Foreign Direct Investment and Growth: The role of Financial Development and Human Capital

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Abstract

This paper studies the effect that foreign direct investment has on economic growth in a panel of 68 developing countries. Using a dynamic panel estimator and accounting for country fixed effects, the empirical evidence shows that foreign direct investment promotes economic growth in developing countries. The paper further documents that the significant and positive effect of foreign direct investment on growth is unconditional on the level of human capital and financial development. The main implication of this finding is that developing countries can boost growth in their economies by attracting higher levels of foreign direct investment independent of a developed financial system and high levels of human capital development.

Keywords: Foreign direct investment, Growth, Financial development, Human Capital
JEL classification: F21, F43, G2

1.0 Introduction

Policy makers in the developing world and development agencies alike believe that foreign direct investment (FDI) is growth enhancing, as suggested by their policy stance (in particular, promoting measures to facilitate and attract FDI). FDI is different from other types of capital flows as it involves not only the capital itself, but also transfers in the form of technology diffusion and skills, managerial expertise and know-how, and the introduction of new processing methods (Rodrik and Subramanian, 2008).[2] These serve to modernize the recipient economy and support productivity gains, which in turn are expected to improve growth performance.

If there are growth-inducing effects of FDI, however, they might be conditional and therefore the environment might matter.[3] For developing economies to therefore maximize potential benefits of FDI national governments will have to ensure that the absorptive capacity exists, as there might

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[2] Indeed, it is this ability of FDI that separates it from other form of investment, e.g. aid and portfolio investment.

[3] This follows a similar reasoning which suggests that FDI will locate its operation in an economy that has certain characteristics in terms of improved profitability.

not be a direct causal relationship between FDI and growth. Research along this line has attempted to disentangle the channels through which FDI is growth-inducing (or growth-retarding) and to provide a clear guide as to how to generate growth in the presence of FDI. The representative papers in this regard are Lensink and Morrissey (2006), Alfaro *et al*. (2004), Hermes and Lensink (2003), and Borensztein *et al*. (1998). They all support the view that there might not be a direct relationship between FDI and growth, while trying to identify conditions under which FDI is growth enhancing.

The goal of this paper is to examine the effect that FDI has on economic growth in a panel of developing countries, providing evidence that there is a direct relationship (contrary to the current literature which seems to suggest only a conditional relationship). Our finding for developing countries in general, however, does not generalize to the Latin America and Caribbean (LAC) sub-sample; for these countries increasing the level of human capital development appears essential to realize gains from FDI, while financial development does not appear to explain the effect of foreign direct investment on growth.

Because of the limited capacity of many developing countries to extract benefits from FDI, knowing where the constraints lie is critical to assist national governments in selecting policies which do not have perverse effects.[4] To this end, the paper applies appropriate econometric techniques to analyze the impact of FDI on growth, accounting for other determinants of growth.

The rest of the chapter is organized as follows. Section 2 discusses previous empirical studies. Section 3 outlines the methodological framework. Section 4 outlines the econometric model. Panel evidence for the full sample of developing countries is presented in Section 5, while Section 6 investigates the effects of FDI on growth for LAC sub-sample. The conclusions are contained in the final section.

2.0 The Empirical Literature

In this section we survey the vast empirical literature on growth and FDI, focusing on the growth effects of FDI. The evidence is divided into both micro and macro studies – firm-level (which

[4] Critics of FDI have argued that foreign investors only extract rents from developing countries without reciprocating any benefits, contrary to supporters who suggest that there is much to gain. But this bears relevance to the view that those developing countries that have not benefited from FDI have not resolved the environment issues necessary to absorb potential benefits, however tacit they may be. Findlay (1978) argues that FDI is sometimes regarded as an "unmitigated evil, a force that suppresses and distorts the development process".

focuses on how FDI externalities affect domestic firms) and aggregate FDI flows in a cross-section of countries, respectively – but here we are interested in the macroeconomic evidence.

Macroeconomic Evidence

Bhagwati (1978) suggests that countries that practice export-oriented strategies have a better development record compared to those that are inward oriented. This hypothesis was tested by Balasubramanyam *et al*. (1996) in an endogenous growth framework. This framework is ideal because most of the characteristics of growth can be 'initiated and nurtured' (Zhang, 2001: 177) through FDI. The endogenous growth model emphasizes the role of human capital, technology and R&D, all of which are bundled in FDI. To achieve this aim they estimate a production function, classifying countries as import substituting or export oriented according to whether they achieve some trade/GDP threshold. They note that the growth effects of FDI in export-oriented countries will be greater because the distortion of tariff-induced FDI can be neutralized, thus resources will be employed optimally. They use the growth rate of GDP as the dependent variable and the stock of FDI to GDP as the variable of interest; other controls include exports, labour, and total investment to GDP to capture the stock of capital. They find that FDI enhances growth in countries that are export promoting, while negatively affects growth in import-substituting countries.

As the study uses annual data (1970-85) without taking account of business cycle effects or random fluctuations[5], findings may be problematic. Contending that the state of the current literature has not sufficiently addressed the many econometric problems associated with testing this relationship, Carkovic and Livine (2002) take a further look at the exogenous component of FDI and its effect on growth. Using two different data sets in a dynamic panel, after backing out potential biases, they observe no robust relationship of FDI enhancing growth. This provides caution to policy makers who introduce policies to attract FDI, believing that this will improve growth, especially those that are distortionary (e.g. tax breaks only to foreign investors, which disadvantaged local firms and other industrial policies which favour a particular sector in an industry). The literature suggests that in the absence of absorptive capacities, growth in the presence of FDI may be elusive.

Rajan and Zingales (1998) argue that financial development plays a supporting role in growth by reducing the cost of financing to firms. Going a step further, Hermes and Lensink (2003) contend

[5] One way of preventing this bias is to smooth out the data using period averages. See also Atique, Ahamad and Azhar (2004) for evidence supporting Bhagwati's (1978) hypothesis in Pakistan's data using time-series techniques.

that a developed financial system is a prerequisite for FDI to positively affect growth. This has been supported empirically on the basis of cross-section and panel estimation method, with various measures of financial development and stability tests. They therefore implore policy makers to get the financial system right in order to take advantage of the growth prospect of FDI.

But even this study has not gone far enough to address the potential identification problem that may arise between FDI and the financial system, as there is a strong case that FDI may precede a good financial system. The implication here is that a good financial system is not a precondition for FDI to improve growth, rather the growth effects of FDI allow the institutions of a country including the financial system to be improved. This has been established in the growth literature where as a country grows its economic and political institutions are modernized, especially to sustain growth. This therefore contradicts the argument that FDI is only growth inducing in a developed financial environment. Moreover, most FDI relies on foreign capital (Alfaro *et al*., 2004), so the local financial system might not be relevant for them. But, Hermes and Lensink (2003) maintain that FDI on its own has a negative effect on growth in the recipient country.

Starting from an underdeveloped financial system, which is the experience of many developing countries, an exogenous inflow of FDI serves to enhance the economic and political institutions that in turn will attract further inflows and contribute to growth. Thus it is not the initial developed financial system (which hardly exists in developing countries) that is important, but how policy makers align incentives to get foreign investors to improve local conditions. Alfaro *et al*. (2004) provide empirical evidence suggesting that the growth effects of FDI can only be realized in a developed financial environment, after addressing the problem identified in Hermes and Lensink (2003).

Along a similar line, in an earlier work, Borensztein *et al*. (1998) test for the effect of FDI on economic growth and find that FDI only matters when the host country achieves a certain level of human capital (i.e. educational attainment). In most of their specifications (after grouping countries according to some human capital threshold) FDI returns a negative coefficient. This suggests that countries with low human capital development do not benefit from FDI: 'the effect of FDI on economic growth is dependent on the level of human capital available in the host country' (Borensztein *et al*., 1998: 134). These studies indicate that developing countries will not benefit from FDI beyond the addition to capital stock, as they often suffer from an underdeveloped financial system and low human capital capacity. Indeed, disadvantages of these

sorts are the major reasons for trying to attract FDI in the first place. In fact, getting the financial system right and improving educational attainment (which is often used to proxy human capital) require policy continuity (from one political administration to the other) and resource availability; these are challenging tasks in developing countries, especially in light of the fact that the financial sector is one of the main areas for extractive behaviour by the private sector and political elites.

This is implied by Temple (2003) who argues that the financial crisis (1997-98) in Indonesia was exacerbated by Suharto's acceptance of "deep-seated" corruption and "crony-capitalism" in the financial sector in an attempt to avoid political rivalry. Alienating education from the general populace is another mechanism for holding on to power in many developing countries, as argued by Easterly (2003) in explaining why Pakistan was unable to translate respectable levels of economic growth of about 2.2% per annum, from 1950 to 1999, into development. Nonetheless, with so much slack in the growth experience of developing countries, any exogenous inflows of FDI will serve to enhance economic growth.

This is the main aim of the paper, providing empirical evidence that the growth effects of FDI in developing countries are direct, i.e. not conditional on values of other determinants (although this does not generalize to a sub-sample of LAC), while acknowledging that this can be augmented by local conditions: levels of human capital and financial development. Hence the answer to economic growth might not be as difficult in developing countries as implied by Bronzstein *et al*. (1998) and others. In a similar spirit, de Mello and Luiz (1999) uses both time series and panel estimation techniques and, after grouping countries based on income levels, did not reach a conclusive outcome concerning the growth effects of FDI.

Ram and Zhang (2002) are optimistic about the role of FDI in economic growth during the 1990s. This was a period when the world and developing countries in particular experienced unprecedented FDI inflows. They use data for the period 1990-97 and find some evidence of FDI-enhancing growth in cross-country regressions, but this was not robust because in some of their specifications the FDI coefficient was insignificant.[6] Furthermore, their eight-year period is perhaps too short to observe a medium to long-term effect, as they only apply cross-section OLS averaged over this period. It is possible that with the correct econometric approach and sufficiently long time series this optimism may not be misplaced.

[6] Mencinger (2003) in an empirical paper finds robust evidence that FDI negatively impacts growth in eight transition economies in Europe. This he suggests was due to acquisition by foreign investors and most of the proceeds went into consumption instead of productive assests.

Yao (2006) uses modern econometric techniques (Generalised Method of Moments) and a relatively long time frame (28 years) to assess the remarkable economic performance of China over the past 25 years. China has been the largest recipient of FDI inflows among developing countries over the past few decades. This case study highlights the role of FDI and exports in China's economic success, even though the empirical support for FDI was positively significant only at the 10% level. In addition to using efficient econometric techniques, the current paper goes further by looking at a wide cross-section of developing countries with different levels of economic performance, with mixed political orientation, and with different levels of FDI inflows. This will enhance our understanding of the growth effects of FDI and provides insights regarding whether FDI plays a similar role in other developing countries. The message here is that if FDI plays a similar role in China as other developing countries, then policy makers from other developing countries can draw lessons and calibrate them to local experiences to improve economic performance.

Using data on 66 developing countries over a twenty-eight-year period and a modified Granger causality approach in the framework of a VAR model, they find that FDI promotes growth in only about 44% of the sample and productivity and exports as mechanisms account for 11% and 14% of growth respectively. An interesting observation is that FDI causes growth directly in 32% of the sample, this they note as unexplained mechanisms. They conclude, that 'The presence of "direct" effects of FDI on growth, i.e. those not captured by exports and productivity suggest that our analysis could be enriched by incorporating more than two mechanisms …' (Duttaray *et al*., 2008: 11), dismissing the possibility of this direct growth effect. Modern econometric tools are available for researchers to isolate causation between economic variables, for example in a panel setting the GMM estimator can accomplish this objective by providing consistent and efficient estimates. Indeed this is the method adopted to answer the question: what is the contribution of FDI to economic growth?

3.0 Methodology

Data, Variable and Econometric Approach

The data used in this paper are mainly from the World Bank, World Development Indicators (2006), the Cross-national Time-series Data Archive (2003) and the Polity IV Project (2004). We draw on the updated version of Barro and Lee (2000) for a measure of human capital.[7] The dataset comprises 68 developing countries including Latin America and the Caribbean (LAC, 20),

[7]See http://www.cid.harvard.edu/ciddata/ciddata.html.

Asia (13), sub-Saharan African (SSA, 31) and North Africa (4). We use non-overlapping five-year averages over 1975-2005: 1975-1979; 1980-1984; 1985-1989; 1990-1994; 1995-1999; 2000-2005. Growth is measured as the first difference of the natural logarithm of real GDP per capita (in constant 2000 US dollars).

FDI is measured as net FDI inflows as a percentage of GDP in a country (de Mello and Luiz, 1999; Ram and Zhang, 2002; Alfaro *et al*., 2004). Studies have used the stock of FDI to GDP (Nunnenkamp and Spatz, 2004; Balasubramanyam *et al*., 1996) or gross FDI inflows as a ratio of GDP (Borensztein *et al*., 1998; Carkovic and Levine, 2002; Hermes and Lensink, 2003; Lensink and Morrissey, 2006). As we are interested in the role of FDI in a host country, net FDI inflows to GDP is the appropriate measure of FDI (Duttaray *et al*., 2008; Alfaro *et al.,* 2004). As the characteristics of economic growth can be "initiated and nurtured" through FDI and there is enormous slack in developing countries' economic performance, an exogenous inflow of FDI can have a significant positive impact on growth, as suggested by previous studies.

Theoretically, a given inflow of FDI will have an initial level effect on growth, but as the effect works through the economy there can be dynamic effects on the growth rate; this growth will generate higher levels of inflows, which will subsequently generate higher growth. Therefore FDI should have a positive impact on growth in developing countries, *ceteris paribus*.

The main controls used are: human capital, liquid liabilities of the financial system to GDP, constraints on the executive use of power and initial income per capita (this is included to control for convergence or initial conditions). One of the major challenges facing developing countries (notably Haiti in LAC, Pakistan in South Asia and most of SSA) is low literacy of the working age population, hence the lack of human development, given the 'belief that expanding education promotes growth has been a fundamental tenet of development strategy' (Pritchett, 2001: 368). The average gross secondary enrolment[8] rates for Pakistan and SSA (average) are 29% (2002-06) and 28% (1999-2005), respectively and anecdotal evidence indicates a gloomy picture for Haiti. This is reflected in the slow rate with which modern technologies have been introduced and the meagre budgetary support for R&D[9] in developing countries. This suggests a strong reliance on imitation and copying from the north, but even these require a minimum threshold level of human capital that many developing countries are not able to achieve. Absorptive capacities

[8] "Gross enrolment ratio is the ratio of total enrolment, regardless of age, to the population of the age group that officially corresponds to the level of education shown", this lay the foundation for human development (World Bank, World Development Indicators 2008).
[9] SSA's public spending on agriculture R&D increased by only 20% in real terms over 1981-2000, (Ravillion, 2008), just to give an example.

through a literate labour force are essential not only to spur growth, but also to sustain growth. Therefore if poor countries are to improve economic growth much emphasis must be placed on developing human capital.

Human capital is measured by Barro and Lee (2000) as average years of schooling[10] in the population age 25 years and older (Rajan and Zingales, 1998). Pritchett (2001) uses this series to construct an education capital index and observes that an educated labour force has a depressing effect on growth. There are at least three reasons for this: when educated individuals are drawn into rent-seeking occupations which rewards individuals but distort growth; when supply of educated individuals outpaces demand and technology this reduces returns on labour and makes it less productive than otherwise; and poor education policies that stress enrolment above quality (Pritchett, 2001). Temple (1999) uses the average years of schooling and finds a positive correlation with growth after accounting for influential outliers. Benhabib and Spiegel (1994) observe a negative direct effect of human capital on growth, but a positive growth effect through total factor productivity. Borenzstein *et al*. (1998) measure human capital by the average years of male secondary schooling. A literate work force serves as a conduit for more productive labour because it is 'better at creating, implementing, and adopting new technologies, thereby generating growth' (Benhabib and Spiegel, 1994: 144).We expect a significant positive relationship with economic growth.

There is a general view in the growth literature that sound institutions are good for growth, especially in developing countries given their poor political, social, and economic institutions. Institutions are 'a set of rules, compliance procedures, and moral and ethical behavioral norms designed to constrain the behavior of individuals in the interest of maximizing the wealth or utility of principals' (North, 1981: 201, cited in Gleaser *et al*., 2004). 'That institutions affect the performance of economies[11] is hardly controversial, [and] that the differential performance of economies over time is fundamentally influenced by the way institutions evolve is also not controversial' (North, 1990:03). Acemoglu (2003) identifies three key features of sound institutions: enforcement of property rights, constraints on political elites or other powerful groups and some amount of equality in opportunities. He asserts that lack of education,

[10] It must be pointed out that average years of school do not indicate learning (Pritchett, 2001) or quality of education which may be important in measuring human capital; we accept this as a crude measure due to data availability.

[11] For an excellent discussion on why countries that became Canada and the United States are rich post- colonial rule, and the role of institutions in their accumulation of wealth, while their neighbours in Latin America and the Caribbean remain poor see Engerman and Sokoloff , 2003, chapter 3. This discussion emphasises different initial conditions and how they influence the evolution of institutions. See also Przeworski (2004).

dysfunctional markets,[12] outdated machinery and technology are only proximate causes of poverty in poor countries, and the deeper determinant operating through these channels is poorly functioning institutions. Rodrik (2007) adds to this by identifying regulation, macroeconomic stabilization, social insurance, and conflict management institutions as key to 'high-quality growth' in a market economy. Rodrik (1999) also shows that countries that were disproportionately affected by the downturn in the world economy after 1975 had poor institutions of conflict management.

Rodrik *et al*. (2004) confirms the primacy of institutions (the rule of law and risks of expropriation), in determining growth, over trade and geography.[13] We use constraint on the executive[14] (XCONST) from the Polity IV Project (2004) to measure good institutions in developing countries as is often used in the growth literature. This measure suggests that political elites have less freedom to make populist policies, or those that satisfy a few influential interest groups, or rent seeking by politicians that are not growth-enhancing. The measure closely reflects the regime type as participatory democracy; although a crude measure of the institutional environment, it provides a closer approximation of the quality of institutions than other widely used measures – such as risk of appropriation or government effectiveness (Gleaser *et al*., 2002). Constraint on the executive power is scored on a 1-7 scale, where a higher score means more constraints on the executive power (interpreted as better governance). That institutions are 'good for growth' has been accepted in recent economic growth literature. Taken as a whole, we expect a positive relationship with growth.

In keeping with the literature, the ratio of liquid liabilities of the financial system to GDP is used to capture the development (or depth) of the financial system (Borensztein *et al*., 1998; Hermes and Lensink, 2003). Alfaro *et al*. (2004) suggest that it is the broadest measure of financial intermediation, as three types of financial institutions are included: the central bank, deposit banks and other financial institutions. One of the principal signals of an undistorted economy is its ability to allocate capital where the return is the highest. The motivation here is that a strong financial system will eliminate leakages by ensuring that resources are allocated to their most

[12] Rodrik (2007: 156) suggests that markets require institutions because they are not "self-creating, self-regulating, self-stabilizing, or self-legitimizing".
[13] In the words of Rodrik *et al.* (2004: 131) 'the quality of institutions "trumps" everything else'
[14] 'When the state is not constrained, it faces a fundamental commitment problem, that is, how to credibly commit not to prey on private gains or intrude on private economic activities despite the great temptation to do so' (Qian, 2003: 318). This is the familiar time-inconsistency problem. The author provides a provocative discussion of the role of transitional institutions in China's growth miracle.

efficient use resulting in economic growth. This is the position taken by Schumpeter (1911)[15] who argues that financial development provides an oversight for technology innovation and economic development. King and Levine (1993) find supporting evidence that financial development improves both current and future growth; not only is financial development good for growth, it is also positively associated with the sources of growth i.e. productivity growth (Beck *et al*., 2000) and capital allocation (Wurgler, 2000).

4.0 Econometric specification

Table 1: Summary statistics for (68) developing countries, 1975-2005

Variables	Mean	St. Dev.	Min	Max
GDPC	1.03	3.33	-13.23	10.66
FDI/GDP	1.83	2.29	0.200	16.18
HC	3.74	2.07	0.14	10.46
FinDev	72.94	533.81	0.82	7912.74
Coups	0.04	0.12	0	1.20
XCONST	3.78	2.09	0	7

Notes: Countries with negative FDI inflows are treated as zero inflows.

To estimate the effect of FDI on growth taking account of the role of human capital, following Borensztein *et al.* (1998), we specify a growth regression model as follows:

$$GDPC_{it}=\beta_1 FDI/GDP_{it}+\beta_2 HC_{it}+\beta_3 FDI/GDP_{it}\times HC_{it}+\beta_4 Y_0+\beta_5\xi_{it} \quad (1)$$
$$+\psi_i+\varepsilon_{it}$$

where $GDPC_{it}$ is real GDP per capita growth, *i*, *t* are countries and each five-year period respectively, and FDI/GDP_{it} is net FDI inflows in country *i* at time *t*, HC_{it} is human capital measured as the average years of schooling in the population 25 years and older, $FDI/GDP_{it} \times HC_{it}$ is an interaction term to capture the complementary effect of FDI and HC on growth, Y_0 is the natural logarithm of initial income at the start of each five-year period, ξ_{it} is the vector of other controls. The latter includes financial development (*FinDev*), constraint on the executive (*XCONST*), a measure of political instability (*Coups* i.e. the number of coups in a country) and

[15] See King and Livine (1993) and Beck *et al.* (2000).

continental dummies for *LAC* and *SSA*, which takes the value 1 if a country is located in the region and zero otherwise.

The ψ_i is an unobserved time-invariant country-specific effect and ε_{it} is an error term assumed independent of all other controls. The key assumption of this model is that ψ_i is time-invariant, rather than of the form ψ_{it}, and is uncorrelated with ε_{it} (this can be assessed using the Hausman Test of no-correlation under the null hypothesis). Through a differencing transformation (which subtracts out ψ_i), the model can be consistently estimated, thus allowing for in-sample[16] predictions to be made. Controlling for country-specific effects and exploiting the time series nature of the panel is an improvement on simple cross-section OLS regressions, which exclude meaningful information and are likely to suffer from omitted-variable bias (due to heterogeneity).

The dynamic panel GMM estimator is adopted to address potential endogeneity of one or more regressors in (1) arising from reverse causality. The dynamic panel GMM estimator has been used in growth regressions to address omitted variables and endogeneity bias (Hoeffler, 2002; Nkurunziza and Bates, 2003).

[16] Cameron and Trividi (2006) suggest that fixed effects estimation is a conditional analysis, i.e., assessing the impact of the independent variables on the dependent variable, controlling for country- specific effects, while random effects estimator is appropriate for out of sample predictions.

5.0 Panel Evidence

Table 3 displays the results for estimating (1) using – fixed effects (FE), pooled cross section (OLS) and random effects (RE).

Table 2: Panel evidence for model (1) on growth and FDI, Pooled (OLS), Random Effects (RE) and Fixed Effects (FE)

Variables	POLS	RE	FE
LnY_0	-.013	-.332	-4.157
	(.953)	(.265)	(.000)***
FDI	.554	.589	.340
	(.005)***	(.001)***	(.074)*
HC	.256	.213	.073
	(.066)*	(.201)	(.762)
HC×FDI	-.060	-.055	.010
	(.072)*	(.096)*	(.776)
FinDev	-.0003	-.0002	-.0001
	(.226)	(.517)	(.714)
XCONST	.236	.210	.200
	(.017)**	(.030)**	(.084)*
COUPS	-.918	-1.017	-1.310
	(.563)	(.538)	(.418)
SSA	-2.393	-2.660	
	(.000)***	(.000)***	
LAC	-3.020	-2.705	
	(.000)***	(.000)***	
F	10.28		
Observations	350	350	350
R^2	.22		
:within		.08	.19
:between		.40	.05
:overall		.21	.003

Notes: P-values are below coefficient in parentheses. *** Significant at the 0.01 level, ** significant at the 0.05 level, * significant at 0.10 level. Estimates are for five-year averages. POLS uses robust standard error. LAC and SSA are continental dummies for Latin America and the Caribbean and sub-Saharan Africa, respectively. The Hausman Test did not reject the RE as the preferred model (a χ^2 of 10.52 and p-value 0.10 is insignificant). Countries with negative FDI inflows have been treated as zero inflows. The variable *COUPS* is the number of coups in a country and *XCONST* is measured on a 1-7 scale, higher scores represent more constraints on the executive power. The dependent variable is the difference between the natural logarithm of GDP per capita at the end and the beginning of each sub-period divided by the number of years. Y_0 is the natural log of GDP per capita at the beginning of each sub-period. *HC×FDI* is an interaction term that captures the complementary effects between human capital and *FDI* on growth. *FinDev* is liquid liabilities of the financial system to GDP; it is usually measured as m2/GDP. The choice of variables and model specifications follow closely Borensztein *et al.* (1998). All regressions have a constant term.

Most variables have the expected sign and are significant at the conventional levels (except the complementary effect of *FDI×HC*, which is negative in POLS and RE). The pooled OLS explains 22 percent of the cross-country variation in growth rates in the sample. The Hausman Test of no-correlation between ψ_i country-fixed effects and the ε_{it} errors does not reject the null, so RE is the preferred specification. Of the controls, constraints on the executive power has a consistently significant and positive effect on growth; as in Bronsztein *et al*. (1998), SSA and LAC dummies are negative and significant, as is often found in cross-section regressions (Barro, 1991; Levine and Renelt, 1992; Alfaro *et al*., 2004). The coefficient on FDI is positive and significant across all models. We do not replicate the main finding in Bronsztein *et al*. (1998), which suggests that FDI positively affects growth conditional on human capital development; the results in Table 2 suggests a negative complementary effect on growth.

As suggested by Borenzstein *et al*. (1998), the positive contribution of FDI to economic growth may be conditional on the values of other variables in the host countries; Alfaro *et al*. (2004) and Hermes and Lensink (2003) argue that for FDI to positively contribute to growth recipient countries must attain a minimum threshold level of financial development. This is based on the allocation efficiency over investment projects and the efficiency of mobilizing savings generated by a robust financial system. Accordingly, good 'financial systems can help monitor a firm's managers and exert corporate controls, thus reducing the principal-agent problems that lead to inefficient investments' (Loayza *et al*., 2004: 21). We explore this possibility by including interaction effects of FDI with financial development. This will also provide a robustness check on the direct effect of FDI on growth observe in Table 3. The results are reported in Table 4.

Table 3: Panel evidence for FDI and growth: The role of financial development

Variables	POLS	RE	FE
LnY_0	.050	-.221	-3.955
	(.832)	(.465)	(.000)***
FDI	.569	.609	.361
	(.004)***	(.001)***	(.059)*
HC	.208	.146	.017
	(.153)	(.391)	(.945)
HC×FDI	-.037	-.027	.026
	(.270)	(.463)	(.485)
FinDev	.00002	.0002	.0001
	(.912)	(.548)	(.694)
FinDev×FDI	-.002	-.003	-.002
	(.026)**	(.062)*	(.225)
XCONST	.237	.217	.211
	(.017)**	(.024)**	(.068)*
COUPS	-.940	-1.038	-1.307
	(.557)	(.529)	(.419)
LAC	-3.222	-2.987	
	(.000)***	(.000)***	
SSA	-2.528	-2.818	
	(.000)***	(.000)***	
F	10.66		
Observations	350	350	350
R^2	.23		
:within		.09	.20
:between		.40	.06
:overall		.22	.004

Notes: *P*-values are below coefficients in parentheses. *** Significant at the 0.01 level, ** significant at the 0.05 level, * significant at 0.10 level. *HC×FDI* is interaction effect of human capital and *FDI*. *FinDev×FDI* is interaction effect of Financial development and *FDI*. POLS is based on robust standard errors. Countries with negative FDI inflows have been treated as zero inflows. When we include domestic credit provided by the private sector to proxy financial development, results were not affected. See also notes to Table 3. All regressions have a constant term. The Hausman Test rejects the RE as the preferred model (a χ^2 of 61.21 and *P*-value 0.00 is significant).

Contrary to the studies cited above, we find no positive relationship of a complementary effect between FDI and financial development on growth. The complementary effect between financial development and FDI is negative and significant for POLS and RE. In fact the introduction of a complementary effect swamps the significance of *HC* and *HC×FDI* in Table 2. Results of significant variables are broadly similar to those observed previously. Using fixed effects as our preferred specification, FDI and institutions are positive and significant and there is evidence of convergence; these estimates are within the range of those of Table 2. Lensink and Morrissey

(2006) did not find any evidence that the effect of FDI on growth was conditional on a threshold level of human capital. Introducing *FinDev×FDI* does not improve the overall performance of the models. More important, these estimators do not allow for potential endogeneity between FDI and growth and should therefore be interpreted with caution.

As noted, it is important to account for endogeneity, especially insofar as this relates to the causal relationship between FDI and growth. For example, the levels of FDI inflows may be the outcome of the types of regime in a country or some other policy variables (exchange rate) that is not included (or may not be observed). Hence including FDI without controlling for these possibilities might capture the effect of those variables and not the true relationship between FDI and growth. There are mixed views about the choice of regimes that are important for growth, but because regime types are also important in determining FDI, regressing growth on FDI might just be capturing the effects of regime choices instead of the effects of FDI on growth that we are after (or more obviously, FDI is endogenous and responds to growth performance). A similar argument applies to the relationship between the financial system and FDI. Borensztein *et al*. (1998) use a three-stage least squares estimator to address potential endogeneity between growth and FDI. Alfaro *et al*. (2004) instrument financial development with origins of a country's legal system and creditors' rights. The justification is that these instruments are exogenous determinants of a country's financial system. To get around the endogeneity problem, we use a dynamic panel estimator to estimate equation (1), i.e. the GMM estimator similar to Hoeffler (2002). By using the GMM estimator we are able to isolate the exogenous component of FDI on growth. Table 4 reports the results.

Table 4: Dynamic Panel estimation (GMM) of the growth effect of FDI

Variables	(1) DIF-GMM	(2) DIF-GMM	(3) DIF-GMM
LnY_{t-1}	-.128	-.145	-.113
	(.491)	(.328)	(.426)
FDI	1.592	1.346	1.217
	(.055)*	(.094)*	(.066)*
HC	-1.326	-1.138	-.319
	(.574)	(.442)	(.831)
HC×FDI	-.112	-.184	-.157
	(.369)	(.314)	(.349)
FinDev		-.004	-.001
		(.792)	(.971)
FinDev×FDI		.010	.005
		(.382)	(.611)
XCONST			.739
			(.079)*
COUPS			2.609
			(.590)
Time Dummies	Yes	Yes	Yes
Observations	233	233	233
M_1	0.04	0.03	0.02
M_2	0.30	0.14	0.13
J (p-value)	0.25	0.51	0.09

Notes: *P*-values are below coefficients in parentheses. * Significant at 0.10 level. M_1 is the test for no first-order serial correlation and M_2 is the test for no second-order serial correlation in the residuals. . The J (Sargan) statistic is the test of over-identifying restrictions of instruments validity under the null. All explanatory variables are their own instruments. Specifications use robust standard error. Full time dummies are included. LnY_{t-1} is initial income lagged one period. Countries with negative FDI inflows have been treated as zero. Specification (1) uses 3 and 5 lags and specifications (2) and (3) use 3/4 lags.

After we control for endogeneity with the GMM estimator, the main result is supported. There is a statistically significant and positive relationship between the exogenous component of FDI inflows and economic growth. This result is robust across different specifications (although not as strong as those in Tables 2 and 3), the point estimates are converging and are larger than those obtained before, a confirmation of the limitation of the conditional argument, which assumes that FDI will not contribute to growth in developing countries where financial underdevelopment and low human capital are persistent. This view implies that developing countries should not consider FDI as a key channel for boosting economic growth but, our finding suggests that this argument is wrong. To the contrary, developing countries should actively encourage FDI inflows, because of the evidence for growth-inducing effects. Another consistent finding is that the measure of institutional quality exerts a positive and significant influence on growth, an indication that the

institutional environment in which economic activities take place is an important stimulus for economic growth. Hence, institutions determine the incentive structure that increases or reduces economic activities. This finding is also supported by Rodrik *et al*. (2004) and other studies in the growth literature. We assess the magnitude of these effects.

Using specification 3, we evaluate the quantitative impact of significant variables, a 1% increase in institutional quality increases economic growth on average .95%,[17] a 1% increase in FDI increases economic growth on average .71%.[18] Many developing countries particularly those in Africa, Caribbean and the Pacific (ACP) have not experienced respectable growth rates in their historical economic performance. For example, average per capita GDP growth for this large group of small countries was, 0.5%, 0.4% and -0.5% in the 1970s, 1980s 1990s respectively[19]. As suggested, it is not as difficult for developing countries to benefit from the growth effects of FDI; the challenge is how to get foreign investors to relocate their plants in developing countries. This observation reflects a point made by Hoeffler (2002) in that developing countries like the ACP are not destined to slow growth performance due to poor initial conditions; what these countries need to do is find ways of attracting investors and controlling their population boom.

That FDI influences growth in developing countries is direct and does not seem to depend on levels of education or financial development. This contradicts the assertion that the 'flow of advanced technology brought along by FDI can increase the growth rate of the host economy *only* by interacting with that country's absorptive capability' (Borensztein *et al.,* 1998, emphasis added). It is noteworthy that all of our specifications yield no significant effect interacting FDI with human capital or financial development. One interpretation is that levels of human capital and financial development are so low that the interaction terms crowd out the growth effects of FDI. Indeed, introducing advanced technology (through FDI) to an unskilled workforce will have no effect on growth or even hurt growth. Take for example Suharto's support for "crony capitalism" in Indonesia in the financial sector that rewards corruption and punishes efficiency as suggested by Temple (2003). One should expect no significant complementary effect of FDI and financial development on growth under such distorted conditions.

[17] A % change in GDPC due to a % change in XCONST is given by: dGDPC/meanGDPC = b lnXCONST, where b is the coefficient of XCONST, d denotes change, and lnXCONST denotes natural log of XCONST.
[18] A % change in GDPC due to a % change in FDI/GDP is: dGDPC/meanGDPC =b lnFDI/GDP.
[19]http://pgpblog.worldbank.org/categories/advances_in_development_economics.

6.0 Growth and FDI in LAC

Our contribution in this section is to take a fresh look at the role of FDI in the growth experience of LAC, particularly whether FDI contributes to economic growth in the region. Economic growth is a benefit; though it does not affect all agents equally, it provides the resources for governments to assist those least affected: through building schools, building hospitals, improving law enforcement and other public goods, which markets fail to provide because of the disproportionate social-private pay-off. The "Washington Consensus" argues for a passive role for the state in economic activity and proposes that markets should be allowed to correct themselves where they fail. Markets by themselves, however, will not provide services that have public goods characteristics; therefore governments' intervention is required to correct these failures. Lessons from Singapore, China and other East Asian countries indicate that state intervention need not result in government failures. For example, over the past 25 years the average annual growth rate for China was 9% (Qian, 2003), taking a billion people out of poverty, this occurred under strong state influence.

Governments with self-seeking interests, however, will not facilitate the efficiency in economic activity that is good for growth. Until recently, LAC countries have had a history of populist regimes that actively engage in economic activity through state-own enterprises and redistribution policies (and even today, most notably Venezuela and Bolivia). The consequences are a bloated government that crowds out private investment, creates rent-seeking behaviour, and generates corruption and inefficiencies resulting in poor economic growth. Perhaps a more severe implication of a populist regime is societal dispute created by unequal distribution of rents among competing interest groups. Stiglitz (2002) suggests that most of the thinking in the "Washington Consensus" in the 1980s was in response to problems in LAC: excessive government intervention in economic activity resulting in huge budget deficits and loose monetary policy resulting in high inflation.

LAC countries are relatively poor, with a large number of their populations living in poverty. For this reason (and the belief that growth reduces poverty and FDI is expected to drive this process) and especially in the light of the region's active policies in attracting FDI and its poor economic performance, the contribution of FDI to economic growth is the key question for LAC; we systematically investigate the contribution of FDI to economic growth in LAC. Table 5 illustrates some basic facts about the growth experience of LAC over selected periods.

Table 5: Growth Rates of GDP per Capita (%) for LAC – 1975-05

Country	1975-79	1980-90	1990-00	2000-05
Southern Cone:				
Argentina	0.93	-3.00	3.20	0.99
Brazil	3.54	-0.52	0.99	1.31
Chile	5.40	2.05	4.64	3.02
Paraguay	6.50	-0.30	-0.60	0.58
Uruguay	3.57	-0.66	2.37	0.88
Andean Group:				
Bolivia	0.50	-2.08	1.50	0.99
Colombia	3.24	1.45	0.70	1.80
Ecuador	2.48	-0.52	-0.02	3.58
Peru	-0.63	-3.08	2.13	2.58
Venezuela, RB	0.69	-1.88	-0.01	0.74
Central America:				
Costa Rica	3.52	-0.22	2.65	2.08
El Salvador	0.81	-1.47	2.44	0.34
Guatemala	3.58	-1.51	1.76	0.08
Honduras	5.12	-0.71	0.46	1.22
Mexico	3.64	-0.29	1.78	0.75
Nicaragua	-9.61	-3.92	1.16	0.11
Panama	1.63	-0.77	2.92	2.34
Caribbean:				
Guyana	-2.00	-3.02	4.58	0.45
Haiti	3.08	-2.72	-2.77	-1.98
Jamaica	-3.78	1.50	1.12	1.20
Trinidad and Tobago	5.74	-3.43	2.56	3.66

Notes: Author's calculations. Data are from the WDI. Chile withdrew from the Andean group in 1972. This pack was formed to enhance the competiveness of members. Figures are unweighted averages, so each country carries the same weight.

LAC economies grew, with a few exceptions, at respectable levels during the second-half of the 1970s. The larger countries of the Southern Cone group grew the fastest, (Paraguay records the highest rate of 6.50% on average); Nicaragua, Jamaica, Peru and Guyana record negative growth. For the decade of the 1980s all countries experience negative growth, except Chile, Colombia, and Jamaica. The poor performance of LAC economies in the 1980s has highlighted the so-called "lost decade" arising from the debt crisis and subsequent IMF stabilization programmes.

The IMF stabilization programmes require cuts in government spending and devaluation of currencies with the aims of containing inflation and generating surplus (on the supply side through exports) to service debts from the 1970s, both of which reduced economic activity and

contributed to poor growth (Nazmi and Ramirez, 2003). Hence generating growth requires more than just stabilization (De Gregorio, 1991). The positive growth of Chile and Colombia underlies their reform and "external credit worthiness" respectively (Loayza *et al*., 2004: 04). In the 1990s most LAC economies recovered from negative growth rates experienced in the 1980s, but still below levels of 1975-79. This positive trend continues to mid-2000, except for Haiti which is afflicted by violence and other political instability. As a comparable group, Table 6 presents growth rates for selected Asian countries.

Table 6: Growth Rates of GDP per Capita (%) for Asia – 1975-05

Country	1975-79	1980-90	1990-00	2000-05
Bangladesh	2.61	1.30	2.54	3.38
China	4.63	7.42	8.85	8.46
India	-0.06	3.51	3.57	5.23
Indonesia	5.16	4.34	2.67	8.62
South Korea	7.21	7.19	4.98	3.92
Malaysia	0.16	3.21	4.33	2.44
Nepal	1.24	2.28	2.46	0.81
Pakistan	0.81	3.43	1.41	2.39
Papua New Guinea	-0.61	-1.13	2.16	-0.55
Philippines	3.38	-0.72	0.85	2.51
Singapore	6.57	4.83	4.54	2.36
Sri Lanka	5.66	2.67	3.80	3.59
Thailand	5.98	5.91	3.19	4.05

Notes: Author's calculations. WDI data. Averages are unweighted by country size.

Table 6 shows that Asian countries grew at faster and sustained rates than LAC countries. The average rate of growth for LAC is: 1.81% (1975-79); -1.20% (1980-90); 1.60% (1990-00); and 1.27% (2000-05). Asia's growth rates over the same periods are: 3.29; 3.40; 3.49; and 3.67. This comparison is consistent with the negative dummy observed for LAC (Barro and Lee, 1994; Tables 2-3 above) and positive for Asia (Barro and Lee, 1994). Economic growth can be explained by many factors, and a number of studies have empirically analyzed factors affecting growth in LAC. We discuss those studies in the next sub-section.

6.1 Previous Empirical evidence on growth and FDI in LAC

In an empirical exercise of 12 Latin America economies over the 1950-85 period, De Gregorio (1991) finds that growth can be explained by a few factors: private investment, foreign investment, inflation, initial income and literacy rate, these factors are robust to the inclusion of

other variables. Total government consumption plays no robust role in explaining growth even after excluding expenditures on education and defense.

Nazmi and Ramirez (2003) develop a dynamic optimization model to show the effect of private capital formation on growth in a small open economy. They empirically implement their model using the seemingly unrelated regression (SUR) technique; government consumption is introduced indirectly through its effect on private capital formation. Their findings are: total government consumption adversely affects growth by crowding out private investment, but the different components affect private investment and thus growth differently – expenditure on health care improves private investment, while defence spending discourages private investment. They note that while private investments promote growth directly, human capital induces growth through its effect on private capital formation.

Finally, Bengoa and Sanchez-Robles (2003) estimate a growth regression with a panel of 18 Latin America countries over 1970-99 to test the effect of economic freedom and FDI on growth. They observe FDI as a robust predictor of economic growth, economic freedom (governance) positively affects growth and public consumption discourages growth. While this study stops at 1999, our coverage extends to 2005. Bengoa and Sanchez-Robles (2003) use two estimation strategies, fixed effects and random effects, to estimate the following model.

$$Y_{it} = \gamma_0 \text{ intercept} + \gamma_1 Z_{it} + \varepsilon_{it} \qquad (2)$$

In (2) Y_{it} is real GDP per capita; Z_{it} is a vector of potential growth determinants: FDI/GDP, Human capital, Index of economic freedom (EFW), external debt/GDP and total government consumption/GDP. EFW is a proxy for governance from the Fraser Institute. It quantifies the (1) size of government, (2) legal structure and security of property rights, (3) access to sound money, regulation of credit, labour and business and (4) freedom to trade internationally into a composite index on a 0-10 scale, larger numbers indicate better governance. In the spirit of (2) we re-estimate (1) with the full set of potential growth determinants for LAC. An immediate criticism of Bengoa and Sanchez-Robles (2003) is that no account is taken of potential endogeneity, we address this concern using lagged explanatory variables (the sample is too small for GMM). Table 7 reports results.

6.2 Panel Evidence - LAC

Table 7: Panel evidence – the growth effect of FDI in LAC

Variables	RE	FE
LnY_0	-.012	-8.992
	(.982)	(.000)***
FDI	.232	-.247
	(.700)	(.676)
HC	.056	-.776
	(.860)	(.155)
HC×FDI	.071	.194
	(.453)	(.048)**
FinDev	-.027	.024
	(.328)	(.491)
FinDev×FDI	-.005	-.007
	(.484)	(.326)
XCONST	.187	.420
	(.247)	(.031)**
COUPS	-1.573	3.233
	(.605)	(.269)
Observations	120	120
R^2		
:within	.14	.37
:between	.29	.32
:overall	.17	.01

Notes: *P*-values are below coefficients in parentheses. *** Significant at 0.01 level, **significant at 0.10 level. All regressions have a constant term. Estimates are based on the six sub-periods. Hausman Test has a χ^2 of 46.39 and a significant p-value of 0.00; fixed effects is preferred. Inconsistent POLS is dropped. Countries with negative FDI flows are treated as zero.

The RE specification performs poorly; even though most variables have the expected sign, none is significant. However, the Hausman Test suggests that FE is the preferred specification. Institutions and the complementary effect of human capital and FDI have a positive and significant impact on economic growth. There is evidence of conditional convergence; poor countries growth faster than their rich counterparts. As these estimates don't control for endogeneity, they cannot be treated as robust determinants. To control for potential endogeneity, lagged independent variables are used, the sub-sample does not permit the use of the GMM estimator when N is small and T is large. Our goal is to systematically test the effect of FDI on growth in LAC. Table 8 reports results.

Table 8: Panel evidence on the growth effect of FDI in LAC – Lagged Independent variables

Variables	RE	FE
LnY_0	-.292	-9.863
	(.536)	(.000)***
FDI_{t-1}	-039	-.356
	(.949)	(.530)
HC	.373	1.730
	(.188)	(.003)***
$HC \times FDI_{t-1}$	.061	.099
	(.529)	(.299)
$FinDev_{t-1}$	.013	.006
	(.597)	(.862)
$FinDev \times FDI_{t-1}$	-.003	.002
	(.694)	(.773)
XCONST	.521	.292
	(.001)***	(.154)
COUPS	-2.769	2.406
	(.415)	(.429)
Observations	100	100
R^2		
:within	.30	.51
:between	.35	.18
:overall	.28	.001

Notes: *P*-values are below coefficients in parentheses. *** Significant at 0.01 level, ** significant at 0.05 level. All regressions have a constant term. Estimates are based on the six sub-periods. Hausman Test has a χ^2 of 47.59 and a significant p-value of 0.00, fixed effects is preferred. Countries with negative FDI flows are treated as zero. Inconsistent POLS is drop.

Introducing lagged independent variables weakens the results in Table 8. For FE only the measure for conditional convergence retains its sign and significance. In RE, the measure for institutions has the expected sign and is significant at conventional level. For the best model, the Hausman Test suggests FE. After accounting for potential endogeneity, human capital development appears to be an important determinant of economic growth in LAC. We check this result by re-estimating a parsimonious model with only significant variables from Table 8. Table 9 reports results.

Table 9: Panel evidence on the growth effect of FDI in LAC - Parsimonious specifications

Variables	RE	FE
LnY_0		-8.150
		(.000)***
XCONST	.350	
	(.007)***	
HC		.923
		(.007)***
Observations	120	120
R^2		
:within	.04	.21
:between	.14	.25
:overall	.06	.01

Notes: *P*-values are below coefficients in parentheses. *** Significant at 0.01 level. All regressions have a constant term. Estimates are based on the six sub-periods. Again, inconsistent POLS is dropped.

All variables retain their sign and significance and are of similar size to those in Table 9. We focus on the FE, as this is the preferred model base on the Hausman Test. Human capital as measured by the average years of schooling of the population 25 years and older induces economic growth, this contradicts previous finding in the full sample which does not find a complementary effect with FDI or directly. This positive relationship between human capital and growth is intuitive; countries with a larger cadre of skilled and educated population will be engaged in R&D activities and more receptive to new technologies that can improve economic performance. This finding is consistent with neoclassical and endogenous growth model, which argues that human capital is integral to the economic performance of a country both in sustaining and generating growth. Apart from the economic benefits, an educated population also serves to preserve social harmony in a society. Our finding is also consistent with De Gregorio (1991) for LAC and Loayza *et al*. (2004). In contrast to the full sample, there is no significant direct effect of FDI on growth in LAC. This supports finding by Obwona (2001) for Uganda.

Zhang (2001) argues that countries of East Asia are more likely to experience improved economic performance as a consequence of FDI inflows relative to their Latin American counterparts, they attribute this to historical policy differences – historically East Asia is more open, has better

macroeconomic stability and a higher proportion of the population is educated. [20] FDI does not appear to be a source of growth in LAC.

7.0 Conclusions

That FDI inflows are growth-inducing is accepted in principle, but the empirical evidence is lacking. Many studies have investigated the effects of FDI on growth, but find no consistent evidence. We use data mainly from the World Bank, World Development Indicators (2006) and appropriate estimator to investigate the growth effects of FDI in a panel of developing countries. In this paper we contribute to the literature on FDI and growth by providing new evidence that FDI plays an important role in explaining economic growth, this relationship is direct and does not depend on local conditions.

We interpret this evidence to mean that, while the growth effects of FDI may be augmented by human capital and financial development, they are not prerequisites as current thinking suggests. However, the absence of evidence in support of conditional effects may also suggest that the countries in our sample have not attained the threshold level of human capital and financial development below which interaction effects do not affect growth. The fact that we have found direct evidence linking FDI to growth suggests that FDI is growth-inducing even in the absence of a literate workforce or a developed financial system. This is consistent with the idea that in developing countries with growth (or lack thereof) below potential (which creates large scope for improve efficiency), reforms in a positive direction will stimulate growth performance (the so-called "advantages of backwardness"). This paper complements the evidence presented by Alfaro *et al*., (2004), Hermes and Lensink (2003) and Borensztein *et al.,* (1998) who suggest that developing countries growth prospect, in the presence of FDI, is hampered by poor financial development and low human capital respectively.

Having identified the direct role of FDI in boosting growth, policy makers and development agencies can be justified in supporting policies favourable to FDI. Therefore the answer to developing countries growth problems can be partly solved by crafting policies that are attractive to FDI, this does not require a complete shift of previous policies. These include relaxing restrictions on investment capital mobility in developing countries, a policy that can be applied relatively easily without huge capital outlay or taxing (diverting resources) other areas of

[20] The data chapter does not support this argument in fact, using Barro and Lee (2000) average years of schooling in the population 25 years and older, we observe that LAC has a higher stock of educational attainment compared to Asia, but the gap closes overtime.

development like education. These are alternatives that governments in the developing world have at their disposal, so if they are to alleviate poverty by generating economic growth they should use them. Lessons from East Asia have taught us that developing countries can improve growth if they apply them. These changes also have the attraction of immediate impact.

As a final analysis, we systematically test for the effect of FDI on growth in 20 LAC countries, as few studies have focused on Latin America (De Gregorio, 1991; Nazmi and Ramirez, 2003; Bengoa and Sanchez-Robles, 2003). Our finding suggests that LAC can boost economic growth by investing in human capital development and FDI does not induce growth directly in LAC. This contrasts with evidence from the full sample that FDI promotes growth in developing countries in general. The implication, then, for LAC governments is not only to create access to education for their populations, but also to emphasize the quality of human capital development. As suggested by the evidence, both are important but the latter is crucial in order for LAC countries to remove the constraint on economic growth.

Although our findings in developing countries do not extend to a subsample of LAC, we do not interpret this to discriminate against our results in developing countries in general. For the reason that LAC has reached a relatively higher level of human capital development than say SSA[21], and this lower level of human capital development may account for the insignificant effect in developing countries in general. However, the evidence is clear, what is growth inducing in developing countries in general might not be the same for LAC and therefore different policy actions are required.

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[21] Using Barro and Lee (2000) average years of schooling in the population 25 years and older, LAC and Asian countries have a higher educational attainment compared to SSA and the differential is expanding toward the end of the sample.

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