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Determinants of Foreign Direct Investment in Sub-Saharan African Countries

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A B S T R A C T
The fundamental problems associated with the Foreign Direct Investment (FDI) in Sub-Saharan African Countries are apparent since the investment is highly influenced by macroeconomic shocks that have severely affected the region's FDI inflow. This paper's prior objective is to investigate the determinants of FDI in some selected emerging sub-Saharan African countries from 2000 to 2017. The panel unit root tests, panel cointegration and fully modified ordinary least square (FMOLS) were employed in analyzing the data. The Panel Unit Root Tests show that the variables were stationary at first difference. The panel cointegration test reveals the presence of a long-run relationship among the variables under study. The results from Modified Ordinary Least Squares (FMOLS) indicate that financial development (FD) and trade openness (TO) have positive effects in determining FDI. In contrast, corruption (COR) has a negative effect in determining FDI in the region. The study recommends that sound financial Development and trade policies should be implemented in the region to have more FDI inflow. The level of corruption should be minimized through various measures to attract foreign investors to the host countries under study.

INTRODUCTION

Foreign Direct Investment (FDI) is the movement of capital resources from one country to another and realizes in the form of global funds, capital markets and direct Investments (Kurtaran, 2005). It is the enterprise of a new production column or buying an already well-known production line in a country different from its origin to diffuse its production abroad (Seyidoğlu, 1999). FDI is mostly defined as capital flows resulting from the behaviour of multinational companies (MNCs). Thus, the factors to affect MNCs' behaviour may also affect the magnitude and direction of FDI. MNCs expand their activities to a foreign country for several reasons, including exploiting economies of scale/scope, the use of specific advantages, often owing to a life-cycle pattern of their products or just because their competitors are engaged in similar activities. On the other hand, governments are also engaged in a policy competition by changing key factors of their economic policies, such as domestic labour market conditions, corporate taxes, tariff barriers, subsidies, Agiomirgianakis et al. (2003)

In the past decade, the fundamental problems associated with the FDI in Sub-Saharan Africa are apparent since the investment is highly influenced by macroeconomic shocks that have severely affected the FDI inflow through changes in macroeconomic factors. For example, out of the estimated $1,388 billion, $817.6 billion, $678.8 billion and $559.6 billion global FDI in 2000, 2001, 2002 and 2003, Africa received only $8.7 billion, $19.6 billion, $11.8 billion, and $15 billion, which represents only 0.6%, 2.4%, 1.7% and 2.7% of the total share of FDI inflow respectively (World Investment Report, 2004). Although UNTAD's world investment report 2004, reported that Africa's outlook for FDI is promising, the expected surge is yet to be clear. The percentage total share of FDI inflow to Africa is less than 5% throughout the period except for 2009, which is recorded at 5.3%. Therefore, FDI is still concentrated in only a few countries for many reasons, such as a negative image of the region, poor infrastructure, corruption, and an unfriendly macroeconomic policy environment.

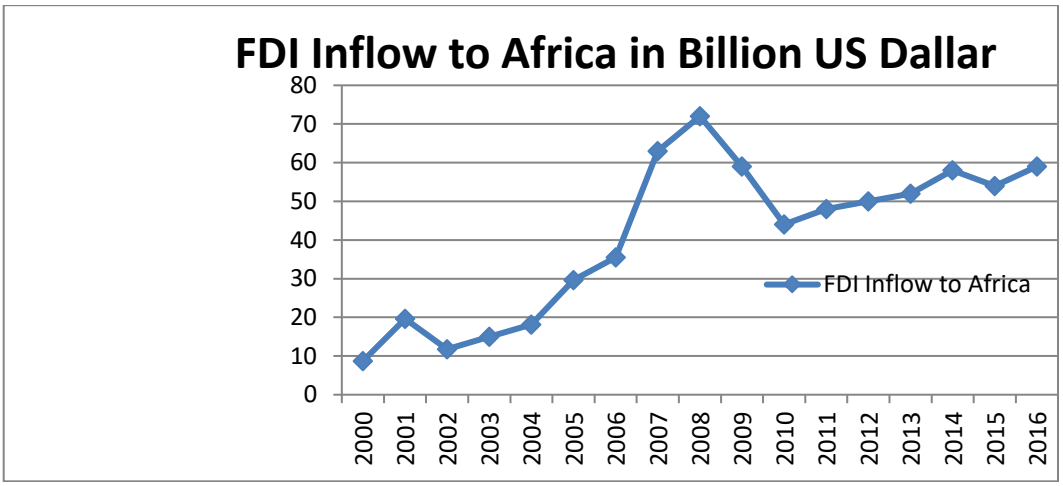

Figure 1. FDI Inflow to Africa in Billion US Dollar

One can ask what the major determinants of FDI in Sub-Sahara African Countries are? Many scholars in the region try to answer this question by identifying some determinants of FDI in Africa, yet their finding contradicts. This

paper uses the recent econometric techniques to find out the determinants of foreign direct investment in Sub-Saharan African Countries from 2000 to 2017.

THEORETICAL REVIEW

Even though there are several available literature on the determinants of foreign direct investment around the globe but yet to reach the consensus among the researchers. This is due to the nature of the data; methodology adopts in their study. For Instance, Nvuh (2017) investigated the robust FDI determinants in sub-Sahara Africa for the period 1985 to 2012. His empirical analysis shows the following key results: (i) natural resources and market size are the most robust determinants; ii inflation, infrastructure, human capital and trade openness are weak robust, iii corruption and political instability are very less robust determinants sub-Sahara African countries. Tuman and Shirali, (2017) applied a cross-sectional time-series data set for 66 countries for 2003–2010 investigate the impact of several political and economic variables on Chinese FDI in Africa and Latin America. The result found that Chinese FDI is influenced by natural resources and trade flows in host economies, including ores, metals and oil resources, and focused on markets with lower per capita income.

Tsaurai (2017) examined the impact of financial sector development on foreign direct investment in emerging markets. The results show that higher stock market and banking sector development above the threshold level positively and significantly influence FDI inflows whilst the influence of lower stock market and banking sector development on FDI inflows was weak and less significant. Levels of private bond market development equal to or greater than the threshold level are found to have a positive but non-significant impact on FDI inflows whereas private bond market development levels less than the threshold have a weaker positive non-significant influence on FDI inflows. On the contrary, public bond market development levels equal to or greater than the threshold level negatively influenced FDI inflows whilst levels of public bond market development less than the threshold positively but non-significantly attracted FDI inflows into emerging markets. Dalia and Sherif (2016) examined the determinants of FDI flows to developing countries based on the MENA region. Their study found that infrastructure, human capital, lagged FDI and market openness are the significant determinants of FDI in the MENA region. The results suggest that FDI for MENA is primarily market-based.

Anyanwu and Yameogo, (2015a) analyzed drivers of foreign direct investments (FDI) to West Africa using a panel dataset from 1970-2010. They used OLS and GMM techniques for the estimations. Their results indicated that there is a U-shaped linkage between economic development and FDI inflows to West Africa. However, the quadratic element of real per capita, GDP, trade openness, domestic investment, natural resources endowment, monetary integration, exports, and first-year lag of FDI have a significant positive influence on FDI inflows to West Africa. There is a negative relationship between FDI inflows to the sub-region, real GDP per capita, economic growth, domestic credit to the private sector and life expectancy. Also, Anyanwu and Yameogo, (2015b) examined the factors that drive foreign direct investments (FDI) by looking at

regional heterogeneity among the five African regions. Their finding indicated that agglomeration has a strong positive relationship with FDI inflows in all the regions except Central Africa. Nevertheless, in West Africa, the second lag of FDI is significantly negative.

The result also found a negative relationship between FDI inflows and GDP per capita in all the five regions. However, a U-shaped linkage is observed in Central, North, and West Africa. Nevertheless, GDP growth rate has a strong positive association with FDI inflows in Central Africa but negatively significant in West Africa. Infrastructure development has a positive impact on FDI inflows in East and North Africa; trade openness has a positive association with FDI inflows in all the five regions except in East Africa; inflation deters FDI inflows to East Africa; the level of urbanization has a strong positive link with FDI inflows only in West Africa; net foreign aid has a negative association with FDI inflows to East, North, and Southern Africa; higher life expectancy discourages FDI inflows to Central Africa but stimulates the same to East and North Africa; metal production and exportation entice significant FDI to Central Africa, but oil production and exportation attract higher FDI to West Africa; monetary union fascinates better FDI to Central and West Africa, and political instability is a substantial hindrance to FDI inflows to West Africa.

While Lateef and Muhammad (2015) found that FDI flows to Sub Saharan Africa economies unaffected by conflict and political instability exceed those with the crisis. For FDI to strive in these countries, it must introduce sound economic policies and make the country investor-friendly. There must be political stability, sound economic management and well-developed infrastructure. Bruce and Jeremy (2014) used Bayesian statistical techniques that allow one to select from a large set of candidates those variables most likely to be determinants of FDI activity. The variables with consistently high inclusion probabilities include traditional gravity variables, cultural distance factors, relative labour endowments and trade agreements. There is little support for multilateral trade openness, host-country business costs, and host-country infrastructure and host-country institutions. Their results suggest that many covariates found significant by previous studies are not robust.

In their analysis of the role of economic, institutional and political factors in attracting foreign direct investment (FDI) in BRICS (Brazil, Russia, India, China & South Africa) economy and the comparative weightage of these factors in attracting FDI, Pravin and Jadhav (2012) found that market size measured by real GDP is a significant determinate of FDI which implies that most of the investment in BRICS is motivated by market-seeking purpose. He also indicates that trade openness, natural resource availability, the rule of law, voice and accountability are statistically significant. Coefficients of market size and trade openness are positive, which implies that these variables positively affect total inward FDI. Natural resource availability has a negative effect on total inward FDI. This particular result indicates that FDI is not motivated by resource-seeking purpose in BRICS economies.

Musonera et al., (2010) evaluated the institutional FDI fitness model in the East African Community alliance, using Kenya, Tanzania and Uganda as their

sample, and data are drawn from 1995 to 2007. They found that for Tanzania and Uganda, FDI inflows were predetermined by more than a single country risk factor, such as population size, size of the economy, financial market development, trade openness, infrastructure and other economic, financial and political risks. Their study further disproved the perception that, natural resources attract FDI inflows to Africa. This was evidenced by that Tanzania and Uganda, both resource-poor countries, were also able to attract FDI on condition that their Governments fulfil two conditions: establish macroeconomic and political stability, and introduce an efficient regulatory framework, as well as eliminate corruption.

Albulescu et al., (2010) investigated the impact of the financial stability on the FDI flows for a large sample of Central and Eastern European countries. The results show that the financial systems' stability played a significant role in attracting FDI inflows in Central and Eastern Europe during the 1998-2008 periods. Mohamed and Sidiropoulos (2010) analyzed the key determinants of foreign direct investment in MENA countries. They employed a sample of 36 countries. 24 were the main recipients of FDI in their particular regions in developing countries, and 12 of these countries were in MENA countries. They applied a panel data methodology the study investigated whether the determinants of FDI are similar to the other FDI receiving developing countries. The study revealed that the main causes of FDI inflows in MENA countries are the host economy, natural resources, the institutional variables and the government size. They concluded that countries getting less foreign investments could make themselves more attractive to potential foreign investors. So, the MENA region policymakers should remove all trade barriers, develop their financial system and build appropriate institutions.

Erdal and Mahmut (2008) examined the determinants of foreign direct investment flows to 38 developing countries by estimating a cross-sectional econometric model for 2000-2004. From their results, per capita growth rate, telephone main lines and degree of openness have a positive sign and are statistically significant. In comparison, the Inflation rate and tax rate have a negative sign and are statistically significant. Labour cost has a positive sign and risk has a negative sign but is statistically insignificant in the model. Matthias and Carsten (2007) explored the linkages among political risk, institutions, and foreign direct investment inflows, for a data sample of 83 developing countries covering 1984 to 2003. The results showed that government stability, internal and external conflict, corruption and ethnic tensions, law and order, democratic accountability of government, and quality of bureaucracy are highly significant determinants of foreign investment inflows in developing countries. Josef et al., (2006), examined the effects of transition and political instability on FDI flows to the transition economies of Central Europe; they found that FDI flows to transition economies unaffected by conflict and political instability exceed those that would be expected for comparable.

In a comparative study, Chowdhury and Mavrotas (2006) discovered that Chiles" GDP has a significant effect on FDI investment patterns in their country. In contrast, Malaysia and Thailand had the opposite to be correct. It was,

however, found that financial soundness has a positive impact on the FDI. Nair-Reichert et al. (2000), tested the causality between FDI and economic growth in 24 developing countries between 1971 and 1995 by using fixed effects and random effects panel data estimation method. In consequence of econometric analysis, they founded that, the effect of FDI on economic growth varies across developing countries. Despite the differences among countries, their finding reveals that the effect of FDI on economic growth is higher in open economies. Borenszteinet et al., (1998), examined, that, the study aims to determine the effect of FDI on economic growth in 69 developing countries in the period of 1970-79 and by using regression bound to panel data. Based on the results, it has been seen that FDIs is a means of technology transfer, contributing a lot to economic growth. However, FDIs have a positive effect on economic growth, when advanced technology is accompanied by capital and human capital at a certain level.

None of the studies identifies financial instability as a major determinant of FDI in their research from the aforementioned empirical studies. Indeed, other researchers report different results and findings in their research. This mixture the final finding and conclusions emanate from the different methodology, variables used, and the study period. There is also the disparity of the study area that fundamentally affects the behaviour of the macroeconomic variables. This is because where the study area is not the same or is different, the methodology and variables that can be used will differ. Secondly, the cover period of research is 2000—2017 study period is a great improvement in the above literature. Lastly, the choice of the research variables and recent econometrics techniques is a significant stride in the literature in finding factors affecting the patterns of attracting foreign direct investment in emerging sub- Saharan African countries.

METHODOLOGY

Model Specification

To investigate factors affecting the patterns of attracting foreign direct investment in emerging Sub- Saharan African countries, the following model is specified:

$$\mathrm{FDI} = \mathrm{F}(\mathrm{GDP}, \mathrm{DCB}, \mathrm{TO}, \mathrm{COR}) \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots . (1)$$

Where:

FDI = Foreign direct investment, net inflows
GDP = GDP per capita (constant 2010 US$) proxy to Economic Growth
DCB = Domestic credit to the private sector by banks (% of GDP) proxy to Financial Development
COR = CPIA transparency, accountability, and corruption in the public sector rating (1=low to 6=high)
TO = Trade (% of GDP)
F = functional relationship

Therefore, the above equations are transformed into econometric models as follows:

$$FDI_{it} = \alpha + \beta_1 GDP_{it} + \beta_2 DCB_{it} + \beta_3 TO_{it} - \beta_4 COR_{it} + \varepsilon_{it} \ldots\ldots\ldots\ldots\ldots\ldots (2)$$

Where, the prior expectation of the parameters in equation 2 is $\beta_1, \beta_2, \beta_3 > 0$, an $\beta_4 < 0$.

Sources of Data

This study's data are collected in eight Sub-Saharan African countries of Angola, Ethiopia, Mozambique, Nigeria, Senegal, Kenya, Ghana, and South Africa spanning 18 years, from 2000 to 2017. The selection of countries was primarily dictated by the availability and reliability of data over the sample period. The total number of observations made by using a balanced panel was 144. All the data of the variables were obtained from the World Development Indicators Database 2017 in the World Bank website and UNCTAD report for various years.

Estimation Procedure

We consider two types of Panel unit-root tests, proposed by Levin et al. (2002) and by Im et al., (2003), to check for the status of unit-root properties of each series, as macroeconomic time series are often characterized by the unit-root problem, which is documented by Nelson and Plosser (1982). When the series are integrated of the same order, a long-run cointegrating relationship between them is estimated at the second step of the estimation process. The panel cointegration tests developed by Pedroni (1999, 2004), will be used. Pedroni (1999, 2004) heterogeneous panel cointegration test allows for cross-section interdependence with different individual effects. Pedroni (1999, 2004) recommends seven residual-based tests in the null of no long-run cointegration relationship among the variables. Out of the seven tests offered, four are based on combining the residuals for the within-group estimate (which contains panel statistic, panel v-statistic, panel PP-statistic, and panel ADF-statistic) while the other three are based on pooling the residuals for the between-group estimation (which includes group -statistic, group PP-statistics, and group ADF- statistics).

According to Pedoroni (2001), one of the key advantages of the between-group estimators is that the point estimate has a more useful interpretation of the true cointegrating vectors that are heterogeneous. When the long-run cointegration relationship is found to exist among the variables under study, the long-run cointegrating vector is estimated using a fully modified ordinary least square (FMOLS) for heterogeneous cointegrated panels developed by Pedoroni (2000). This method is based on the dimension estimator, which takes into account heterogeneity across countries. This is selected because the mode in which the data is pooled allows for greater flexibility in the presence of heterogeneity of cointegrating vectors.

RESULTS AND DISCUSSIONS

Panel Unit Root Tests

To avoid spurious regression result, a panel unit root tests were conducted to investigate the series of interest to determine the respective order of integration. Therefore, to achieve this, the two-panel unit root tests were conducted. These include Levin et al. Unit Root Test and Im, Pesaran and Shin W-Stat Unit Root Test.

Table 1. Unit Root Tests

	Levin et al. Unit Root Test				Im et al. Unit Root Test			
	At Level	At First Difference			At Level		At First Difference	
Variables	Statistic	Prob.	Statistic	Prob.	Statistic	Prob.	Statistic	Prob.
FDI	-0.24665	0.4026	-4.01942	0.0000*	-1.40491	0.0800	-4.7378	0.0000*
GDP	2.06281	0.9804	-2.56062	0.0275**	5.40829	1.0000	-1.9346	0.0365**
DCB	0.20759	0.5822	-5.57050	0.0000*	1.68860	0.9544	-5.1934	0.0000*
TOP	-1.25561	0.1120	-6.34684	0.0000*	-0.50514	0.3067	-5.1885	0.0000*
COR	1.12307	0.8693	-2.98300	0.0172**	1.64083	0.9496	-1.6795	0.0465**

Table 1 shows the levin et al. and Im et al. unit root tests both with trend and intercept. The results reveal that all the variables are not stationary at level but stationary at the first difference with different significance levels. For example, FDI, DCB, and TOP were stationary at a 1% statistical level of significance, while GDP and COR were statistically significant at a 5% level of significance in both the tests.

Panel Cointegration

Since the variables under study are integrated of order one I(1), the next step is to test the variables' long-run relationship. Therefore, the Pedroni Panel Cointegration test was employed to test the variables. Table 4.6 shows the results of the panel cointegration test. The table demonstrates that the null hypothesis of no cointegration cannot be rejected for Panel υ-statistics, Panel rho-statistics, and Group rho-statistics. However, the null hypothesis of no cointegration is rejected for Panel PP-statistics, Panel ADF-statistics, Group PP-statistics, and Group ADF-statistics at a 1 percent level of significance. Thus, it can be concluded that the panel cointegration tests result proved that the variables possess cointegration in the long run for the sampled emerging SSA countries. Therefore table 5 presents the Pedroni panel cointegration results of the variables.

Table 2. Pedoroni Co Integration Test

	Statistic	Prob.	Weighted Statistic	Prob.
Panel v-Statistic	-1.714145	0.9567	-1.036593	0.8500
Panel rho-Statistic	0.749199	0.7731	0.846562	0.8014
Panel PP-Statistic	-6.909029	0.0000*	-3.713677	0.0001
Panel ADF-Statistic	-3.912057	0.0000*	-2.893411	0.0019
Group rho-Statistic	1.664460	0.9520		
Group PP-Statistic	-4.370590	0.0000*		
Group ADF-Statistic	-2.383950	0.0086*		

Fully Modified Ordinary Least Square Regression Test (FMOLS)

The existence of a long-run relationship among the Sub-Saharan African countries (SSA) variables qualified this study to estimate the FMOLS regression. Table 6 represents the FMOLS regression for foreign direct investment determinants in the Sub-Saharan African countries (SSA). Table 6 reveals that DCB and TOP were positive and statistically significant at a 1% level of significance in determining FDI for the sample countries. However, GDP found to be statistically insignificant in determining FDI in the sampled study area under review. In contrast, COR was negative and statistically significant in determining FDI in the region. This study's finding contradicts the finding of Chowdhury and Mavrotas (2006) for Chile, Erdal and Mahmut (2008), for developing countries and among others. The result indicates that sound financial development and Trade Policy result in massive FDI attracting in the region. A 1 percent increase in financial development leads to a 0.77 and 1.5% percent increase in FDI in the study area, respectively. These findings are in line with the finding of Albulescu et al. (2010), for Central and Eastern European countries, Tsaurai (2017), for developed economies and Abu et al. (2017) for developing countries. While the finding shows that GDP is statistically insignificant in determining FDI in the Sub Saharan African Countries. This means that GDP is not among the variables determining the level of FDI inflow into the region. This finding is contrary to Shiba's (2016) finding for India and Pravin and Jadhav (2012) for BRICS economies, among others.

Table 3. FMOLS Regression Result Dependent Variable FDI

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GDP	0.136258	0.111048	0.24754	0.1526
DCB	0.771199	0.163858	4.706494	0.0000*
TOP	1.592464	0.123069	12.9396	0.0000*
COR	-1.25457	0.096072	-13.05863	0.0000*

CONCLUSIONS AND RECOMMENDATIONS

This paper aims to investigate the determinants of FDI in some selected Sub-Saharan African countries from 2000 to 2016. The panel unit root tests, panel cointegration, and fully modified ordinary least square (FMOLS) were employed

to analyse the data to achieve the desired objective. The Panel Unit Root Tests show that the variables were stationary at first difference. The panel cointegration test reveals the presence of a long-run relationship among the variables under study. The FMOLS results indicate that financial development (FD) and trade openness (TO) have positive effects in determining FDI. In contrast, corruption (COR) has a negative effect in determining FDI in the region. Therefore, the study concludes that FD, TO, and COR are the major determinants of FDI in Sub-Saharan African Countries. Based on the findings, the following recommendations were offered.

1. The Sub-Sahara African Countries should establish sound financial Development policy in the region to have more FDI inflow.
2. Favourable Trade Policies should be implemented in the region to have more FDI inflow.
3. The level of corruption should be minimized through various measures to attract foreign investors to the host countries under study.

FURTHER STUDY

However, a U-shaped linkage is observed in Central, North, and West Africa. Nevertheless, GDP growth rate has a strong positive association with FDI inflows in Central Africa but negatively significant in West Africa.Even though there are several available literature on the determinants of foreign direct investment around the globe but yet to reach the consensus among the researchers. This is due to the nature of the data; methodology adopts in their study. For Instance, Nvuh (2017) investigated the robust FDI determinants in sub-Sahara Africa for the period 1985 to 2012. His empirical analysis shows the following key results: (i) natural resources and market size are the most robust determinants; ii inflation, infrastructure, human capital and trade openness are weak robust, iii corruption and political instability are very less robust determinants sub-Sahara African countries.

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