

THE EFFECTS OF FOREIGN DIRECT INVESTMENT ON ECONOMIC GROWTH: THE CASE OF SUB- SAHARA AFRICA

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ABSTRACT

This paper examines the effect of foreign direct investment on economic growth in Sub-Sahara African countries. The methodology involves estimating augmented endogenous growth model using panel data for the period 1975-1999. The results indicate that foreign direct investment has marginally significant positive effect on economic growth. Domestic economic conditions such as macroeconomic policy, openness, and domestic investment have significant positive effect on economic growth.

INTRODUCTION

The role of foreign direct investment (FDI) in stimulating economic growth is one of the controversial issues in the development literature. In the standard Solow type growth model, FDI enables host countries to achieve investment that exceeds their own domestic saving and enhances capital formation. According to this theory, the potential beneficial impact of FDI on output growth is confined to the short run. In the long run, given the diminishing marginal returns to physical capital, the recipient economy could converge to the steady state growth rate as if FDI had never taken place leaving no permanent impact on the growth of the economy [De Mello, 14]. On the other hand, endogenous growth models [e.g. Romer, 28; Lucas, 24; and Barro and Sala-i-Martin, 7] that highlight the importance of improvement in technology, efficiency, and productivity suggest that FDI can positively influence the growth rate in so far as it generates increasing returns in production via externalities and production spillovers.

With an increasing pace of globalization that resulted partly from liberalization of trade and exchange rate regimes, the volume of FDI has increased throughout the world. In the last few decades, FDI has been growing at a pace that far exceeds the volume of international trade. According to UNCTAD [32], FDI inflow to the developing countries increased from \$8,392 million to \$246,056 million between 1990 and 2000¹.

The massive increase in global FDI is credited with creating an unsurpassed prosperity in some parts of the world especially in Southeast Asia (SEA). Most of the investments in the SEA were made in the 1970s and the 1980s when many Sub-Sahara African (SSA) countries were ravaged with border conflicts and internal political problems. In fact, the 1980s were considered to be the “lost decade” for

African countries as they have missed the opportunity to grow when many developing countries registered record growth rates. It was only in the 1990s that many SSA countries actively began to persuade foreign investors to invest their money and expertise in their countries. However, the level of FDI flows to the SSA has increased only moderately, despite a number of incentives being offered to foreign investors. Foreign investment flow was very small relative to other developing countries, even where political climate was favorable, partly because of the mismatch between development goals of the host countries and the goals of foreign investors.

The purpose of this paper is to examine the effect of FDI on the economic growth of the SSA countries. The paper is organized as follows. Section II presents a review of the literature; Section III discusses the trends of FDI inflow to Africa; Section IV presents the model; Section V presents data sources, methodology, and empirical findings. We conclude and summarize our findings in section VI.

REVIEW OF LITERATURE

The FDI inflow differential and economic growth disparity among developing countries have created much research interest among economists. There is a large body of theoretical and empirical literature on the impact of FDI on economic growth. The existing evidence, however, is mixed. In theory, FDI can be expected to benefit the host country by transferring resources (the so-called resource transfer effects), increasing employment opportunities (employment effects), improving the balance of payments (balance of payments effects) and transferring technology (technology effects). Researchers such as Findlay [16], Lall [22], Loungani and Razin [23], and Romer [28], among others, note that FDI brings much needed physical capital, new technology, managerial and marketing talents and expertise, international best practices of doing business as well as increased competition. These resources may have the potential to be diffused into indigenous firms thereby creating more innovation and productivity growth. FDI contributes more jobs to the local economy by directly adding new jobs and indirectly when local spending increases due to purchases of goods and services by the new increase in employees. All of these in turn are expected to have positive multiplier effects for an economy. The benefits from the balance of payments effects include improvement in the capital account due to the inflows of new capital into the host country and improvements in the current account balance because of possible decline in imports of goods and services which would otherwise have been imported. The additional taxes from multinational corporations also have the potential to improve the budget situation of the host country.

Hymer [19] suggested that the technological transfer benefits included, among other things, the direct benefits from adopting the product, process and organizational innovations initiated by the parent company which he named as “firm-specific assets”, and the indirect spillover effects on the rest of the economy. Although economists agree regarding the direct benefits of technological transfer on the host country firms, the measurement of indirect spillover effects is shrouded with difficulties. As a result, the evidence is mixed. For example, an extensive review by Blomstorm, Globerman and Kokko [9] both at aggregate and cases studies levels, finds no strong consensus on the magnitude of spillover effects. A study of UK-owned 20 manufacturing industries by Harris and Robinson [18] concludes that “...inter-industry spillovers are just as likely to be negative.... and so there

is clear evidence of an overall beneficial effects on UK manufacturing industries resulting from supply side linkages associated with FDI.”² Using a World Bank survey of 1500 firms in five Chinese cities, Hale and Long [17] find evidence of positive spillover effects for more technologically advanced firms but none or even negative spillover effects for relatively small firms. From this, they conclude that a well functioning labor market facilitates FDI spillover by creating network externalities among highly skilled workers.

Despite some of the evidence presented in recent studies, there are several theoretical arguments why developing countries may not gain from FDI. Krugman [21] argues that the transfer of control from domestic to foreign firms may not always be beneficial to the host countries because of the adverse selection problem. FDI undertaken within a crisis situation under “Fire Sale” may transfer ownership of firms from domestic to foreign firms that are less efficient. This concern is particularly important to the developing countries including the SSA countries, where, as part of privatization, state owned enterprises are sold to foreign firms simply because foreign firms have more available funds than domestic ones. As pointed out by Salz [29], Agosin and Mayer [2], FDI may also “crowd out” domestic firms through unfair competition. There is also a concern that the enclave nature of many foreign owned firms and their minimal linkage to the rest of the economy could reduce the potential spillover contribution to the national economy. Moreover, the potential subsequent outflow of foreign firms' subsidiary earnings to their parent companies could also cause deterioration in the balance of payments. It is also argued that foreign corporations tend to produce inappropriate goods that are tailored to satisfy the wealthy portion of the host country's consumers, thereby increasing inequality and engaging in transfer pricing.

Empirical evidence on the link between FDI and economic growth is also inconclusive. Bosworth and Collins [12], Blomstrom *et al.* [10], Borensztein *et al.* [11], Zhang [36], DeMello [14], Balasubramanyam *et al.* [6], and Obwona [26] provide evidence on the positive effects of FDI on economic growth.

Growth enhancing effect of FDI is not, however, automatic, but depends on various country specific factors. UNCTAD [31], Blomstrom *et al.* [10], and DeMello [14] indicate that the positive effect of FDI is stronger the higher the level of development of a host country. Higher level of development allows countries to reap the benefits of productivity fostered by foreign investment. For similar reasons, Bronsznestein *et al.* [11] have found that significant relations between FDI flows and economic growth depend on the level of human capital. Host countries with better endowment of human capital are believed to benefit more from FDI induced technology transfer as spillover-effects than others with less human capital. More recently, Balasubramanyam *et al.* [6] and UNCTAD [33] suggest that the positive effects of FDI also depend on openness to trade. FDI can broaden access to export markets as transnational corporations often serve as channels for the distribution of goods from one country to other markets located in another country. Similarly, Nair-Reichert and Weinhold [25], using a mixed fixed and random panel data estimation method to allow for cross country heterogeneity in the causal relationship, find some evidence that efficacy of FDI in raising future growth rate, although heterogeneous across countries, is higher for more open economies.

Alfaro *et al.* [4] examines the role of financial market in FDI-growth nexus. Their empirical evidence indicates that FDI plays an important role in contributing to

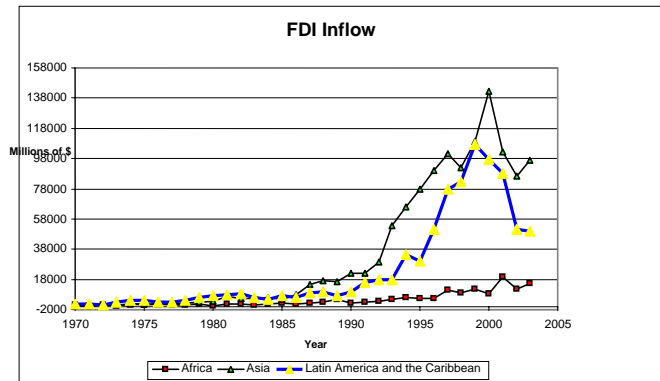
economic growth. However, the level of development of local financial markets is crucial for the positive effects to be realized.

In contrast, Aitken and Harrison [3] and Carkovick and Levine [13] argue that there is no significant positive relation between FDI and economic growth. Even when the relation is positive, the effects tend to be weak. Rodrick [27] for example argues that much of the correlation between FDI and economic growth is driven by reverse causation. Few studies such as Salz [29], find a negative relationship between FDI and economic growth. The majority of studies, however, conclude that FDI contributes to total productivity and economic growth.

TRENDS OF FDI INFLOW TO AFRICA

Total foreign direct investment has increased in the 1980s both in absolute and relative terms. It has also become widely dispersed among outward investors and recipient countries. Total FDI inflows to developing countries increased from 3.5 billion dollars in 1970 to 16.2 billion dollars in 2002. Among developing countries, the distribution of world FDI inflow is uneven. Figure 1 shows the trend of FDI inflow to Africa, Asia, and Latin America. Starting from similar levels in the 1970s, annual FDI inflow to Africa lagged far behind Asia and Latin America. In 1970 for example, the average FDI inflow to Africa was \$1 billion compared with \$1.6 billion and \$3.3 billion in Asia and Latin America and the Caribbean islands, respectively. In 1980s, the amount received by African countries stagnated while the amount received by Latin America and Asia expanded impressively. Consequently, Africa’s share of FDI inflow into developing countries decreased from 20 percent in 1970s to 9.8 percent in 1980s and to 5.5 percent in 1990s. Beginning in the 1980s Africa has fallen behind other developing areas in terms of its relative value of FDI inflows. In the 1990s, the gap increased widely when the world wide surge in FDI flows into developing world largely by-passed the region.

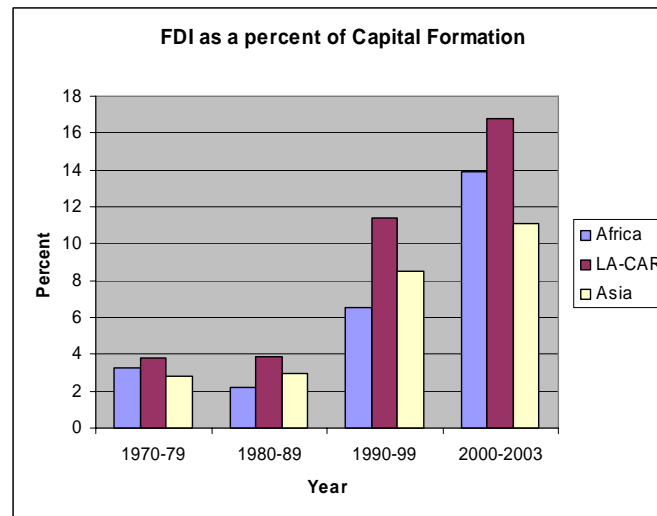
**FIGURE 1
TRENDS IN FDI INFLOW INTO DEVELOPING REGIONS**



FDI inflows to Africa are small in absolute terms, but nevertheless, they have greater impact on their economies than what the absolute figure suggests. The average share of FDI flows in gross domestic capital formation averaged 13.9 percent

for Africa as a group compared to 11.1 percent and 16.8 percent for Asia and Latin America, respectively, during 2000-2003 (Figure 2).

FIGURE 2
FDI AS A PERCENT OF GROSS FIXED CAPITAL FORMATION



Until 1980s, many African political leaders had hostile policies regarding private sector development and FDI in particular. There was a widespread concern about the loss of control over major enterprises especially if foreigners are involved. It was not until the second half of the 1990s that large scale privatization programs were initiated. Even when privatization took place, African governments remained reluctant to open up the so called strategic sectors such as energy, telecommunication, and banking. Such reluctance undoubtedly discouraged private investment.

Aside from the lack of macroeconomic stability and economic growth, there are many other structural and institutional factors that keep FDI away from Africa. Asiedu [5] and Senbet [30] contend that African countries are perceived as inherently risky and that can be a factor which likely keeps FDI away from the region. Investors are concerned about risks associated with probability of adverse changes. These risks and pessimisms could involve contagion effects and are usually due to war, famine, massive corruption, failure of projects, and poor governance. Africa received only a modest amount of FDI even though the rate of return in many African countries has been higher than that of other developing countries. This suggests that the risks are perceived to be higher for Sub-Sahara African countries than for other regions [Bhattacharya et al., 8].

Many African countries have taken positive measures and initiated economic reforms aimed at increasing the role of the private sector. An increasing number of African countries are now allowing foreign participation in the privatization of state owned enterprises. They have also improved their regulatory framework for FDI such as expediting the approval process, removal of restrictions on repatriation of profits, and providing liberal tax incentives. It is widely believed that the policy

framework for FDI adopted by many African countries today has become very similar to that of most of other developing countries [UNCTAD, 31]. These positive developments are expected to attract more FDI into the region and enhance economic growth.

THE MODEL

The empirical methodology used in this paper is based on the conditional convergence model that is commonly used in the growth literature. Specifically, the following standard growth regression model is estimated:

$$\dot{y}_{it} = \lambda \ln y_{it-1} + \beta X_{it} + \gamma FDI_{it} + u_{it} \tag{1}$$

$$u_{it} = \eta_i + \nu_t + \varepsilon_{it} \tag{2}$$

Where:

\dot{y} = growth rate of real per capita income; $\ln y_{it}$ = the log of real income per capita; X_{it} = vector of fundamental determinants of economic growth; FDI = inflow of foreign direct investment as a percent of GDP; u_{it} = the general disturbance term which includes; η_i = unobservable country specific effect; ν_t = time specific effect; and ε_{it} = the error term.

The vector of fundamental determinants of growth (X_t) include the standard variables in growth regression such as: Convergence (logarithm of per capita real GDP in the initial year of the period under consideration); Demographic development (population growth); Investment in physical capital (growth of investment as a percent of GDP); Macroeconomic stability (inflation rate); Government consumption (government consumption as a percent of GDP); and Openness (Share of external sector to GDP).³

**TABLE 1
COUNTRY COVERAGE**

Botswana	Ethiopia	Mauritius	Senegal
Cameroon	Kenya	Niger	Tanzania
Cot'Divoire	Madagascar	Nigeria	Zimbabwe

DATA, METHODOLOGY, AND ESTIMATION

The data set refers to a panel of twelve African countries observed from 1975 - 1999. A list of the countries used in the study is presented in Table 1. Data for FDI inflows as a percent of GDP, inflation rates and for human capital development are obtained from the World Bank Development Indicators (2004); real per capita GDP, population, government expenditure, investment, and openness, are obtained from Penn World Table (6.1). A more detailed description of the data is given in Table 2.

Table 3 presents the summary of descriptive statistics using data averaged over 1975-1999. The summary statistics are calculated using one observation per country. There are considerable cross-country variations in the data. For instance, the mean per capita growth rate for the sample is 0.5 percent and the standard deviation is 2.2. Botswana enjoyed the maximum growth (5.4%) while Madagascar had the lowest average growth (-1.6%) over the period. The mean FDI for countries in our study as a percent of GDP is 1.03 percent and the standard deviation is 0.78. Botswana received the highest mean FDI (2.8%) followed by Nigeria (2.5%). Madagascar received the minimum FDI at 0.28 percent of its GDP. The average inflation rate for the period was 13.07 percent. Nigeria, Tanzania, and Zimbabwe were high inflation countries in the period while Niger and Senegal were low inflation countries. The mean growth rate of the population for the selected countries was 5.78 percent with a standard deviation of 0.08. Nigeria had the highest population growth over this period and Mauritius had the lowest. In terms of openness, Mauritius ranks the highest while Ethiopia is the least open economy among the countries in the sample.

**TABLE 2
DEFINITION OF VARIABLES AND SOURCES**

Variable	Definition	Source
Y	Real per capita GDP RGDOCH	PWT6.1
INV	Real domestic investment as a share of real per capita GDP	Ibid
GOV	Real government consumption as a share of real per capita GDP	Ibid
OPEN	Sum of real exports plus imports as a share of real per capita GDP	Ibid
FDI	FDI as a percent of GDP	World Bank
INF	Inflation rate	World Bank

The correlation matrix presented in Table 4 indicates a positive relationship between FDI and economic growth. As expected, economic growth is negatively related with population, government consumption and inflation. The correlation between economic growth and investment is positive and so is the correlation between growth and openness. The matrix also indicates that there is no serious multicollinearity problem in the data.

Equation (1) can be estimated by OLS on a cross section of countries under the assumption that μ_{it} are the same across countries. The problem with this methodology is that there is an unobservable fixed effect which captures country specific heterogeneity. Such unobservable fixed effect is potentially correlated with explanatory variables. If it is not controlled for in the estimation, the parameter estimates will be inconsistent due to omitted variable bias. In order to avoid this problem, we use a panel method. The panel method allows controlling for individual effects. It also allows the use of more observations and gives more degrees so

freedom. The usual F-test is used to select the most appropriate model between the pooled cross section effect and the fixed effect models. Hausman's test is also computed to compare fixed effect and random effect models.

TABLE 3
SUMMARY STATISTICS

Variable	Mean	Standard Deviation	Minimum	Maximum
Growth rate of Per capita GDP	0.04	0.02	0.02	0.089
Foreign Direct Investment (as a share of GDP)	1.028	0.785	0.276	2.69
Openness	67.43	24.03	41.17	116.65
Inflation	13.07	6.66	6.068	25.70
Domestic Investment (as a share of real GDP)	10.16	5.77	2.72	22.40
Government Consumption (as a share of real GDP)	17.28	5.77	2.72	22.40
Population Growth	5.67	0.08	-2.7	22.24

In this paper we estimate the effect of FDI inflows after controlling for other determinants and potential bias induced by the country specific effects. In Table 5, we present OLS (pool effects), fixed effects, and random effects estimates. Empirical results of the OLS model show that the effect of FDI on economic growth is positive and statistically significant at the 5 percent level. All control variables included in the model also have the expected signs and are significant at less than 5 percent level.

In the fixed effect model, FDI has its expected (positive) sign but does not enter the growth regression significantly. The results also show that all the other variables also have the expected sign with the exception of the government consumption variable. Investment and initial real per capita GDP are statistically significant at less than 5 percent. The results of the F-test indicate that both the fixed effects model and the OLS cross-section model are in agreement even though one would expect the results obtained using the fixed effects model to be better than the ones obtained using the OLS procedure.

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**TABLE 4
CORRELATION MATRIX**

	Economic Growth	FDI	Pop Growth	Openness	Government Consumption	Domestic Investment	Inflation
Economic Growth	1						
FDI	0.357	1					
Pop Growth	-0.212	0.357	1				
Openness	0.613	0.467	-0.03348	1			
Government Consumption	-0.036	0.032	-0.00008	-0.306	1		
Domestic Investment	0.3465	0.430	-0.02867	0.213	0.159	1	
Inflation	-0.296	0.387	0.04996	-0.045	-0.149	0.469	1

The results of the random effects model also suggest a positive but a statistically insignificant effect of FDI on economic growth. The convergence factor appears with statistically significant coefficient and displays the appropriate negative sign. Inflation and population growth enter the growth model with their expected negative signs and they are statistically significant. Investment and openness exert statistically positive effect on economic growth. The Hausman's test indicates that the random effect model is preferable to the fixed effect model.

TABLE 5
THE EFFECT OF FDI ON ECONOMIC GROWTH

Variable	Pool Effect	Fixed Effect	Random Effect
Intercept	0.2345 (3.72)	0.526 (5.16)
Initial Income	-0.0286 (-3.50)**	-0.093 (-6.12)**	-0.0716 (-5.55)**
FDI	0.005 (1.97)**	0.004 (1.65)*	0.004 (1.725)*
Investment	0.005 (4.89)**	0.003 (1.98)**	0.004 (2.75)**
Government Consumption	-0.001 (-1.97)**	0.0001 (0.110)	-0.00077 (-0.640)
Inflation	-0.001 (-3.50)**	-0.0007 (-1.88)*	-0.0008 (-2.007)**
Population Growth	-1.131 (-1.84)*	-1.436 (-1.877)*	-1.366 (-1.84)*
Openness	0.0004 (2.14)**	0.0006 (1.78)*	0.0006 (2.12)**
F-Test	8.09 (P-value=0.000)	1.263 (P-value=0.246)	
Hausman Test			8.555 (P-value=0.286)
R ²	0.15	0.23	0.25
No. observation	267	267	267

* Indicates statistical significance at 10%; ** Indicates statistical significance at 5%

SUMMARY AND CONCLUSION

FDI inflows to developing countries have increased significantly since the 1980s. Among developing countries, the distribution of FDI inflows has been uneven. Southeast Asian countries attracted massive FDI inflows and enjoyed substantial economic prosperity. In an effort to attract FDI and spur economic growth, many developing countries including Sub-Saharan African countries have established investment agencies and have introduced policies that include fiscal and financial incentives. Even though such policies can be effective in attracting foreign investment, the potential benefit that FDI can bring to host countries could be limited.

In this paper we used panel data to examine the effect of FDI on economic growth of selected Sub-Saharan African countries over the 1975-1999 periods. Our results indicate that the effect of FDI on economic growth is positive but statistically insignificant at 5 percent level. This finding is similar to those found in Rodrick [27] and Aitken *et al.* [3], who argue that the effect of FDI on economic growth tends to be weak. The weak link between FDI and economic growth in the sampled countries

may not be surprising in view of the fact that FDI inflows to Africa have been concentrated to a limited number of countries and then only in large scale primary resource developments, particularly the mining and the energy sector. FDI in mining is often enclave in nature with limited multiplier effects on output and employment on the rest of the economy [Addison *et al.*,1]. Proliferation of incentives may also cause significant distortion in the economies of many developing countries. Our results also imply that other factors such as, sound macroeconomic policies, greater openness, and higher domestic investment would advance economic growth.

ENDNOTES

¹<http://www.unctad.org/>

²Harris & Robinson [18, p.66]

³ It is conceivable that the economic growth and development of a country may depend, among other factors, on its political stability and this political stability may also influence FDI inflows. However, there is no standard measure of political stability data base that we could use for the countries included in this study.

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