The Effect of Rate of Return on Investment on Inflow of Foreign Direct Investment in Africa

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Abstract: Developing regions of the world, Africa inclusive show the greatest potential of rate of return on investment, this necessitates the fact that they should attract more foreign capital to primarily fill the existing gaps of productive factors which vividly reveals basis for their underdeveloped status. The main objective of this study is to ascertain the effect of the apparently attractive rate of return on investment has on inflow of FDI to host African countries. Panel data was utilized for 39 African countries. The results indicate that the apparently attractive rate of return on investment has no positive effect in relation to foreign direct investment for the host African countries, unlike expectations of better prospects anticipated in such host economies. The study concludes by recommending that government of host economies should discourage dependence on FDI inflow and ensure policies are put in place to enhance the economic environment of host economies to make them stimulating on their own for investment regardless of indices of rate of return on investment of host economies. This will gradually bring about stimulating and vibrant economic environment which ideally encourage investment of foreign capital as expected truly by foreign investors to that desire to take advantage of high investment returns.

Key words: Foreign direct investment, rate of return on investment, host african countries, foreign, Nigeria

INTRODUCTION

The image of Africa as attraction for FDI has not been favourable. Prior to the 1980's, Africa had attracted more of FDI than other developing countries in Asia, Latin America and the Caribbean. Even though, the ratio of FDI to GDP increased for most of the time between 1970 and 2010 by 1990 Africa had fallen behind other developing regions and has stayed behind since then. The gap became even more pronounced during the 1990's when the worldwide FDI flows into developing countries largely bypassed the region. Despite the seeming stabilization of inflow in the mid 1990's, the continent is still struggling to make up for the grounds it lost during the 1970's and the 1980's.

The trend of the rate of return on investment for developing regions of the world has been interesting because of the great potential available to them and therefore their ability to attract more foreign capital. It is harnessed by economic theory that capital should flow from rich countries to poor countries. Poor countries with lower levels of capital per worker, the scarcity of capital relative to labour should mean that the returns to capital are high. In response, savers in rich countries should look at poor countries as profitable places in which to invest. In reality, little capital flows from rich countries to poor countries. This puzzle, discussed in a paper by Lucas (1990) is often referred to as the "Lucas Paradox." Lucas put forward several explanations including differences in human capital between rich and poor countries as well as the failures in international capital markets that might account for the lack of flows. None of these can come near to explaining quantitatively, the observed shortage of capital flows relative to what economic theory, specifically the neoclassical growth model would predict.

The rate of return on FDI per region in the world has been interesting such that, the developing countries show greatest potential of return on investments in their countries and therefore should attract more foreign capital. For the African region, there is an average of 22.6 % rate of return on FDI, the primary sector over the years had an average of 21%, the secondary sector had an average of 19.2%, the tertiary sector an average of 13.8% and other industries an average of 23.5%. However, the expected effect on flow of foreign capital has not been seen in the African region despite the relative attractiveness of rate of return on investment.

The main aim of this research paper is to determine the effect that the apparently attractive rate of return on investment has on inflow of foreign direct investment to

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African countries. In the course of the study, the relationship that exists between the rate of return on investment and flow of FDI will be ascertained to determine the position of Africa if in tandem with other developing regions of the world. The research paper will bring to fore the extent to which rate of return on investment for Africa has succeeded in concisely attracting FDI as it has in other developing regions of the world.

Theoretical framework and literature review: The lower the per capita income the better prospects for FDI in the host country (Jaspersen *et al.*, 2000). FDI will go to countries that pay a higher rate of return on capital (Asiedu, 2002). The rate of return on capital for Africa has been increasing faster than other developing regions in the world, it is expected therefore that financial capital should, on net, flow more to Africa as stated by economic theory that foreign capital do flow from richer to poorer countries where the potential for rate of return on investment is highest. That is, it should flow from countries that have more physical capital per worker and hence where the returns to capital are lower, to those that have relatively less capital but greater unexploited investment opportunities. In principle, this movement of capital should make poorer countries better off by giving them access to more financial resources that they can then invest in physical capital, such as equipment, machinery and infrastructure.

Developing economies are characterized with low income per capita features. This is the reason why the research work of Lucas (1990), described them as poor countries. Also, the scarcity of capital relative to labour should mean that the returns to capital are high. This has been reinforced in the research work of Hymer (1976) in the theory which states that developing countries have low per capita income and therefore high rate of return on investment, given that an inverse relationship exist between income per capita and rate of return on investment. This invariably should draw flow of foreign capital to developing economies that have high rate of return on investment.

The expected flow of FDI should be enormous to developing countries, due to the predicted inverse relationship that exist between FDI flow and rate of return on investment. Since the low income African countries should have high rate of return on investment, the flow of FDI therefore should be commensurately huge. This however as enumerated above has not been the case concerning flow of FDI in African countries.

Political environments that may be violent are not favourable to the inflow of FDI. Rapid change in laws, government, security, taxes and so on induce a great amount of risk which is unfavourable for investment. White and Fan (2006) stated that country risk originates from the relations of the firm in terms of the implementation of its strategies and the government of the home country. This relationship takes into account factors like economy, finance, politics and culture that are not well known by the foreign investing firm. The country risks looms as a result of the government of the home country which becomes a major strategic player. Political risk also being the negative influence on a strategic or key performance related to the investment due to an unpredicted change in the political situation in the home country. The nature of the change could be in the form of a policy change, regime change or political turbulence. The elements of political risk are uncertainty in government policy change, political instability elements, social instability uncertainty and tax changes (White and Fan, 2006).

Stevens used two political variables in the FDI model for his study on Argentina, Mexico and Brazil. Firstly, he worked on the taxes and interest rates which were determined and influenced by the government. Second, he found that the FDI model is strengthened immensely by the addition of political variables. A model that was able to show seventeen % of variation in FDI can now be explained to variation of ninety to ninety seven % with the addition of political variables.

Habib and Zurawicki (2002) studied the influence of corruption on FDI. They state that addition of corruption variables to the FDI models like industrial organization or eclectic theory further enhances their explanations. They have compared the FDI with the Transparency International's corruption perception index. Their findings have provided support to the hypothesis that corruption has a harmful effect on FDI.

MATERIALS AND METHODS

A test of the effect of rate of return on investment on inflow of foreign direct investment in selected African countries is performed in a framework of cross-country regressions utilizing data on FDI flows from 39 African countries for the period 1993-2012. Based on theory, it is expected that developing economies have low per capita income thereby translating into high rate of return on investment which should attract high inflow of foreign capital; Hymer. This was further corroborated by the research work of Jaspersen which stated that the lower the per capita income the better prospects for FDI in the host country. Also, Asiedu, stated that FDI will go to countries that pay a higher rate of return on capital.

The dependent variable adopted in the research study is FDI which is the net inflow of foreign direct investment. The independent variables included are: active Labour force (L), gross capital formation (K), Trade Openness (TO), Technology (T), the rate of Return on Investment of capital (ROI), Money and quasi money (M_2), level of corruption (CRPT), %age change in the GDP deflator or consumer price index (INFLT), central government expenditure (GOVTCONS) infrastructure (INFRST) and nominal Exchange Rate (EXR).

The original model that contains all independent variables is a variation of the research work of Chenery and Strout (1966), Prasad *et al.* (2007) and Fortanier (2007). The model varied in this research work is developed using same independent variables, however, FDI is made the independent variable. This research work aims at testing the direct effect of rate of return on investment and other social and macroeconomic variables on FDI in the selected African countries. The model includes macroeconomic variables such as; inflation, exchange rate, money supply and other variables like central government expenditure infrastructure, technology, trade openness, active labour, gross fixed capital formation and corruption because of their prominent impact in economic activities. Since, impact of rate of return on investment cannot be singularly tested, we include other variables that both impact inflow of foreign capital and economic activities. These variables are included to enable the researcher to find the overall effect of rate of return on investment on inflow of foreign capital. Alongside with rate of return on investment, factors like active labour force, domestic investment, trade openness, government expenditure and even technology also determine if the investment environment is appealing for a foreign investor, thereby reason for including alongside with other macroeconomic variables, to determine how they impact on inflow of foreign capital. The model is therefore stated below:

$$FDI = f(L, K, TO, T, ROI, M_2, CRPT, \\ INFLT, GOVTCONS, INFRST, EXR) \quad (1)$$

Equation 1 is stated in econometric form as:

$$\ln FDI = \beta_0 + \beta_1 \ln L + \beta_2 \ln K + \beta_3 \ln TO + \\ \beta_4 \ln T + \beta_5 \ln ROI + \beta_6 \ln M_2 + \beta_7 \ln CRPT + \\ \beta_8 \ln INFLT + \beta_9 \ln GOVTCONS + \beta_{10} \ln INFRST + \\ \beta_{11} \ln EXR + \epsilon_t \quad (2)$$

Stating Eq. 2 in panel form we have:
$$\ln FDI = \beta_{0i} + \beta_1 \ln L_{it} + \beta_2 \ln K_{it} + \beta_3 \ln TO_{it} +$$

$$\overset{(+)}{\beta_4 \ln T_{it}} + \overset{}{\beta_5 \ln ROI_{it}} + \overset{}{\beta_6 \ln M_{2it}} + \overset{(+)}{\beta_7 \ln CRPT_{it}} + \\ \overset{(+)}{\beta_8 \ln INFLT_{it}} + \overset{(+)}{\beta_9 \ln GOVTCONS_{it}} + \overset{(+)}{\beta_{10} \ln INFRST_{it}} + \overset{(-)}{} \\ \overset{(-)}{\beta_{11} \ln EXR_{it}} + \overset{(+)}{\epsilon_{it}} \quad (3) \\ \overset{(-)}{}$$

Where:

GDP_k	=	The annual percentage growth of GDP per capita
L	=	Active labour force
K	=	Gross capital formation
FDI	=	Foreign direct investment
TO	=	Trade openness
T	=	Technology
ROI	=	Rate of return on investment
M_2	=	Money and quasi money
CRPT	=	Level of corruption
INFLT	=	Percentage change in the GDP deflator or consumer price index
GOVTCONS	=	Central government expenditure
INFRST	=	Infrastructure
EXR	=	Nominal exchange rates
β_0	=	The intercept β_1-β_{12} are the coefficients

The signs under Eq. 3 are the apriori expectation of the variables in the model. All data is sourced from United Nations Statistical Division, World Bank; World Development Indicators (WDI), World Governance Indicators (WGI) and African development indicators. These are for the specified period stated from 1993 till 2012 and for the 39 selected African countries The technique for estimation adopted in this study is the fixed effect Least Square Dummy Variable (LSDV) model. Each entity's intercept does not vary over time, that is, it is time-invariant. It is assumed that the (slope) coefficient of the regressors do not vary across countries or over time. This allows for the fixed effect intercept to vary among the countries by using the dummy variable technique with proper avoidance of the dummy-variable trap which is a situation of perfect collinearity. The models fitted on the data meet the asymptotic assumptions of the Hausman test; this therefore is reason for adopting the fixed effect regression analysis.

RESULTS AND DISCUSSION

Descriptive statistics: Table 1 below represents the growth of FDI and rate of return on investment for each region in Africa. It can be seen from the tables that as rate of return on investments grows, FDI may even be

Table 1: All sub-regions growth rate of FDI and ROI

Sub-region	Year	FDIGR	ROIGR
Central	1995	-15.54270	25.623450
	2000	247.53380	-21.099600
	2005	-36.87350	3.166226
	2010	554.90720	34.908150
Eastern	1995	-39.06380	-11.478000
	2000	125.46850	-3.014030
	2005	-0.62325	12.350230
	2010	484.96850	17.704780
Northern	1995	-39.17940	-2.959980
	2000	160.84560	11.924660
	2005	305.71580	12.467740
	2010	23.51112	8.127173
Southern	1995	-1447.60000	-1.063080
	2000	-29.52080	-30.226500
	2005	486.14870	-19.936500
	2010	-67.37160	33.650290
Western	1995	-3.91069	4.810120
	2000	19.63022	-0.520700
	2005	270.41760	48.702030
	2010	44.17900	3.233844

Adegboye (2014); *FDIGR is FDI growth, ROIGR is rate of return on investment growth

reducing for the regions of Africa as shown by the data presented in the tables. As rate of return on investment for instance in the central region of Africa increased by over 25 % in 1995, FDI decreased by over 15 %. Also in the same region in 2005 as rate on return on investment increased by over 3 % FDI inflow reduced by over 36 %. In the Western region of Africa also in 1995 as rate of return on investment increased by over 4 %, FDI rather reduced almost 4 %. This does not follow the theoretical expectations of determinants of FDI inflow as high rates and increase in rate of return on investment is expected to result in commensurate increase in inflow of FDI.

The correlation test was conducted to describe statistical relationship between the selected variables. In the correlation result matrix in Table 2, it is deduced that varied relationship exists between the variables and since the major reason for test is to ascertain the possible presence of multicollinearity, results do not show its presence between the variables. Only few instances noted between government expenditure, gross fixed capital formation and money supply that recorded rather high degree of positive correlation between variables.

Table 3 shows the panel unit root test results. All variables are significant at 1 % level of significance. This indicates that they are all stationary at 1 percent. To this end, therefore, we hereby reject the null hypothesis that all panels contain unit roots. We, hereby, accept the alternative hypothesis that at least one panel is stationary. Since all are stationary, we hereby, proceed to the pooled regression analysis as results are reliable and not spurious.

The models fitted on the data meet the asymptotic assumptions of the Hausman test. This, therefore, is the reason for adopting the fixed effect regression analysis.

Since, the hausman test is significant as indicated in Table 4, considering the level of significance, it indicates that there is significant difference. Therefore, both methods (i.e. fixed and random effect) are not appropriate; rather, we justify the use of the fixed effect regression analysis.

Fixed effect least square dummy variable analysis: This tests the effect of rate of return on investment alongside other determinants on inflow of foreign direct investment in selected african countries.

Table 5 presents results that estimates Eq. 3 testing the effect of rate of return on investment and other FDI determinants. It is noted from the results therefore, that rate of return on investment has no significant effect on inflow of foreign direct investment in the selected African countries. However, for other determinants of FDI, active labour force, corruption and inflation also, have no significant effect on inflow of foreign direct investment in the selected African countries. However, trade balance, technology, gross capital formation, government expenditure and money supply are significant at 1 % on inflow of foreign direct investment in the selected African countries. This implies that, a change in trade openness, technology, gross capital formation, government expenditure and money supply will result in a greater magnitude of change in foreign direct investment in the selected African countries. This is similar to the research finding of Asiedu (2002, 2006) and Ayanwale. The research work also noted that rate of return on investment has no significant impact on FDI inflow for sub-Sahara Africa, thereby making Africa different from other developing regions of the world.

The R^2 and adjusted R for the selected African countries are 0.6068 and 0.6003, respectively, these indicate that the independent variables explain respective variations in the dependent variables used to measure foreign direct investment. For the t-statistics, the results show that the variables are significant as most of the values are >2, thereby showing the level of significance. F-statistics has a value of 92.61(0.0000) which shows that it is significant at 1% in explaining inflow of foreign direct investment.

This can be explained from the prevailing condition of unrest, political instability and level of corruption in host African economies. This clearly shows that high rates of return on investment is not sufficient basis for investment, rather a stable environment which is expected to make investment thrive and yield expected returns at lowest possible risk.

Table 2: Correlation results matrix

	FDI	L	K	TO	T	ROI	M$_2$	CRPT	INFLT	GOVTCONS	INFRST	EXR
FDI	1.0000											
L	0.4997	1.0000										
K	0.0837	0.0793	1.0000									
TO	0.0271	-0.1837	0.0398	1.0000								
T	0.3274	0.1760	0.0241	0.1082	1.0000							
ROI	-0.0026	-0.2735	0.1194	0.4023	0.1613	1.0000						
M$_2$	0.3003	0.3192	0.8098	0.0432	0.2072	0.0246	1.0000					
CRPT	-0.0286	-0.0847	-0.0544	-0.0697	0.0635	0.1946	-0.0552	1.0000				
INFLT	-0.0144	-0.0206	-0.0139	-0.0160	-0.0189	-0.0416	-0.0136	0.0231	1.0000			
GOVTCONS	0.1307	0.1488	0.9275	0.0172	0.0404	0.0022	0.8365	-0.0596	-0.0140	1.0000		
INFRST	0.1479	-0.0724	-0.1471	0.0652	0.4718	0.1446	-0.0762	0.2420	0.0145	-0.1600	1.0000	
EXR	-0.0640	-0.1174	0.2674	-0.0472	0.1118	0.1092	0.1954	-0.0111	-0.0111	0.2301	-0.0653	1.0000

Table 3: Unit roots test

Unit roots test-augmented Dickey-Fuller tests

Variables	Chi-squared statistics	Remark
Fdi	81.83(0.0086)	Stationary
L	401.19(0.0000)	Stationary
K	263.14(0.0000)	Stationary
To	171.93(0.0000)	Stationary
T	1282.31(0.0000)	Stationary
Roi	110.57(0.0090)	Stationary
m$_2$	186.41(0.0000)	Stationary
Crpt	412.90(0.0000)	Stationary
inflt	276.06(0.0000)	Stationary
govtcons	160.50(0.0000)	Stationary
infrst	175.21(0.0000)	Stationary
exr	543.68(0.0000)	Stationary
No. of panels	39	
No. of periods	20	

Table 4: Hausman test results

Variables	Fixed (b)	Random (B)	Difference (b-B)
LnFDI	-0.009	-0.009	0.0002
LnL	0.078	0.044	0.0340
LnK	0.113	0.116	-0.0030
LnTO	0.206	0.207	-0.0010
LnT	0.044	0.024	0.0190
LnROI	-0.086	-0.075	-0.0110
LnM$_2$	-0.095	-0.058	-0.0360
LnCRPT	-0.032	-0.018	-0.0140
LnINFLT	0.004	0.003	0.0004
LnGOVTCONS	-0.064	-0.070	0.0060
LnINFRST	0.100	0.086	0.0140
LnEXR	0.054	0.022	0.0320

$\chi^2 = 47.48 \ (0.0000)$

Adegboye (2014)

Table 5: Estimation results determinants of FDI

Variable	Regression
lnL	0.045, [0.43], (0.667)
lnK	0.622***, (4.89), (0.000)
lnTO	1.708***, (11.98), (0.000)
lnT	0.131***, (5.76), (0.000)
lnROI	-0.220, (1.36), (0.173)
lnM$_2$	0.641***, (6.97), (0.000)
lnCRPT	-0.147, (0.85), (0.395)
lnINFLT	0.030, (0.99 (0.323)
lnGOVTCONS	-0.447***, (3.53), (0.000)
lnINFRST	-0.324***, (3.49), (0.001)
lnEXR	-0.838***, (9.92), (0.000)
Constant	-5.361***, (4.58), (0.000)
R^2	0.6068
Adjusted R^2	0.6003
F-Stat	92.61 (0.0000)
No of countries	39
Dummy countries	Yes
No. of observations	672

Adegboye (2014). Effect of determinants of FDI. Absolute t statistics are displayed in parenthesis beside the coefficient estimates while probability values are in brackets under the coefficient estimates. *, **, *** indicates significance at 10, 5 and 1%

Summary: The study found out that for the selected African countries that the rate of return on investment has no significant effect on inflow of foreign direct investment. This is contrary to expectations in theory as ascertained in the research work of Hymer (1976) and Jaspersen *et al.* (2000) which states that high rates of return on investment brings about high inflow of foreign investment to mostly developing economies like Africa that are characterized by them. The finding of the study, however, is similar to the finding of Asiedu (2002, 2006) and Ayanwale the that stated that rate of return investment has no significant impact onto FDI in SSA except in instance of better infrastructure. Even though, it is noted that trade openness promotes inflow of FDI as it also found in this study, it found that Africa is different from other developing regions of the world in that, though it is expected that high rates of return will significantly impact FDI inflow, for Africa this is not so. Different policies that have been successful in other regions therefore, may not be successful in Africa.

The research work found out that despite the high rates of return on investment in the selected African countries, it did not have effect on inflow of FDI in the region. This is also backed by literature as essentially highlighted in the research study of Ayadi *et al.* (2014) which says that the level of transparency and size of foreign direct investment flows have long run equilibrium relationship. The study stated that therefore to attract foreign investment; it is expedient to transform the political and the economic environment.

CONCLUSION

We can conclude from the results of this research study that rate of return on investment for selected African countries has no significant effect on inflow of

foreign direct investment. However, host economies should address determinably the prevailing condition of unrest, political instability and level of corruption peculiar to their economies. As can be seen from trend that high rates of return on investment is not sufficient basis for inflow of foreign investment, rather a stable environment which is expected to make investment thrive and yield expected returns at minimal risk.

Hence, as rate of returns on investment for Africa remains high relative to other regions of the world, it is expedient that our economy and investing environment be built up to match up with the demands of an appealing investment environment. As infrastructure is improved by massive revolutionalized investment plans, along side with politically stable, economically vibrant and an unreservedly transparent institutional environment, the expected impact that the attractive rate of return on investment for host African countries should have on inflow of foreign capital would be evident in the shortest possible time. The resources are available for Africa, therefore, for it to be maximally utilized host African countries must rise up to the challenge of improving our investing environment in order to make the most of improving our economy by attracting foreign investment, to better increase income, savings investment, living standard and further develop our economies.

RECOMMENDATIONS

Given the above circumstances and estimated results, it becomes imminently imperative for the study to recommend that; Government of low income countries that welcome the flow of foreign direct investment need to do so while also taking concise steps towards alleviating unrest instability politically, socially and also mitigating level of corruption in their countries. They should also enforce policies that will encourage increase in domestic investment participation in sectors to reduce dependence on FDI by ensuring that strategies are put in place to ascertain that income growth attained by maximally employing domestic sector of host nations must be preserved against decline.

As government of host economies improve on their domestic investing environment, they should also continuously make their economy more investor friendly so as to maximize the opportunity of high returns on investment which is actually available, thereby, making foreign investors less sceptical about the investment environment. The need for better infrastructure here cannot also be overemphasised as highlighted in the research work of Asiedu (2002). The research work noted that high rate of return on investment with better infrastructure has positive impact on foreign inflow of capital. This therefore brings to the fore the need for government of the selected countries in Africa to invest

more in infrastructure to improve them from the present deplorable state that they are in to good and them better as this improves the countries' investing environment to such as will pool more investors, because high rate of investment alone will not pool investment but rather a vibrant and well structured investing environment.

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