective institutions, perceived level of corruption and regulations are also indispensable and can boost the impact of capital investments. The investment climate, proxied by business regulations and governments support, was the third most significant determinant of FDI; in almost 30,000 FDI projects for which a location determinant was identified in its market database(Hornberger, Battat, & Kusek, 2011). Some empirical studies have found that, albeit lowering effective tax rates were positive correlates with inbound FDI, the effect was eight times stronger with a good investment climateJames (2009). Studies have, however, differed on what measures of business climate to adopt. While some consider the rate of capital formation to GDP as a measure of a country's investment climate(ÇEviŞ & Camurdan, 2007), others employ different dimensions of both political and economic risk(Dollar & Kraay, 2003; Sekkat & Veganzones-Varoudakis, 2007). In this study, we adopt two measures with the objective to calibrate their outcomes. These include capital formation and measures of economic freedom found in the Freedom Heritage foundation like business, financial, investment and trade freedoms. Tchouassi (2014) had earlier employed similar variables to investigate the effect of investment climate on economic growth in selected African countries. All monetary values were expressed in current US dollars.

Since some variables in our dataset contained missing values, we employed the method of linear interpolation to generate them. This is often calculated using the formula $y_i =$

$(1-\rho)y_{i-1}+\rho y_{i+1}$, where y_{i-1} and y_{i+1} are previous and next missing values. Furthermore, it is common in econometric analysis for the final dataset to contain negative values and zeros. Busse and Hefeker (2007) proposed the formulation $x = \ln\left\langle x + \sqrt{(x^2+1)}\right\rangle$ as a way of dealing with negative values and log transforming the variables. This method resulted in many negative values in our data after log transformation. As a result, we translated our variables using $min(y_i + a) = 1$, such that $a = b - min(y_i)$ The procedure is widely accepted by researchers especially when y_i contain very few zeros. All variables except the lagged dependent variable were log transformed. Taking the logarithmic form of data mitigates heteroscedasticity or skewed distributions and even make its parameter estimates less sensitive to outliers. Therefore, its final formulation was $y_i = \log\langle y_i + min(y_i + a)\rangle$.

Empirical Model

Our empirical model is derived from papers by Adeleye, Osabuohien, and Bowale (2017); Anyanwu and Yameogo (2015); Mileva (2007); Nkoa (2018). This dynamic panel data model estimates the impact of investment climate reforms on inflows of foreign direct investment to Africa. It can be specified as shown in equation (1):

$$\begin{aligned}\left\langle \frac{fdi}{gdp}\right\rangle_{it} = \alpha_i + \delta_i \left\langle \frac{fdi}{gdp}\right\rangle_{it_{-1}} + \gamma_i \langle icr\rangle_{it} + \vartheta_i \langle z\rangle_{it} + \omega_{it} \\ \omega_{it} = \eta_i + \mu_{it}, t = 1,...,T, i = 1,...,N \\ E[\mu_{it}|icr_{i1},...icr_{iT}, z_{it}, \eta_i] = 0 \end{aligned} \tag{1}$$

From equation (1), i refers to the country or number of cross sections and t denotes the period under consideration. $\frac{fdi}{gdp}_{it}$ is the inflow of foreign direct investments expressed as a percentage of GDP, $\frac{fdi}{gdp}_{it_{-1}}$ is a lagged dependent variable, which shows the dynamic nature of the model and illustrate the interdependence of FDI flows over time. The $\mathbf{z}_{it}$ matrix represents a set of instrumental variables that are orthogonal to residuals while $\mathbf{icr}_{it}$ are explanatory variables in the model. Table (1) presents detailed information on variables and their expected signs. Unobserved country specific fixed effects and idiosyncratic shocks

are accounted for by η_i & μ_{it} respectively, which are orthogonal components. The most common methods used to estimate such panel regression data are the fixed and random effect models. Such models rely highly on the unrealistic assumption of strict exogeneity, no serial correlation and the absence of heteroscedasticity to provide consistent estimates of the parameters.

However, the introduction of $\frac{fdi}{gdp}_{it-1}$ in equation (1) presupposes the possibility of endogeneity and autocorrelation, thus, it cannot be estimated using static panel data models. Similarly, estimating such a model using OLS can result in biased, albeit consistent estimates of the parameters. In situations where these fundamental assumptions fail, GMM provides consistent, asymptotically normal and efficient parameter estimates than traditional moments estimators such as OLS and Two-Stage Least Squares(2SLS)(White, 2000). Although empirical evidence have shown that the GMM model and 2SLS yield similar results, Wooldridge (2001, 2010) argues that it theoretically offers greater precision. The GMM is therefore recommended because it controls for endogeneity bias in the parameters of a lagged dependent variable in a dynamic panel data model. It also controls for omitted variable bias, unobserved panel heterogeneity & measurement errors in the data (Hansen, 1982; Newey & West, 1987; White, 2000). Empirically, either the difference GMM or the systems GMM can be used in the estimation. Both methods work well when variables in the equation exhibit a random walk and there is no autocorrelation of residuals.

To deal with short time periods and large country dimensions, the difference GMM is often employed because it uses first differences to transform equation (1) as shown below: The idea is that first differencing removes country specific effects since they do not vary with time. The danger in differencing, however, is that it may lead to significant loss of information.

$$\begin{aligned} \Delta fdi_{it} &= \alpha_i + \delta_i \Delta \langle fdi \rangle_{it_{-1}} + \gamma_i \Delta \langle icr \rangle_{it} + \vartheta_i \Delta \langle z \rangle_{it} + \Delta\omega_{it} \\ \omega_{it} - \omega_{it-1} &= \langle \eta_i - \eta_i \rangle + \langle \mu_{it} - \mu_{it-1} \rangle \end{aligned} \tag{2}$$

The difference GMM was designed for models with small time periods and large

cross-sections. A practical challenge in applying this method lies in choosing the number of moment conditions. Wooldridge (2001) posits that two researchers will generally choose different moment conditions, a procedure that opens ones research to criticisms in search for different ones. He further cautions that, GMM may also suffer from finite sample problems when researchers add more moment conditions that add less information.

Furthermore, as $T \to \infty, \omega_{it} \approx 0$, and the correlation between the lagged dependent variable & the disturbance term also become insignificant hence no need for the difference GMM. However, lagging variables often results in poor instruments after taking first differences. Literature has shown that using the two systems GMM can improve efficiency of the results, since it reduces potential bias and imprecision associated with a simple first-difference GMM estimator(Nayan, Kadir, Ahmad, & Abdullah, 2013). Nonetheless, a major empirical challenge with this method is that it's often difficult to find appropriate instruments that are completely correlated with the endogenous regressors, resulting in weak instruments. Similarly, the model does not work well with long time periods and small groups which result in overidentification. However, xtabond has been recommended for longer panels, while xtabond2 is better for shorter panels given that it incorporates instruments in levels, reducing the loss of information(Barajas, Chami, & Yousefi, 2013).

Another obstacle with dynamic panel analysis is in choosing an "appropriate" number of cross-sections(n) and time(t), which its definition in the literature as "small" t and "large" n tend to be ambiguous. Some researchers have suggested that for the number of cross sections to be suitable, $n > 100$ and $t \leq 15$ with the ideal being $t < 10$. Researchers face a multiplicity of challenges when estimating dynamic panels with $n < 100$ and $t > 15$ due to panel data structure and the way the system generates instrumental variables(Labra & Torrecillas, 2018). Our initial attempt to run the systems GMM with 23 time periods generated more instruments than the number of cross-sections, and consequently, poor results. We therefore, split our cross sections into two to ensure that $t < 15$ before running the analysis. This increased the probability that the number of instruments generated will be less than n, which is similar to the procedure employed by Barajas et al. (2013).

In the analysis, we test for possible misspecification of our models. Although standard errors in GMM are more robust to model specification than maximum likelihood because it requires less information, this only happen when the sample size turn to infinity(Arellano & Bover, 1995; Blundell & Bond, 1998). In practice, however, they are often biased and it is prudent to test for misspecification. Monte Carlo simulations have established that properties of the GMM tend to be substantially different in a misspecified model and can result in misleading inference. The Sargan–Hansen J-test was employed to test for over-identifying restrictions or overall validity of instruments. It assumes that all instruments as a group are exogenous. Similarly, Arellano and Bond (1991) tests were utilised to verify the null hypothesis that errors are not serially correlated particularly at the second order(AR2). Failure to reject both null hypotheses supports the model, since higher p-values are a lynchpin of valid results in all applications involving GMM(Adeleye et al., 2017; Roodman, 2009). These tests were necessary to control for the proliferation of instruments, which can result in overidentification of the model. Results of the estimated *coefficients* and *standard errors* are presented, alongside their *p-values*. We also provide *long-run* dynamic coefficients and their *z-statistics*. All econometric analysis were performed in Stata version 15.1.

Results

This section present results of both descriptive and inferential analysis, which were segregated i.e., from 1995–2008 and 2009–2017 as explained in the preceding section. Table 1 shows that there were 644 observations with some missing data points across the 46 cross-sections. The table further shows a wide deviation between minimum and maximum values suggesting potential outliers in the data range. Preliminary analysis of normality using kurtosis and skewness(not presented) suggested that the distribution was leptokurtic. All other variables were positively skewed except indices of trade, investment and financial freedom which were approximately symmetric. On average, foreign direct investment flow

Table 2
Descriptive Statistics[1995-2008]

Variables	Obs	Mean	Std.Dev.	Min	Max
Foreign Direct Investment	644	3.194	5.762	-7.868	72.793
Gross Domestic Product	644	5.211	8.615	-28.1	149.973
GDP Per Capita	644	2.659	8.203	-29.31	140.501
Inflation	630	24.88	200.698	-9.798	4145.106
Fixed Capital Formation	644	19.331	16.156	-47.737	155.451
Gross Capital Formation	644	20.078	17.515	-42.427	169.233
Trade Openness	589	31.413	17.658	4.686	89.686
School Enrollment	630	36.093	25.497	-6.448	133.469
Mineral Rents	532	1.039	3.996	-12.163	44.644
Business Freedom	644	56.495	12.981	20	145
Trade Freedom	644	53.335	14.45	0	89
Investment Freedom	644	46.693	15.911	10	70
Financial Freeodom	644	42.484	16.759	10	70
Corruption Perception	644	31.654	14.667	0	90

*Source:*Authors (2019); Values are in percentages

to SSA was 4.696% from 1995 to 2008, with a standard deviation across cross sections of 5.762%. The minimum percentage of FDI in one of the included countries was -7.868% while the most attractive country received FDI amounting 72.793% of her GDP.

Similarly, Table 3 presents descriptive statistics on included variables from the years 2009-2017. The highest recipient received FDI amounting 45.833% of her gross domestic product while the least realised a reduction totalling 5.387% of GDP. There were 414 observations with some countries having missing data points. The distribution of traditional economic variables were similarly leptokurtic, but approximately symmetric for indices of business, trade, financial freedom and corruption perception index. Consequently, the dataset needed to be normalised prior to running the regression analysis.

Furthermore, we also calculated the pairwise correlation matrix as shown in Tables 4 & 5 respectively. Investment climate was measured using business, investment, financial & trade freedom indices and corruption perception index. The aim was to establish the direction and strength of the relationship between explanatory variables, in other to avoid multicollinearity in our regression model. Preliminary analyses were performed to ensure that fundamental assumptions of normality, linearity and homoscedasticity were not

Table 3
Descriptive Statistics[2009-2017]

Variable	Obs	Mean	Std.Dev.	Min	Max
Foreign Direct Investment	414	4.696	6.093	-5.387	45.833
Gross Domestic Product	414	4.302	8.225	-62.076	123.14
GDP Per Capika	414	1.799	8.169	-62.225	122.968
Inflation	405	5.941	6.839	-11.21	60.861
Trade Openness	406	32.567	15.631	6.408	94.034
Fixed Capital Formation	414	25.352	10.98	5.885	74.608
Gross Capital Formation	414	26.096	11.515	0	73.777
School Enrollment	405	51.99	25.034	11.705	157.513
Mineral Rents	342	3.823	6.92	-.285	46.625
Trade Freedom	414	68.117	9.246	31.8	90
Investment Freedom	414	47.126	16.887	0	90
Financial Freedom	414	42.005	13.298	10	70
Corruption Perception Index	414	32.578	10.536	14	65

*Source:*Authors (2019); Values are in percentages

violated after detrending and normalising the data. Table 4 which presents the pairwise correlation for included variables between the period 2009-2017 shows that its direction and strength ranged from extremely weak-negative correlations, to strong positive relationships. For instance, there was a strong, positive correlation between the index of investment and

Table 4
Correlation Matrix[2009-2017]

	FDI	BIZF	INVF	FINF	TRDF	CPI	OPN	GKF
FDI	1							
BIZF	0.00369	1						
INVF	0.0769	0.387***	1					
FINF	0.0725	0.422***	0.762***	1				
TRDF	-0.00849	0.434***	0.315***	0.336***	1			
CPI	0.123*	0.575***	0.477***	0.523***	0.347***	1		
OPN	0.180***	0.0440	-0.0753	0.143**	0.0410	0.191***	1	
GKF	0.298***	0.0876	0.0434	0.153**	0.128**	0.113*	0.229***	1

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

financial freedom [r= 0.762, n=414, p<0.001], with high levels of investment freedom associated with higher levels of financial freedom. A strong correlation between two explanatory variables is often a potential indication of multicollinearity, hence, such two variables cannot fit in the same regression model during analysis. All other coefficients

have either moderate or weak relationships and are therefore, not a significant call for concern.

Table 5
Correlation Matrix[1995-2008]

	FDI	BIZF	INVF	FINF	TRDF	CPI	OPN	GKF
FDI	1							
BIZF	-0.0750	1						
INVF	-0.00322	0.413***	1					
FINF	-0.0343	0.369***	0.598***	1				
TRDF	0.0678	0.00381	0.0480	0.125**	1			
CPI	-0.177***	0.234***	0.353***	0.270***	0.0434	1		
OPN	0.224***	0.140***	-0.0436	0.0882*	-0.0926*	0.0170	1	
GKF	0.213***	0.0685	0.0556	-0.0546	-0.0300	-0.0220	0.0625	1

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Similarly, Table 5 shows pairwise correlations of some included variables from the period 1995 to 2017. Correlation coefficients range from weak negative to moderate positive relationships, and thus, do not suggest any potential multicollinearity. However, association as indicated in Tables 4 & 5 does not imply causality, and it is often necessary to disentangle the causal chains.

Therefore, we proceed to run a two-step systems generalised method of moment to establish the causal chains using xtabond2. Worthy of note here is that the two-step system GMM was developed for shorter time panels with large cross-sections. However, our time period of 23 years is too large to produce efficient results. we therefore run two regressions, from 1995 to 2008 and 2009 to 2017. These are accompanied by their long-run dynamic coefficients.

Table 6 presents short-run dynamic coefficients of all included variables for the period 2009 to 2017. Results of the F-statistics, AR(2) and the Hansen test statistic justify the validity of our models. The signs of included variables are consistent across all models and in agreement with our economic expectations, except for number of school enrolment. Previous investment flow is a significant determinant of foreign direct investment across all six models as expected. As shown on model *1*, the coefficient of financial

freedom(*FINF*), shows that everything being equal, a percentage change in *FINF* is associated with *0.660%* increase in foreign direct investment in the short run, at 0.1 level of significance. Its magnitude for investment freedom is *0.265%(Model 4)*, which is significant at 0.1 level; and *–0.482(model 6)* for corruption perception index, which is significant at 0.05 level. Gross capital formation(*GKF=0.772*), trade openness(*OPN=0.340*) and natural resources(*MINR=0.573*) are significant positive determinants of FDI flows at 0.05 level. Table 7 present the long run dynamic estimates which shows that these variables are similarly significant determinants of FDI flows in the long run, everything being equal.

Table 8 presents short run dynamic estimates for the period 1995*to*2008. Similarly, the F-statistics, $AR(2)$ and the Hansen test statistics validate our models. Signs of all included variables are in agreement with their economic expectations and the first lag of FDI is a significant determinant of inflows. The coefficient of financial freedom in model 1 (*FINF=0.660*) suggest that a change in investment freedom is associated with a 0.660% increase in foreign direct investment(which is significant at 0.05 level). Also, a change in corruption perception index will reduce foreign direct investment by 0.911%. The results are similar for investment freedom in model 6(*INVF=0.591*) and trade freedom(*TRDF=0.616*).

Fundamental macroeconomic determinants like GDP per capita, gross fixed capital & gross domestic capital, trade openness, and secondary school enrolment are positive and significant. In th long run, these short run dynamic coefficients are also significant. Therefore, financial freedom, investment freedom and trade freedom are significant determinants of FDI flows into Africa. Worsening levels of corruption also act as a disincentive to inflows of FDI to African countries.

Table 6
Two-step systems GMM Output[2009-2017]

	(1)	(2)	(3)	(4)	(5)	(6)
LFDI	$1.31x10^{-4***}$	$1.24x10^{-4***}$	$1.21x10^{-4***}$	$8.01x10^{-5**}$	$9.40x10^{-5***}$	$1.19x10^{-5*}$
	$(2.98x10^{-5})$	$(2.42x10^{-5})$	$(3.14x10^{-5})$	$(3.62x10^{-5})$	$(2.89x10^{-5})$	$(5.83x10^{-5})$
BIZF	0.0403					
	(0.200)					
FINF	0.510*	0.204**		0.660*		
	(0.282)	(0.0951)		(0.365)		
INVF			0.0562	0.125	0.265*	0.0788
			(0.0557)	(0.147)	(0.134)	(0.0870)
TRDF			0.0268			
			(0.162)			
CPI	-0.322*	-0.364**	-0.206	-0.473**	-0.310*	-0.482**
	(0.175)	(0.147)	(0.239)	(0.226)	(0.166)	(0.221)
GDP				0.0180		
				(0.0247)		
GDPK		0.0501			0.0404	
		(0.219)			(0.0248)	
GFK					0.383	
					(0.299)	
GKF						0.772**
						(0.323)
OPN	0.340**		0.365**	0.447*	0.454***	
	(0.161)		(0.159)	(0.223)	(0.147)	
INFL		-0.107				
		(0.0851)				
SCL			-0.320***			
			(0.104)			
MINR						0.573***
						(0.170)
_cons	0.244	2.906*	2.774***	-0.501	-0.901	-1.092
	(1.343)	(1.248)	(0.695)	(1.044)	(1.263)	(1.063)
F-Stat	5.99	8.55	4.51	2.44	5.65	13.33
Prob > F	0.000	0.000	0.001	0.040	0.000	0.000
AR(2)	0.379	0.257	0.357	0.483	0.153	0.543
H = exo	0.204	0.560	0.197	0.309	0.241	0.302
N	414	405	405	405	405	342

Standard errors in parentheses
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 7
Long run Dynamic Estimates[2009-2017]

	(1)	(2)	(3)	(4)	(5)	(6)
LFDI	$1.31x10^{-4***}$	$1.24x10^{-4***}$	$1.21x10^{-4***}$	$8.01x10^{-5**}$	$9.40x10^{-5***}$	$1.19x10^{-4**}$
	$(2.98x10^{-5})$	$(2.42x10^{-5})$	$(3.14x10^{-5})$	$(3.62x10^{-5})$	$(2.89x10^{-5})$	$(5.83x10^{-5})$
FINF	0.510*	0.204**		0.660*		
	(0.282)	(0.0951)		(0.365)		
INVF			0.0562	0.125	0.265**	0.0788
			(0.0557)	(0.147)	(0.134)	(0.0870)
CPI	-0.322*	-0.364**	-0.206	-0.473**	-0.310*	-0.482**
	(0.175)	(0.147)	(0.239)	(0.226)	(0.166)	(0.221)
GKF						0.772**
						(0.323)
OPN	0.340**		0.365**	0.447**	0.454***	
	(0.161)		(0.159)	(0.223)	(0.147)	
SCL			-0.320***			
			(0.104)			
MINR						0.573***
						(0.170)
_cons	0.244	2.906**	2.774***	-0.501	-0.901	-1.092
	(1.343)	(1.248)	(3.99)	(1.043)	(1.263)	1.063)
N	414	405	405	405		342

Standard errors in parentheses
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Conclusions & Policy Implications

This paper examined the impact of several dimensions of the business environment or investment climate on the inflow of foreign direct investment in Africa. The 46 cross-sections retained for the study were split into two time periods; 1995 to 2008 and 2009 to 2017. This was due to the peculiarities of the two-systems generalised method of moments. Both short-run and long-run dynamic estimates were presented adjacent to their model validation. All results are robust to heteroscedasticity, and the coefficients of estimated parameters were generally inelastic.

Accordingly, financial freedom is a significant determinant of foreign direct investment into Africa in both the short-run and long-run in both time periods. Therefore, African countries with more efficient banks, devoid of government control and interference in the financial sector attract higher levels of foreign direct investment relative to those

Table 8
Two-step systems GMM Output[1995-2008]

	(1)	(2)	(3)	(4)	(5)	(6)
LFDI	$9.73x10^{-5**}$	$7.66x10^{-5**}$	$7.39x10^{-5}$	$4.85x10^{-5*}$	$6.79x10^{-5**}$	$6.39x10^{-5**}$
	$(4.35x10^{-5})$	$(3.07x10^{-5})$	$(4.50x10^{-5})$	$(2.56x10^{-5})$	$(2.66x10^{-5})$	$2.80x10^{-5})$
BIZF						0.386
						(0.444)
FINF	0.660**		0.318 *	0.225		
	(0.316)		(0.172)	(0.285)		
INVF		0.221*		0.148	0.354*	0.591*
		(0.130)		(0.142)	(0.202)	(0.310)
TRDF	0.0387					0.616*
	(0.127)					(0.344)
CPI	-0.911**	-0.407*	-0.310*	-0.586**	-0.199***	-0.723***
	(0.443)	(0.239)	(0.148)	(0.260)	(0.0739)	(0.238)
GDP					0.0476	
					(0.236)	
GDPK			0.836***			
			(0.256)			
GFK		0.566*				
		(0.321)				
GKF					0.157***	
					(0.0433)	
OPN	0.193				0.410**	
	(0.348)				(0.198)	
INFL			-0.0221			
			(0.0354)			
SCL				0.337*		
				(0.173)		
MINR						0.0894
						(0.130)
_cons	2.099	0.479	-1.286	1.663	-0.581	-1.776
	(1.484)	(1.613)	(1.755)	(1.005)	(1.113)	(3.550)
F-Stat	1.81	6.35	10.34	2.36	6.86	2.50
Prob > F	0.131	0.000	0.000	0.056	0.000	0.040
AR(2)	0.308	0.646	0.463	0.509	0.466	0.348
H = exo	0.182	0.833	0.873	0.808	0.241	0.291
N	630	644	280	616	644	518

Standard errors in parentheses
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 9
Long run Dynamic Estimates[1995-2008]

	(1)	(2)	(3)	(4)	(5)	(6)
LFDI	$9.73x10^{-5**}$	$7.66x10^{-5**}$	$7.39x10^{-5}$	$4.85x10^{-5*}$	$6.79x10^{-5**}$	$6.39x10^{-5**}$
	$(4.35x10^{-5})$	$(3.07x10^{-5})$	$(4.50x10^{-5})$	$(2.56x10^{-5})$	$(2.66x10^{-5})$	$(280x10^{-5})$
FINF	0.660**		0.318*	0.225		
	(0.316)		(0.172)	(0.285)		
INVF		0.221*		0.148	0.355*	0.591*
		(0.130)		(0.142)	(0.202)	(0.310)
TRDF	0.0387					0.616*
	(0.127)					(0.344)
CPI	-0.911**	-0.407*	-0.310**	-0.586**	-0.199***	-0.723***
	(0.443)	(0.239)	(0.148)	(0.260)	(0.0739)	(0.238)
GDPK			0.836***			
			(0.256)			
GFK		0.566*				
		(0.321)				
GKF					0.157***	
					(0.0433)	
OPN	0.193				0.410**	
	(0.348)				(0.198)	
SCL				0.337*		
				(0.173)		
_cons		0.479	-1.286	1.663	-.581	
	(1.484)	(1.613)	(1.755)	(1.005)	(1.113)	-1.776
N	630	644	280	616	644	(3.550)

Standard errors in parentheses
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

with high government interference. In most instances, governments ownership of banks, insurance companies and other financial services often result in limited services rendered and inefficiency. Policies that favour the independence of banks should therefore be encouraged since they communicate to foreign investors that there will be no restriction on inflow and outflow of capital as business opportunities change. Such policies also open local banks to foreign competition, and do not direct more bank credits to some *predetermined priority sectors* at the expense of *productive sectors*; as has often been the case in most African countries. Our results support the *New Minimalist paradigm* of private sector development, which advocates that governments should ensure that businesses are not thwarted by unsuitable rules and regulations defining activities of the banking sector(Altenburg &

Von Drachenfels, 2006).

Similarly, investment freedom significantly attract foreign capital in both the short and long-runs from 1995 to 2017. Consequently, African countries with limited constraints on the flow of capital, and sectors of investment both domestically and across borders attract more foreign investments. It is common to find countries with translucent investment laws and inefficient implementation, red tape and restrictions on foreign purchase of real estates, many legal procedures to repatriate profits etc., which have damaging consequences on capital mobility and development(Bah & Fang, 2015). Designing policies that target foreign direct investment should, therefore, take into consideration the fundamental role of investment freedom in the market.

In addition, trade freedom is also a significant determinant of foreign direct investment from 1995 to 2008 in both short-run and long-run estimates. It's estimated parameter is positive, but does not achieve statistical significance during the period 2009 to 2017. This is quite acceptable since many policies that improved competition and less government intervention were initiated during the structural adjustment and stabilisation programmes in the 1980s. The 2008 financial crisis also made many countries to revisit their trade policies, which had serious implications on capital flows. In fact, figure 1 clearly shows that FDI flows into Sub-Saharan Africa has had a negative secular trend since the 2008 global financial crisis. Consequently, countries with less tariff and non-tariff barriers attract more FDI than their other counterparts with more tariffs and non-tariff barriers. Campos and Kinoshita (2010) carried out a similar study and realised a strong relationship between reforms and FDI, and especially trade liberalisation.

Furthermore, the negative and coherent coefficient of corruption perception index in both the short and long runs is consistent with most of the empirical literature(Bayraktar, 2013; Biglaiser & DeRouen, 2006; Habib & Zurawicki, 2002). Although corruption is too complex to be explained by a single score, its measure has over the years forced many governments to adopt policies that can reduce the level of corruption in their public sectors. However, such unfavourable results should be interpreted with caution since they do not

indicate the source of the corruption and the participants involved. In fact, it is hard to measure the causality between corruption and major FDI players, since some actually take advantage of such corrupt and decadent systems to make money. In whatever case, corruption is anti-developmental and have damaging consequences on the private sector which remains an engine of growth in most developing economies.

Finally, fundamental macroeconomic determinants continue to exhibit a significant effect on inflow of foreign direct investment. Current market size and prospects for growth(GDP per capita), macroeconomic stability(inflation), infrastructural development(GFK), domestic capital to the private sector, quality of labour force and natural resource endowments are vital macroeconomic determinants of FDI. Countries should create a balance between economic, social and physical infrastructure as all forms are equally relevant. We therefore conclude that for African countries to optimise investment flows, both fundamental macroeconomic determinants and business environment variables should be enhanced. A good investment climate gives investors an opportunity to receive optimal benefits from improving levels of infrastructure, macroeconomic stability, market size and growth potentials.

The study, however, has exclusively analysed only aggregate inflows of FDI into Africa. The quantum leap of Chinese investment into Africa has recently been spearheading the drive to diversity its inflows away from traditional extractive industries. Anecdotal evidence also suggest that the eminent reality of Brexit, announcement by the UK to become the largest G7 investor in Africa by 2022; and escalating trade tensions between the USA and China that are almost synchronous can only result in a promising future of foreign investments into Africa. Consequently, addressing such sectoral decompositions in relation to investment climate should be at the centre of future empirical research.

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