Does FDI promote Economic Growth and Development? Evidence from Latin America and Africa

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ABSTRACT

This paper is an attempt to analyse and empirically estimate the impact of FDI on economic growth and human development of Africa and Latin American countries for the period 1985–2011. To this end we develop two equations: growth and human development. Our findings, based on fixed effect panel regression, thus, suggest that FDI does not have a positive impact on economic growth but it has significant positive impact on human development. We conclude that for FDI to be a noteworthy provider to economic growth, it is important to increase absorption capacity by improving the level of democracy, increasing and improving transport infrastructure and following appropriate economic policies. Our results are found to be robust across approach, model specifications and statistical test.

Keywords: economic growth, human development, FDI, sub-Saharan Africa, Latin America

1. INTRODUCTION

Sources of economic growth have been a main topic that economists have addressed for more than half a century. The literature shows diverse channels through which growth can be achieved. A prominent channel is through investment. This investment can be financed through different ways. One way in which investment can be financed in the country is through foreign direct investment (FDI). It is seen as an engine of growth as it provides the much required capital for investment, expertise in terms of managerial, technical and entrepreneurial skills, which may help to increase the productivity of workers and export. FDI also helps the developing countries to fill the foreign exchange, savings and revenues gaps.

The importance attached to FDI in the growth and development process has led many countries to lay emphasis on various efforts to attract FDI. These countries have introduced policies that include fiscal and financial incentives, tax holidays, import duty exemptions, low interest rate loan and subsidies to foreign firms. This, in turn, leads global trends in FDI flows to be increased steadily and tremendously in both quality and quantity.

There is an increasing interest in development circles and continuing intense debate from the empirical literature side regarding the effect of FDI inflow on economic growth and development

processes of the host nation (see, Lim 2001; De Mello Jr 1997; Carkovic and Levine 2002; Borensztein *et al*. 1998; Alfaro *et al*. 2004; Durham 2003; Basu *et al*. 2003; Ghosh Roy and Van den Berg 2006; Javed *et al*. 2012). However, the empirical evidence to date on the effect of FDI on economic growth, however, is not conclusive. One stream of research has indicated a positive impact of FDI on economic growth, another stream reports that the benefits accrued from FDI are small compared with their negative effects. A third stream of research suggests that the effect of FDI on a host country's economy is dependent on the economic, institutional and technological conditions of host countries. It thus appears that the benefits of FDI are more evident in the theories than detected in empirical studies.

However, an issue that is often neglected in empirical literature is the relationship between FDI, economic growth and human development. Although the impact of FDI should be primarily measured against the level of poverty reduction and improvement in the Human Development Index (HDI) rates, it is mostly measured against gross domestic product (GDP) or GDP per capita growth. According to Gohou and Soumaré (2012), the implicit assumption done in these papers is the use of GDP growth as a good proxy for welfare. However, even if economic growth is required to improve population well-being, when this growth is not pro-poor, the effect may be large inequality with a worsening welfare system. Therefore, it can be concluded that the relationship between FDI, economic growth, and human development is far from straightforward.

A question of great interest is not only from an academic point of view but also from an economic policy and public perspective relating to the impact of FDI on economic growth and thus human welfare. Thus, this paper aims to answer the following questions: First; does FDI inflow contribute to economic growth and thus human development of the host nation? Second, can country-specific features and differences in economic policies, democracy, human capital stock and infrastructure level explain cross-country variations in the growth benefits of FDI?

To this end we use a sample of 77 African and Latin American countries for the period 1985–2011. We develop two equations: economic growth equation and human development equation. Our findings, based on fixed effect panel regression, thus, suggest that FDI does not have a positive impact on economic growth but it has a significant positive impact on human development. We conclude that for FDI to be a noteworthy provider to economic growth, it is important to increase absorption capacity by improving the level of democracy, increasing and improving transport infrastructure and following economic policies appropriate to the country's conditions.

This paper contributes to the existing literature in three dimensions. First, contrary to most existing studies, which typically concentrate on FDI-growth nexus, this paper focuses further on the impact of FDI inflow on human development. Second, the paper adds to the growing literature by studying a range of supporting conditions and structural policy-related factors that seem to play an important role in shaping the relationship between FDI and economic growth. Third, this study uses a larger cross country (77 countries) survey over a longer period of time (1985–2011 because of availability of data).

The rest of the paper is structured as follows. Section II provides a selective literature review of the link between FDI and economic growth. The empirical methodology is presented in section

III. Section IV presents a discussion of the paper's results and Section V draws conclusions and some policy implications.

2. LITEREATURE REVIEW

Several studies have examined FDI-growth nexus. Yet, the growth effect of FDI is controversial in view of the mixed findings reached by many theoretical and empirical studies. One stream of research has indicated a positive impact of FDI on economic growth, another stream reports otherwise. A third stream of research suggests that the effect of FDI on a host country's economy is dependent on the economic, institutional and technological conditions of host countries. However, researchers differ in terms of methodology they used, variables included, sample periods and countries incorporated. Thus, in the following section, we cover the selected literatures on FDI-growth nexus.

2.1 Studies that find positive impact of FDI on economic growth

Growth theories provide support for potential positive impact of FDI on economic growth. The standard neoclassical understanding assumes that economic growth is primarily capital driven. Since FDI augments domestic capital accumulation, it can enhance the potential for economic growth. In the new endogenous growth theory, the production of goods as a function of the stock of knowledge and other inputs exhibits increasing returns (Romer 1986). And the creation of new knowledge by one firm is assumed to have a positive external effect on the production possibilities of other firms as knowledge is not exclusive to one firm. As FDI initiates the promotion of growth factors, it can thus encourage economic growth. The theory further postulates that FDI does not only affect growth directly but also through the appearance of transmission mechanisms, such as technological spillovers and know-how to the host country (Blomstrom and Kokko 2003).

From the empirical side, Balasubramanyam *et al*. (1996) examine the role of FDI on economic growth of 46 developing countries using cross-section data, and they found that FDI has a positive impact on economic growth. However, the beneficial effect of FDI, in terms of enhanced economic growth, is stronger in those countries that pursue an outwardly oriented trade policy than it is in those countries adopting an inwardly oriented policy. Using a sample of 69 countries, Borensztein *et al*. (1998) also examine the impact of FDI on economic growth for the period 1970 to 1989. The results indicate that inward FDI has positive effects on growth with the strongest impact through the interaction between FDI and human capital.

De Mello (1999) also investigates the impact of FDI on capital accumulation, output and total factor productivity growth for a sample of Organisation for Economic Co-operation and Development (OECD) and non-OECD countries for the period 1970–1990, and found the positive effects of FDI. Similarly Li and Liu (2005) indicate that FDI not only affects growth directly but also indirectly through its interaction with human capital, based on a panel of 84 countries over the period of 1970–1999. By reviewing the recent trends in FDI inflow in six Asian countries, Brooks and Hill (2004) conclude that it has contributed to the strong growth experienced by most of the six for most of the past two decades or more.

Bhandari et al. (2007) examine the relationship of foreign aid and foreign direct investment with economic growth in six east European countries by using the pooled time series data from the period 1993 to 2002. The results of their study indicate that inward foreign direct investment has significant positive impact on economic growth while foreign aid has an insignificant effect on economic growth. The same result was also found by Ndambendia and Njoupouognigni (2010) in 36 sub-Saharan African countries for the period 1980 to 2007, using Pooled mean group (PMG) estimator and dynamic fixed effect (DFE) model.

Tiwari and Mutascu (2011) empirically examine the relationship between foreign direct investment and economic growth in 23 Asian countries by using panel data from the period 1986 to 2008. The result of their study indicates the positive and significant relationship between foreign direct investment and economic growth. A study by Rachdi and Saidi (2011) on a sample size of 100 countries, by using the panel data from the period of 1990 to 2009, also indicates the significant positive relationship between foreign direct investment and economic growth in both developed and developing countries. More recent studies by Rabiei and Masoudi (2012) and Javed *et al*. (2012) also show positive and significant impact of FDI on economic growth on eight Islamic countries and south Asian countries, respectively. The former uses pooled time series data from the period of 1980 to 2009, while the latter uses GMM from the period 1973 to 2010.

2.2 Studies that do not find any positive impact of FDI on economic growth

Some scholars, on the other hand, argue that the positive effect of FDI with regard to growth for the recipient country is not always certain. In this regard, Singer (1950) and Prebisch (1968) indicate that the host countries of FDI receive very few benefits, because most benefits are transferred to the multinational company's country. In addition, least developed countries (LDCs) have to provide sufficient facilities for transferring profits, dividends, interest and principal. If these payments lead to a net capital outflow, they create serious balances of payment difficulties. Thus, the indirect costs of debt servicing and balance of payment adjustments create series foreign exchange crises, thereby adversely affecting the national economy.

Haddad and Harrison (1993), applying panel data of firm-level dataset, reject the growth enhancing-spillover hypothesis for the Moroccan manufacturing sector. Looking at plant-level data in Venezuela over 4 000 plants from 1976 to 1989 using annual census data, Aitken and Harrison (1999) also found no evidence of a positive technology spillover effect from FDI.

Empirical evidence by Carkovic and Levine (2002) shows that FDI inflows do not exert an independent robust positive influence on economic growth but sound economic policies encourage output growth. They used GMM panel estimator using World Bank and IMF datasets covering the period 1960–1995. Lipsey (2004) surveys the most important empirical literature on the effects of FDI, and determines that the studies of the effects of FDI inflows on national economic growth are inconclusive. Shahbaz and Rahman (2010) also showed that FDI might have adverse effects on the recipient economy through the substantial reverse flow of profit transfer, remittance of resources via transfer pricing and grant of substantial concessions from the host country.

Adams (2009) analyzes the impact of FDI and domestic investment on economic growth in sub-Saharan Africa for the period 1990–2003. The result shows that FDI is positive and significant only in OLS estimation, but it appeared to be insignificant on fixed effect estimation results. He further argued that FDI has an initial negative effect on domestic investment. Thus, the sign and magnitude of the current and lagged FDI coefficient suggest a net crowding out effect.

2.3   Studies that find a conditional positive impact of FDI on economic growth

A third stream of research on FDI-growth nexus suggests that FDI does not have an independent positive effect on economic growth. Researchers argue that the effect of FDI on a host country's economy is dependent on the economic, institutional and technological conditions of host countries. Others, indeed, document that the growth impact of FDI could be enhanced if these conditions are satisfied at best. For instance, Balasubramanyam *et al.* (1996) show that FDI impact on growth is relatively larger when the host countries follow export promotion in preference to encouraging import substitution. Borensztein *et al*. (1998) argue that FDI is a crucial tool in transferring the technology, but the effectiveness of FDI depends on the stock of human capital in the host country

Balcao Reis (2001) uses an endogenous growth model to evaluate the growth effects of FDI. She finds that, in equilibrium, foreign firms replace all domestic firms in the R&D sector. In this model, FDI only adds a positive effect to growth if the world interest rate is lower than the home interest rate. Hermes and Lensink (2003), using 67 countries, have argued that the development of the financial system of a host country is an important precondition for FDI to have a positive effect on economic growth. According to them, a more developed financial system positively contributes to the process of technological diffusion associated with FDI. The same result also found by Alfaro *et al*. (2004) using cross country data between 1975 and 1995. They found that FDI alone plays an ambiguous role in contributing to economic growth. But, countries with well-developed financial market gain significantly from FDI.

Durham (2004) also examines the impact of FDI and equity foreign portfolio investment on economic growth using data on 80 countries from 1979–1998. He similarly finds that FDI only has a positive effect on growth in countries with strong financial systems. Additionally, he found that only countries with high quality governance, as evidenced by strong institutional development and investor friendly legal environment, enjoy positive effects of FDI on growth. Also using data on developing countries, Hsiao and Shen (2003) find that institutional strength and high levels of urbanization are conditions for positive effects of FDI on growth.

Makki and Somwaru (2004) analyze the role of FDI and trade on economic growth across 66 developing countries over the last three decades. Their result suggests that FDI, trade, human capital and domestic investment are important sources of economic growth for developing countries. Their result shows the contribution of FDI to economic growth is enhanced by its positive interaction with human capital and sound economic policies and institutional stability.

We can see from the above review of the empirical findings that, despite the large number of studies devoted to the relationship between FDI and growth, the issue is far from settled. Therefore, its

real effect on economic growth of the recipient country still remains a controversial issue. In this study an attempt was made to improve the weakness of previous studies by incorporating a range of economic and political determinants of economic growth.

3. DATA AND EMPIRICAL METHODOLOGY

All the data used in this study are secondary data collected from World Bank development indicators, IMF financial statistics, polity IV, UNCTAD and UNDP. A sample of 77 countries (44 African and 33 Latin American) is used both for growth and human development equation with a time span of 1985–2011 and 2000–2011, respectively. (See appendix for more detail.)

3.1 Empirical methodology

The empirical model to investigate the impact of FDI on economic growth of these countries is derived from the neoclassical augmented Solow model, based on a Cobb-Douglas production function framework. Consider the following Cobb-Douglas production function in country i at time t is

$$Y_{it} = A_{it} K_{it}^{\alpha} L_{it}^{\beta} \text{---}1$$

Where Y_{it} is output level (GDP) of the country i at time t, K_{it} is capital stock of country i at time t, L_{it} is human capital stock of country i at time t and A_{it} total factor productivity of country i at time t, which explains the output growth that is not accounted for by the growth in factors of production specified.

Capital stock is assumed to consist of two components: domestic and foreign owned capital stock. Thus, we specify domestic and foreign owned capital stock separately in a Cobb–Douglas production function. Following the established practices in the literature domestic and foreign owned capital are proxied by domestic investment as percentage of GDP and FDI as percentage of GDP as I_{it} and FDI_{it} respectively. The above equation can be, thus, written as

$$Y_{it} = A_{it} I_{it}^{\alpha} FDI_{it}^{\gamma} L_{it}^{\beta} \text{---}2$$

By taking the natural logarithm of the above equation in both sides, we obtain the familiar growth equation

$$ln Y_{it} = \Theta_{it} + \alpha ln I_{it} + \gamma ln FDI_{it} + \beta ln L_{it} \text{--------------------------}3$$

Recent studies on economic growth, however, have argued that the above equation does not consider political, economic policies and other factors, which significantly affect economic

growth. Therefore, to capture the complexity of determinant of growth the production function can be expanded by adding openness (OPENESS), infrastructure development (INFR), inflation (INFL) as a control variable. Thus, the augmented production function can be rewritten as

$$lnY_{it} = \Theta_{it} + B_1 lnI_{it} + B_2 lnFDI_{it} + B_3 lnH_{it} + B_4 lnOPENESS_{it} + B_5 lnINFL_{it} + B_6 lnINFR_{it}$$

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We apply, further, FDI to the growth function based on the assumption that FDI can stimulate economic growth through the technology transfer and spillover effect and the relationship between FDI and growth is nonlinear. Therefore we postulate that the level of human capital (H), good economic policies (INFL), improved infrastructure (INFR) and high level of democracy (Democ) would accelerate the growth impact of FDI. To prove this hypothesis the interaction of these variables with FDI and FDI squared was used as regressors and the above augmented production function can be further elaborated as the following;

$$\begin{aligned} lnY_{it} = \Theta_{it} &+ B_1 lnI_{it} + B_2 lnFDI_{it} + B_3 lnH_{it} + B_4 lnOPENESS_{it} + B_5 lnINFR_{it} + B_6 Democ_{it} \\ &+ B_7 lnINFL_{it} + + B_8 lnFDI_{it}L_{it} + B_9 lnFDI_{it}INFR_{it} + B_{10} lnFDI_{it}INFL_{it} \\ &+ B_{11} lnFDI_{it}Democ_{it} + B_{12} lnFDI_{it}^2 + U_{it} \end{aligned}$$

Where the notation is defined as follows;

lnY_{it}=log of GDP per capita of country i in year t

lnI_{it}=log of gross fixed capital formation as percentage of GDP of country i in year t

$lnFDI_{it}$=log of foreign direct investment inflow as percentage of GDP of country i in year t

lnH_{it} = log of secondary school enrolment of country i in year t

$lnOPENESS_{it}$ =log of export plus import as percentage of GDP of country i in year t

$lnINFR_{it}$ = log of number of telephones per 1 000 population of country i in year t

$Democ_{it}$ = level of democracy

U_{it} = error term which capture the unexplained portion in the growth equation

3.2   Expected sign of the variables

The variable **I** symbolizes domestic investment. Investment is acknowledged as the basic determinant of economic growth, both by neoclassical and endogenous growth models. The importance placed on investment by these theories has resulted in a significant volume of research evaluating the relationship between investment and economic growth, and the vast majority of them found significant positive relationship (see for instance, Kormendi and Meguire

1985; Levine and Renelt 1992; Mankiw *et al*. 1992; Barro and Sala-i-Martin 1995; Easterly and Levine 1997 ; Podrecca and Carmeci 2001). We use gross fixed capital formation as a percentage of GDP as a proxy for investment and the expected sign is positive.

H symbolizes human capital. Human capital is also considered as one of the key determinant of economic growth in numerous endogenous growth models as well as one of the key extensions of the neoclassical growth model. Since the term 'human capital' refers principally to workers' acquisition of skills and know-how through education and training, the majority of studies have measured the quality of human capital using proxies related to education. The vast majority of them have found evidence which confirm the above theoretical argument (see Mankiw *et al*. 1992; Barro and Sala-i-Martin 1995, Hanushek and Kimko 2000). In this paper, we use secondary school enrolment rate as a proxy for human capital and the expected sign is positive.

FDI is foreign direct investment and is included to evaluate the impact of FDI on economic growth. Despite the large number of studies devoted to the relationship between FDI and growth, the issue is far from settled in view of the mixed findings reached by many empirical studies. One stream of research has indicated a positive impact of FDI on economic growth, another stream reports otherwise. A third stream of research suggests that the effect of FDI on a host country's economy is dependent on the economic, institutional and technological conditions of host countries. Thus, our prior expectation of the coefficient is inconclusive.

Openness to trade has been used extensively in the economic growth literature as a major determinant of growth performance. There is a substantial and growing empirical literature investigating the relationship between openness and growth. Most of them found that economies that are more open to trade have higher GDP per capita and grew faster (Dollar 1992; Edwards 2001) even though some scholars have criticized the robustness of these findings (see for example, Levine and Renelt 1992;Vamvakidis 2002). Based on the existing practice in the growth literature, we use the ratio of export and import to GDP as a proxy of openness. We expect a direct relationship between these variables and economic growth.

INFL is included to gauge the macroeconomic stability of the sampled countries. Economic policies and macroeconomic conditions have, also, attracted much attention as determinants of economic performance (see Barro and Sala-i-Martin 1995). Macroeconomic conditions are regarded as necessary but not sufficient conditions for economic growth (Fischer 1993). In general, a stable macroeconomic environment may favour growth, especially, through reduction of uncertainty, whereas macroeconomic instability may have a negative impact on growth through its effects on productivity and investment (e.g. higher risk). Several macroeconomic factors with impact on growth have been identified in the literature, but considerable attention has been placed on inflation. We included the inflation rate as a measure of overall economic stability of the country. Thus, it is expected that the inflation rate would be negatively correlated with growth.

INFR is included as a proxy infrastructure development. Good infrastructure facilitates production, reduces operating costs and thereby promotes growth (Wheeler and Mody 1992). In addition, good infrastructure increases the productivity of investment and thereby enhances economic growth. In the literature, the number of telephones per 1 000 populations is often

used to measure infrastructure development and we used this proxy for this paper. We expect a direct relationship between this measure and economic growth.

Democ is a variable used to see whether democracy has an effect on economic growth. Recent studies are exploring how regime type affects economic growth. Some studies report positive effect of democracy on economic growth (e.g. Haan and Siermann 1996; Oliva and Rivera-Batiz 2002; Rock 2009; Zouhaier and Karim 2012). The argument advanced in these papers is that democracy is better for economic performance because of the way it protects individual property rights and promotes political stability. In contrast, other studies suggest democracy can hamper economic growth (see Barro 1996; Tavares and Wacziarg 2001). They argue that economic growth is often incompatible with other goals associated with democracy in less developed countries. Thus, to examine the true relationship between theses variable, we include the Democ variable in our growth regression. The indicator for democracy is collected from Polity IV. The indicator ranges from 0 (strongly autocratic) to 10 (strongly democratic). Given the mixed finding of the previous research, the prior expectation of this variable is inconclusive.[1]

FDI*H is an interaction term between FDI and human capital, which is used to assess whether the impact of FDI on growth depends on stock of human capital. Pioneering work done by Borensztein *et al*. (1998) shows that in countries with low levels of human capital the direct effect of FDI on growth is negative, though sometimes insignificant. But, once human capital passes a threshold, they find that FDI has a positive growth effect. The same results were also obtained by Rogers (2004). Our prior expectation for this variable is positive.

FDI*INFL is an interaction term between FDI and inflation. The interaction term is used to assess whether the growth impact of FDI could be enhanced if countries follow good macro-economic policies. Some studies argued that FDI is positively correlated with economic growth in the host countries, however, the host country requires good economic stability (see Bengoa and Sanchez-Robles 2003; Makki and Somwaru 2004). Thus, to test this hypothesis we included this interaction term in the growth equation and our prior expectation is negative.

FDI*Democ is an interaction term between FDI and level of democracy. The hypothesis is simply based on the fact that the lower the democracy level in the country can limit firms' (or nation's) ability to absorb and internalize new technology. In addition democratic government would spend money generated from FDI in terms of tax in to social spending, and this, in turn, would enhance growth and the welfare of the poor (Li and Resnick 2003). Thus, our prior expectation is positive.

FDI*FDI is the square of FDI and is used to investigate the non-linear relationship between FDI and economic growth and the threshold level of FDI and our prior expectation is negative.

FDI*INFR This is an interaction term between FDI and infrastructure level (proxied by number of telephones per 1 000 populations), which is used to look at whether the growth impact of FDI would be enhanced in the countries where infrastructure level is high. Some studies included this interaction in their growth equation (see Li and Liu 2005) and our prior expectation is positive.

3.3   Regression model specification for human development equation

The following regression is used to assess the impact of FDI on human development

$$HDI_{it} = \alpha_{it} + \alpha_1 FDI_{it} + \alpha_2 X_{it} + u_{it}$$

Where:

HDI_{it} = human development index of country i at time t

FDI_{it} = Foreign direct investment of country i at time t

X_{it} = is a vector of other control variable that affects human development

u_{it} = error term

Since HDI is a combination of education, health and economic performance we include H, GDP per capita, INFR and INF as a control variable. Therefore, the HDI equation can be specified as follows:

$$HDI_{it} = \alpha_{it} + \alpha_1 FDI_{it} + \alpha_2 GDP_{it} + H_{it} + INFR_{it} + INF_{it} + u_{it}$$

4.   ESTIMATION AND EMPIRICAL RESULT

There are basically three types of panel-data models, namely, a pooled ordinary Least Squire (OLS) regression, panel model with random effects and panel model with fixed effects. While using a pooled OLS regression, however, countries' unobservable individual effects are therefore not controlled. According to Bevan and Danbolt (2004), heterogeneity of the countries under consideration for analysis can influence measurements of the estimated parameters. Further, using a panel-data model with incorporation of individual effects, has a number of benefits, for example, among others, it allows us to account for individual heterogeneity. Indeed, Serrasqueiro and Nunes (2008) mention that developing countries differ in terms of their colonial history, their political regimes, their ideologies and religious affiliations, their geographical locations and climatic conditions, not to mention a wide range of other country-specific variables. And, if this heterogeneity is not taken into account, it will inevitably bias the results, no matter how large the sample is.

To test for the possible existence of a correlation we use the Hausman test. This tests the null hypothesis of non-existence of a correlation between unobservable individual effects and the growth determinants, against the alternative hypothesis of an existence of a correlation. If the null hypothesis is not rejected we can conclude that correlation is not relevant and therefore a panel model of random effects is the most correct way of carrying out the analysis of the relationship between economic growth and its determinants. On the contrary, if the null hypothesis is rejected,

we can conclude that correlation is relevant and therefore a panel model of fixed effects is the most appropriate way to carry out the analysis of the relationship between economic growth and its determinants. We are able to reject the null hypothesis and thus we used fixed effect model for the above growth equation and the result of the estimation result are given in the following table.

Table 1: Fixed-Effect panel regression result
Dependent variable: GDP per capita (US Dollar constant 2000)

variables	MODEL 1	MODEL 2	MODEL 3	MODEL 4	MODEL 5	MODEL 6
Democ	-0.0024	-0.001	-0.001	-0.002	-0.002	**-0.003**
	(-0.87)	(-0.40)	(-0.53)	(-0.78)	(-0.810	**(-1.14)**
I	0.074**	0.081***	0.084***	0.088***	0.087***	**0.094*** **
	(3.84)	(4.34)	(4.52)	(4.72)	(4.66)	**(5.09)**
H	0.08***	0.094***	0.106***	0.104***	0.102***	**0.116*** **
	(3.55)	(4.23)	(4.80)	(4.76)	(4.61)	**(5.26)**
INFR	0.175***	0.16***	0.138***	0.141***	0.141***	**0.144*** **
	(13.88)	(12.6)	(10.33)	(10.58)	(10.57)	**(10.92)**
FDI	-0.003	-0.089***	-0.008	0.007	0.009	**-0.04* **
	(-0.78)	(-5.91)	(-0.34)	(0.29)	(0.40)	**(-1.81)**
INFL	-0.014***	-0.011***	-0.0127***	-0.011***	-0.012***	**-0.01*** **
	(-2.97)	(-2.25)	(-2.69)	(-2.51)	(-2.55)	**(-2.13)**
OPPENESS	0.051*	0.039	0.054**	0.056**	0.05***	**0.06*** **
	(1.94)	(1.5)	(2.09)	(2.20)	(2.26)	**(2.34)**
FDI*H		0.0275***	0.003	-0.005	-0.004	**0.01**
		(5.93)	(0.52)	(-0.72)	(-0.64)	**(1.27)**
FDI*INFR			0.016***	0.012***	0.012***	**0.008*** **
			(4.49)	(3.11)	(3.09)	**(1.92)**
FDI*Democ				0.004***	0.0043***	**0.0055*** **
				(3.11)	(3.09)	**(3.96)**
FDI*INFL					-0.001	**-0.005** **
					(-0.70)	**(-1.96)**
FDI*FDI						**-0.0042*** **
						(-4.68)
CONSTANT	5.96***	5.91***	5.81***	5.799***	5.802***	**5.73*** **
	(49.70)	(50.09)	(48.79)	(48.83)	(48.80)	**(48.34)**
R²	0.77	0.76	0.74	0.74	0.74	**0.74**
countries	77	77	77	77	77	**77**
Sample period	1985-2011	1985-2011	1985-2011	1985-2011	1985-2011	**1985-2011**

Note: * significant at 10% level; ** significant at 5% level; *** significant at 1% level.

Statistical results for the key variables included in the growth equation, as can be seen from the above fixed effect panel regression result, offer strong support for our theoretical arguments. The variable **Democ** is statistically insignificant at 10% significance level in all six models, suggesting that it does not have any significant impact on economic growth. This is in line with previous studies. As cited by Sirowy and Inkeles (1990), Pye (1966) argues that there is no universal relationship between democracy and economic performance because economies can develop in both democratic and authoritarian frameworks. The same result is also found in the study of Gasiorowski and Poptani (2006) who showed that having a democratic government alone means very little for economic growth because so many factors can influence economic performance.

Domestic investment **I** is statistically significant and has the expected positive sign in all six models. It shows that a 1% increase in domestic investment rise economic growth by 0.09%. The same result is also found by previous studies (see Kormendi and Meguire 1985; Levine and Renelt 1992; Mankiw *et al*. 1992; Barro and Sala-i-Martin 1995; Easterly and Levine 1997; Podrecca and Carmeci 2001).

The coefficient of human capital formation **H** also produces a very significant and positive relationship with GDP per capita in all models. This shows that economic growth is influenced by human capital, which supports the notion of new endogenous growth theory and many empirical works (see Mankiw *et al*. 1992; Barro and Sala-i-Martin 1995; Hanushek and Kimko 2000). Infrastructure variable (**INFR**) also produces statistically significant and positive as expected in all six models, which shows the higher the infrastructure level is, the higher GDP per capita of the country will be. A similar result is also found in Wheeler and Mody (1992). Trade openness (**OPENESS**), which is proxied by export plus import as percentage of GDP, has a significant positive impact on economic growth. Dollar (1992) and Edwards (2001) also found the same result. Another controlled variable used in this paper is inflation (**INFL**) as a proxy for good economic policy to see the impact of good economic policy on growth. The inflation growth nexus in the regression result shows significant negative relation because a higher inflation rate reduces real income and, hence, makes the economy worse-off.

The result in table 1 clearly indicates that **FDI** is statistically insignificant for most of the model and even negative signs for model 6 and 2. This suggests that the exogenous component of FDI does not exert a reliable, positive impact on economic growth. This outcome is not a surprise and is in line with the findings of Alfaro *et al*. (2004), Durham (2004), Hermes and Lensink (2003), who among others have discovered that FDI had no direct impact on growth. Similarly, FDI becomes insignificant when it interacted with human capital in most of the model. The interaction term becomes positive only for model 2. This implies that the effect of FDI inflows on growth is not dependent on the stock of human capital of the host nation.

However, when FDI interacted with INFR and Democ, it turns out to be positively signed and statistically significant at 1% level. This result implies that the growth impact of FDI could be enhanced if countries have good infrastructure levels and high levels of democracy. When we interact FDI with INF, it becomes significant at 5% level in the last model, indicating that countries should to pursue good economic policies to benefit from the inflow of FDI. This finding is consistent with recent studies, which also found that the effect of FDI on growth

depend on the absorptive capability of the recipient countries (see Carkovic and Levine 2002; Bengoa and Sanchez-Robles 2003; Makki and Somwaru 2004). Therefore, it supports the view that democracy, good infrastructure and good and stable macroeconomic policies are needed to facilitate FDI spillovers.

Next, table 2 displays the regression results of the Human Development Index.

Table 2: Fixed-Effect panel regression result

Dependent variable: Human Development Index

Variables	Expected sign	Statistical result
Democ	+/-	**0.001[*]** **(1.92)**
GDP per Capita	+	**0.09[***]** **(15.57)**
H	+	**0.037[***]** **(10.94)**
INFR	+	0.001 (1.01)
INFL	_	**-0.001[**]** **(-2.23)**
FDI	+/-	**0.0012[**]** **(1.92)**
OPPNESS	+	0.003 (0.83)
CONSTANT		**-0.268[***]** **(-7.52)**
R^2		0.91
Countries Sample period		77 2000-2011

Note: [*] significant at 10% level; [**] significant at 5% level; [***] significant at 1% level.

The above statistical result (table 2) shows that the value of adjusted R^2=0.91, which means 91% of the variation in HDI, is explained by the regression equation specified in this model. Democ has a significant positive impact on human development at a 10% significance level. One may wonder how Democ will have impact on human development if it has no impact on economic growth. This is because of the spending pattern of leaders. According to Lake and Baum (2001), democratically elected leaders may be more likely to concern themselves with issues of human development than leaders who maintain their positions through other means. Therefore, we can

argue that democracy would lead to higher social spending, and this, in turn, would enhance the welfare of the poor.

GDP per capita and school enrolment turn out to be positive and significant, which is not surprising as HDI is the component of these variables, while openness and infrastructure appeared to be insignificant. INF is significant and negative at the 5% level, suggesting that higher inflation will reduce human welfare.

The variable FDI is significant and positive in the human development model at the usual significance level, suggesting that it is enhancing human welfare positively. The positive impact of FDI on human development can be seen in different ways. One way is through education. As extensively illustrated in the literature, the transfer of technology by FDI is not only embodied in machinery or equipment but is also realized through the training of local employees. This training affects the level of human development. In addition, the various skills gained from foreign-owned company may spill over as the employees move to other firms or set up their own businesses. This is confirmed by previous studies for the case of Latin America. As cited by Blomström and Kokko (1998), Katz (1987) notes that managers of locally owned firms in Latin America often started their careers and were trained in multinational corporation (MNC) affiliates.

FDI may also have a direct and significant impact on education, especially on tertiary education in the host countries. This is because FDI provides attractive employment opportunities to highly skilled graduates, which may be an incentive for students to complete tertiary training. Furthermore, the high demand of skilled labour by FDI may encourage governments to invest in higher education. Apart from this, MNCs may provide scholarships and sponsor the formal education of individual employees in the host country or elsewhere.

5. CONCLUSION AND RECOMMENDATION

Numerous researchers have investigated the impact of FDI on economic growth. Unfortunately, the empirical literature has produced conflicting conclusions. One stream of research has indicated a positive impact of FDI on economic growth, another stream reports otherwise. A third stream of research suggests that the effect of FDI on a host country's economy is dependent on the economic, institutional and technological conditions of host countries. The main purpose of this paper was to investigate the impact of FDI on economic growth and human development. In addition, this paper assesses whether the marginal impact of FDI on growth depends on the democracy, infrastructure, economic policy and human capital stock of the host countries. To this end, we develop growth and human development equations for a panel data of 77 countries from Africa and Latin America countries over the 1985–2011 periods.

We draw four important conclusions from our empirical analysis. First, as in earlier studies, we find that FDI does not have significant positive impact on economic growth. Second, human capital, investment, infrastructure, good macroeconomic policies and openness to trade are found to be an important determinant for long-run growth for the countries considered. Third, for FDI to be a noteworthy provider to economic growth, it is important to increase absorption capacity by improving the level of democracy, increasing and improving transport infrastructure

and following appropriate economic policies. Fourth, FDI has a positive impact on human development.

In terms of policy implication, this paper suggests that sound economic policies, good infrastructure and democracy are the critical determinants of the beneficial effects of FDI reaped in host countries. Consequently, policy makers should formulate policies that are not limited to attracting FDI alone but also should design good economic policies, improve the level of democracy and infrastructure level for obtaining benefit from the technological spillovers of FDI so as to enhance their economic growth persistently.

The direction for future studies would be to disaggregate FDI to different sectors and analyze the impact of each sectoral FDI on economic growth and human development. For instance, FDI to the manufacturing sector is usually an investment in tradable (versus FDI to the services sector that is mostly non-tradable) and each of this may have different impact on economic growth and human development.

NOTES

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ENDNOTE

1   In this indicator democracy is conceived as three essential, interdependent elements. One is the presence institutions and procedures through which citizens can express effective preference about alternative policies and leaders. Second is the existence of institutionalized constraints on the exercise of power by the executive. Third is the guarantee of civil liberties to all citizens in their daily lives and acts of political participation.

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Annex

Annex 1. Data source

Name of variable	Measurement in	source	URL
GDP per capita	US $ constant 2000	World bank: world development indicator	http://data.worldbank.org/data-catalog/world-development-indicators
Investment	Gross fixed capital formation as percentage of GDP	World Bank; world development indicator	http://data.worldbank.org/data-catalog/world-development-indicators
Human capital	Secondary school enrollment (% of gross)	World Bank; world development indicator	http://data.worldbank.org/data-catalog/world-development-indicators
Infrastructure	number of telephones per 1,000 populations	World Bank; world development indicator	http://data.worldbank.org/data-catalog/world-development-indicators
FDI	Inflow of Foreign direct investment as percentage of GDP	UNCTAD	http://unctadstat.unctad.org/TableViewer/tableView.aspx?ReportId=88
Openness	Export plus import as percentage of GDP	World Bank; world development indicator	http://data.worldbank.org/data-catalog/world-development-indicators
Inflation	Inflation	International Monetary Fund; International financial statistics	http://www.imf.org/external/data.htm#data

Democracy	Democracy level	Polity IV project	http://www.systemicpeace.org/polity/polity06.htm
HDI	Human Development Index	UNDP	http://hdr.undp.org/en/statistics/hdi/

Annex 2. List of countries

African counties			Latin American and Caribbean countries		
Angola	Gabon	Niger	Antigua and Barbuda	Grenada	Trinidad and Tobago
Benin	Gambia, The	Nigeria	Argentina	Guatemala	Uruguay
Botswana	Ghana	Rwanda	Bahamas, The	Guyana	Venezuela, RB
Burkina Faso	Guinea	Senegal	Barbados	Honduras	
Burundi	Guinea-Bissau	Seychelles	Belize	Jamaica	
Cameroon	Kenya	Sierra Leone	Bolivia	Mexico	
Cape Verde	Lesotho	South Africa	Brazil	Nicaragua	
Central African Republic	Liberia	Sudan	Chile	Panama	
Chad	Madagascar	Swaziland	Colombia	Paraguay	
Comoros	Malawi	Tanzania	Costa Rica	Peru	
Congo, Dem.Rep.	Mali	Togo	Cuba	Puerto Rico	
Congo, Rep	Mauritania	Uganda	Dominica	St. Kitts and Nevis	
Cote d'Ivoire	Mauritius	Zambia	Dominican Republic	St. Lucia	
Equatorial Guinea	Mozambique	Zimbabwe	Ecuador	St. Vincent and the Grenadines	
Ethiopia	Namibia		El Salvador	Suriname	