ESSAYS ON FDI, GROWTH, AND POLITICAL INSTABILITY IN DEVELOPING COUNTRIES

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ABSTRACT

Foreign direct investment (FDI) plays an important role in development strategies in developing countries. In particular, policy makers in developing countries and development agencies alike believe that FDI is growth enhancing, as suggested by their policy stand (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). These serve to modernize the recipient economy and support productivity gains, which in turn are expected to improve growth performance.

The evidence of this thesis suggests that the flow of FDI in developing countries is likely to be affected by high debt, high inflation, and constraints on the executive (XCONST), market size and good infrastructure quality. However, the flow of FDI in Latin America and the Caribbean (LAC) is affected differently: infrastructure is more important (relative to developing countries) for the type of FDI attracted to LAC. The impact of FDI on growth is direct i.e. not conditional on other country characteristics, contrary to Alfaro *et al*. (2004), Hermes and Lensink (2003), and Borensztein *et al*. (1998) that argue that the effect of FDI on growth is conditional. However, LAC can boost economic growth by investing in human capital development, as FDI does not induce growth directly in LAC.

FDI and growth are endogenously related, and the effect is bidirectional: from FDI to growth and from growth to FDI. Political instability affects growth, but the effect depends on the dimensions of political instability and appears to vary for different regions: instability of the regime and protest affect growth, while violence doesn't appear to affect either growth or FDI, and the higher incidence of political instability in SSA affects growth differently in SSA relative to developing countries.

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Kiana and Kevin, love and lots of respect

TABLE OF CONTENTS

LIST OF FIGURES

Chapter 2

LIST OF TABLES

Chapter 2

Chapter 3

Appendix

Chapter 4

Appendix

Chapter 5

Appendix

[1] This table reports results excluding countries which score average and above on both government crisis and constitutional changes.
[2] This table reports results excluding countries which score average and above on executive changes and simultaneously exclude all countries which score average and above on government crisis, constitutional changes, and executive changes.
[3] This table reports results on whether SSA is different
[4] Corresponds to Table 1.
[5] Corresponds to Table 3.
[6] Corresponds to Table 4.

[7] Corresponds to Table 5.
[8] Corresponds to Table 6.
[9] Corresponds to Figure 1 and Tables 7 and 8.
[10] Corresponds to Table 10.
[11] Corresponds to Table 10.
[12] Corresponds to Table 11.
[13] Corresponds to Table 11.
[14] Corresponds to Table 12.
[15] Corresponds to Table 12.
[16] Corresponds to Table 13.
[17] Corresponds to Table 13.
[18] Corresponds to Table 14 (1).
[19] Corresponds to Table 14 (1).
[20] Corresponds to Table 14 (2).
[21] Corresponds to 14 (2).
[22] Corresponds to 15.
[23] Corresponds to 15.

CHAPTER 1

INTRODUCTION

1.0 Background and Motivation

The world economy is only beginning to recover from the effects, especially reduced capital flows to the real economy, arising from the recession that started in 2008 in the US. This has adversely affected most developing countries, principally through reductions in exports (as world demand falls) and capital inflows. The latter is against the backdrop that international capital flows, specifically foreign direct investment (FDI) inflows, have the potential to stimulate growth in developing countries. This thesis provides a study of the factors influencing the flow of FDI to developing countries and the impact on growth, with particular emphasis on Latin America and the Caribbean (LAC).

In the 1980s, developing countries adapted their economies with the aim of taking advantage of globalization. In particular, most countries adopted policies to attract international capital inflows, especially FDI. East Asia is often cited as evidence for the unmitigated virtues of globalization. Successful replication, however, of East Asia's successes in other developing countries has been contested. In light of this contestation, empirical studies have assisted policy makers to understand what works, where, under what conditions, and what does not work. Some of these empirical studies serve to inform policies makers of ways to integrate in the global economy, such as attracting and using FDI.

In this vein, Asiedu (2001), Emmert and Tuman (1999) and others look at the determinants of FDI in developing countries. These studies find macroeconomic stability, trade policy and institutions as key motivations for developing countries to, first of all, be considered as good location choices. As influential as these empirical studies are in policy circles, many have not systematically addressed the location choices of international investors. A key problem with these studies is that they either employ limited econometric methodology, or exclude key explanatory variables from their analysis, or use inappropriate measures to capture domestic policies. For example, on the determinants of FDI in developing countries, Asiedu

(2001) treats GDP per capita as a measure of the return on investment. This is not a convincing proxy as many factors influence per capita GDP while the return on investment is appropriately captured by the level of real interest rates. In considering trade policy, this literature generally ignores services, which is increasingly important in trading relationships between countries (especially small developing countries such as the Caribbean where, for example, tourism is very important).

Similarly, on the relationship between economic variables, this literature rarely addresses the problem of endogeneity in a comprehensive manner. The implication is that these studies lack sound policy implications. It is possible that what works for some developing countries may not work for others. Kolstad and Villanger (2008) and Asiedu (2001) find that the Caribbean and SSA, respectively, are different from other developing countries on the determinants of FDI inflows. The former doesn't consider a broader sample comprising Latin American countries, and the latter uses a narrow range of potential explanatory variables. If they are to inform policies, these methodological and data issues should be addressed. This is important, as developing countries have lagged in their growth potential; only a handful of countries in the developing world boast good growth outcomes: for example, Botswana and Mauritius in SSA, Chile in LAC, and those of East Asia. This provides huge opportunities for developing countries to gain from their backwardness, and evidence grounded in sound empirical work will inform good policies that will perhaps generate these gains.

Another strand of this literature looks at the growth effect of FDI. In particular, this cluster of studies argues that FDI has a limited direct effect on growth in host developing countries; the effects of FDI are seen as conditional on the value of other variables. The evidence is based on positive coefficients on interacting local conditions with FDI. Proponents of this view include Alfaro *et al*. (2004), Hermes and Lensink (2003), and Borensztein *et al*. (1998). The latter supports improved human capital and the former suggest better financial structure in order for developing countries to gain from FDI. However, estimates of conditional effectiveness are rarely robust; changes in the sample or variables included often render interaction terms insignificant.

The implication of the former results is that despite the inflows of FDI, gains through growth will not be realised in recipient countries if these country-specific factors are

not improved. First of all, other things remain the same, in addition to physical assets FDI takes to the host country specific knowledge about factor prices, and has the technology to generate pareto equilibrium between factor inputs and output levels. Thus, these firms are exporters (or serve domestic markets) which achieve efficient-productivity thresholds, so it's not clear that developing countries will not gain through growth from a given inflow of FDI, even in the short run, in spite of country-specific deficiencies. ('There is no single set of policies [or single sector, however,] that can be guaranteed to ignite sustained growth'.)[24]

If Alfaro *et al*. (2004), Hermes and Lensink (2003), and Borensztein *et al*. (1998) are correct, then, there is no incentive for developing countries to participate in globalization through FDI, as low human capital and underdeveloped financial systems are structural deficiencies that will not be addressed in the short to medium term. The anomaly in this thinking is that these are the same structural disadvantages that FDI is supposed to improve in the first place. So, the belief that developing countries must already have attained good financial systems, respectable levels of human capital development, and other determinants of development to benefit from FDI is akin to suggesting "you must be growing in order to grow."[25]

In this tradition, the literature also looks at whether FDI affects growth in specific regions. Latin America and the Caribbean (LAC) experimented with a range of economic policies: starting in the 1950s to 1970s with import substitution and from the early 1980s toward a more open orientation. The need for foreign exchange to service sovereign debt and poor economic performance generally were key motivations for LAC to participate in the global economy – they did so partly through FDI. Bengoa and Sanchez-Robles (2003) and De Gregorio (1993) are two studies that investigate the growth effect of international capital flows to Latin America. However, they ignore the important issue of identification (in an econometric sense) and they don't consider the wider region to include the Caribbean.

A related literature looks at the effect of FDI on growth, in particular whether FDI causes growth or growth causes FDI. If FDI is expected to boost growth in the host

[24] Barcelona Development Agenda (2004) (quoted in Easterly, 2008).
[25] Easterly (2008) provides a similar anomaly in explaining why the "big-push", as opposed to the marginal approach, to foreign aid is not working.

economy and international capital goes where returns are highest, it's possible that the FDI-growth relationship is driven by reverse causality. To ignore this possibility will produce spurious estimates, so appropriate econometric methods are required to correct for this bias.

In contrast, the theoretical literature, in a neoclassical framework, predicts that countries with a low capital-labour ratio should attract capital from rich countries with a high ratio (Prasad *et al*. 2007). Capital will, therefore, continue to flow from rich to poor countries until the capital-labour ratio and thus the return differentials are equalized across both (Lucas, 1990). This has not been observed in practice; in absolute value, a larger proportion of capital flows to rich countries. This might be explained by higher productivity levels in rich countries; other explanations include poor institutions and frequent defaults in poor countries (Reinhart and Rogoff, 2004; Alfaro *et al*., 2005).

The neoclassical prediction is based on the theoretical proposition that the abundance of one factor will raise the productivity of other scarce factors. If a larger proportion of international capital doesn't flow to high-growth countries relative to their slow-growth counterparts, the feedback effect between FDI and growth will not hold. According to this interpretation, if a slow growth country receives a given inflow of FDI and it begins to improve its economic performance, as that country graduates to the fast growth category, international capital flows will be reallocated to slow growth countries. There is a large empirical literature that investigates this relationship: Li and Liu (2005), Durham (2004), Nair-Reichert and Weinhold (2001), Mencinger (2001), and others. But there is no consensus on the direction of causality in part because of different ways of investigating the relationship.

Other studies introduce political instability to evaluate the relationship between economic indicators. These studies either use single indicators of political instability (Nel, 2003; Svensson, 1998) or assign some structure on multiple indicators (Gyimah-Brempong and Traynor, 1996, 1999). However, indicators of political instability don't have a uniform effect on economic outcomes (this is addressed in Chapter 5). Hence, to assign arbitrary structure on political instability indicators will swamp the effect of some indicators or magnify the effect of others, thus giving biased estimates. This

probably explains why indicators of political instability are significant in regressions on SSA data. A deeper analysis is required. To our knowledge Jong-A-Pin (2009) is the only study that doesn't arbitrarily apply structure to the indicators of political instability; instead he applies a model – exploratory factor analysis – that systematically constructs the indices of political instability.

In the next section we discuss how to resolve the gaps in the literatures identified above.

2.0 Research Objectives

We resolve the deficiencies in the literature discussed above in three empirical essays. In particular, we examine the determinants of FDI (Chapter 3) and the growth effect of FDI (Chapter 4) in a global sample of developing countries; we then investigate whether LAC is different from the global sample of developing countries (in each chapter). Finally, we investigate the potential endogenous relationship between FDI and economic growth (Chapter 5). In this framework, we evaluate the effect of the different dimensions of political instability on growth and FDI, and assess whether these dimensions of political instability affect FDI and growth differently in SSA.

As pointed out above, Asiedu (2001) and others look at the determinants of FDI in developing countries. We extend the Asiedu (2001) framework by considering a larger subset of potential explanatory variables and employ appropriate measures of domestic policies: e.g. for trade openness we use a broader measure to include services. While Kolstad and Villanger (2008) only consider the Caribbean, we include a broader sample of Latin American countries. To address endogeneity, where feasible we use the GMM estimator; where the GMM estimator is not appropriate because of sample size e.g. the subsample on LAC, we use lagged explanatory variables. We also assess the magnitude of potential determinants of FDI, using beta coefficients. Taken together, we hope to provide deeper insights on how domestic policies can affect economic outcomes, in particular FDI and its collateral benefits.

The next goal is to investigate the growth effect of FDI. The literature argues that, in developing countries, the positive effect of FDI is conditional on local conditions, in particular good financial structures and human capital. At first blush, we argue that

this extreme position is conceptually flawed, not least because developing countries seek FDI because of development gaps. In the empirical essay we re-evaluate this extreme position, arguing that there is large scope for FDI to stimulate the growth potential in developing countries, unconditional on local endowments; we provide evidence to support this claim. Our approach is in the spirit of Borensztein *et al*. (1998), but we extend the model to incorporate other dimensions of development. We decompose the sample into non-LAC and LAC in order to investigate whether FDI affects growth in LAC differently.

Finally, we consider the potential causal relationship between FDI and economic growth in a system of simultaneous equations framework; it's possible that countries with higher growth rates have an advantage to attract higher levels of FDI inflows and FDI in turn may strengthen these countries already higher growth rates. In this analysis we use variables that are significant predictors of FDI from the determinants of FDI analysis and significant variables from the growth analysis. We introduce three dimensions of political instability in the simultaneous equations framework. We argue that political instability has different dimensions and thus affects growth and FDI differently. We identify these dimensions of political instability, using exploratory factor analysis. The key advantage of using exploratory factor analysis over assigning structure to indicators is that it clusters those indicators with identical explanatory power from others to form a new variable. Hence we don't restrict or magnify the effect of any indicator.

In addition, SSA is stigmatized because of its higher incidence of political instability. As a further empirical exercise, we use the dimensions of political instability to examine whether the higher incidence of political instability affects economic performance differently in SSA.

Hence our contribution to the empirical literature on FDI and growth is to provide evidence on the determinants of FDI in developing countries, in particular how LAC is affected by the potential determinants of FDI, providing evidence that there is scope for FDI to improve growth in developing countries, despite the lack of other growth enhancing factors, providing evidence on the endogeneous relationship between FDI and growth, accounting for the effects of political instability. Furthermore, we do not

address the firm level literature on FDI or the theoretical literature on growth and FDI; instead our contribution is in the context of the cross-country empirical literature. The main reason is that in the theoretical approach on FDI and growth, different authors construct different models based on various assumptions and then proceed to estimate these models. In other words, there is no consensus on the underlying assumptions of these theoretical approaches: these assumptions are guided by value judgements.

Chapter 2 provides a detailed description and discussion of the data used in the subsequent empirical chapters. We discuss how each variable is constructed and plot trends over time and across regions for developing countries, LAC, SSA, and Asia. This decomposition identifies how each region performs on various indicators. The first empirical essay forms Chapter 3. In this empirical essay we estimate a single equation on the determinants of FDI and investigate whether LAC shares similar characteristics relative to developing countries. The second empirical essay forms Chapter 4. Here we investigate the role of FDI on growth in developing countries and evaluate whether FDI affects growth differently in LAC in a single equation framework. The final empirical essay forms Chapter 5. In this essay we investigate the potential endogenous relationship between FDI and growth. To achieve this we combine the analysis from Chapters 3 and 4 in a system of simultaneous equations. Further, we investigate the effect of three dimensions of political instability on FDI and growth in the system of simultaneous equations, and examine if there's a political instability curse on SSA relative to developing countries. The conclusions of the thesis are contained in the final chapter.

CHAPTER 2

Data Description and Trends

1.0 Introduction

Failed experiments with the inward-orientation approach to economic development in the 1960s and 1970s and the debt crisis of the 1980s encouraged developing countries to adopt policies to integrate with the global economy. This is predicated on the belief that integration with the global economy will improve economic performance through increased innovation, foreign exchange inflows, and improvement of human capital development. Foreign direct investment (FDI) is integral to this process, as economic growth is expected to follow FDI: we find empirical support for this argument in the essays. Hence, many developing countries have undertaken policies to attract foreign investors. The expected economic growth, however, has not been realised by all developing countries, thus governments have focused on specific types of FDI: market serving, export oriented or resource seeking. This new strategy involves "conditions" that allow FDI in partnership with local firms, to develop specific sectors of the domestic economy, and to include certain kinds of technologies. Despite this tendency to pin down the potential beneficial effects of FDI, there is no unanimity in the empirical literature that FDI does improve developing countries economic performance, especially those that have structural failures – poor governance structures, high incidence of political instability, and low absorptive capacity. As for the empirical evidence, poor data quality and inappropriate econometric methods are often blamed for the mixed results (Cuadros *et al*., 2004).

This chapter takes an in-depth look at the data used in Chapters 3 and 4, discussing he sources and how each variable is constructed. The data span 1975-2005 and include a sample of 68 middle and low income[26] developing countries from four regions: sub-Saharan Africa (SSA), Latin America and the Caribbean (LAC), Asia, and North Africa. Table 1 displays a list of all the countries.

[26] The World Bank, World Development Indicators (2006) defines a middle income country as having a GNI of $906-$11, 115 and a low income country as having a GNI of $905.

Table 1*: Sample of 68 countries according to regions*

SSA	LAC	Asia	North Africa
Benin	Bolivia	Bangladesh	Algeria
Botswana	Brazil	China	Egypt
Burkina Faso	Chile	Indonesia	Morocco
Cameroon	Colombia	Malaysia	Tunisia
Central Africa	Costa Rica	Nepal	
Congo, D. Rep.	Ecuador	Pakistan	
Congo, Rep.	El Salvador	Philippines	
Cote d'Ivoire	Guatemala	South Korea	
Gabon	Guyana	Sri Lanka	
Gambia	Haiti	Thailand	
Ghana	Honduras	India	
Guinea	Jamaica	Papua New Guinea	
Guinea Bissau	Mexico	Singapore	
Kenya	Nicaragua		
Madagascar	Panama		
Malawi	Paraguay		
Mali	Peru		
Mauritania	Trinidad & Tobago		
Mauritius	Uruguay		
Mozambique	Venezuela		
Niger			
Nigeria			
Senegal			
Sierra Leone			
South Africa			
Swaziland			
Tanzania			
Togo			
Uganda			
Zambia			
Zimbabwe			

Notes: Argentina was dropped because of its outlying influence in the regression analyses.

Most of the middle income countries are from LAC and East Asia, while SSA is representative of the low income group. SSA accounts for 46% of the sample, while North Africa is least represented.

The chapter has three sections. In Section 2 we discuss the measurement and trends of FDI; here we compare our FDI variable with an alternative measure. In Section 3 we discuss measurements and trends of other core variables. The conclusions are provided in the final section.

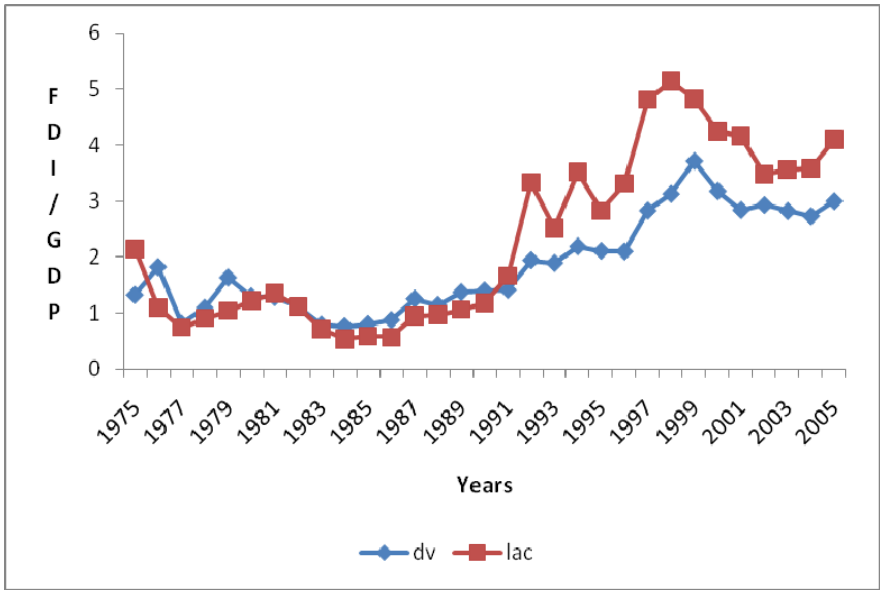
2.0 Measurement and Trends of FDI

'Foreign direct investment (FDI) is the net inflows of investment to acquire a lasting management interest (10 percent or more of voting stock) in an enterprise operating in an economy other than that of the investor. It is the sum of equity capital, reinvestment of earnings, other long-term capital, and short-term capital as shown in the balance of payments. This series shows net inflows in the reporting economy and is divided by GDP' (World Development Indicators, 2006).[27] This is in line with Fernandez-Arias and Hausman (2000) who argue that FDI is just a source of finance which does not include physical assets; physical assets constitute a firm and FDI is one way of acquiring those assets. We take our measure of FDI as the net inflows of FDI/GDP from the World Bank, World Development Indicators (2006). This measure subtracts outflows from reporting countries. We are interested in the effects of inward FDI inflows on economic outcomes, hence gross inflows may be a better measure when assessing the growth effects of FDI in developing countries. We, however, used net FDI inflows to a country due to data availability and this is a widely used measure in the literature.

Some countries in the annual data have negative FDI inflows; as we construct panel averages of six five-year (1975-79, 1980-84, 1985-89, 1990-94, 1995-99, 2000-05) periods, we treat any negative inflows as zero. As some countries have gaps in the annual data, period averages allow us to smooth out these gaps. Figure 1 displays trends in FDI/GDP inflows to all 68 developing countries (dv) and a subsample of 20 LAC over the sample period (1975-2005).

[27] http://ddp-ext.worldbank.org/ext/DDPQQ/member.do?method=getMembers.

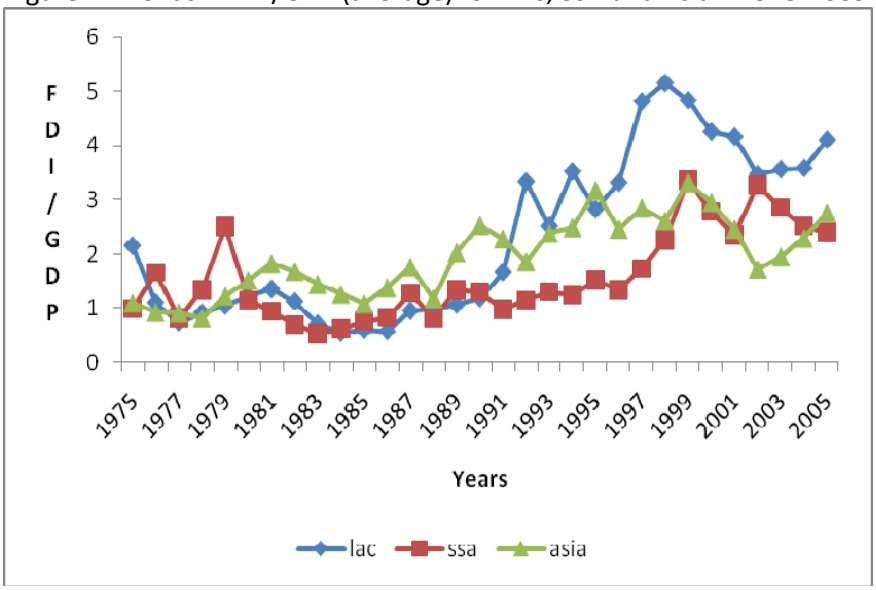
Figure 1: Trends in FDI/GDP (average) for developing countries (dv) and LAC – 1975-2005



Source: Data are from the World Developmen Indicator (2006). Developing countries (dv) are the entire sample.

After 1979 the inflows to developing countries reduce steadily until the mid-1980s. During the 1990s inflows to developing countries surge with a sharp rise from 1996-99. However, between 1999 and 2004, inflows to developing countries have reduced, but show signs of upward trends in 2005. The patterns of FDI inflows for LAC and developing countries (dv) reflect similar trends in the data, except from 1979-82 when inflows surge in LAC, but for developing countries on the whole inflows reduced. The trends for developing countries reflect the debt crises of the 1980s in most developing countries, the growth decade of the 1990s in the global economy and the recession in the US in 2000-01, the major home to FDI. From the 1990s, trends for LAC are generally higher than developing countries. Trends for developing countries, however, mask inflows to other regions e.g. Asia and SSA.

Figure 2: Trends in FDI/GDP (average) for LAC, SSA and Asia – 1975-2005



Source: Data are the World Development Indicators (2006).

Figure 2 displays trends of FDI/GDP for the three major regions in the sample LAC, SSA and Asia. LAC and Asian countries share similar trends of FDI/GDP, for both regions inflows reduce from 1975 to 1977, increase up to 1981, and then reduce for four years ending 1985. During the late 1980s and the decade of the 1990s, FDI/GDP inflows in both LAC and Asian countries indicate upward trends, but a steep fall in inflows was evident from 1999 to 2002, this can be explained (again) by the mild recession in the US from 2000-01. LAC countries intensify liberalisation of their economies and privatisation of state-owned enterprises in the 1990s, this coincided with the boom decade of the 1990s. These developments interacted with other local and international factors to affect the volume of FDI/GDP inflows. Viewed broadly, the inflows for SSA mirror that of LAC and Asian countries. It's instructive that the 1990-91 recession in the US does not appear to reduce inflows to LAC, this contrasts with reductions in ASIA and SSA. Historically FDI inflows in LAC are market serving, while in ASIA and SSA FDI is export oriented and resource seeking respectively. Adverse economic shocks in developed markets are more likely to restrict demand from FDI geared for export but this doesn't seem to hold for LAC, as FDI has increased during 1990-91. Table 2 highlights countries that receive the largest distribution of FDI relative to GDP for the three major regions over the sample period.

Table 2: ***Leading recipients of FDI/GDP (average) by region – 1975-2005***

Country	1975-79	1980-89	1990-99	2000-05
LAC:				
Panama	5.50	2.50		
Guyana			11.40	
Trinidad& Tobago				8.30
SSA:				
Congo, Rep.	7.40			
Swaziland		4.90	5.80	
The Gambia				10.30
ASIA:				
Singapore	5.20	10.00	11.80	14.40

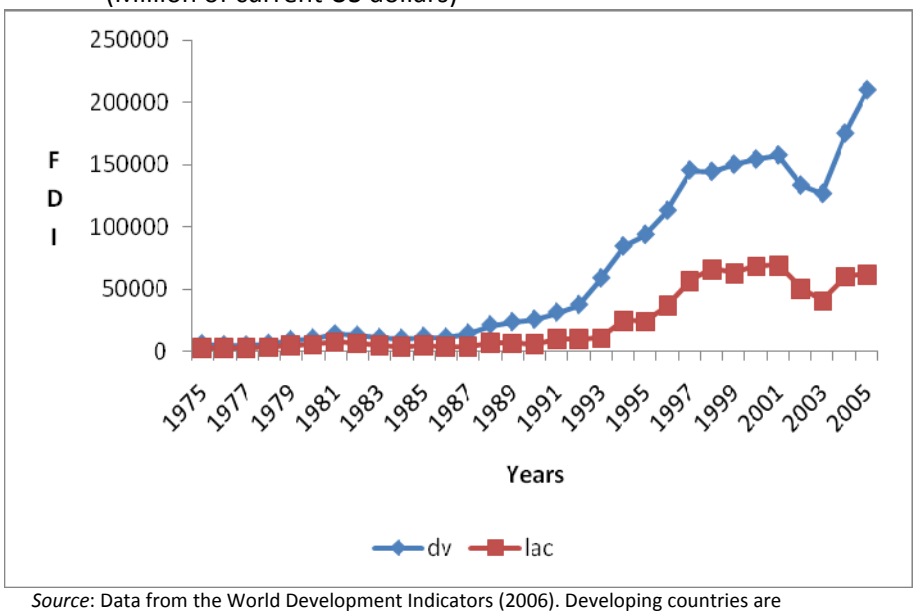
Source: World development Indicators (2006).

As depicted in Table 2 Panama receives the largest share of FDI inflows relative to GDP (on average) for LAC in the periods 1975-79 and 1980-89, these amounts to $193 and $1,107 million (current US dollars), respectively. For the decade of the 1990s and 2000-05, the leading recipients of inflows according to proportion of GDP were Guyana ($619 million) and Trinidad and Tobago ($5,152 million) – in both cases probably resource-seeking FDI. In SSA, Swaziland dominates for the periods 1980-89 and 1990-99, while the Republic of Congo and The Gambia were the leading recipients for 1975-79 and 2000-05, respectively. In current US dollars, Swaziland accounts for $285 and $598 million and the Republic of Congo accounts for $276 million and The Gambia $253 million. Even though the largest share of inflows went to China, in absolute value (since 1992) and as a share of GDP Singapore has the largest inflows for all four periods of $1,658, $19,069, $70,086, and $85,617 million respectively.

As an alternative measure, Figures 3 and 4 show plots of net FDI inflows in million current US dollars. This measure has been constructed as 'net FDI in the reporting economy from foreign sources less net FDI by the reporting economy to the rest of the world' (World Development Indicators, 2006).[28] Countries with negative inflows signal outward FDI; again, we have treated this as zero.

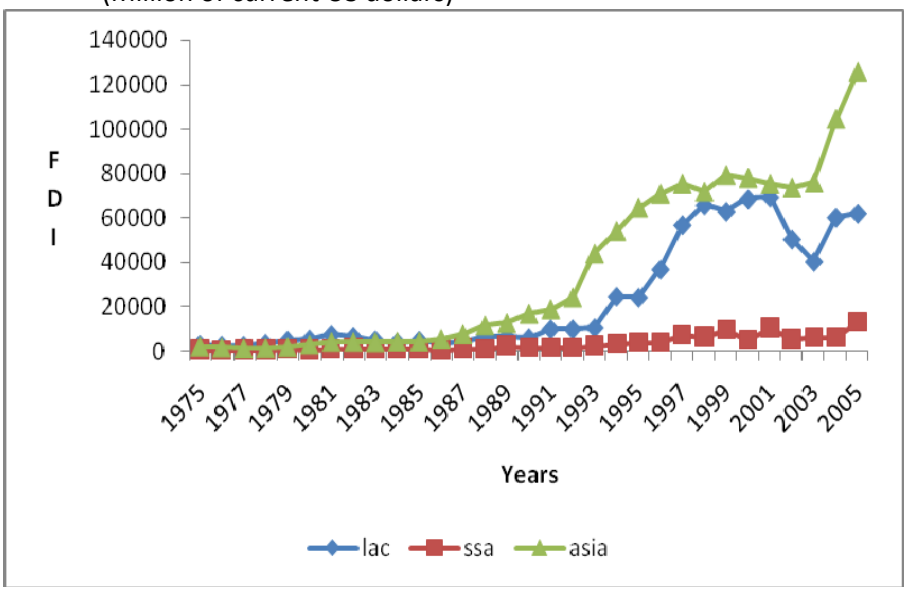
[28] http://ddp-ext.worldbank.org/ext/DDPQQ/member.do?method=getMembers.

Figure 3: Trends in FDI for developing countries and LAC – 1975-2005
(Million of current US dollars)



Source: Data from the World Development Indicators (2006). Developing countries are the entire sample.

Figure 4: Trends in FDI for LAC, SSA and ASIA – 1975-2005
(Million of current US dollars)



Sources: Data from the World Development Indicators (2006)

The trends of FDI, for LAC, using million of current US dollars as an alternative measure illustrated in Figure 3 follow closely the trends observe for developing countries. Furthermore, similar trends are observed for the three major regions in Figure 4. In Figures 3 and 4 net FDI inflows surge in the 1990s with a brief interruption in 1997-98 (the period of the Asian financial crisis, this is also evident in Figure 2), decline sharply in the early 2000s especially for ASIA and LAC, perhaps in response to the recession in

the US, and begin to rise again after 2002. Obstfeld (2008) argues that capital flows from rich to developing countries surge post-2002, this is also illustrative of the trends in capital financial integration undertaken by developing countries in Asia and LAC and to a lesser extent SSA in the 1990s. These episodes of inflows are also reflected in Figures 1 and 2 despite using FDI/GDP to measure FDI inflows. For Asia the inclusion of China has influenced the plots and Brazil has dominated for LAC in Figures 3 and 4. For example the inflows to China range between $11, 156 (1992)-$79,127 (2005) million and its closest rival, Singapore records inflows in the range $2,204 (1992)-$19,815 (2004) million. FDI inflows to Brazil range between $345 (1986)-$32,779(2000) million, while Mexico's inflows range between $327 (1977)-$21,431 (2001) million. However, as shown in Table 2, as a proportion of GDP Singapore records a higher share of FDI in Asia relative to China and in LAC, Guyana, Panama and Trinidad and Tobago account for a greater share of FDI compared to Brazil.

It's worth noting that as a share of GDP, countries of Asia receive relatively less FDI inflows. This is so because the economies of Asia are bigger relative to SSA and LAC and therefore mask actual values of inflows. As is evident from Figure 4, in terms of million of current US dollar value, Asian countries account for relatively higher levels of FDI inflows.

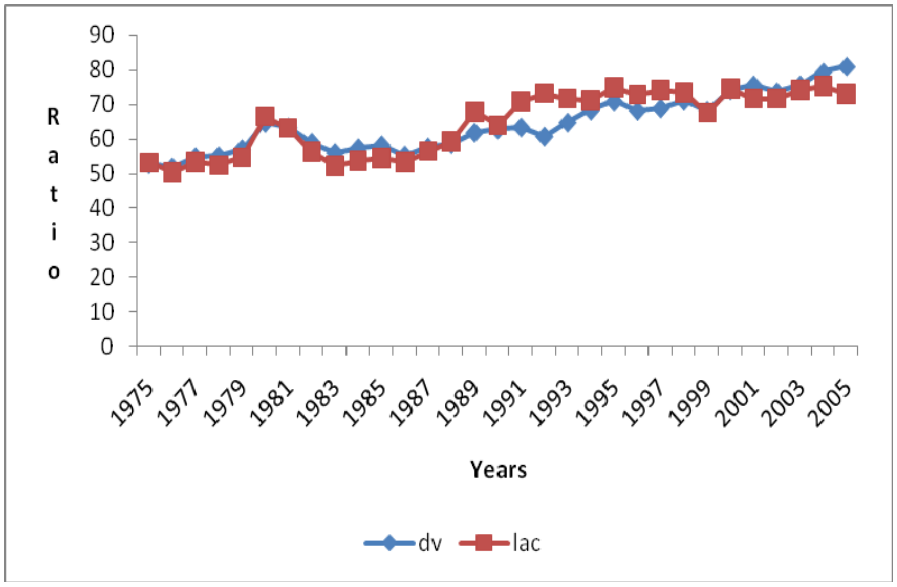
3.0 Measurements and Trends of other core variables

In this section we discuss measurements and trends of other core variables used in Chapters 3 and 4. These include – a measure for the trade regime (OPEN) of the economy, a measure for infrastructure (INFRAS) quality, a measure for the size of the economy (GDPGR), a measure for political instability (REVOLU), a measure for debt (DEBTSG), a measure for institutional quality (XCONST), and a measure for inflation (INFLA). Chapter 4 also includes – a measure for the growth rate (GDPC) of the economy, a measure for human capital (HC), a measure for financial development (FinDev), a measure for political instability (Coups), and a measure for initial income.

To capture the trade regime of a country we use the sum of exports and imports of goods and services as a share of GDP. This measure is broader than the usual sum of just imports and exports, as we have included services and is taken from the World Development Indicators (2006). A high ratio is suggestive of being integrated with the

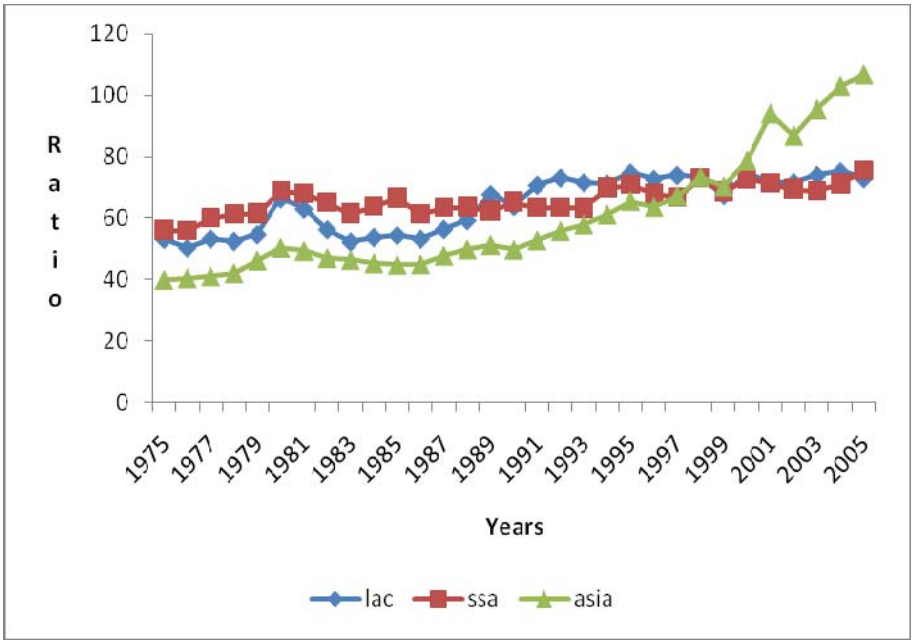
global economy, while a low ratio suggests a relatively closed economy. The trade regime also indicates whether the political regime is likely to restrict the movement of capital in and out of the country or expropriate foreign investors' assets. A country that trades with the rest of the world is likely to conform to international norms and practices, making it more transparent, thus less likely to engage in illegal practices, for example reneging on written contracts. For these reasons, the trade regime of a country helps us to determine the likely location for FDI. Trends in trade regimes are shown in Figures 5 and 6.

Figure 5: Exports and Imports of goods and services as a share of GDP (average) – developing countries (dv) and LAC, 1975-2005



Source: World Development Indicators (2006). Developing countries include the entire sample.

Figure 6: Exports and Imports of goods and services as a share of GDP (average) – LAC, SSA and Asia, 1975-2005



Source: World Development Indicators (2006).

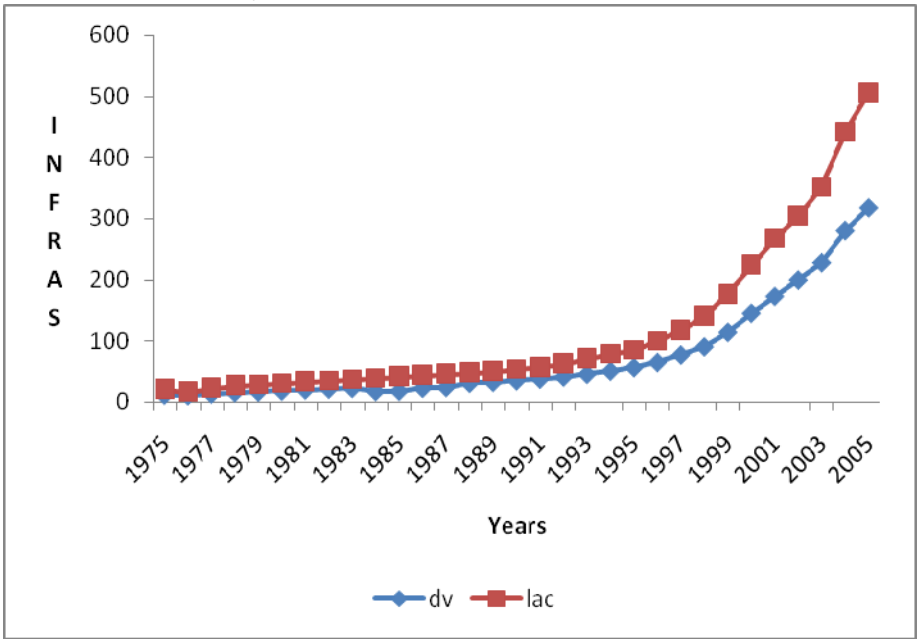
The trading relations of developing countries with the world follow similar patterns as in LAC, except for the 1990s when LAC intensifies their outward look and mid-2000 where developing countries appear to be more open. The divergence in 2000s seems to be fuelled by the rapid outward orientation of East Asian countries from around 2000. This also supports claims that Asia's growth is fuelled by exports (in fact, China's trade surplus with the US amounts to more than 2 trillion dollars). It's worth also noting that SSA appears relatively more open, up to late 1980s, compared to LAC and Asia. An important critique, however, of this trade index measure is that, since the trade regime is normalised by GDP, a country which has a small economy might appear to be more open relative to a country with a larger economy. Another well known problem with this trade volume measure is that it does not capture trade policy accurately. Nonetheless, this is a popular measure (without services) used in the literature to capture the trade openness of a country.

The infrastructure quality of a country gives an indication of the level of development. To measure the infrastructure quality we use the number of telephone mainlines per 1000 population. These are 'fixed telephone lines connected a subscriber to the main exchange equipment' World Development Indicators (2006).[29] This is a crude measure

[29] http://ddp-ext.worldbank.org/ext/DDPQQ/member.do?method=getMembers.

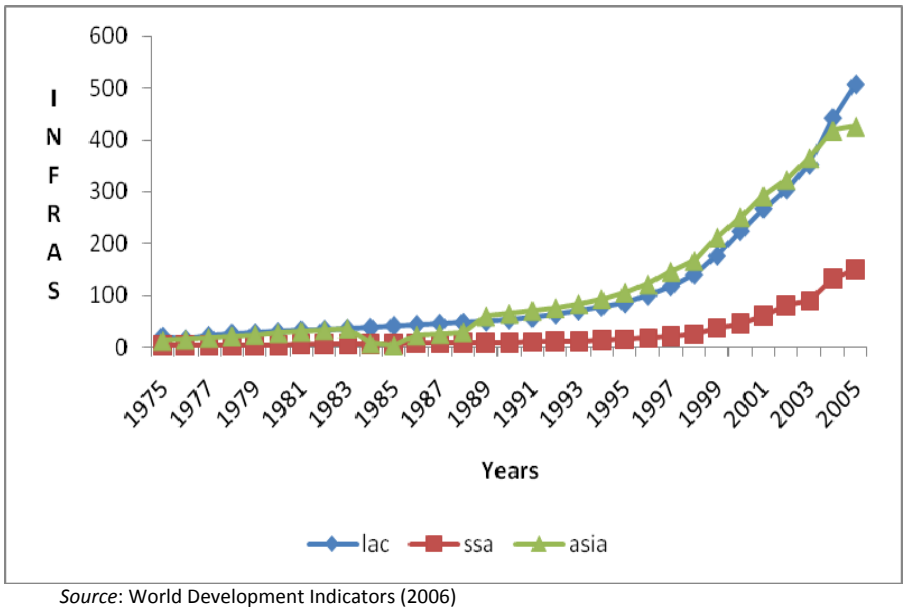
that omits increasingly important mobile telephone and does not capture the efficiency of communication services; being connected to the main exchange does not ensure reliability of service. The efficiency of communication services is important because it affects the costs of doing business, which is likely to influence where investors locate. Foreign investors that serve host markets will be interested in good communication infrastructure in a host country, while investors that serve a world market are likely to be influenced by good airports and seaports facilities. Given data limitations, the number of telephone mainline per 1000 population is taken to reflect the overall physical infrastructure and the general development of a country. Figures 7 and 8 display average telephone mainlines per 1000 population.

Figure 7: Trends of Infrastructure Development, developing countries
LAC, 1975-2005



Source: World Development Indicators (2006)

Figure 8: Trends of Infrastructure Development, LAC, SSA and Asia – 1975-2005



Source: World Development Indicators (2006)

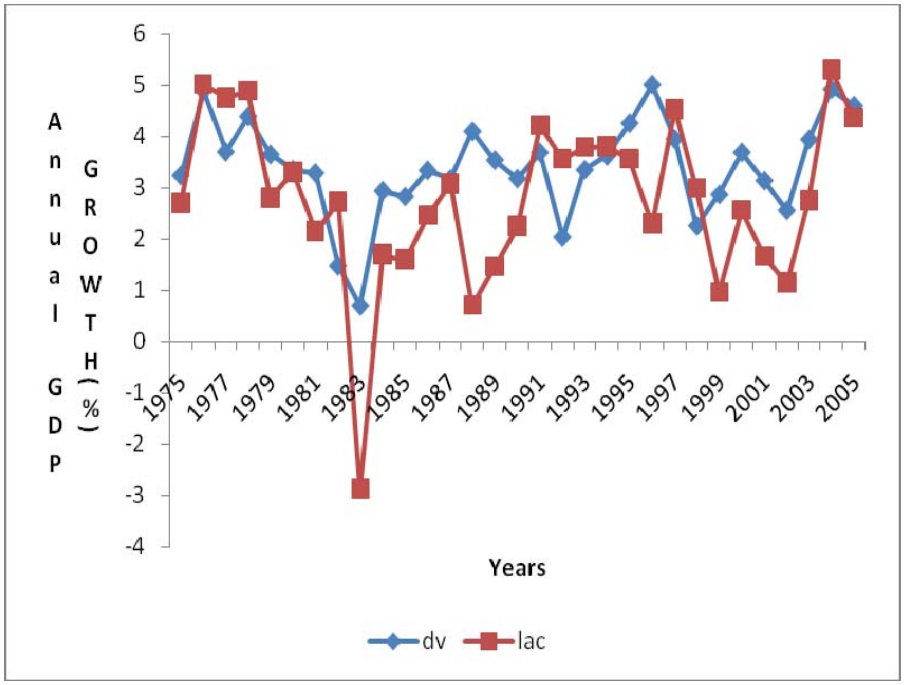
The infrastructure 'stock' increases steadily in developing countries, with similar trends for LAC (Figure 7) and other regions (Figure 8). For all three regions, the stock of infrastructure improves, but the improvement in Asia takes place at a faster rate during the 1990s and a relatively slower rate in SSA over the sample period. This is not surprising, because Asia and LAC are at a higher development trajectory and these economies are larger, accounting for most middle income developing countries.

To measure the market size we use the 'Annual percentage growth rate of GDP at market prices based on constant local currency. Aggregates are based on constant 2000 US dollars. GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources' (World Development Indicators, 2006).[30] Market serving FDI is attracted by large and growing economies and this is reflected by the GDP. This series does not disaggregate the sources of growth i.e. whether the growth in GDP is due to expansion in the real economy or due to some newly-found natural resources. While the latter will boost GDP in the short run, the former sets the economy on a path for long-term and sustainable growth. The growth leaders over the entire sample (1975-2005) period on average are: China (9%),

[30] http://ddp-ext.worldbank.org/ext/DDPQQ/member.do?method=getMembers

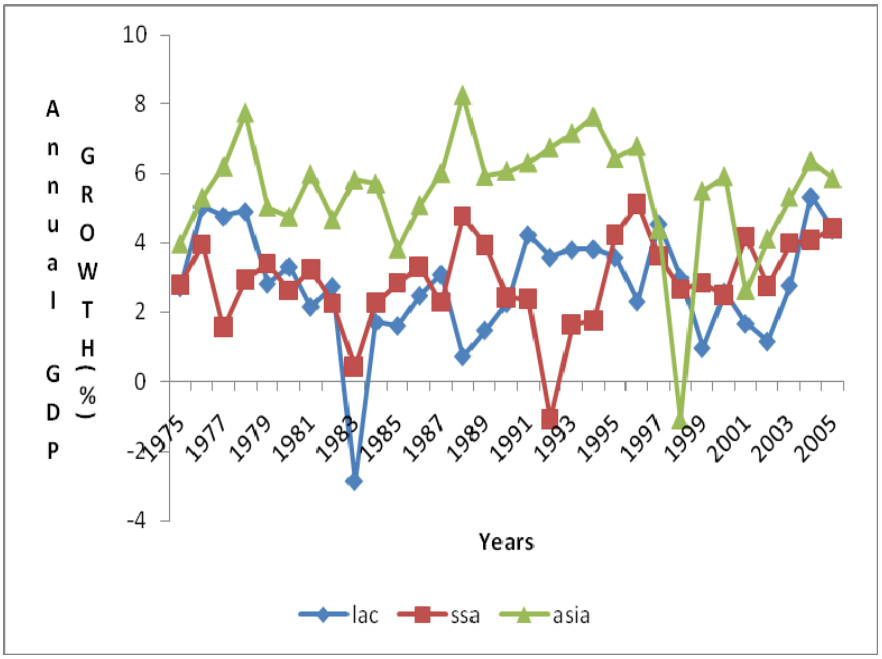
Botswana (8.6%), and Singapore (7%). Congo Democratic Republic GDP contracts 1%. Figures 9 and 10 show trends of average annual GDP growth for developing countries and LAC and other regions.

Figure 9: Annual GDP Growth (average), developing countries and LAC – 1975-2005



Source: World Develooment Indicators (2006)

Figure 10: Annual GDP Growth (average), LAC, SSA and Asia –1975-2005



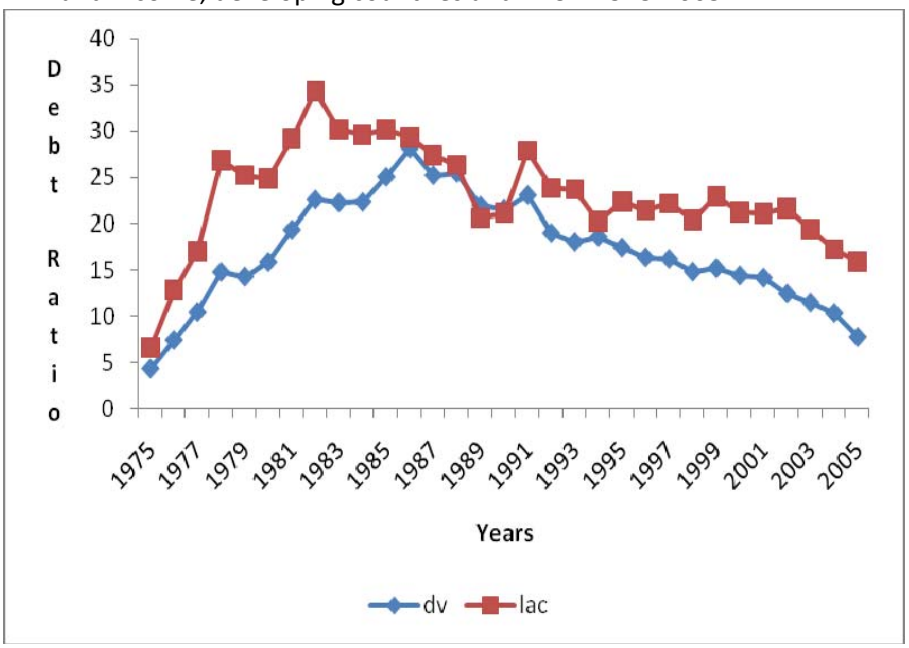
Source: World Development Indicators (2006)

On average annual GDP growth in developing countries declines in mid and late 1970s. There was expansion of annual GDP on average in the mid to late 1980s (Figure 9). LAC region experiences negative annual GDP growth in the early 1980s, perhaps due to the debt crisis. Figure 10 plots the trends for all three regions. The Asian region experiences the highest and most sustained period of annual GDP growth on average. However, all three regions experience negative growth in GDP: LAC in the early 1980s, SSA in the early 1990s and Asia in the late 1990s (the Asian financial crisis).

The level of debt indicates how well the economy is being managed; high debt, especially if at an unsustainable level, suggests a poorly managed economy and that taxes will have to increase in the future to service and repay the debt (this discourages investors). To measure the debt burden in a country we use the total debt service as a proportion of exports of goods, services and income. This is calculated as 'the sum of principal repayments and interest actually paid in foreign currency, goods or services on long-term debt, interest paid on short term debt, and repayments to the IMF' (World Development Indicators, 2006).[31] The advantage of this measure is that creditors are likely to identify when a country is spending more than it's earning (with the possibility to default) in order to cease lending. This measure also helps foreign investors to determine when governments are likely to expropriate their investments because of excess debt obligation. This causes the worry in many developing countries particularly in LAC (in the 1980s) resulting in FDI diverting to East Asia and other developed countries. The major disadvantage, however, of using the debt to GDP ratio is that a sharp fall in GDP can inflate interpretation of this ratio (Reinhart and Rogoff, 2008). Figures, 11 and 12, show the ratio of debt service (average) to exports of goods, services and income for developing countries and LAC and the three regions separately, respectively.

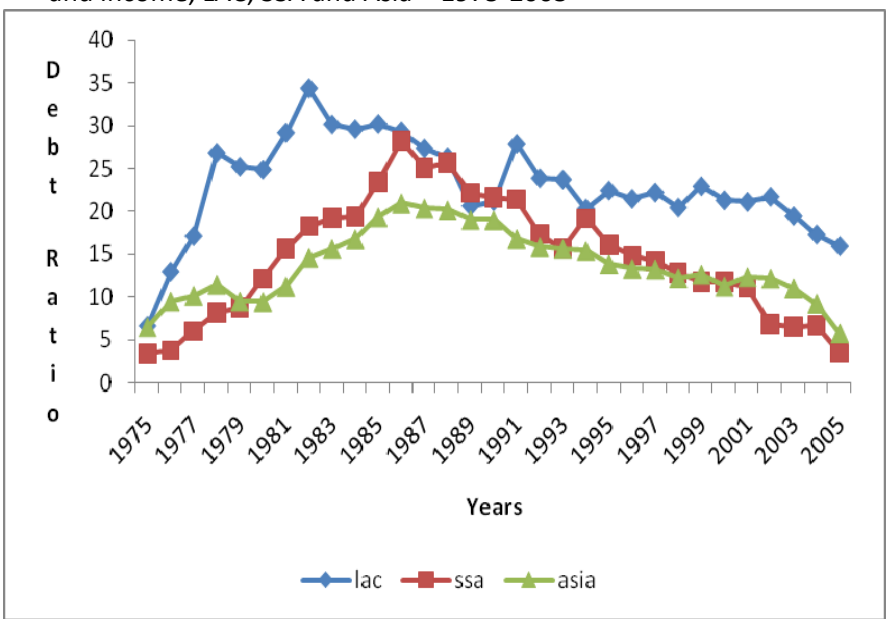
[31] http://ddp-ext.worldbank.org/ext/DDPQQ/member.do?method=getMembers

Figure 11: Ratio of debt service (average) to exports of goods, services and income, developing countries and LAC – 1975-2005



Source: World Development Indicators (2006)

Figure 12: Ratio of debt service (average) to exports of goods, services and income, LAC, SSA and Asia – 1975-2005



Source: World Development Indicators (2006)

The main feature of Figures 11 and 12 is that LAC has a higher debt ratio compared to developing countries on the one hand and Asia and SSA on the other. This stands out in the late 1970s, early 1980s and again in the decade of the 1990s. The debt ratio for all regions appears to be declining in 2000s, but LAC is declining at a slower rate.

We use constraint on the executive powers (XCONST), drawn from the Polity IV project, to measure institutional qualities. The variable 'refers to the extent of institutional constraints on the decision-making powers of the chief executive, whether an individual or a collective executive' (Jaggers and Marshall, 2004: 63). Accordingly, a clear structure is established for decisions to be made. In a democracy the executive is acountable to the legislature and ultimately to the electorates. Thus any deviation from the rule of law will be punished through the ballots. In principle this threat of punishment constrains policy makers to establish good governance institutions, for example protect property rights, and adherence to the rule of law by repudiating expropriation of private property. A regime that constrains the decision making powers of the executive is likely to be more accountable, observes the rule of law, has better regulatory qualities, and has efficient judiciary. This stands to reduce the distortions in economic activities that would have otherwise been generated under an unconstraint regime.

The variable is comprised of seven components on a Likert scale where a higher score indicates more restrictions on the excutive power: unlimited authority (1); intermediate authority (2)[32]; slight to moderate limitation on executive authority (3); intermediate authority (4)[33]; substantial limitations on the executive authority (5); intermediate authority (6)[34]; executive parity or subordination of the executive power relative to other branches of government (7). Each component on the Likert scale has different attributes, for example category (1) includes constitutional restrictions on the executive is ignored to rule by decree and category (7) includes other branches of government (legislature) making most of the decisions to a state of "cabinet instability" i.e. a constant refusal by the legislature to approve the executive decisions.

Data on XCONST only covers 1975 to 2004. Countries oscillate between categories, except a few that remain in category (7) i.e a substantial check on the executive powers, through the sample period: Mauritius, Papua New Guinea, South Africa, Costa Rica, Jamaica and Trinidad and Tobago. The regime in Togo reflects the strongest grip

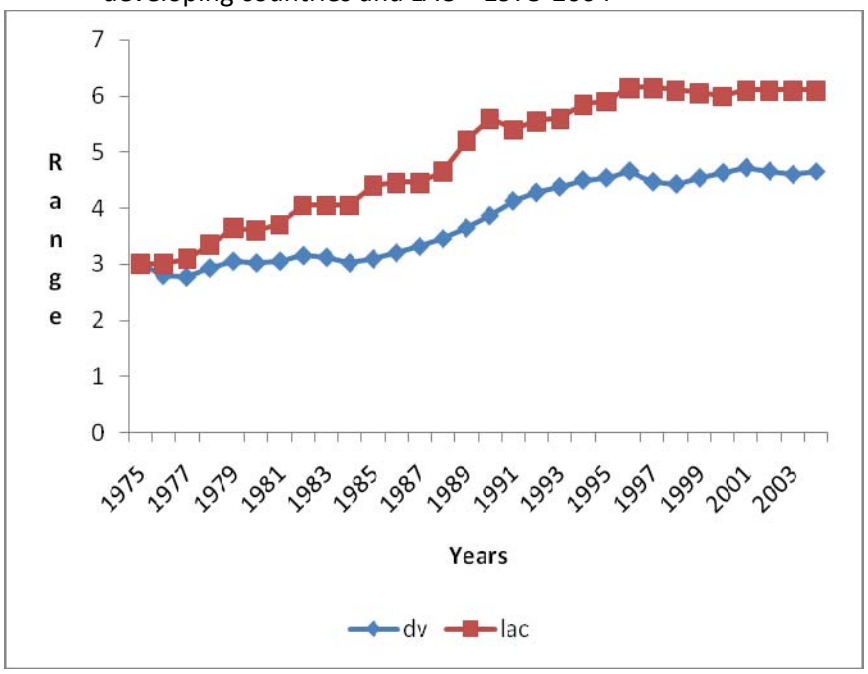
[32] This is a transition between 1 and 3, for example 'if an absolute monarch (or other type of autocrat) establishes a "consultive assembly" or the leader of a one-party state begins to consolidate his/her political power over the party apparatus' (Jaggers and Marshall, 2004:65)

[33] This is a transition between 3 and 5. Here limited authority is exerted on the executive powers, for example the weakening of an autocratic regime or a gradual shift from a democratic regime.

[34] This is a transition between 5 and 7, i.e. a weakening of the legislature relative to the executive or a strengthening of the legislature relative to the executive.

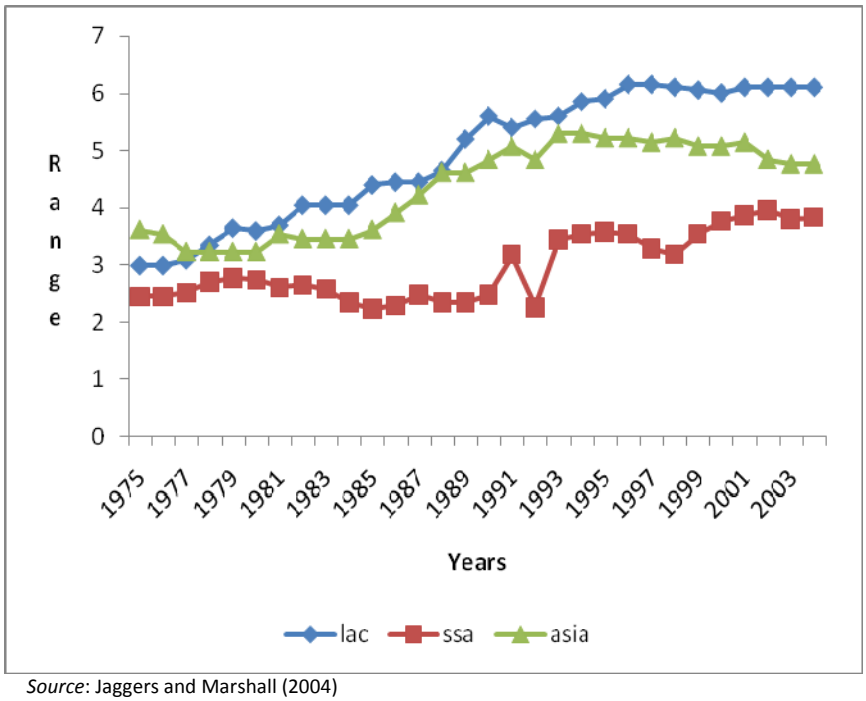
on power, unlimited executive power (1) ending 1990 and some variants between (1) and slight to moderate limitation on executive power (3). We plot the trends on the extent of the average constraints on the executive power in Figures 13 (for developing countries and LAC) and 14 (for the three subregions).

Figure 13: Constraint (average) on the Executive Powers
developing countries and LAC – 1975-2004



Source: Jaggers and Marshall (2004)

Figure 14: Constraint (average) on the Executive Powers, LAC, SSA and Asia–1975-2004



Source: Jaggers and Marshall (2004)

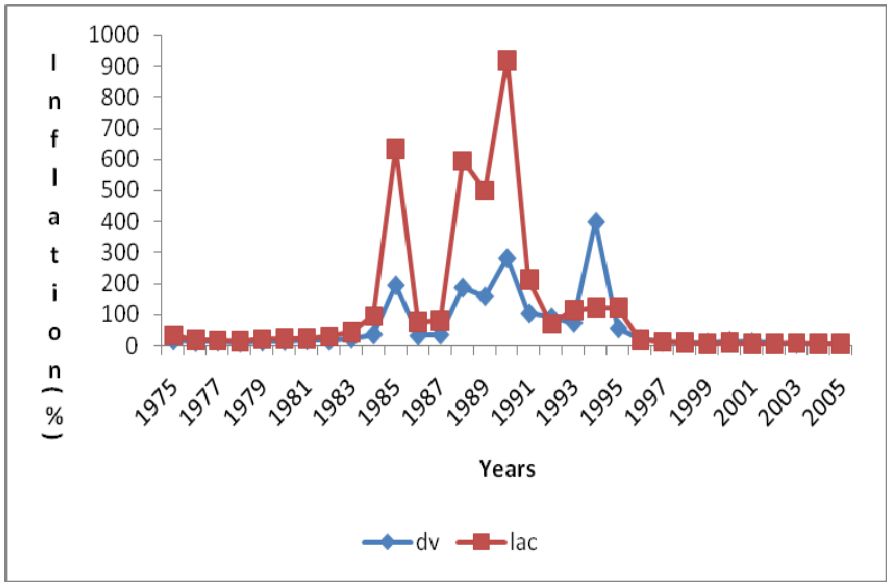
Figure 13 shows upward trends for both developing countries and LAC i.e. more restrictions on executive powers, but LAC at higher levels particularly since the late 1970s. We disaggregate the regions in Figure 14; LAC appears to exert more constraints on executive powers over SSA and Asia for most of the sample period. SSA has fewer relative restrictions on executive powers for the entire sample period. Toward the end of the sample period LAC and SSA institutional qualities are improving, while Asia is weakened.

The inflation level gives a general picture of the health of an economy; whether it can be considered for long-term investment opportunities. We approximate the macroeconomic conditions of a country by the level of inflation. This is given as 'the annual percentage change in the cost to the average consumer of acquiring a fixed basket of goods and services that may be fixed or changed at specific intervals, such as yearly' (World Development Indicators, 2006).[35] This measure is just the CPI inflation i.e. changes in the prices of consumption goods. Although this measure is commonly used to reflect inflation, it does not capture the overall price levels in a country as only a specific group of goods are accounted for at any point, but consumption profile

[35] http://ddp-ext.worldbank.org/ext/DDPQQ/member.do?method=getMembers

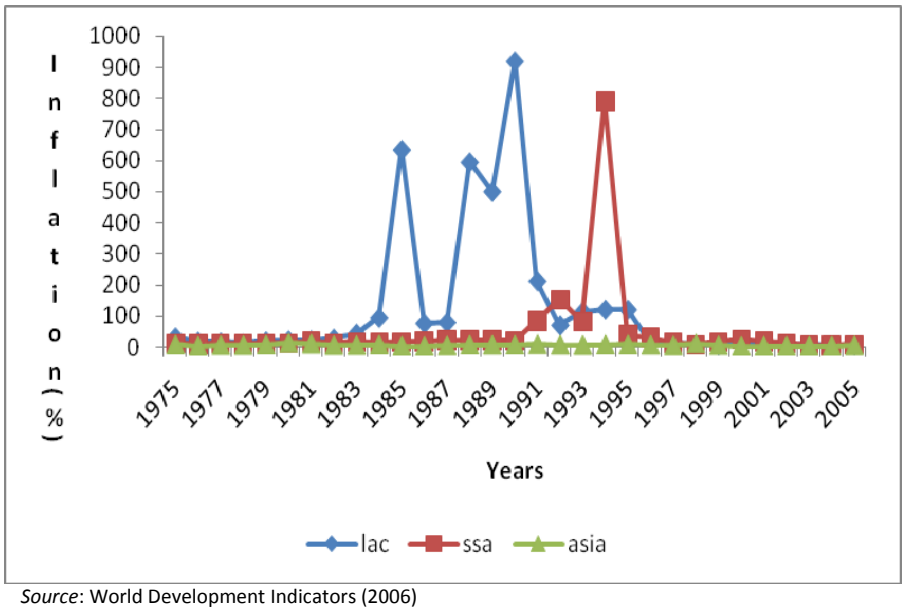
changes regularly i.e. substitution bias. There is also discount bias i.e. consumers sometimes purchase goods at cheaper prices compared to the prices in the typical basket. Finally, the typical basket of goods doesn't account for quality differences. Notwithstanding these limitations, it's popularly used to provide guidance to the levels of price changes in the wider economy. Unlike developed economies, inflation in developing countries is generally high and variable which makes them relatively less attractive for long-term business opportunities. Developing countries with high inflation rates can be found in LAC and SSA, while countries of Asia have relatively low and stable inflation rates. Figures 15 and 16 give the evolution of the average price changes over the sample period.

Figure 15: Annual (average) Price Changes, developing countries and LAC – 1975-2005



Source: World Development Indicators (2006)

Figure 16: Annual (average) Price Changes, LAC, SSA and Asia – 1975-2005



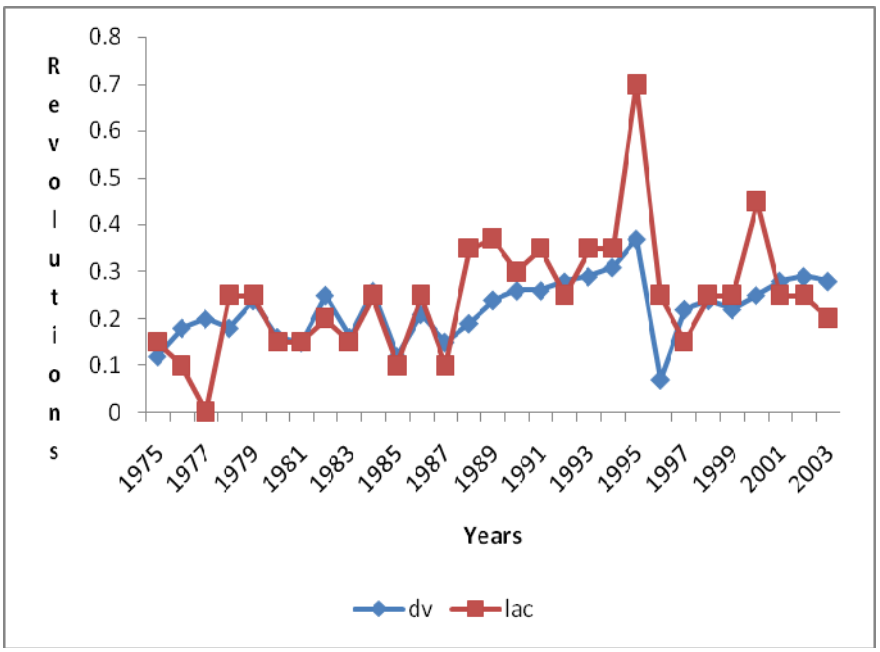
Source: World Development Indicators (2006)

The inflation rates in LAC are higer than developing countries when taken as a whole, except for the year 1994. In Figure 16, inflation rates for Asia are consistently lower than LAC and SSA. This may partly explains why countries in Asia attract relatively higher levels of FDI inflows (in absolute values).

In addition to the stability of macroeconomic indicators as means of assessing investment opportunities, investors also weigh heavily political stability in their location choices. We use two measures of political instability – Coups and Revolutions. These measures are defined in turn: 'The number of extraconstitutional or forced changes in the top government elite and/or its effective control of the nation's power in a given year' and 'Any illegal or forced change in the top government elite, any attempt at such a change, or any successful or unsuccessful armed rebellion whose aim is independent from the central government' (Cross-national Times-series Data Archives, 2003). By inference, revolutions are likely to occur compared to coups, as any attempt to remove a government elite is sufficient to constitute a revolution, not the actual removal as is required for a coup. The time horizon for these two political economy instability measures ends 2003, which means the final period average (2000-2005) has only four years (2000-2003).

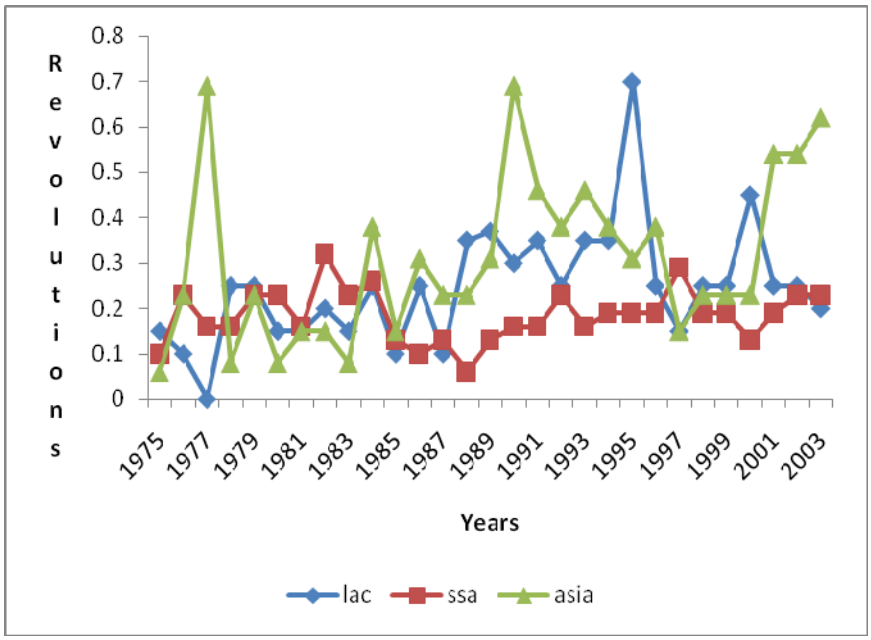
These series differ across and within regions to greater extent than other variables. For example, in Asia the Philipines records at least one revolution per year, execept in the three years ending 1999 and 1980 and Sri Lanka has revolutions for 19 of the 29 year span of the series. This constrasts with Singapore that does not have a revolution over this period. Mexico experiences 19 revolutions (with as much as 9 separate incidents in 1995) in LAC, while Costa Rica does not have a revolution. For SSA countries Mozambique has 17 revolutions, while stable regimes like Malawi do not have one incident. None of these revolution-prone countries has a coup incident. Those countries that are coups prone – Bangladesh (4), Haiti (4), Burkina Faso (4), and Uganda (4) – have relatively fewer incidents of revolutions. This pattern, perhaps, suggests that a regime which achieves political power through a coup is more likely to anticipate rebellions and therefore take pre-emptive measures to suppress revolutions. We plot the trends for both series below.

Figure 17: Revolutions (average), developing countries and LAC – 1975-2003



Source: Cross-national Time-series Data Archives (2003)

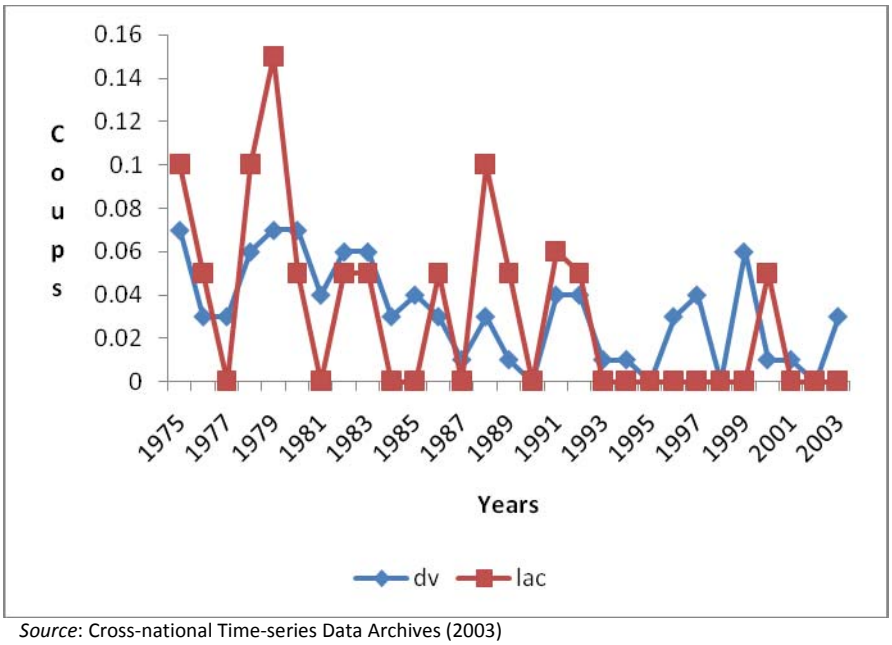
Figure 18: Revolutions (average), LAC, SSA and ASIA – 1975-2003



Source: Cross-national Time-series Data Archives (2003)

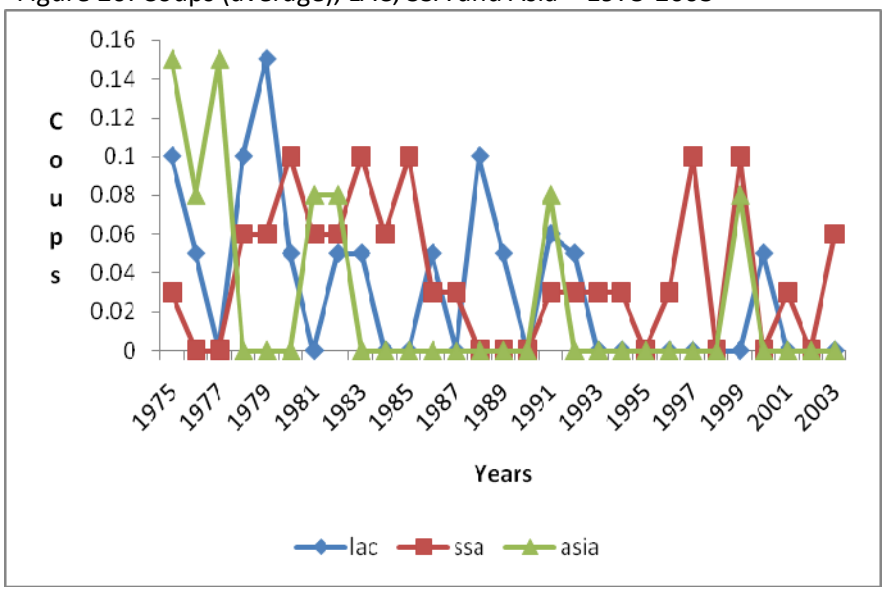
As displayed in Figure 17, developing countries as a group have relatively fewer incidents of revolutions from the late 1980s and for the 1990s, before this period the trends were more or less the same for both LAC and developing coutries. Looking at each region separately, the incidents of revolutions (average) are relatively higher in Asia and LAC. This conflicts with the traditional view which suggests that SSA is the most unstable region in the developing world. Since the early 1980s, SSA has fewer incidents of revolutions than Asia and LAC. The trends for the incidents of coups are represented below.

Figure 19: Coups (average), developing countries and LAC – 1975-2003



Source: Cross-national Time-series Data Archives (2003)

Figure 20: Coups (average), LAC, SSA and Asia – 1975-2003



S*ource*: Cross-national Time-series Data Archives (2003)

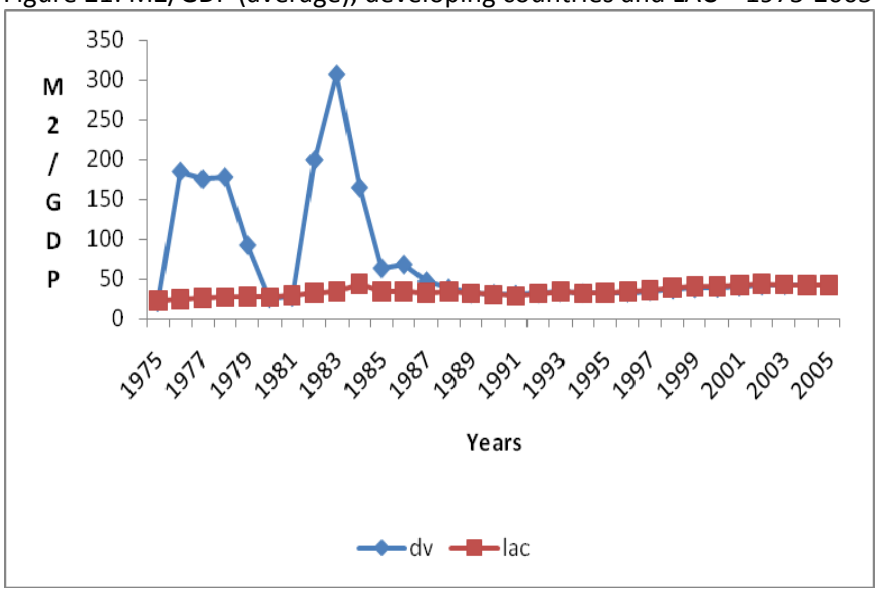
Generally, there are similar trends of the incidents of coups in developing countries and LAC in Figure 19, albeit LAC has on average more incidents of coups. In Figure 20, Asia has relatively fewer incidents of coups on average and SSA has relatively more coups, these occur around the late 1970s to late 1980s (this is the longest spell for all regions). During this period many governments in developing countries were vulnerable as a result of the debt crisis in the 1980s.

Most modern-day recessions have their genesis in the financial sector – the Asian crisis of 1997-98, the Japanese crisis of the 1990s which is characterized as a lost decade and more recently the subprime crisis in the US, starting late 2007 and which permeated the global economy. These financial sector-led crises have plunged the real economies into recessions, in the case of the latter, only the contraction of 1929-33 is more severe. These experiences suggest that the strength of the real economy is dependent on a robust financial sector, one that is able to mediate (efficiently) between savings and investments with the implication of separating productive firms from their unproductive counterparts, but also for the former to absorb the latter (something akin to creative destruction). With lagging growth in developing countries, especially SSA and LAC and the mass of distortions both in the financial sector and the real economy, having a sound financial system is even more urgent.

To measure the financial system in developing countries we use the ratio of liquid liabilities (M2) to GDP drawn from the World Development Indicators. M2 is defined as money and quasi money i.e. 'currency outside banks, demand deposits other than those of central government and the time, savings, and foreign currency deposits of resident sectors other than government' (World Development Indicators, 2006).[36] This is a broad measure that captures all the accessible liquidity to firms and consumers in the economy at any point in time. As before, this measure is constructed on a five-year average over 1975-2005. In the figures below we show trends of average M2/GDP.

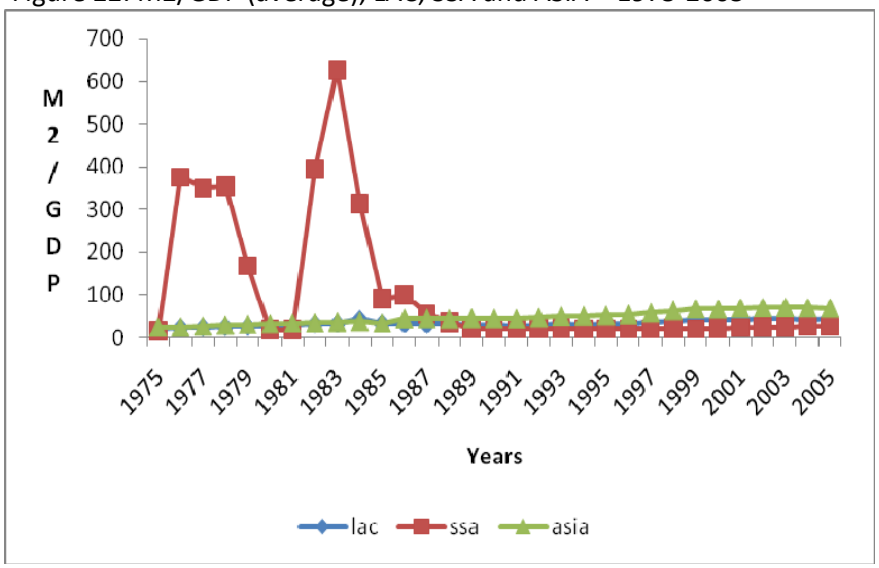
[36] http://ddp-ext.worldbank.org/ext/DDPQQ/member.do?method=getMembers

Figure 21: M2/GDP (average), developing countries and LAC – 1975-2005



Source: World Development Indicators (2006)

Figure 22: M2/GDP (average), LAC, SSA and ASIA – 1975-2005

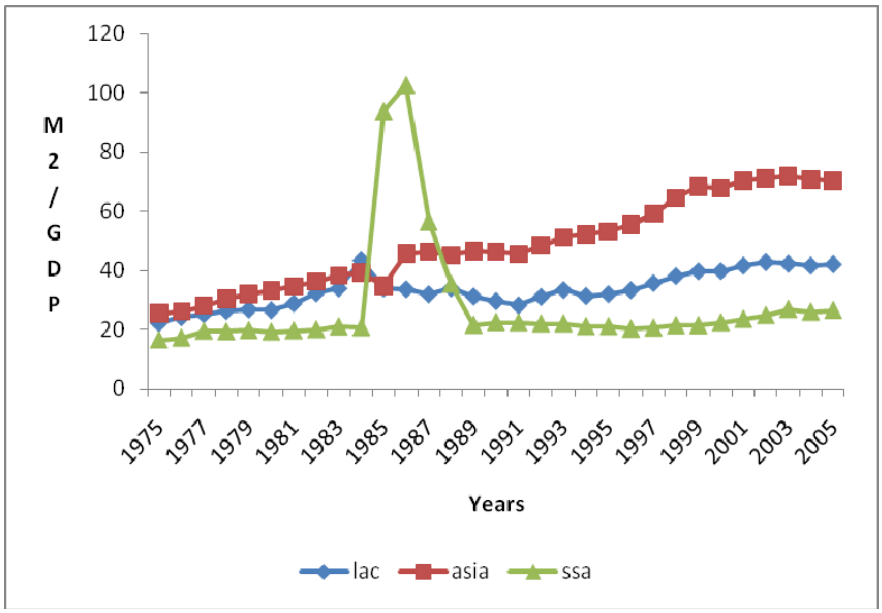


Source: World Development Indicators (2006)

For the fifteen years ending 1989 in Figure 21, excluding the year 1981, the ratio of liquid liabilities to GDP was higher for developing countries as a group. Since then the ratio of both developing countries as a group and LAC appears to be similar. The Asian region experiences a steady increase in M2/GDP, in Figure 22, over LAC and SSA. The abrupt spikes in both figures are accounted for by Zimbabwe where M2/GDP reached 11048 (1976), 10277 (1977), 10357 (1978), 4553 (1979), 11608(1982), 18798 (1983) and 9110 (1984). This suggests monetization of the economy i.e. liquid assets are far greater than the underlying productive capacity of the economy: a sure recipe for

hyperinflation. For a meaningful interpretation of the trends in SSA, we exclude Zimbabwe from the sample.

Figure 23: M2/GDP (average), LAC, SSA and ASIA – 1975-2005



Source: World Development Indicators (2006)

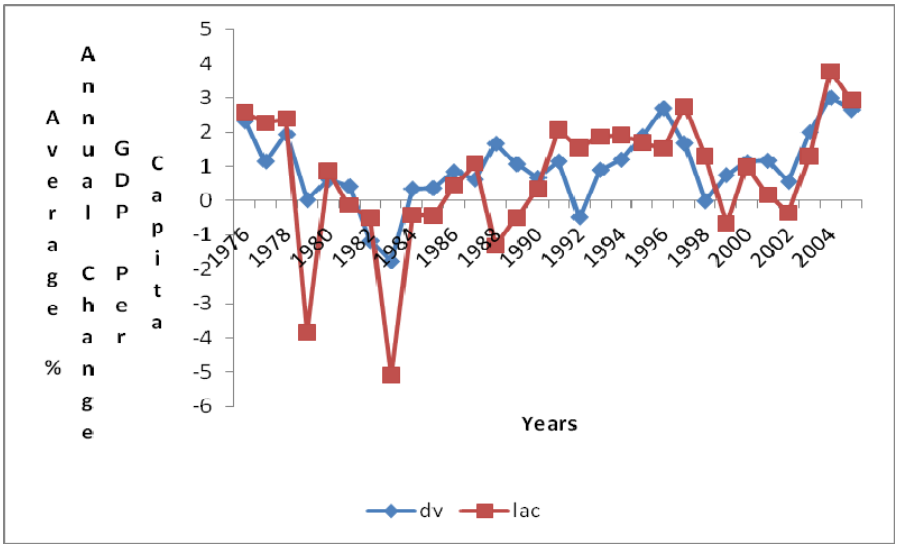
Figure 23 shows that SSA has a lower M2/GDP relative to LAC and Asia. The sudden increase for SSA is due to Mozambique, M2/GDP of 2206.87 (1985), 2460 (1986), and 1062.25 (1987).

To construct the annual average growth rate for each country, we use the logarithmic difference of real GDP per capita (in constant 2000 US dollars) at the end and beginning of each sub-period divided by the number of years. Hence the sub-period 1975-1979, 1980-84, 1985-89, 1990-94, and 1995-99 each has four observations, while the sub-period 2000-05 has five observations. GDP per capita is defined as 'gross domestic product divided by midyear population. [Again] GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources' (World Development Indicators, 2006).[37] This variable captures the welfare of the population and, in principle, we can use it to determine the differences

[37] http://ddp-ext.worldbank.org/ext/DDPQQ/member.do?method=getMembers

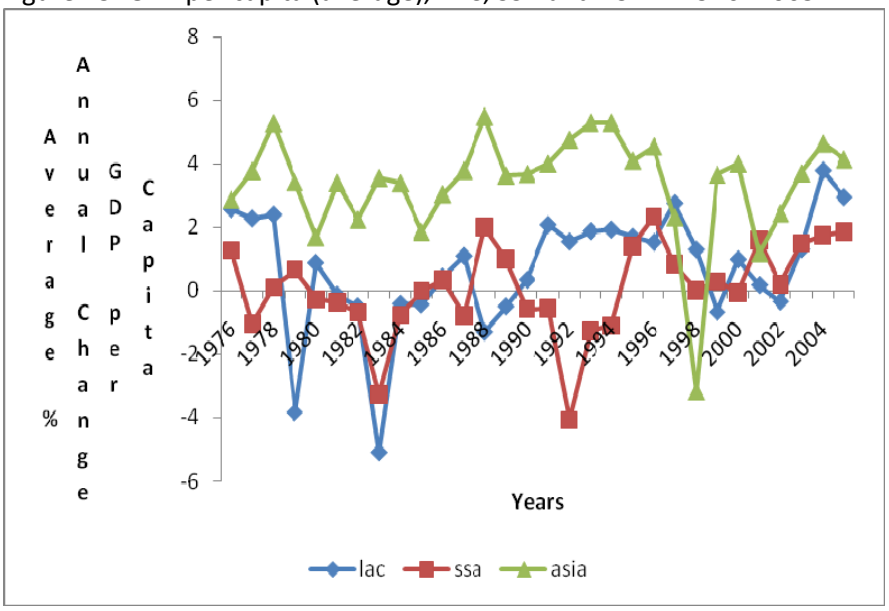
in consumption levels and health across countries (Acemoglu, 2009). In Figures 24 and 25 we plot trends of average income per population across regions overtime.

Figure 24: GDP per capita (average), developing country and LAC – 1976-2005



Source: World Development Indicators (2006)

Figure 25: GDP per capita (average), LAC, SSA and ASIA – 1976 -2005



Source: World Development Indicators (2006)

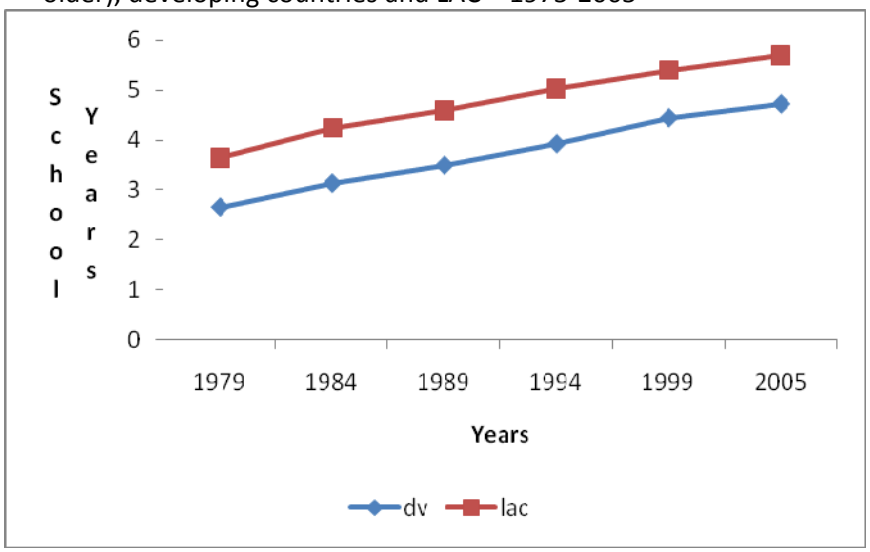
Broadly, the trends of GDP per capita in Figure 24 are similar for both developing countries as a group and LAC. However, the magnitude of negative rates of GDP per capita is larger and more persistent for LAC compared to developing countries as a group. As is expected countries in (Figure 25) Asia have higher growth rates of GDP per capita than LAC and SSA. While LAC and SSA countries have frequent episodes of

negative growth of GDP per capita over the period, this occurs only once in 1998 for Asian countries, around the time of the financial crises. Toward the end of the sample period LAC and Asian countries experience downward trends in income per capita, while SSA is on a upward path. The 2001 recession in the US can explain the downward trends in GDP per capita for LAC and Asia, as both regions rely on the US for exports market. It's noteworthy that Asia was not always growing at faster rates compared to LAC. Using 1820-2000 data from Angus Maddison, Acemoglu (2009) shows that Latin America starts at higher levels of GDP per capita and was growing at faster rates than Asia up to 1950, at which point Asia's growth rates overtook Latin America.

Finally, to measure human capital we draw on Barro and Lee (2000) updated version on average years of schooling in the population age 25 years and older, an index of three cycles of educational attainment – primary level, secondary level and post-secondary level. Essentially, this reflects the stock of human capital in a society through school attendance. According to Barro and Lee (2000), educational attainment does not take into account knowledge accumulated outside school attendance, which is essential in shaping individuals character. Also, school attainment does not measure educational quality or skills acquired at school (hence the measure is silent on productivity). In spite of these shortcomings, educational attainment gives a first view of the stock of human capital available and whether society values education. These are factors that distinguish progressive societies. This measure of human capital is popular in the growth literature. Barro and Lee (2000) construct averages of five-year intervals over 1975-2000. Hence for our final period (2000-05) we use the observation for 2000.[38] We use these five-year averages, in Figures 26 and 27, to construct trends across regions overtime.

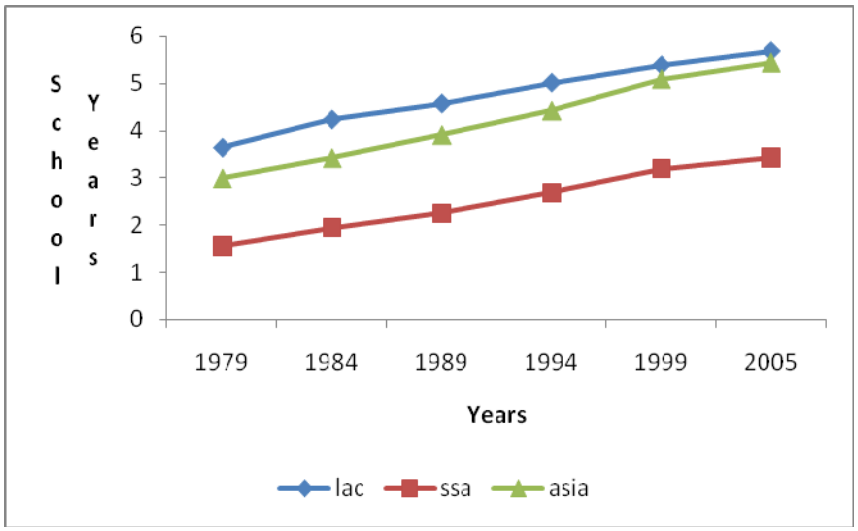
[38] Barro and Lee (2000) base the year 2000 on projections.

Figure 26: Average Years of Schooling in the Population (age 25 and older), developing countries and LAC – 1975-2005



Notes: Data are from Barro and Lee (2000). 1979 is for 1975-79, 1984 is for 1980-84, 1989 is for 1985-89, 1994 is for 1990-94, 1999 is for 1995-99 and 2005 for 2000-05.

Figure 27: Average Years of Schooling in the Population (age 25 and older), LAC, SSA and Asia – 1975-2005



Notes: See Notes to Figure 26

Both figures show that the educational attainment is higher for LAC compared to developing countries as a group (Figure 26) and compared to SSA and Asia (Figure 27). All regions experience upward trends but, LAC increases at a faster rate. In Figure 27, toward the end of the sample, countries of Asia close the gap with LAC seen in previous periods. SSA has the lowest attainment levels, and the difference expands overtime.

4.0 Conclusions

The aim of this chapter was to provide a detailed account of the data used in subsequent chapters. We reach this goal by describing how each variable is constructed and plotting trends for each variable and for the three major regions (LAC, ASIA and SSA), providing a discussion along the way. The main message that emerges is that different regions don't necessarily share the same characteristics, e.g. LAC is endowed with a higher stock of human capital (using the measure from Barro and Lee, 2000), but this doesn't seem to translate into higher levels of growth, considering that Asia has higher and sustained levels of GDP per capita relative to LAC (and SSA) over the sample period, except for the financial crisis (1997-98). These trends are interesting, as the widely held view was that Asia's growth could be explained by its relatively higher levels of productivity, partly due to higher levels of human capital. Even within the same region we observe subtle differences among countries, e.g. the frequency with which revolution occurs in LAC and Asia are dominated by Mexico and the Philippines, while neighbouring countries like Costa Rica and Singapore are relatively peaceful, respectively.

CHAPTER 3

ON THE DETERMINANTS OF FDI: EVIDENCE ON LATIN AMERICA and the CARIBBEAN

1.0 Introduction

Foreign direct investment (FDI) is the flow of funds (capital) overseas with the aim of owning a business operation. Having influence or control is critical to this aim (Shatz, 2001) hence FDI is through the activities of Multinational Corporations (MNCs). Research interest in FDI had its genesis in the 1950s but as Agiomirgianakis *et al*. (2006) argue the complexion of FDI has changed. FDI is seen today as a conduit for technology transfer, managerial know-how, access to foreign markets and other 'growth-inducing' characteristics. This is partly reflected in what the World Bank (1991) describes as a "sea change" in the way in which policy makers think about development i.e. a shift away from inward oriented strategies and development behind "closed doors" toward a more open door development agenda. In his assessment of the determinants of FDI liberalisation policies in 116 developing countries, Kobrin (2005) posits that 95 percent of such changes (over 1992-2001) were favourable toward FDI. In the period 2002-04 an (annual) average of 85 countries effected policy changes (affecting FDI), 91% of which provided incentives to FDI (UNCTAD, 2005). But does this liberal development orientation increase the inflows of FDI beyond what would have been obtained in its absence, or does it just motivate reallocating the existing stock to make greater profit (Gastanaga *et al*, 1998). This question is more than a decade old, but it still occupies policy and research discussions today.

This question is even more relevant given the fact that poor regions like sub-Saharan Africa (SSA) are afflicted by low saving and virtually shut-out of the international capital market. Policy makers in the developing world seem to believe that FDI offers a source of foreign capital inflow that supports the aim of achieving growth, reflected in their vigorous policy competition to attract FDI. Developing countries place great confidence in FDI to address economic woes; it does not create debt and is long-term

(partially irreversible). The focus of this chapter is to throw some light on the factors determining inflows of FDI in Latin America and the Caribbean (LAC), to systematically investigate any differential effects between factors affecting FDI inflows in LAC and other regions of developing countries.

Our approach in spirit follows Asiedu (2002), who studies the determinants of FDI inflows in SSA countries and considers the question of whether Africa is different compared to other developing countries. The study employs panel estimation techniques on 71 developing countries, 32 of which are SSA countries, over the period 1988-97. A narrow range of potential determinants is considered (including an index of trade openness, a measure of infrastructure, a measure of the return on investment, a measure of liquid liabilities, GDP growth and an African dummy). The major findings are that openness, infrastructure quality and a high return on investment positively influence FDI inflows, but even allowing for these there is an "Africa effect" reducing FDI inflows.

By including other potential determinants (economic and institutional), a richer and more complete understanding of FDI inflows in LAC and whether they differ from other developing countries can be provided. In spirit the approach followed is that of Quartey and Tsikata (2007) and Trevino and Mixon (2004) who assess a wide range of economic and institutional factors on FDI inflows in SSA and LAC respectively, but (unlike the latter) the focus is on whether LAC is different.

The rest of the chapter is structured as follows. Section 2 discusses trends of FDI flows in LAC. Section 3 looks at previous empirical research on FDI flows. Section 4 briefly discusses data and variables used in the chapter. Section 5 further explores the data and discusses the empirical specification. Section 6 reports empirical results. The conclusions are in Section 7.

2.0 FDI IN LAC – TRENDS

Until the early 1980s Latin American countries were largely closed to the world economy, with relatively protectionist trade regimes and restrictions on FDI. Since then these countries have opened up, partly due to the failed inward development strategy and the debt crisis and more importantly the forces of globalization. 'Reflecting the shift toward market-oriented reform, states have increasingly relied upon private direct investment as a substitute for public finance in order to generate economic dynamism and employment' (Inter-America Development Bank [IDB] 1997; ECLA 1998 cited in Emmert and Tuman 2004: 10). This dependence of Latin American economies on FDI has important implications for development in the region. The welcome practice that LAC countries have replaced military rule with different variants of democracy underlie much optimism for FDI inflows. 'In 1979 over two-thirds of Latin America's people were living under military rule. By 1993, however, not a single military regime remained in Central or South America or the Spanish speaking Caribbean' (Loveman, 1994: 105). This point is evidenced in Table 1.

Table 1: *Commencement of Civilian Rule in Latin America*

Ecuador	1979	Uruguay	1984
Peru	1980	Brazil	1985
Honduras	1982	Guatemala	1986
Bolivia	1982	Chile	1990
Argentina	1983	Paraguay	1993
El Salvador	1984		

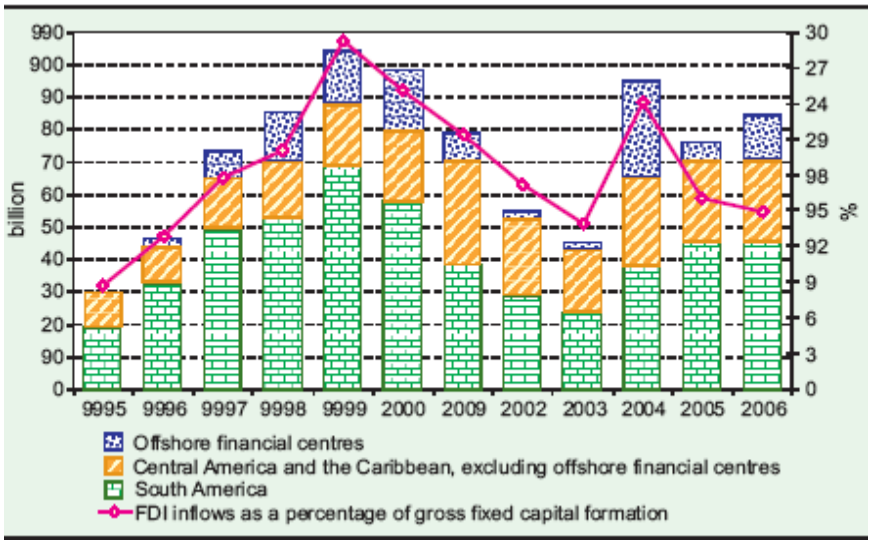
Source: Loveman (1994: 108).

Between 1985 and 1996 aggregate nominal FDI inflows increased from $53 billion to $315 billion (World Development Report, 1998). The inflows of FDI to developing countries increased from $24 billion in 1990 to $178 billion in 2000, 24% and 61% of aggregate foreign investment inflows respectively (Asiedu, 2002). FDI flows have become one of the most dynamic features of the modern global economy (Dunning, 2002). Again this is encouraging in light of the experience that many developing countries have limited access to international capital markets and low saving rates, especially those of SSA and Latin America and the Caribbean (LAC). The aggregate picture, however, masks the fact that there is regional concentration of inflows to developing countries. Notwithstanding campaigns to lure FDI, Africa and LAC hardly benefit from this. In nominal terms, inflows to those two regions over 1980-89 and

1990-98 grew by 59% and 455% respectively, compared unfavourably with Europe and Central Asia 5200%, East Asia and the Pacific 942%, South Asia 740% and 672% for the developing world as a whole for the period under investigation. The average return (13.8%) to US FDI over 1991-96 in Latin America and the Caribbean is the lowest among developing countries (Asiedu, 2002).

Recent evidence suggests that developing countries accounted for 36% (over 2003-2005) of total inflows, Asia and Oceania received 21% of this amount, inflows to LAC was 12% and 3% was reported for Africa (UNCTAD, 2006). Inflows have, however, increased in 2004 and 2005, by 44% and 3% respectively for LAC. This has been attributed to good growth performance, increased commodity prices (resulting in current account surplus) and a general improvement in the investment climate (UNCTAD, 2006; 2005). Africa received an increase in FDI ($36 billion) in 2005 despite a reduction in the share of global inflows, while FDI for LAC remains flat ($70 billion, excluding income from offshore financial centres that earn $14 billion) over 2005. Inflows to Asia and Oceania reach record levels ($260 billion) in 2006 (UNCTAD, 2007). Noorbakhsh *et al*. (2001) assert that since FDI in East and South East Asia overtook that in LAC in 1988 the gap has widened. This raises the empirical question of whether there are features of these regions (SSA and LAC) that render them relatively unattractive to FDI.

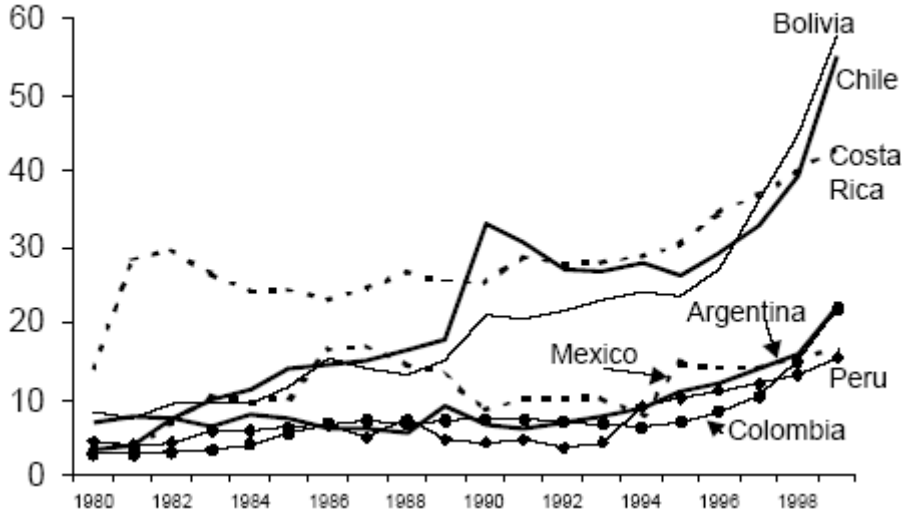
Figure1: The share of FDI inflows in gross fixed capital formation – Latin America and the Caribbean, 1995-2006



Source: UNCTAD, FDI/TNC database.

The flows of FDI in LAC, as a share of gross fixed capital formation, are shown in Figure 1. Since 1999 FDI inflows as a percent of gross fixed capital formation have declined, except in 2004 when there was a 10 percent increase over 2003. This is in line with the general trend of FDI inflows in the region. The peak in 1999 represents 25 percent of gross fixed capital formation (Cravino *et al.*, 2007). Offshore financial centres are emerging as an important sector and the larger economies in LAC attract relatively more FDI inflows; te Velde (2003) notes that the latter is due to size advantage, as FDI inflows in the region is market serving.

Figure 2: Stock of FDI/GDP – Latin America and the Caribbean, 1980-1998



Source: te Velde (2003), www.unctad.org

The intraregional concentration of FDI inflows is represented in Figure 2. Bolivia, Chile, Costa Rica are leading recipients in the period. Even though no data are provided for Brazil, in 2006 Brazil and Mexico experience the largest inflows of $19 billion each. This is followed by Chile, Colombia, Argentina and Peru (UNCTAD, 2007). Figures 1-2 also underline the boom in FDI flows in the 1990s due to a wave of privatization and liberalization policies in the region.

The major source countries of the region's FDI inflows are from the OECD – US, Spain, Netherlands, France, Canada, and UK (UNCTAD, 2004). With many EU investors concentrating on home market, flows from EU countries are less stable than the US. This partly explains the reversal of the boom in the 1990s and the downturn in recent times (ECLAC, 2004). The major economies of LAC also engage in intraregional FDI

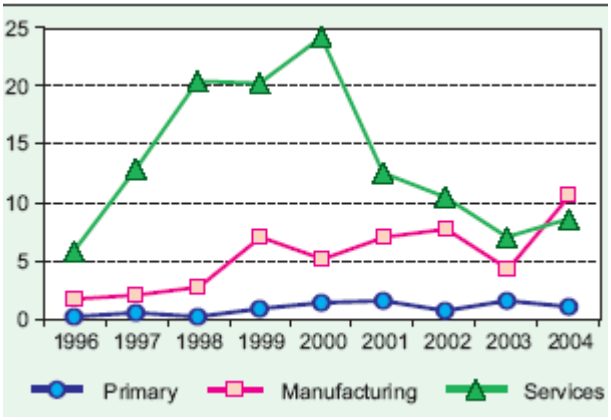
outflows: Brazil, Mexico, Chile and Argentina are the major players. However, most of Brazil's outflows target countries outside the region, mainly developed economies. The purchase of Inco, a Canadian company, for $17 billion by CVRD of Brazil was the largest single outflow from the region. Mexico, Chile and Argentina's outflows target countries within the region.

2.1 Sector Distribution of FDI flows in LAC

Inflows of FDI to LAC are evident in primary, manufacture and services sectors. Primary (oil, gas and other raw materials) and manufacture (especially cement and steel) sectors include exportables, whereas the main services (utilities, finance and telecommunications) are typically not exported. For the period 1996-2003, services have been the most attractive sector to foreign investors; FDI inflows in services were 59 percent of regional flows, manufacture was 28 percent and the primary sector registered 13 percent (although flows to the manufacture sector grew faster than to services). The strength of the manufacture sector continues in 2005 and 2006, accounting for 41 percent of regional flows. At the height of the liberalization episode of the 1990s most of the inflows went into services (UNCTAD, 2007, 2006; ECLAC, 2004).

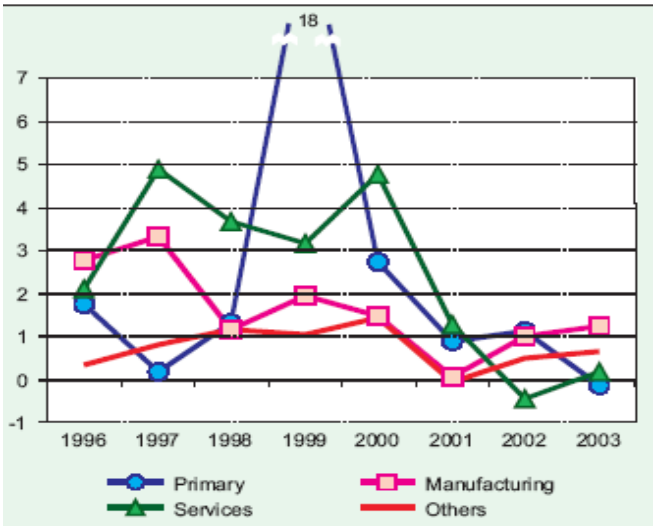
This aggregate analysis obscures the fact that sector distribution of inflows is not uniform across countries of LAC. Figures 3-5 show a clear and unambiguous distribution of inflows by the main sectors in the larger economies of LAC. From the mid-1990s to early 2000s most of the inflows to Brazil (up to 2003) and Argentina (up to 2001) went into services. The sharp rise of inflows in the primary sector in Argentina in 1999 was the sale of YPF (for $15.2 billion), a state-owned company, by Repsol of Spain. There were negative inflows in services for Argentina in 2002. In contrast, the manufacturing sector has played the dominant role in attracting inflows in Mexico since 1996. The windfall in services in 2001 was the purchase of a Mexican bank by a US firm, 37 percent of inflows in the manufacturing sector went to Mexico in 2005 and Brazil records only 20 percent (UNCTAD, 2006).

Figure 3: FDI flows in Brazil by sector
1996-2004, (Billion of dollars)



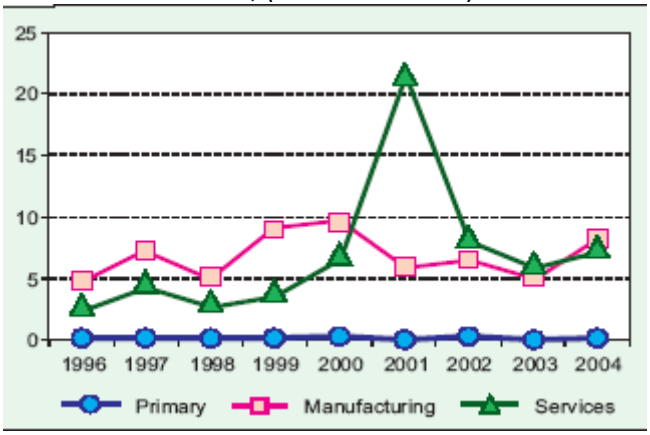
Source : UNCTAD, based on data from Banco do Brazil (www.unctad.org).

Figure 4: FDI flows in Argentina by sector
1996-2003, (Billion of dollars)



Source: UNCTAD, data from Instituto National de Estadistica y Censos (INDEC) Argentina (www.unctad.org).

Figure 5: FDI flows in Mexico by sector
1996-2004, (Billion of dollars)



Notes: The rise in services is acquisition by Citygroup in 2001 of the Mexican Bank, Banamex for 12.5 billion
Source: UNCTAD, data from Seccretaria de economia de Mexico, Inform Estadistico Trim-estral Sobre el Comportamiento de la Inversion Extrajera Directa en Mexico, ComNacional de de Inversiones Extranjeras www. economia.gob.mx. (www.unctad.org).

2.2 Related Literature on FDI flows in LAC

The strategic proximity of LAC to the largest economy (the US) in the world and its relative stability in term of political risks make it an attractive market for FDI inflows. This opportunity was seized upon by foreign investors during the boom decade of the 1990s. The "China effect" (and concentration of EU investors on home market) seems to have had an impact on this trend, with policy makers expressing fear of inflows diverting to China. 'The fear of PRC [People Republic of China] is floating in the atmosphere here. It has become a challenge to the Americas not only because of cheap labor, but also on the skilled labor, technological and foreign investment fronts' (Cesar Gavin, Organization of American States; cited in Chantasasawat *et al*., 2004). Studies have attempted to investigate the effects of China's role on LAC ability to attract FDI. They observe that the emergence of China as an attractive FDI location diverts FDI flows from LAC (Chantasasawat *et al*., 2004). In contrast, Garcia-Herrero (2005) posits that the emergence of China has only a negligible diversion effect on FDI flows from LAC, mostly for Mexico and Colombia before 2001 and after 2000 respectively. The author speculates that the channel through which this diversion might occur is manufacture, as investors view China as a relatively lucrative market to locate their operation. Thus the concern might not be for the region as a whole, but only for those two countries.

Fear of China by policy makers in the region may be misplaced; Chantasasawat *et al*. (2004) suggest that policy makers should be concerned with economic growth, reduce corporate taxes and link their economies to the global economy, as these may off-set China's influence to reduce FDI flows in LAC. A similar theme has been echoed by Galan and Gonzalez-Benito (2006) in distinguishing circumstances under which Spanish firms select LAC as their preferred location. They assert that the decision for Spanish firms to invest in LAC is based on features unique to the region, for example the cultural similarity, and idiosyncratic features that are unique to a particular country e.g. consumers' preferences, and trade unions attitudes in resolving industrial disputes, etc.

Following the reform process in LAC, Trevino *et al*. (2002) argue that privatization exerts a strong influence on FDI inflows and this advantage is sustained long after the process is complete. The implication is that potential investors will perceive a host government as investor-friendly and be willing to invest there. This has been supported by Shatz (2001) who maintains that part of the reasons why the Andean group (Bolivia, Colombia, Ecuador, Peru, and Venezuela) was able to experience a rise in the ratio of FDI/GDP (from 1994-1998) was due to slackening of policies toward FDI during the 1970s and 1980s. Most of the hostility toward FDI was among LAC economists in the 1950s and 1960s during the "core-periphery" debate which argues for an interventionist role for the state in economic development (Bengoa and Sanchez-Robles, 2003).

Further work on LAC by Bengoa and Sanchez-Robles (2003) concludes that economic freedom (the degree of openness, government intervention, distortion in the economy, and corruption) and inflation are the most robust factors that affect FDI flows. In analyzing the effects of FDI on growth, they find that one way in which LAC can expand their economies, in line with the received wisdom, is through attracting more FDI flows. Estimating a growth regression to identify determinants of growth in LAC, De Gregorio (1992) presents evidence that foreign investments increase the potential for growth and the marginal contribution is greater relative to other types of investments. This is not surprising, given the competitive nature of foreign investments and their international experience. Beyond providing capital, however, foreign

investments are not homogeneous in their growth potential; Alfaro and Charlton (2007) argue that FDI targeted to high skilled industries has a greater probability to spur growth.

In the light of the reform agenda in LAC, Biglaiser and DeRouen (2006) disentangle the effects of the reform process on FDI inflows. Contrary to the cheerleaders of the reform process, they postulate that of the raft of economic reforms undertaken in the region, only domestic financial liberalization and trade encourage FDI flows and that the benefits of international capital liberalization and privatization have been exaggerated, as the evidence in support of these factors is lacking. In terms of institutional reforms, they argue that reducing the risk of expropriation is critical given the notoriety of nationalization in the region. The correct lesson that follows is for policy makers to avoid the (Washington Consensus style) complete package of reform, but rather to target those that specifically satisfy the preferences (and is beneficial to a host country) of foreign investors since not all have similar effects. This requires careful diagnosis in discovering where the FDI constraints lie, whether they are trade, credit or the risk of expropriation.

Being contiguous to the US market may not be the only advantage for the Mexican economy in attracting FDI inflows. Love and Lage-Hidalgo (2000) find that location characteristics, particularly factor (wage rate, and this has influence both in the short and long run) cost differentials between the US and Mexico and the "market hypotheses" encourage investors from the US. Since the marginal productivity of labour increases as a result of FDI (through new ideas such as more efficient production techniques), they share concerns that increased FDI in response to this favourable wage differentials may put upward pressure on wages, both in the *maquiladora* industry where there is a high concentration of US FDI and in other sectors of the economy (thus increasing equilibrium wages), thereby driving FDI to more competitive locations. Aitken *et al*. (1996) find no evidence of wage spillovers from higher paid foreign investors to wages paid by domestic firms in Mexico or Venezuela. This they suggest may be because foreign investors and domestic firms operate in different labour markets, with the former associated with tighter institutional regulations and explicit efforts to retain skilled workers.

3.0 Previous Empirical Studies

The literature is replete with empirical analyses of factors affecting FDI flows. In addition to the studies cited above, there are other studies which seek to shed light on why some countries are more successful in attracting FDI, or more generally why FDI favours certain locations relative to others. Most of these studies focus on location factors and ignore firm-specific advantages (for example proprietary advantage) as such analysis requires micro data, while analysis on location determinants relies on country aggregate data (Cardoso de Mendonca and Nonnemberg, 2002). Unfortunately, given LAC past experience of policy exclusion and the important role of FDI to development, not much research has been done on FDI inflows in LAC, the potential differences versus other regions and the impact on the levels of FDI flows. There are a few exceptions.

Emmert and Tuman (1999) look at the determinants of Japanese FDI inflows for 12 (largest) LAC countries. The panel is 1972-92 and they dichotomize the determinants into economic (market potential, trade, work-force size, cost of production, economic adjustment policies) and political (foreign aid and political instability) variables. Japanese FDI inflows in LAC are influenced by market size (population), political instability due to revolutionary movements, deaths and adjustment episodes arising from structural adjustment programmes. Traditional measures of labour quality (education), trade, inflation, and GDP per capita exert relatively less influence over Japanese FDI inflows.

Mixon and Trevino (2004) search for the determinants of FDI inflows for seven of the LAC countries, for the period 1988-99, in Emmert and Tuman (1999). The motivation is that LAC had recently implemented liberalisation policies to one degree or the other. In this connection, they attempt to assess the dominance of institutional over economic factors. First, a pooled OLS regression reveals that exchange rate instability discourages FDI whereas GDP, privatization, and somewhat surprisingly, capital controls and inflation all serve as attractors. A more efficient estimation technique (fixed effects) suggests that GDP has a positive influence, but inflation and privatization are insignificant. Political risk is positive and highly significant in both versions of the model, an indication that the risk adjusted rate of return on FDI inflows in LAC is high (this contrasts with Emmert and Tuman, 1999). The final step in their estimation

procedure (as to whether institutions dominate economic factors) throws up institutional influence as most dominant in attracting FDI inflows in LAC.

In a rather different approach, Woodward and Rolfe (1992) use a discrete choice technique, utilizing a conditional logit model with micro level data to find the influences on the choice of country for export-oriented FDI inflows in the Caribbean Basin area (a sample of particularly small island states). The variables they utilize are assumed to feature prominently in the probability of which country to invest. In keeping with convention, infrastructure (proxy by GDP per capita), monetary policy (exchange rate depreciation) and tax incentives increase the probability of FDI inflows. Higher labour cost, high wages, high transportation cost and political instability serve as deterrents.

Using a longitudinal methodology over 1975-00, Cardoso de Mendonca and Nonnemberg (2002) investigate the determinants of FDI flows for 38 developing (and transition) economies. Their evidence suggests that market size, previous growth performance, education and openness are important in FDI location. A measure of capital market growth (from Dow Jones) in the source country supports FDI outflows and risk is significant (as measured by inflation). These results are confirmed when fixed effects are taken into account.

The Middle East and North Africa (MENA) region's pattern of FDI inflows has been studied by Onyiewu (2003). This region is rich in natural resources - oil - therefore one would expect resource-seeking FDI to favour the MENA region. However, a binary (0, 1) variable (indicating the volume of FDI inflows) suggests that FDI inflows to this region compared to developing countries might be lower. Onyiewu (2003) finds that the MENA region is different, as the reduced FDI inflows are affected by government bureaucracy and corruption and trade restrictions. Economic fundamentals, infrastructure and the level of return on investment are significant for increased FDI inflows in non-MENA regions.

The opening of Eastern European centrally planned economies in the 1990s provide Campos and Kinoshita (2003) the opportunity to search for the determinants of FDI inflows in these states, something they describe as akin to a natural experiment. The

study spans the period 1990-98 and includes 25 transition economies. This study also addresses the question of the differential effects of FDI inflows in CIS (e.g.Turkmenistan Azerbaijan, Kazakhstan and Russia) and Central and Eastern European and Baltic (CEEB) countries. They employ two different estimation techniques – fixed effects and GMM. The primary aim of the GMM is to provide suitable instruments (and to knock out endogeneity effects) to assess the role of previous (agglomeration effect) FDI stock. They conclude that previous FDI, a large market, minimum labour cost, abundance of natural resources, external liberalization, fewer restrictions on FDI and countries with good institutions stand to benefit from FDI inflows. They divide the sample into CIS and non-CIS countries to identify potential differences in FDI flows. They find that FDI flows are attracted to natural resource rich CIS countries via good infrastructure and abundance of natural resource. In contrast, good institutions and the accumulated stock of FDI account for FDI flows in non-CIS countries.

Cheng and Kwan (2000) model the agglomeration effect (and other variables) on regional FDI distribution across China's provinces from 1985-95. Like Campos and Kinoshita (2003) they use GMM in search of appropriate instruments and find that previous FDI is a major determinant of future inflows. All the traditional determinants turn out as expected, except for education which is insignificant. Importantly, policy variables like special economic areas seem to affect the regional location of FDI inflows in China. In an earlier study by Sun *et al*. (1999) about FDI inflows across China's 30 provinces, for a relatively short period (1989-96), the "herding effect" of attracting future FDI inflows due to past inflows serves as a deterrent. Highly skilled workers and good research capability are good signals for FDI inflows. Contrary to popular belief, they observe a positive outcome for high wages, which they assert may indicate a good economic environment for a location.

In addition to being the source countries, developed countries are the major recipients of inward FDI, over 75% of flows on average (Agiomirgianakis *et al.*, 2006). The Single Market Programme (SMP) even increased intra-EU FDI. Agiomirgianakis *et al.* (2006) examine the factors that support FDI inflows in OECD countries, using panel estimation methods. In line with previous research they provide empirical evidence that agglomeration, trade regime, density of infrastructure and human capital contribute in

attracting FDI in OECD countries. Table 2 provides a summary of selected potential determinants of FDI flows.

Table 2: ***Summary of empirical studies on the determinants of FDI, significant variables***

Author	Agiomirgianakis *et al*. (2006)	Nonnemberg & Cardoso de Mendonca (2002)	Asiedu (2002)
Sample Period:	1975-97	1975-2005	1970-95
Sample Type:	Panel	Panel	Panel
Sample:	Developed Countries	38 Developing & Transition Countries	71 Developing Countries
Economic Strategy	Fixed & Random Effects	Fixed & Random effects	Fixed & Random Effects
Dependent Variable: Net FDI/GDP inflows	√	√	√
Independent Variables: GDP per capita	Positive		
Exports and imports to GDP	Positive	Positive	Positive
Secondary enrolment to population (15-65)	Positive		
Railway network & percentage of roads paved	Positive		
Agglomerations (FDI_{t-1})	Positive		
GDP		Positive	
Average growth in last 5 years		Positive	
Proportion of population in secondary school		Positive	
Rate of inflation		Negative	
A country risk		Negative	
Capital market growth in developed countries		Positive	
Telephone lines per 1000 population			Positive
Inverse of GDP per capita			Positive
SSA (Dummy)			Negative
Inverse of GDP per capita × SSA			Negative
Telephone lines per 1000 population × SSA			Negative

Table 2 cont., ***Summary of empirical studies on the determinants of FDI, significant variables***

Author	Emmert & Tuman (1999)	Emmert & Tuman (2004)	Mixon & Trevino (2004)
Sample Period:	1979-92	1979-96	1988-99
Sample Type:	Annual	Annual	Panel
Sample:	12 LAC	15 LAC	7 LAC
Economic Strategy	OLS	OLS	Fixed Effects
Dependent Variable: Net Japanese FDI/GDP inflows	√		√
Net US Inflows FDI/GDP		√	
Independent Variables: Population	Positive		
Economic adjustment period	Negative		
Defeat in a war	Negative		
Revolutionary movements deaths	Negative	Negative	
GDP per capita growth		Positive	
Imports and exports to GDP		Positive	
Proportion of population in secondary school		Positive	
Coups		Negative	
US FDI/GDP$_{t-1}$		Negative	
Anti-government riots		Negative	
Human rights abuses		Positive	
GDP per capita			Negative
Political risk			Positive

Table 2 cont., ***Summary of empirical studies on the determinants of FDI, significant variables***

Author	Gastanaga *et al*. (1998)	Cheng & Kwan	Quartey & Tsikata (2007)
Sample Period:	1970-95	1985-95	1975-2002
Sample Type:	Panel	Panel	Panel
Sample:	49 Developing Countries	29 Chinese Regions	23 SSA
Economic Strategy	Fixed Effects	GMM	Fixed & Random Effects
Dependent Variable: Gross FDI/GDP inflows	√		
Net US Inflows FDI/GDP	√		
Per capita FDI stock		√	
Per capita net FDI inflows			√
Independent Variables: US FDI/GDP$_{t-1}$	Negative		
Marginal tax rates	Negative		
Tariff	Negative		
Bureaucratic delay	Negative		
Nationalization risk	Positive		
GDP growth (current, future and lagged)	Positive		
FDI$_{t-1}$ (stock)		Negative	
Real wage		Negative	
Per capita real regional income		Positive	
Roads (km/km^2 of land mass)		Positive	
Special economic zone (lagged)		Positive	
Per capita GDP			Positive
Natural resource availability			Positive
Corporate tax share			Negative

Table 2 cont., ***Summary of empirical studies on the determinants of FDI, significant variables***

Author	Asiedu (2006)	Lucas (1993)	Campos & Kinoshita (2003)
Sample Period:	1984-2000	1960-85	1990-98
Sample Type:	Panel	Annual	Panel
Sample:	22 SSA	7 ASIAN	25 Transition Economies
Economic Strategy	Fixed Effects	OLS	GMM
Dependent Variable: Net FDI/GDP inflows	√		
Net FDI inflows/deflator of fixed capital formation		√	
Per capita FDI stock			√
Independent Variables: GDP	Positive		
Minerals and oil/total exports	Positive		
Telephone lines per 1000 population	Positive		
Inflation rate	Negative		
Rule of law	Positive		Positive
Openness to FDI	Positive		
Corruption	Negative		
Political instability (coups, riots & assassination)	Negative		
Diminished exchange risk		Positive	
Export market size		Positive	
Strikes		Negative	Negative
Wages		Negative	Positive
Natural resources			Positive
Per capita FDI_{t-1}			Negative

Author's compilation

4.0 Data and Variable Description

The panel dataset used for this chapter spans the period 1975-2005 inclusive, on a sample of 68 developing countries, 20 in LAC, 13 from Asia, 31 from sub-Saharan Africa (SSA) and four from North Africa. This sample is further divided into two sub-samples, 20 and 48 for LAC and other developing countries respectively over the same time period. This time period is chosen due to extensive gaps for most of the variables for these countries pre-1975; overseas territories and special administered countries are excluded. Information on most variables is based on published data from the World Bank, World Development Indicators (2006). The governance variables are taken from the Polity IV Project (2004), and the political instability variables are those from the Cross-national Time Series Data Archive (2003). In addition to being authoritative sources, these data sets are readily accessible. We use the ratio of FDI to GDP (net FDI inflows) as the dependent variable, as is standard in the FDI literature. The following is a discussion of the explanatory variables.

The degree of openness includes both trade and capital flows. The former refers to the free movement of goods and services, while the latter suggests fewer restrictions on capital repatriation. Following Aseidu (2002) and Agiomirgianakis *et al*. (2006) and others we use the ratio of trade flows (imports and exports of goods and services) to GDP to proxy trade openness (OPEN). An open trade regime is an indication of lower transaction and information costs and less willingness on the part of policy makers for rent seeking behaviour. This will facilitate learning spillovers, as locally based firms will benefit from interacting with foreign owned subsidiaries. This also suggests the host country's attitude toward capital flows and the relationship with the global economy (Cardoso de Mendonca and Nonnemberg, 2002).

A closed trade regime retards the speed of doing business through rigid bureaucratic structure (and co-ordination gaps) and fosters the abuse of public funds, thus making the business space unattractive to FDI. All these costs of government failures are transferred to investors making the cost of businesses more onerous (Onyeiwu, 2003; Quartey and Tsikata 2007). Firms will locate in countries that have an open trade regime, so we expect a positive relationship with FDI flows. A negative coefficient, however, may indicate tariff-jumping FDI (for restrictive regime) interested in serving domestic market.

Good infrastructure (communication and proper road network) provides the potential for investors to access distant location and to exploit scope economies. This reduces the cost of doing business (and increases productivity), while poor quality infrastructure has the reverse effect. Investors, therefore, prefer good infrastructure (Moody and Wheeler, 1992), and host countries stand to benefit as it improves the location attractiveness for FDI inflows (Agiomirgianakis *et al*., 2006). We use the number of telephone lines per 1000 population to proxy infrastructure (INFRAS) (Asiedu, 2002; Campos and Kinoshita, 2003, Morisset, 2000; Assanie and Singleton, 2001). The motivation underlying this proxy is that countries with '…large number of telephone lines are more likely to have better roads, modern airport/seaports, Internet access, and water/electricity supply' (Onyeiwu, 2003: 06). Thus, good infrastructure stands to benefit both market serving and export-oriented FDI. Availability of good infrastructure is important but reliability is even more crucial (Aseidu, 2002). A positive relationship with FDI is expected.

There is a consensus in the literature that GDP growth exerts a positive influence on FDI inflows. Following Agiomirgianakis *et al*. (2006), Quartey and Tsikata (2006), Asiedu (2002) and Onyeiwu (2003) we use GDP growth (annual %) to measure market size (GDPGR). A large market allows for the possibility of scale economies and good economic performance (Morisset, 2000). The level of economic growth may also indicate the general level of development in the host country (Rolfe and Woodward, 1992), for example infrastructure and education. Market-seeking FDI is likely to benefit from a large market. A positive relationship with FDI inflows is expected.

A high debt discourages FDI inflows, as it signals that host countries have lost control of key economic balances (external and internal). This creates a belief on the part of investors that proper infrastructure to facilitate profitability is absent, because governments' resources are consumed by debt repayments. A highly indebted state is also accompanied by a highly taxed regime and, since policy makers will have to find resources to defray domestic recurrent expenditures (salaries and health care) and close foreign exchange gaps, host governments may have an incentive to restrict profit repatriation. A heavily indebted country will have a negative influence on FDI inflows, other things equal. As in Onyeiwu (2003) and Quartey and Tsikata (2007), we use the

ratio of total debt service to the sum of exports of goods, services and income as a measure for debt burden (DEBTSG).

One of the principal aims of FDI inflows is to search for profitable locations. Holding many other things equal, FDI will go where the potential for return on investments is the highest after adjusting for possible risks (Onyeiwu, 2003). This is possible through a well defined property rights regime and respect for the rule of law. In addition to being more politically stable, 'Democratic regimes are also more likely to respect the rule of law and property rights – features that are more conducive to the flow of FDI' (Onyeiwu, 2004: 96). Despite the shift in political regimes, Emmert and Tuman (2004) suggest that class theorists predict that US FDI in Latin America is attracted by regimes that suppress human rights (feature of authoritarian rule), as profits are higher and property rights are secured. For their governance measure, they use Freedom House index of political rights and civil liberties. In his work on the relationship between investment and regime types, Oneal (1994) uses as his political regime variable an index of authoritarianism by subtracting the democracy score from the authoritarian score, drawn from the Polity IV Project dataset.

As not all aspects of democratic institutions might be important in explaining FDI inflows, we use constraints on the executive (XCONST) to proxy good governance from the Polity IV Project (2004). Persson *et al*. (1997) argue that checks and balances on the executive are likely to discipline otherwise corrupt politicians bent on the abuse of power. Investors would be expected to be attracted to countries that have low probabilities of policy reversal, as indicated by good governance structures (i.e. appropriate checks and balances), after they have sunk their investments. *A priori*, we expect a positive relationship between XCONST[39] and FDI inflows. This variable is based on a scale of 1-7: higher score indicates more constraints (better governance). Two measures of political instability are used: the number of revolutions (REVOLU) and assassinations (ASSAS) in a country (Asiedu, 2006; Emmert and Tuman, 1999, 2004). The hypothesis is that political instability discourages FDI (Asiedu, 2006); a negative relationship is expected, other things constant.

[39] Satyanath and Subramanian (2007) use checks and balances on the executive in a assessing the role of democracy on inflation. Acemoglu *et al*. (2002) also employ this measure of institutions in investigating the possible reversal of the fortunes of the former colonies before the arrival of the colonial powers.

Finally, internal macroeconomic stability is critical to attracting FDI. 'One indicator of a stable macroeconomic environment is a record of price stability. A history of low inflation and prudent fiscal activity signals to investors how committed and credible the government is' (Campos and Kinoshita, 2003: 10) '…considering that one of the classic symptoms of loss of fiscal or monetary control is unbridled inflation' (Cardoso de Mendonca and Nonnemberg, 2002: 09). High and unstable inflation increases the cost of businesses and negatively affects long-term planning by investors, thus reduces current and future profits. In contrast, low and stable inflation are more appealing to investors, as monetary stability influences FDI inflows (Rolfe and Woodward, 1992). In line with previous studies, we use the annual change in consumer prices to approximate inflation (INFLA) (Aseidu, 2002; Campos and Kinoshita, 2003; Emmert and Tuman, 1999; Mixon and Treveno, 2004; Onyewu, 2003). We expect a negative relationship with FDI flows, *ceteris paribus*.

5.0 Data Exploration and Empirical Specification

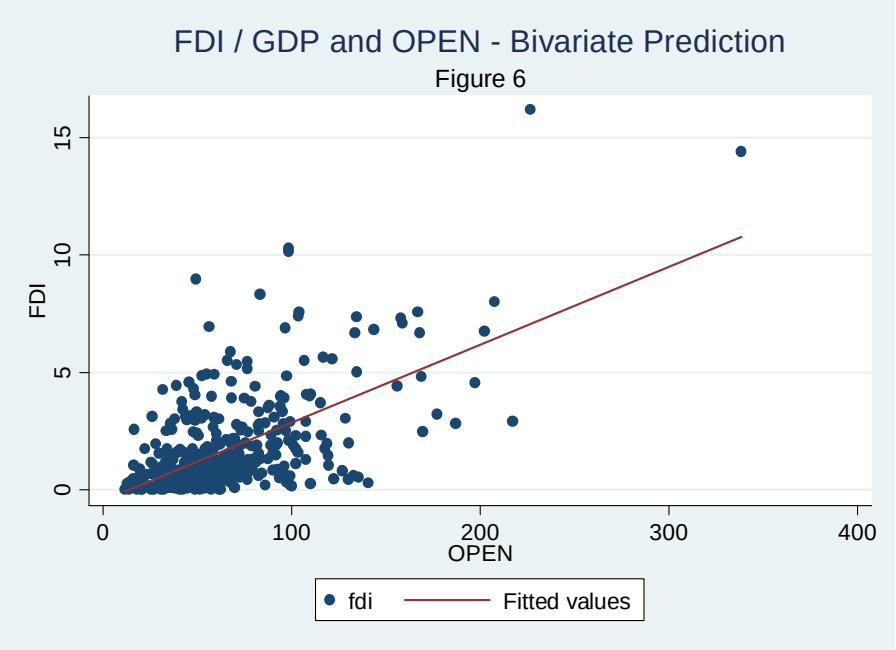
Table 3: ***Summary statistics for the entire sample, 1975-2005***

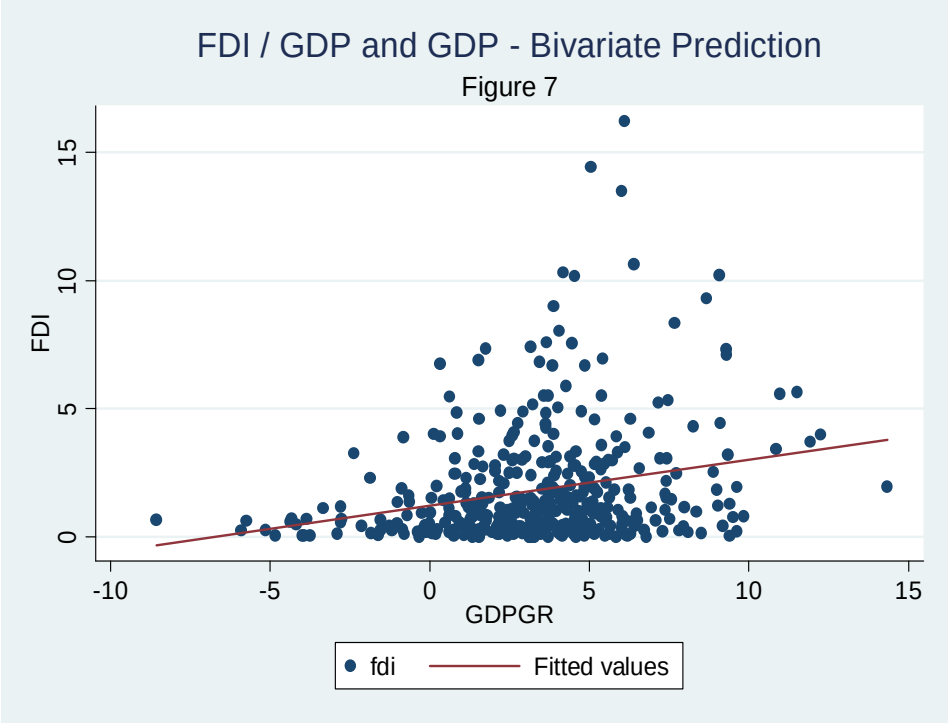
Variable	Mean	St. Dev.	Min	Max
FDI/GDP	1.83	2.29	0.20	16.18
OPEN	65.82	37.81	11.86	338.53
INFRAS	68.25	144.21	0	1290.23
GDPGR	3.43	3.09	-8.57	14.34
DEBTSG	19.01	12.52	0	67.76
INFLA	68.13	426.75	-3.01	6424.99
REVOLU	.25	.51	0	6.40
XCONST	3.78	2.09	0	7

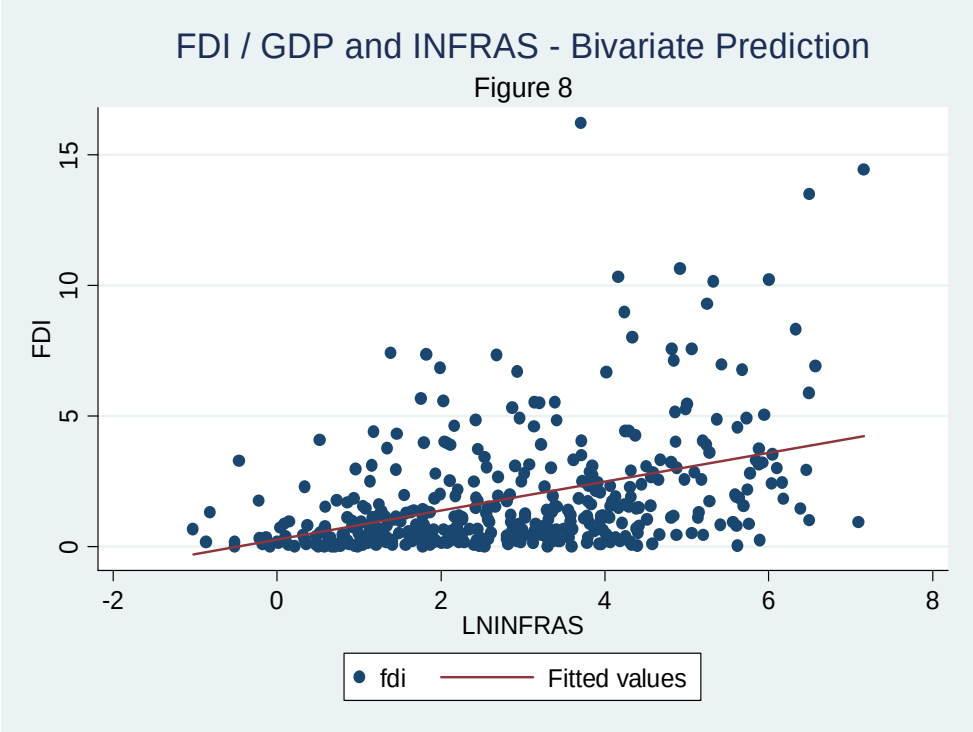
Notes: Countries with negative FDI inflows have been treated as zero inflows.

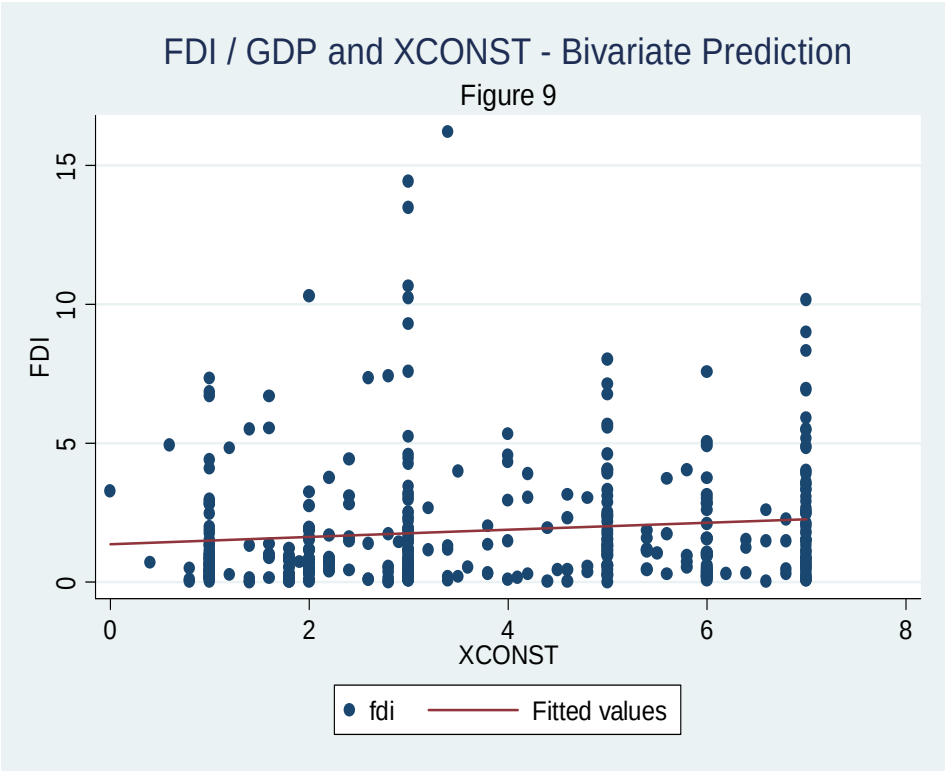
Table 3 reports summary statistics for the entire sample. Inflation displays the highest variability, partly because of the extremely high maximum (for the Democratic Republic of Congo over the period 1990-94). Figures 6-10 provide scatter plots of FDI inflows against selected variables of the panel data used in the econometric analysis. Figures 6-8 show a positive relationship between FDI inflows and OPEN, INFRAS and GDPGR. Although there is considerable bunching of OPEN in the range 10-100%, Figure 6 suggests that the positive relationship with FDI exists within this range (i.e. it is not

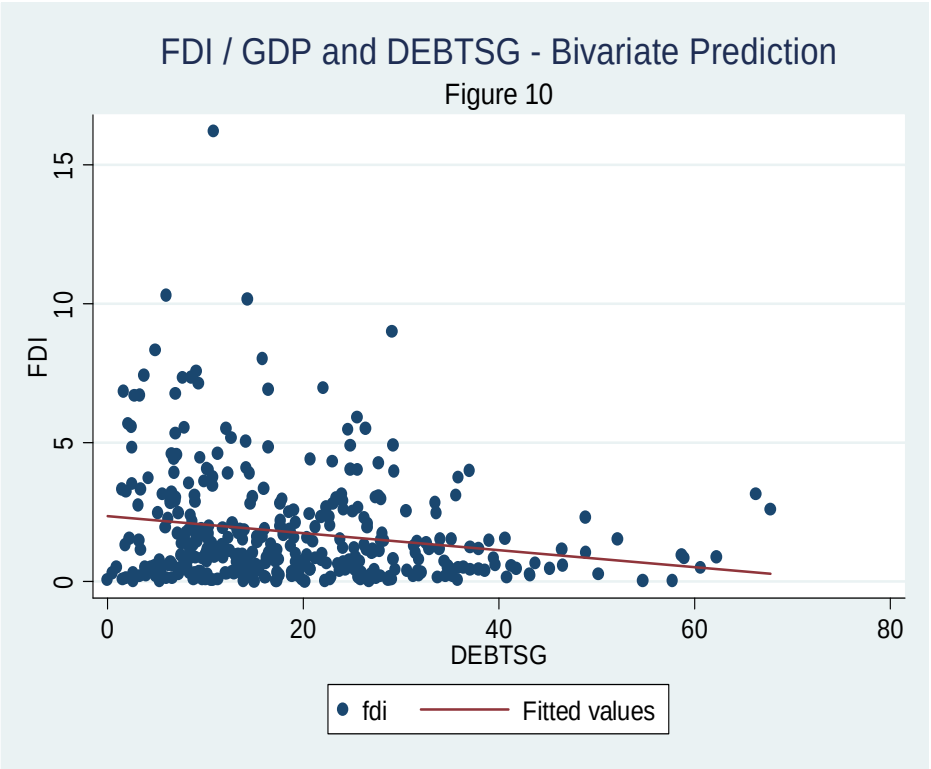
determined by outlying values). The same applies to GDPGR and INFRAS, i.e. there is sufficient dispersion of observations to support a broadly positive relationship with FDI. The relationship in Figure 9 is very weak, only partly because XCONST is bunched on certain values. Figure 10 indicates a negative relationship between FDI and DEBTSG, although this is probably driven by countries with relatively low or moderate values (i.e. the pattern below DEBSTG of 40%). These are all potential influences on FDI inflows, but none are obviously driving determinants, i.e. there is considerable noise in the relationship. Some variables may be more important for some countries, and it may be some configuration of variables that influences FDI. Econometric analysis can help us to explore this.




FDI / GDP and GDP - Bivariate Prediction
Figure 7
FDI
0
5
10
15
-10
-5
0
5
10
15
GDPGR
fdi
Fitted values


FDI / GDP and INFRAS - Bivariate Prediction
Figure 8
FDI
0
5
10
15
-2
0
2
4
6
8
LNINFRAS
fdi
Fitted values


FDI / GDP and XCONST - Bivariate Prediction
Figure 9
FDI
0
5
10
15
0
2
4
6
8
XCONST
fdi
Fitted values


FDI / GDP and DEBTSG - Bivariate Prediction
Figure 10
FDI
0
5
10
15
0
20
40
60
80
DEBTSG
fdi
Fitted values

5.1 Empirical Specification

Following the discussion in the previous section, we adopt an empirical model similar to that used in the literature to explore the determinants of FDI inflows (FDI/GDP) for a sample of developing countries with a specific emphasis on LAC. The model takes the general form,

$$y_{it} = \beta\lambda_{it} + v_{it} \qquad (1)$$

where the composite error is $v_{it} = \alpha_i + \varepsilon_{it}$ and i, t represent countries and time periods respectively. α_i is unique to each unit (country), ε_{it} is idiosyncratic disturbances, y_{it} is the dependent variable and λ_{it} is the vector of explanatory variables (explained above). We include α_i to control for unobserved (country level) effects across countries i.e. to account for country heterogeneity in our sample. There is another important issue with this specification: if the unobserved country-level effects are correlated with the vector of explanatory variables, then fixed effects is the appropriate estimation technique, otherwise random effects will suffice. This can be assessed through the Hausman test of no-correlation between the vector of explanatory variables and α_i. However, non-rejection of random effects implies that both approximate each other and either can be used (Wooldridge, 2006).

Specifically, following Asiedu (2002), the regression estimated is:

$$\begin{aligned} \text{FDI/GDP}_{it} = {} & \alpha_i + \beta_0 \text{OPEN}_{it} + \beta_1 \text{INFRAS}_{it} + \beta_2 \text{GDPGR}_{it} + \beta_3 \text{REVOLU}_{it} + \\ & + \beta_4 \text{DEBTSG}_{it} + \beta_5 \text{XCONST}_{it} + \beta_6 \text{INFLA}_{it} + \varepsilon_{it} \end{aligned} \qquad (2)$$

Initially, three econometric approaches are used to estimate (2): cross-section pooled OLS (POLS), fixed effects (FE), and random effects (RE) with period averaged data for 1975-79, 1980-84, 1985-89, 1990-94, 1995-99 and 2000-05. The attractions of using period averages are to smooth out business cycle effects (Chitiga and Kandireo, 2003) and random year-on-year volatility. The analysis is then extended to address endogeneity concerns using lagged explanatory variables and first difference GMM estimation.

6.0 Econometric Results

Results for the pooled cross section (POLS), fixed (FE) and random effects (RE) models are reported in Table 4.

Table 4: ***Regression estimates of model (2), pooled (OLS), fixed effects (FE) and random effects (RE). The dependent variable is FDI/GDP.***

Variables	POLS	FE	RE
OPEN	.024	.017	.022
	(.000)***	(.002)***	(.000)***
DEBTSG	-.002	-.017	-.009
	(.737)	(.049)**	(.243)
GDPGR	.121	.161	143
	(.000)***	(.000)***	(.000)***
INFRAS	. 004	.004	.004
	(.001)***	(.000)***	(.000)***
INFLA	6.100	-.001	-.0004
	(.956)	(.011)**	(.126)
REVOLU	.149	.170	.158
	(.337)	(.433)	(.430)
XCONST	.046	.007	.028
	(.338)	(.902)	(.550)
F	16.15		
Observations	336	336	336
R^2	.38		
: within		.31	.30
: between		.41	.48
: overall		.34	.37

Notes: *P*-values are in parentheses. *** Significant at the 0.01 level, ** significant at the 0.05 level. Pooled OLS estimates are based on robust standard error. Democracy and assassination were tried, but they were insignificant. All specifications include a constant term. Argentina was identified as the only outlier that exerted leverage over regression estimates. To avoid distortion, it was dropped from the sample. The Hausman Test with *P*-value .01 and χ^2 17.39 is significant: fixed effects is preferred.

Across the three estimation methods only three variables are consistently significant determinants of FDI – OPEN, GDPGR and INFRAS – and all have the expected positive sign (with broadly similar coefficient estimates). Countries with higher trade volumes, faster growth and better infrastructure attract more FDI. This is not a surprising result, and confirms previous findings. With FE estimates, INFLA and DEBTSG also appear significant with negative effects, as expected. We must assess if these results are robust before considering the implications.

Although FE is the preferred model, it only accounts for unobserved country-specific factors; there still remains the potential of endogeneity. This arises if a regressor in a model that is expected to determine the dependent variable is in turn determined by the dependent variable, or if both variables are determined by a third unobserved variable. For example, FDI may be attracted to countries with good growth performance, but if growth is to be included as a determinant of FDI inflows it is important to control for potential endogeneity arising because FDI may itself have an impact on growth or there is an unobserved factor that affects both FDI and growth. The same applies to trade openness, i.e. a country with a high trade volume may attract FDI and FDI in turn may determine its trade volume or both may be determined by a third variable, say the exchange rate.

Chitiga and Kandiero (2003) argue that time series from developing countries may be plagued with endogeneity, particularly those from Africa. They address endogeneity using the first difference generalized method of moments (GMM), with lagged regressors as instruments, due to Arellano and Bond (1991). Ndikumana and Verick (2007) address endogeneity with the use of lagged (one period) explanatory variables. Lensink and Morrissey (2006) use both 2SLS estimator and lagged explanatory variables to address potential endogeneity between FDI (and FDI volatility) and growth and find that lagged explanatory variables perform better (because, as is often the case, it is difficult to find suitable instruments).

Table 5 reports results using both lagged explanatory variables and first difference GMM to control for potential endogeneity. In addition to providing valid internal instruments, the first difference GMM purges the data of any country level effects (Cameron and Trivedi, 2006). The validity of the instruments can be assessed through the Hansen/Sargan test of over-identifying restrictions (OIR) with a chi-square distribution under the null that the over-identifying restrictions are valid and no second order serial correlation (distributed N(0,1)) in the residuals of the difference equation provides a further check on the model specification. Specifically, a *p*-value above 0.05 for both the OIR and no second order serial correlation in the disturbances suggests that the instruments are valid and the model is correctly specified (Cameron and Trivedi, 2006).

To implement the first difference GMM, we take first differences of (1) to give $y_{it} - y_{it-1} = \beta(\lambda_{it} - \lambda_{it-1}) + (\alpha_i - \alpha_{it-1}) + (\varepsilon_{it} - \varepsilon_{it-1})$. This eliminates country level fixed effects to give the difference equation, $\Delta y_{it} = \beta\Delta\lambda_{it} + \Delta\varepsilon_{it}$ where $\alpha_i - \alpha_{it-1} = 0$ and for $t = 2 \ldots T$. This transformation resolves the omitted variable issue but introduces endogeneity, since λ_{it-1} is endogeneous to the error disturbances through ε_{it-1} (Nkurunziza and Bates, 2003). The latter can be addressed by using suitable instruments (lag levels) for $\Delta\lambda_{it-1}$ with two or three period lags. Further, assuming the vector of lagged explanatory variables is "predetermined" with respect to the dependent variable FDI/GDP, this also accounts for potential reverse causality (Lensink and Morrissey, 2006). Table 5 reports results.

Table 5: ***Regression estimates of lagged independent variables and first difference GMM. The dependent variable is FDI/GDP.***

Variables	POLS	FE	RE	GMM
OPEN$_{t-1}$	.021	.005	.017	.012
	(.000)***	(.530)	(.000)***	(.422)
DEBTSG	-.009	-.042	-.022	-.045
	(.199)	(.000)***	(.013)**	(.015)**
GDPGR $_{t-1}$	.024	.036	.030	.357
	(.460)	(.305)	(.341)	(.000)***
INFRAS	.004	.004	.004	.003
	(.001)***	(.000)***	(.000)***	(.090)*
INFLA	-.0002	-.001	-.001	-.001
	(.193)	(.000)***	(.024)**	(.004)***
REVOLU	.118	.044	.081	.652
	(.514)	(.859)	(.732)	(.251)
XCONST	.081	-.030	.048	-.393
	(.141)	(.685)	(.398)	(.027)**
F	11.37			
Observations	290	290	290	270
R^2	.30			
: within		.25	.22	
: between		.17	.39	
: overall		.19	.29	
M_1				0.00
M_2				0.34
J (p-value)				0.61

Notes: *P*-values are in parentheses. *** Significance at the 0.01 level, ** significance at the 0.05 level. GMM is lagged 2/3 periods, with all explanatory variables as their own instruments. Pooled OLS and GMM use robust standard errors. GMM uses time dummies (y2, y3, y4, y5 and y6). 'The autocorrelation test and the robust estimates of the coefficient standard errors assume no correlation across individuals in the idiosyncratic disturbances. Time dummies make this assumption more likely to hold' (Roodman, 2006: 42). The M_2 test of no second order serial correlation doesn't reject the null and the J statistic is the test of over-identifying restrictions suggests that our instruments are valid and hence our model is correctly specified. M_1 is the test of no first order serial correlation, indicates first order serial correlation. The Hausman test with p-value .00 and χ^2 24.93 is significant, fixed effects are preferred. POLS, FE and RE have a constant term.

Table 5 reports results with OPEN and GDPGR lagged (one period) in POLS, FE, and RE for comparison with Table 4; in general the results are weaker, and INFRAS is significant across all three methods with the expected sign. As GMM is our preferred method, we focus on those results.

For the first difference GMM model DEBTSG, INFLA, INFRAS (weakly), GPDGR and XCONST are significant and all except XCONST have the expected sign; OPEN is insignificant, as is the revolution measure. The second order test of no serial

correlation in the difference residuals and the J (Sargan) statistic of over-indentifying restrictions suggest that the instruments are valid and the model is correctly specified. Insofar as the lags are valid instruments and the GMM controls for unobserved country-specific factors it gives relatively efficient estimates and is therefore the preferred choice. Thus, FDI appears to be attracted to countries exhibiting growth, with good infrastructure and macroeconomic stability (relatively low inflation and debt servicing costs).

The most surprising result is that the coefficient on XCONST is negative: good governance or rules-based institutions as measured by constraints on the executive do not appear to attract larger FDI inflows. This is not surprising in light of Figure 9: values of XCONST exhibit bunching that is unrelated to FDI inflows. The negative result may be because we could not control for the type of FDI; for example, foreign investment attracted by natural resources or privatization may be less concerned about governance than market-seeking FDI or investment for manufactured exports. It is possible that in some developing countries with low values for positive determinants of FDI (growth, infrastructure and macroeconomic stability) but that have other features attractive to FDI (such as resources – these are not country-specific as they are present in a range of countries), XCONST tends to be relatively low and hence it is this variable that picks up these FDI-attracting features across a number of countries. The values of the "principal" determinants (growth, infrastructure and macroeconomic stability) explain much of the cross-country variation in FDI inflows, in particular investment for manufactures (market-seeking or export-oriented); countries with high values of these variables may also tend to have relatively high XCONST. Other features that are attractive to FDI, such as natural resources or large-scale privatization, may tend to be in countries with relatively low values of the principal determinants and relatively weak governance (low XCONST). Thus, conditions on principal determinants, low XCONST captures FDI motivated by other features.

The negative relationship with XCONST supports the findings by Quartey and Tsikata (2007), although it is not robust across specifications in their study. Kolstad and

Villanger (2008) also find a negative correlation between FDI and regulation quality in the Caribbean.[40]

High debt and high inflation discourage FDI. A highly indebted host country presents the potential for expropriation and restrictions on profit repatriation, while high and variable inflation make future profits uncertain, thus foreign investors are likely to consider these possibilities in their location choices. This is supported by many studies, but contradicts others who plausibly argue that the willingness of foreign investors to invest in highly indebted and high inflation developing countries is due to the high rates of return after adjusting for these distortions. The high rates of return on investments (typically natural resources) also explain why FDI flows to violent and corrupt prone countries.

6.1 Is LAC Different?

The next step is to investigate if there are differences in factors attracting FDI between LAC and other developing countries and whether LAC receives more (or less) FDI inflows than would be predicted. To address this we interact an LAC dummy with the important factors from the GMM specification (Table 5). Table 6 reports the results.

[40] An alternative interpretation in support of this finding in the context of China is that even though property rights were not legally recognized in the mid-1990s, investors felt secure about their investments in China compared to Russia where 'an investor has in principle the full protection of a regime of private property rights enforced by an independent judiciary' (Rodrik, 2007: 188-189).

Table 6: ***Determinants of FDI in LAC (lagged explanatory variables) and first difference GMM. The dependent variable is FDI/GDP***

Variables	FE	RE	GMM
OPEN$_{t-1}$	.009	.020	.019
	(.230)	(.000)***	(.267)
DEBTSG	-.054	-.048	-.028
	(.000)***	(.000)***	(.340)
GDPGR $_{t-1}$	.024	.023	.163
	(.549)	(.519)	(.167)
INFRAS	.0001	.0001	-.004
	(.970)	(.679)	(.215)
INFLA	-.009	.003	.014
	(.218)	(.662)	(.282)
REVOLU	.058	.165	.504
	(.813)	(.458)	(.266)
XCONST	-.167	-.095	-.448
	(.080)*	(.178)	(.039)**
DEBTSG×LAC	.032	.050	.004
	(.152)	(.004)***	(.879)
INFRAS ×LAC	.006	.006	.005
	(.001)***	(.000)***	(.031)**
GDPGR $_{t-1}$×LAC	.030	.062	.071
	(.688)	(.357)	(.672)
INFLA×LAC	.008	-.003	-.015
	(.271)	(.601)	(.245)
XCONST ×LAC	.267	.266	.319
	(.071)*	(.029)**	(.270)
LAC		-2.168	
		(.010)***	
Observations	290	290	270
R^2			
: within	.30	.28	
: between	.29	.54	
: overall	.25	.39	
M_1			0.01
M_2			0.30
J (p-value)			0.18

Notes: LAC is a (1, 0) dummy for Latin America and the Caribbean. We have used only those variables that are significant in our preferred specification (GMM) from Table 5 (to interact with LAC dummy). GMM includes time dummies and lagged 2 periods. FE and RE have constant terms. The Hausman test with *p*-value .00 and χ^2 34.98 is significant, fixed effects are preferred.

INFRAS×LAC is robust across specifications. RE suggests that LAC receives less FDI than developing countries. GMM is our preferred method. In general, LAC and other developing countries share the same characteristics in attracting FDI inflows, except that infrastructure is positively related to FDI in LAC relative to developing countries generally. This finding is not surprising, as most FDI in LAC is market serving. In the case of Africa, most FDI is resource-seeking hence good seaports may be more

important. Does this mean that LAC is different? XCONST discourages FDI flows in developing countries, consistent with earlier finding. Good infrastructure is crucial for market-serving FDI to maximize scale economies within a host country, while export-oriented FDI serving international markets must have current information to satisfy consumers' demand.

It may be argued that results in Table 6 are driven by a group of countries which received relatively more FDI inflows relative to LAC and SSA. Countries of East Asia attract higher levels of FDI inflows; we assess their influence, and whether this might affect the overall results, by interacting an Asian (ASIA) dummy with all significant variables from the difference GMM specification (Table 5). Results are reported in Table 7.

Table7: ***Determinants of FDI in ASIA (lagged explanatory variables) and first difference GMM. The dependent variable is FDI/GDP***

Variables	FE	RE	GMM
$OPEN_{t-1}$	.016	.020	.036
	(.061)*	(.000)***	(.110)
DEBTSG	-.044	-.022	-.049
	(.000)***	(.015)**	(.345)
$GDPGR_{t-1}$	.015	.025	.361
	(.679)	(.464)	(.170)
INFRAS	.005	.005	.0001
	(.000)***	(.000)***	(.975)
INFLA	-.001	-.001	-.003
	(.001)***	(.023)**	(.136)
REVOLU	-.022	.122	1.433
	(.930)	(.596)	(.309)
XCONST	-.105	.026	-1.423
	(.209)	(.675)	(.233)
DEBTSG×ASIA	.010	-.010	-.105
	(.795)	(.701)	(.414)
INFRAS ×ASIA	-.008	-.007	-.042
	(.004)***	(.001)***	(.098)*
$GDPGR_{t-1}$*×ASIA*	.013	.071	-.156
	(.909)	(.423)	(.690)
INFLA×ASIA	-.003	-.048	.042
	(.961)	(.415)	(.867)
XCONST ×ASIA	.229	.048	2.192
	(.180)	(.674)	(.288)
Observations	290	290	270
R^2			
: within	.29	.26	
: between	.20	.40	
: overall	.19	.31	
M_1			0.15
M_2			0.96
J (p-value)			0.91

NOTES: Asian dummy (ASIA) comprises 13 countries. FE and RE has a constant term. We used only those variables that are significant in our preferred specification (GMM) from Table 5 (to interact with ASIA's dummy). GMM includes time dummies and lagged 4 periods. M_1 and M_2 are first and second order serial correlation tests. J (Sargant) is test of instrument validity. There are no second order serial correlation and instruments are valid. The Hausman test with *p*-value .00 and χ^2 29.93 is significant, fixed effects are preferred.

In assessing the regional effects of Asia, infrastructure quality does not attract FDI inflows. This is the only robust difference between Asia and other developing countries, consistent with the difference (Table 6) observed for LAC compared to other regions, albeit results are weaker in our preferred (GMM) method. This is encouraging. Development strategies in Asia favoured export-oriented FDI, hence efficient seaports and airports may be more relevant in attracting FDI relative to the measure we have

used. LAC has gone the furthest in implementing policies favourable to FDI since the 1980s, while Asia is selective in their FDI regime, a practice that is absent in LAC and may not be to the region's advantage (Agosin and Machado, 2007). Taken together, results in Table 6 suggesting that LAC may be different are not influenced by those countries that attract relatively more FDI inflows. A stronger case can be made, about differences between LAC and other regions, by splitting the sample into two sub-samples – LAC and non-LAC.

Thus, we construct two sub-samples of 20 (LAC) and 48 (non-LAC) countries. This provides the opportunity to dig deeper and bring to the surface any differences that may exist. The size of these sub-samples renders the use of first difference GMM estimator infeasible: 'The GMM estimators are asymptotically biased in a small sample' (Campos and Kinoshita, 2003). As before, we employ random effects and fixed effects with potential endogenous variables (OPEN and GDPGR) lagged one period. Table 8 reports results for both LAC and non-LAC countries separately, this will also provide a check on the results in Table 6.

Table 8*: Regression estimates (independent variables lagged one period) for LAC and non-LAC. The dependent variable is FDI/GDP.*

Variables	LAC (FE)	non-LAC (FE)	LAC (RE)	non-LAC (RE)
$OPEN_{t-1}$	.003	.011	.022	.019
	(.821)	(.193)	(.000)***	(.000)***
DEBTSG	-.021	-.054	.006	-.048
	(.339)	(.000)***	(.703)	(.000)***
$GDPGR_{t-1}$	.071	.017	.096	.020
	(.345)	(.649)	(.155)	(.555)
INFRAS	.006	-.0001	.006	-.0005
	(.000)***	(.938)	(.000)***	(.685)
INFLA	-.001	-.009	-.001	.002
	(.008)***	(.211)	(.115)	(.775)
REVOLU	.433	-.271	.412	-.055
	(.301)	(.385)	(.279)	(.842)
XCONST	.134	-.161	.192	-.096
	(.321)	(.065)*	(.090)*	(.155)
Observations	96	194	96	194
R^2				
:within	.43	.17	.40	.15
:between	.29	.25	.65	.39
:overall	.34	.23	.45	.30

Notes: P-value in parentheses. *** Significance at the 0.01 level, * significance at the 0.10 level. All specifications are based on the panel data for the six sub-periods. Estimates are for the 20 LAC and 48 non-LAC countries. All regressions included a constant term. The Hausman test with *p*-value .01 and χ^2 19.52 is significant, fixed effects are preferred for non-LAC and *p*-value 0.06 with χ^2 13.56, fixed effects are preferred for LAC.

The results presented in Table 8 support the finding in Table 6 i.e. infrastructure quality affects LAC and non-LAC differently: infrastructure attracts FDI to LAC, but does not affect FDI to non-LAC. Debt servicing now appears to deter FDI in non-LAC, this is additional evidence flagging differences between LAC and non-LAC. These effects are robust across specifications. Fixed effects are preferred for both LAC and non-LAC. As fixed effects are preferred, inflation negatively affects FDI to LAC and XCONST weakly discourages FDI to non-LAC. We further check these results by re-estimating a model with only significant variables for LAC and non-LAC, using the preferred (FE) method. Results are reported in Table 9.

Table 9: ***Differences between LAC and non-LAC – dependent variable is FDI/GDP*.**

Variables	LAC (FE)	non-LAC (FE)
INFRAS	.007 (.000)***	
INFLA	-.001 (.017)**	
DEBTSG		-.037 (.000)***
XCONST		.008 (.894)
R^2		
:within	.37	.06
:between	.18	.14
:overall	.28	.10

Notes: P-value in parentheses. *** Significance at the 0.01 level, ** significance at the 0.05 level. All regressions have a constant term. Only significant variables from Table 8 are re-estimated.

Table 9 supports differences between LAC and non-LAC reported in Tables 6 and 8, except XCONST is now insignificant for non-LAC. These differences are highlighted in Table 10, which reports normalized (beta) coefficients of the variables that are consistently significant for all, LAC and non-LAC, countries.

Because of the different units of measurement of the explanatory variables, we cannot make direct comparisons of the relative magnitude of the regressors. To get a sense of the relative magnitude of the independent variables, we use the standardized or beta coefficients. Following Wooldridge (2006), the beta coefficient ($\hat{G}_j$) is as follows:

$$\hat{G}_j = (\hat{S}_j / \hat{S}_y)\hat{W}_j \quad \text{where} \quad j = 1, \ldots, k$$

$\hat{G}_j$ is the beta coefficient of the *j*th regressor, $\hat{S}_j$ is the standard deviation for the estimated coefficient of the *j*th regressor, $\hat{S}_y$ is the standard deviation of the estimated coefficient for the dependent variable and $\hat{W}_j$ is the estimated coefficient of the *j*th regressor. 'Because it makes the scale of the regressors irrelevant, this equation puts the explanatory variables on equal footing' (Wooldridge, 2006:196). Thus the coefficients must be interpreted in terms of standard deviations.

Table 10: ***Normalised (beta) coefficients of regression estimates***

	non-LAC	LAC
DEBTSG	-.20	
INFLA		-.19
INFRAS		.44

Notes: All variables are taken from Table 9. The beta coefficients are reported for variables that are significant in Table 9 for both subsamples.

Infrastructure quality has the greatest relative impact for LAC countries. A 1 standard deviation increases in infrastructure quality increases FDI inflows to LAC .44 standard deviation. A 1 standard deviation increases in inflation reduces FDI inflows to LAC .19 standard deviation. And a 1 standard deviation increases in the size of the debt reduces FDI inflows to non-LAC -.20 standard deviations.

7.0 Conclusions

Because FDI inflows bring perceived advantages, policy makers in the developing world have accepted an accommodating stance, competing to attract FDI. In this chapter we set out to investigate whether LAC was different from other developing countries in attracting FDI inflows and the extent of the lower levels of FDI inflows they experience (except for Africa, we already know that LAC attracts less FDI inflows than other developing countries). This objective was accomplished by using standard panel regression techniques and different specification strategies.

The evidence that emerges from this analysis indicates that LAC and non-LAC countries are similar in terms of the role of certain core features in attracting FDI inflows, for example an open trade regime. Furthermore, we have found evidence that macroeconomic instability (high inflation) discourages FDI to LAC and high debt reduces FDI to non-LAC. However, these findings are not robust to different model specifications. Additionally, LAC receives less FDI compared to developing countries, by on average 2.2 percentage (of GDP) points. Our main result suggests that good infrastructure quality attracts FDI to LAC, but does not appear to have a significant effect on FDI to non-LAC. This finding is robust to model specifications, econometric techniques and sample sizes. We therefore conclude that there is mild evidence that

LAC is indeed different from non-LAC. This is our contribution to the FDI literature. The main finding is supported by Kolstad and Villanger (2008), who use mobile phones to measure infrastructure and find a positive influence on FDI in the Caribbean. In contrast, Bengoa and Sanchez-Robles (2003) use physical units of railways to measure infrastructure and find no significant relationship with FDI in LAC.

The policy implication that follows from our finding is that governments of LAC have an advantage over other developing countries in attracting FDI by focusing on improving the infrastructure quality of the region. Because exports are important to the region's economic success in generating urgent foreign exchange, beyond the provision of telephone lines, LAC should incorporate seaports and airports infrastructure development in their overall infrastructure goals in order to take full advantage of international markets. Infrastructure development[41] in general should therefore be a key priority for LAC policy makers.

[41] Appendix to chapter provides data on privatization of telecommunication for selected LAC countries.

Appendix to Chapter 3

The appendix provides information on the correlation matrices for the full sample, LAC and non-LAC subsample, summary statistics for LAC and non-LAC subsample, pooled OLS corresponding to Table 8 in text, and data on privatization of telecommunications for selected countries in LAC.

Table 1A: ***Correlation Matrix for the entire sample (68) of developing countries***

F	*FDI/GDP*	*OPEN*	*DEBTSG*	*GDPGR*	*INFRAS*	*INFLA*	*REVOLU*	*XCONST*
DI/GDP	1.00							
OPEN	0.53	1.00						
DEBTSG	-0.22	-0.35	1.00					
GDPGR	0.25	0.12	-0.20	1.00				
INFRAS	0.38	0.25	-0.07	0.04	1.00			
INFLA	-0.08	-0.10	0.13	-0.17	-0.05	1.00		
REVOLU	-0.07	-0.16	0.08	-0.12	-0.05	0.11	1.00	
XCONST	0.18	0.07	-0.02	0.04	0.39	0.06	0.02	1.00

These correlations are due to the panel data over the six sub-periods.

Table 2A*: Correlation Matrix for non-LAC (48) sample*

	FDI/GDP	*OPEN*	*DEBTSG*	*GDPGR*	*INFRAS*	*INFLA*	*REVOLU*	*XCONST*
FDIGDP	1.00							
OPEN	0.57	1.00						
DEBTSG	-0.35	-0.30	1.00					
GDPGR	0.28	0.13	-0.22	1.00				
INFRAS	0.16	0.37	-0.22	0.10	1.00			
INFLA	-0.04	-0.17	0.24	-0.23	-0.17	1.00		
REVOLU	-0.08	-0.16	0.11	-0.09	-0.09	0.12	1.00	
XCONST	-0.01	0.05	-0.22	0.15	0.26	-0.13	0.13	1.00

This matrix is based on the six sub-periods of the panel data.

Table 3A: ***Correlation Matrix for LAC sample (20)***

	FDI/GDP	*OPEN*	*DEBTSG*	*GDPGR*	*INFRAS*	*INFLA*	*REVOLU*	*XCONST*
FDI/GDP	1.00							
OPEN	0.50	1.00						
DEBTSG	-0.14	-0.42	1.00					
GDPGR	0.31	0.05	-0.07	1.00				
INFRAS	0.55	0.21	-0.08	0.13	1.00			
INFLA	-0.17	-0.14	0.12	-0.23	-0.15	1.00		
REVOLU	-0.07	-0.15	0.02	-0.15	-0.04	0.15	1.00	
XCONST	0.36	0.19	0.04	0.09	0.40	-0.03	-0.20	1.00

These figures are based on the six sub-periods of the panel data.

Table 4A: ***Summary Statistics for LAC sample (20)***

Variables	Mean	S.D	Min	Max
FDI/GDP	2.24	2.50	0.05	16.18
OPEN	64.95	39.95	16.00	226.87
DEBTSG	23.18	13.89	2.54	67.76
GDPGR	2.56	2.64	-5.13	9.40
INFRAS	108.98	139.01	3.38	716.76
INFLA	131.90	478.87	.50	3357.61
REVOLU	0.25	0.46	0	2.80
XCONST	4.92	2.09	.80	7

Table 5A: ***Summary Statistics for non-LAC sample (48)***

Variables	Mean	S.D	Min	Max
FDI/GDP	1.67	2.18	9.20	14.41
OPEN	66.19	36.93	11.86	338.53
DEBTSG	17.03	11.31	0	60.65
GDPGR	3.80	3.19	-8.57	14.34
INFRAS	51.57	143.21	0	1290.23
INFLA	39.81	399.18	-3.01	6424.99
REVOLU	0.26	0.53	0	6.4
XCONST	3.31	1.92	0	7

Table 6A*: Pooled OLS estimates corresponds to Table 8 (independent variables lagged one period*)

	LAC	non-LAC
$OPEN_{t-1}$	.023	.022
	(.000)***	(.000)***
DEBTSG	.013	-.043
	(.168)	(.000)***
$GDPGR_{t-1}$	102	.030
	(.116)	(.434)
INFRAS	.006	-.001
	(.000)***	(.614)
INFLA	- .0003	.011
	(.078)*	(.014)**
REVOLU	.449	.126
	(.061)*	(.544)
XCONST	.223	-.058
	(.027)**	(.367)

Notes: *P*-value in parentheses. *** Significance at the 0.01 level, ** significant at the 0.05 level, * significance at the 0.10 level. These estimates are based on robust standard error. These results are not efficient compared to fixed and random effects, for e.g. they don't control for unobserved country-effects therefore less confidence is placed in them. We include them for completeness nonetheless. Both regressions include a constant term.

Table 7A: Privatization of Telecommunication in LAC

Country	Year
Chile	1987
Jamaica	1989
Mexico	1990
Venezuela	1991
Guyana	1991
Peru	1994
Brazil	1998

Source: Ros and Banerjee (2000: 239)

Notes: Privatization as define here is at least 50% ownership by the private sector. The largest privatization occurred in Brazil when the government sold "Telebras" for $19 billion. "Telebras" consisted of three fixed-line companies, one long distance and international company, and eight cellular holdings. Using data on 23 LAC countries, the authors find that privatization increases the efficiency and expansion of telecommunications in LAC over 1986-95.

CHAPTER 4

NEW EVIDENCE on FDI and GROWTH in DEVELOPING COUNTRIES

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).[42] 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 not be unconditional and therefore the environment might matter. [43] For developing economies to maximize potential benefits of FDI national governments will have to ensure that the absorptive capacity exists, as there might not be a direct casual relationship from FDI to 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 notion that there might not be an automatic relationship between FDI and growth while trying to identify conditions under which FDI is growth enhancing. The aim of this chapter is a direct analysis of the effects of FDI 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

[42] Indeed, it is this ability of FDI that separates it from other form of investment, e.g. aid and portfolio investment.
[43] 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.

(LAC) sub-sample; for these countries increasing the level of human capital development appears essential to realize gains from FDI.

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.[44] To this end, the chapter 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 surveys the theoretical literature. Section 3 discusses previous empirical studies. Section 4 outlines the methodological framework. 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 Analytical Literature: FDI and growth

At a conceptual level FDI has a first-order effect of increasing the stock of physical capital in a host economy and second-order effects of stimulating learning and human capital development thus promoting technological upgrading (de Mello, 1999). In the naïve framework of the neo-classical Solow[45] growth model foreign investment is predicted to improve long-run growth through technological progress (an exogenous factor). Technology is the driver of economic growth (Romer, 2001) and FDI can provide technology (and the managerial skills to use it).[46] It is well established (according to the law of diminishing returns) that the marginal product of capital is higher in capital-scarce countries, so (with free mobility of factors) the disembodied technical knowledge that accompanies FDI should flow from developed to developing countries, thus resulting in convergence across countries both in

[44] 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".

[45] In the Solow type model only capital (K), labour (L) and technological progress (A) exist; all are exogenous and have only a level effect on long-run growth, except A which has a growth effect over-time. Growth effects arise in the sense that parameter changes alter growth rates along the balanced growth trajectory and level effects arise in the sense that changes in parameters only lower or raise balanced growth without affecting the slope.

[46] The long-run growth effect of FDI must be through a permanent technology shock, otherwise FDI affects growth in the short run and in the long run "the recipient economy would converge to its steady state, as if FDI had never taken place, leaving no permanent impact on output growth" (de Mello, 1997:08).

growth rates and technology. This has not been observed in practice which causes others to criticize the ability of the neo-classical model to adequately explain variations in growth levels and rates across countries.[47]

Romer (1986) suggests that a departure from the assumption of the law of diminishing returns can result in non-convergence of per capita income between rich and poor countries, with slower (or even the absence of) growth in the latter. In a 'fully specified competitive equilibrium' one can achieve persistent output growth per capita over time.[48] Increases in capital stock (knowledge) in the technology leader will result in the rate of investment and returns on capital increasing (rather than decreasing), so it is not immediately clear that investment (or FDI) should flow from rich to poor countries. Indeed, the most reliable evidence on international trade indicates that rich countries trade more among themselves and FDI flows are greater among them, than between rich and poor countries. This also highlights the observation that rich countries grow faster than poor countries (Romer, 1986). Since policies can make the host economy attractive to FDI, the endogenous growth model provides a tractable device for FDI to affect long-run growth (de Mello, 1997).

In the familiar two-factor two-commodity[49] model of international trade, under constant returns to scale, Brecher and Diaz Alejandro (1977) show that tariff-induced capital inflows to a host economy can reduce welfare through lower consumption patterns and hence 'FDI may be immiserizing' (de Mello, 1999: 135). This may occur through at least two channels – the traditional tariff-induced distortions in consumption and production and if capital is paid its full marginal product and investors are allowed to repatriate profits through exportables, Brecher and Diaz Alejandro (1977) illustrate that capital inflows work to reduce the host country's welfare. The upshot of this theoretical framework emphasizes that starting from an initial protectionist regime (with no initial capital inflows); any inflows will serve to lower welfare.

[47] The model has also lost grounds because of its "strong and counterfactual prediction that international trade should induce rapid movement toward equality in capital-labour ratios and factor prices" (Lucas, 1987: 17).
[48] The three elements that constitute the 'fully specified competitive equilibrium' are: externality; decreasing returns in the production of new knowledge; increasing returns in the production of output.
[49] Because this theory includes only two goods and two factors its "real world relevance will always be in question" (see Rodrik at http://rodrik.typepad.com/, comment 16, June 2008).

Rodrik and Subramanian (2008) maintain that the effects of induced-capital inflows on the welfare of a developing economy depend on whether it is investment- or saving-constraints. For a saving-constrained economy they demonstrate that a reduction in domestic interest rates (for an economy that initially has high interest rates and now opens to external finance) and increases in external finance[50] stimulate domestic investments. Consumers therefore save less and consume more due to a reduction in "inter-temporal relative prices" occasion by increased capital inflows.[51] This increase in investments takes the economy to a higher growth path. In the case of an investment-constrained economy capital inflows only boost consumption with neutral effects on investments and growth, as returns on investments are perceived to be low. Inflows of capital in an investment-constrained economy do not go toward boosting investments because the marginal return is too low. In fact savings may be high and any additional inflows just go toward consumption.

A further point worth emphasising, according to these authors capital inflows make the host country currency less competitive relative to its trading partners. The overall effect on investments is less clear in that the non-tradable sector sees appreciation as good, while for exports this is clearly a constraint. But, since tradables hold greater potential for enhancing developing countries economic performance, depreciation is good for investment and growth. Rodrik (2007) provides both theoretical and empirical support to this end and this is particularly true for developing countries in his panel of 184 countries. He thus concludes, 'Tradable economic activities are "special" in developing countries [and] real exchange rate depreciation increases the relative profitability of investing in tradables, and acts as a second-best fashion to alleviate the economic costs of this distortion' (Rodrik, 2007: 32). This is supported by Johnson *et al*. (2007) in that part of the reasons for African countries inability to improve their growth experience have to do with a history of large and persistent currency overvaluation. This contrasts with high growth performers of East Asia which maintain undervalued exchange rates.

Berthelemy and Demurger (2000) model the relationship between FDI and growth in a two-sector framework of intermediate goods and final producers, using an

[50] Note that these inflows include but not confine to FDI. Inflows here could also mean short-term finance with elements of high volatility (reversibility).
[51] 'The increase in domestic investment and reduction is saving are financed by capital inflows' (Rodrik and Subramanian, 2008:15).

endogenous growth model. There are no barriers to entry thus foreign firms are allowed to compete with local firms in the domestic market on differentiated varieties. Each firm is integrated forward in two steps, which allows for research activities to drive new product varieties in intermediate goods. With only two inputs in research activities (human capital and existing stock of knowledge), they show that technology intensive foreign-funded firms are good for growth by introducing a greater number of new intermediate varieties. The model also underscores gains that can be obtained from FDI by integrating domestic firms with foreign-funded firms and the potential negative growth effect of too wide a technology gap.[52]

In Borensztein *et al*. (1998) the introduction of FDI in the host economy affects growth through a different channel i.e. increased rate of new capital varieties. The argument goes that FDI with superior technical knowledge allows technology to be transferred at a low cost and makes it more likely for adoption of innovations thereby increasing the rate of new capital goods. However, the key point is that foreign firms are low cost enterprises and this is reflected in the rate at which they introduce new capital goods in the host country. This model also emphasises the role of human capital in that the effect of FDI on growth depends on the level of human capital and in conformity with the notion of convergence, countries that produce fewer initial varieties of capital goods tend to grow faster, as the cost of technological adoption is lower relative to leading countries. This runs parallel to Romer (1990: 95) who stresses the role of human capital accumulation and technical change in 'speeding up the rate of growth' and in the static equilibrium framework of Segerstrom (1991) who shows that growth is affected by technical change through firms' innovation and imitation strategies.

Wang (1990) models FDI and growth as dynamic in nature which encapsulates interactions of capital accumulation, technology change, and international capital movements. He suggests that moving from a state of autarky to capital mobility the rate of change of human capital will increase, as this will now depend on flows of FDI with the potential of diffusing technology with growth-enhancing effects in the recipient country. During the transition phase this is possible provided the growth rate of human capital is lower in poor countries relative to rich countries and the ratio of

[52] 'Stone age communities suddenly confronted with modern industrial civilization can only disintegrate or produce irrational … responses' (Findlay, 1978: 02).

foreign capital to domestic investment is positive in developing countries.[53] In the long run, however, if developing countries allow their human capital to lag too far behind rich countries 'The booming innovation drive in the rich country may hold back the capital that would otherwise flow to the less developed country' (Wang, 1990: 267). In this model increases in domestic saving reduces growth because it slows the impact of technology by crowding out FDI[54]: this underscores the fact that capital in poor countries are less productive than foreign capital.

In line with the belief that growth and FDI are endogenously determined (the subject of Chapter 5), in a two-country scenario, Gao (2005) shows that there is no casual link between growth and FDI; instead economic integration simultaneously determines both growth and FDI flows. The emphasis here is the "core-periphery" outcome of FDI and growth as a result of economic integration. If the trade costs between potential trading nations are high, this heightens the profitability of domestic firms in the periphery (due to protectionist policies), but as they begin to fall this increases the advantages of foreign-invested firms (due to their research activities); this have welfare implications: a shift of manufacturing to the periphery increases wages there, while wages in the core fall. This reduction of wages in the core translates into lower cost R&D activities, which in turn lead to faster product development; labour demand increases in R&D activities in the core as a result, even though manufacturing activities decline. This causes the overall growth rate to rise in both the core and periphery. Consumers' welfare in the periphery is also enhanced because of product expansion in R&D activities in the core.

Alfaro *et al*. (2007) model the local-condition hypothesis by incorporating the role of financial development in analysing the growth effects of FDI. They observe that in a well developed financial environment, FDI improves growth through backward linkages with domestic firms. This is particularly true when goods produced by foreign firms and their domestic counterparts are perfect complements. Further, they assert that with imperfect credit markets potential investors will face high borrowing costs; this is exacerbated with an underdeveloped financial system. Any increase in the share or productivity of foreign firms (in total output) will reallocate resources away from local firms resulting in declining number of locally owned firms. Notwithstanding the

[53] The relative abundance of one factor raises the productivity of the scarce factor.
[54] Increases in foreign saving have the opposite effect of shifting foreign capital to the south.

destruction of domestic firms in the short run, however, surviving firms will benefit from greater FDI productivity due to spillovers and the presence of FDI which serves to strengthen the financial environment thus making resources available to surviving firms. In addition, through backward linkages from the final goods to the intermediate sector, this will increase the overall growth rate of the economy. They confront the prediction of their theoretical model with a simulation exercise, indicating that the productivity and hence the growth effects of FDI is stronger in countries with a good financial system.

This linkages argument is analysed by Lin and Saggi (2007) in a "two-tier" oligopoly structure. In particular, if multinationals as final goods producers enter a recipient country through contractual arrangements with local intermediate producers by transferring technology in return for exclusive supply of intermediate inputs, Lin and Saggi (2007) show that depending on the size of the final good sector and technology transferred this can have ambiguous effects on linkages and welfare. With a small final good sector and moderate technological transfer, the entry of multinationals increase intermediate output (i.e. greater profit for suppliers) and strengthens backward linkages. On the other hand, exclusivity prevents other local final-goods producers from being supplied by intermediate suppliers, leading to a reduction in welfare. With a large intermediate sector and a small technological transfer linkages are reduced, but welfare increases. The reduction in linkages is due to the relatively weak demand that is created when the intermediate sector is large and the effects of the technology transfer off-set those firms that are "squeezed out" by the entry of multinationals.

Similarly, in Markusen and Venables (1999) multi-industry (final and intermediate) model entry of multinationals in the final output industry affects the host economy on two fronts – competition effect and linkage effect. In this model the entry of multinationals in the local market can serve as substitutes for domestic rivals and create upstream linkages with intermediate goods producers. The competition effect may also strengthen the position of local rivals, thus forcing multinationals out of the host market, leaving a stronger industry upon exit. This capacity improvement of local rivals suggests R&D spending on technology upgrading resulting in lower cost per unit of output, this stands to create consumer surplus and spurt growth. The observation is that while multinationals may serve as catalysts for industry development, with the

right foresight, local firms have the potential to undercut their competitive advantages and introduce their own brand of development in the domestic economy; own brand of development in the sense of taking account of shared cultural and historical experiences. This is implied in Balasubramanyam *et al*. (1996) insofar as intense competition from domestic firms may propel foreign investors to invest in more advance technology. Rodriguez-Clare (1996) also shows that when linkages are strong FDI is likely to improve the welfare of underdeveloped countries. These positive linkages are determined by high trade costs between host and home countries, the intensity of intermediate inputs (require by the foreign firm) and the complementarities between them.

One would expect domestic savings to stimulate growth through higher private investments. This is intuitively appealing because it makes monetary resources available for production purposes. This supposition, however, is not indisputable. If monitoring by lenders is incomplete, this moral hazard may provide opportunities for borrowers to engage in unproductive activities. Aghion *et al*. (2006) model the effects of domestic saving on growth by introducing FDI as a channel of technological innovation and the financial sector as the monitoring agency of investment projects in a framework of backward and technology frontier countries. In this model growth in the laggard country requires saving, efforts by entrepreneurs and the involvement of FDI with the requisite innovation know-how. The local financial sector attracts foreign investors by co-financing investment projects with borrowers.[55] This co-financing attracts FDI since the financial sector has an incentive in ensuring that projects are successful, otherwise it stands to lose its portion of capital. The crucial prediction here is that the financial sector, in poor countries with high saving, will be willing to co-finance a greater number of investment projects and with this interest (and stake) monitoring attracts FDI by ensuring reasonable returns on their investments.[56] In the case of frontier countries savings are not required to attract FDI, as they are already familiar with technological innovation. To back up this theoretical prediction they illustrate in the empirical investigation that saving affects growth through FDI for poor countries (the effect is muted for rich countries).

[55] In their model these are local firms that lack technology innovation capability therefore, foreign investors make this possible because of the assurance of co-financing by the financial sector.
[56] This is similar to the Township and Village Enterprise partnership between Chinese local authorities and foreign investors, described by Rodrik (2006). According to Rodrik (2005) investors feel more protected against potential expropriation because the local authorities will benefit from the profitability of the investment.

3.0 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 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, hence now dated) without taking account of business cycle effects or random fluctuations[57], findings may be biased. 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

[57] 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.

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 Zingles (1998) argue that financial development plays a supporting role in growth by reducing the cost of financing to firms that would have otherwise prevailed due to adverse selection and moral hazard and the allocation inefficiency that arises. Going a step further, Hermes and Lensink (2003) contend 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 whereby 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 ex ante 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. In a recent paper 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 arbitrary level of human capital threshold) FDI returns a negative coefficient on its own. 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 over and above the addition to capital stock, as they almost always 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 thrust of the chapter, 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 (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. He therefore engages in speculation such as '… if FDI is growth-enhancing …' this may be greater in developing countries. He predicates this guess on the convergence hypotheses. Nunnenkamp and Spatz (2004) maintain that the inconclusive results in previous studies are amplified if FDI stocks are considered instead of flows: the 'relationship between a LDC's stock of foreign investment and its subsequent economic growth is a matter on which we totally lack trustworthy conclusions' (Caves, 1996: 237 cited in Nunnenkamp and Spatz, 2004: 54).

Notwithstanding their own advice and the warning from Caves (1996), Nunnenkamp and Spatz (2004) use the stock of FDI in regressions to test for the effects of FDI on growth.[58] They too claim that favourable host country and industry characteristics are necessary to generate benefits from FDI. It is not disputable that these characteristics matter, what is disputable however is that they are indispensable for developing countries to generate growth from FDI. Lensink and Morrissey (2006) did not find convincing evidence about the growth effects of FDI, but they provide robust support for the negative effect of FDI volatility (as a proxy for investment uncertainty) on growth.

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 categorical because in some of their specifications the FDI coefficient was

[58] They justify this on the grounds of controlling for endogeneity.

insignificant.[59] 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 period this optimism may not be misplaced.

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 relatively efficient econometric techniques, the current essay 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 provide a deeper understanding of the growth effects of FDI and 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. The idea of calibration to local experiences serves as an escape from the trap of the "one-size-fit-all" mistake of the "Washington Consensus" view about development policies; this will also legitimize lessons adopted.

Duttaray *et al*. (2008) focus on the channels through which FDI affects growth or more specifically, the mechanisms through which FDI promotes growth. 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

[59] 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.

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? Table 1 presents a summary of previous empirical studies.

Table 1: ***Summary of empirical studies on growth and FDI and other significant variables***

Author	Borensztein *et al* (1998)	Alfaro *et al* (2004)	Hermes & Lensink (2003)
Sample Period:	1970-89	1975-95	1970-95
Sample Type:	Panel	Annual	Annual & Panel
Sample:	69 Developing Countries	71 Developed & Countries Developing	67 Developing Countries
Economic Strategy	SUR	IV OLS	Fixed & Random Effects
Dependent Variable: Average annual rate of GDP per capita	√	√	√
Independent Variables: Gross FDI inflows ×			
initial-year of average male secondary schooling	Positive		
Institutions	Positive		
Black market premium	Negative		
LAC dummy	Negative		
Gross FDI inflows/GDP	Negative		Insignificant
Net FDI inflows		Insignificant	
Net FDI Inflows (lagged one period)		Positive	
Net FDI Inflows × Financial Development Indicators		Positive	Positive
Real Exchange Rate		Positive	
Initial GDP per capita	Negative		Negative
Initial level of secondary enrolment rate			Positive
Investment/GDP			Positive

Table 1 cont., ***Summary of empirical studies on growth and FDI and other significant variables***

Author	Ram & Zhang(2002)	de Mello (1999)	Carkovic & Levine (2002)
Sample Period:	1990-97	1970-90	1960-95
Sample Type:	Annual	Panel & Time Series	Panel
Sample:	85 Developed & Developing Countries	32 Developed & Developing Countries	57 Developed & Developing Countries
Economic Strategy	OLS	Fixed Effects	GMM
Dependent Variable: Average annual rate of GDP per capita	√	√	√
Capital Stock		√	
TFP Growth		√	
Independent Variables: Net FDI inflows/GDP	Positive	Positive	Insignificant
Investment-Output Ratio	Positive		
Mean years of education in the pop. age 15 and older	Positive		
Ratio of imports and exports to GDP			Positive
Government size to GDP			Negative

Table 1 cont., ***Summary of empirical studies on growth and FDI and other significant variables***

Author	Hoeffler (2002)	De Gregorio (1992)	Bengoa & Sanchez-Robles (2003)
Sample Period:	1960-89	1950-85	1970-99
Sample Type:	Panel	Panel	Panel
Sample:	85 Developed & Developing Countries	12 LAC	18 LAC
Economic Strategy	GMM	Random Effects	Fixed & Random Effects
Dependent Variable: Average annual rate of GDP per capita	√	√	√
Independent Variables: Net FDI inflows/GDP		Positive	Positive
Investment/GDP	Positive	Positive	
Population growth rate	Negative		
Initial GDP per capita	Negative		
Inflation		Negative	Negative
Literacy rates		Positive	
Political stability		Positive	
Government Consumption/GDP		Negative	Negative
Economic Free of the World			Positive
Debt (1980-85, dummy)			Negative

Own compilation. LAC denotes Latin America and the Caribbean.

4.0 Methodology

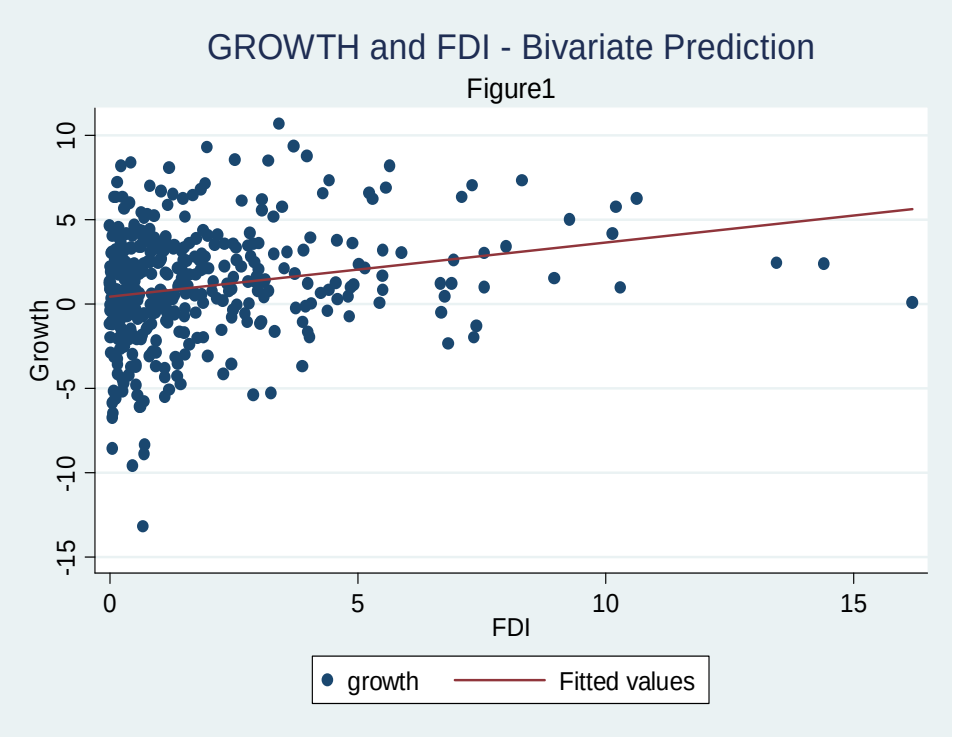
Data, Variable and Econometric Approach

The data used in this essay are similar to Essay 1 (as described in Data Chapter); these 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.[60] The number of countries remain 68, comprising the same mix of Latin America and the Caribbean (LAC, 20), Asia (13), sub-Saharan African (SSA, 31) and North Africa (4). Again, 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) as is common in the literature. The measures of FDI and control variables, discussed in detail in Data Chapter, are briefly summarized.

FDI is measured as net FDI inflows as a percentage of GDP in a country (de Mello, 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 (see Table1).

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*.

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



Notes: This plots the data of GDP per capita and FDI/GDP as used in the analysis.

Figure (1) plots the relationship between net FDI/GDP and growth; although observations of low FDI exhibit no consistent relationship with growth, a positive relationship is observed as the ratio of FDI/GDP increases. There are no obvious outliers that may bias the empirical results (a check of the residuals of countries that may exert leverage in the sample reveals no obvious candidate).

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[61] 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

[61] "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).

introduced and the meagre budgetary support for R&D[62] 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 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[63] in the population age 25 years and older (Rajan and Zangles, 1998). Pritchett (2001) uses this series to create an educational 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 reward 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 constraint the behavior of individuals in the interest of maximizing the wealth or utility of principals' (North, 1981: 201, cited

[62] 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.
[63] 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.

in Gleaser *et al*., 2004). 'That institutions affect the performance of economies[64] 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, dysfunctional markets,[65] 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.[66] We use constraint on the executive[67] (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).

[64] 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).

[65] Rodrik (2007: 156) suggests that markets require institutions because they are not "self-creating, self-regulating, self-stabilizing, or self-legitimizing".

[66] In the words of Rodrik *et al.* (2004: 131) 'the quality of institutions "trumps" everything else'

[67] '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.

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 efficient use resulting in economic growth. This is the position taken by Schumpeter (1911)[68] who reckons 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).

4.1 Econometric Approach

Table 2: ***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	.200	16.18
HC	3.74	2.07	.14	10.46
FinDev	72.94	533.81	.82	7912.74
Coups	.04	.12	0	1.20
XCONST	3.78	2.09	0	7

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

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

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

The ψ_i is an unobserved time-invariant individual country-specific effects term and ε_{it} is an error term assumed independent of all other predictors. 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[69] 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). Borensztein *et al*. (1998) apply the seemingly unrelated regression (SUR) estimator in a system of two equations to estimate their model. This estimator allows error disturbances across equations to be correlated.[70] Here we use pooled OLS, fixed effects and, random effects estimators, instead. SUR is appropriate for a system of equations; here we estimate a single equation.

[69] 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.

[70] For further discussion of this technique see Cameron and Trividi (2006) and Baltagi (2005).

Potential endogeneity is not accounted for, however, by using these methods and instrumental variable techniques have been developed to address this potential problem, most notably the dynamic panel generalized method of moments (GMM) estimator due to Arellano and Bond (1991). The dynamic panel GMM estimator is adopted to address potential endogeneity of one or more regressors in (1) and will permit consideration of potential reverse causality. The dynamic panel GMM estimator has been used in growth regressions to address omitted variables and endogeneity problems (Hoeffler, 2002; Nkurunziza and Bates, 2003).

Hoeffler (2002) investigates the determinants of growth in sub-Saharan Africa with a dynamic panel GMM estimator in an augmented Solow framework. The point of Hoeffler's (2002) was to show that Africa's poor growth experience is explained by low investment ratios and high population growth rates. Following Hoeffler (2002) and using the logarithmic difference in income per capita at the end and beginning of each time period over the number of years, the dynamic panel model is specified as follows:

$$y_{it} - y_{it-1} = \beta\, y_{i,t-1} + \gamma\, x_{it} + \psi_i + \epsilon_{it} \ , \qquad \text{for } t = 2, \ldots, T \qquad (2)$$

or

$$y_{it} = \beta^* y_{i,t-1} + \gamma\, x_{it} + \psi_i + \epsilon_{it}$$

where $\beta^* = (\beta + 1)$, t, i denote time and countries respectively and x_{it} is the vector of explanatory variables including FDI/GDP_{it}; ψ_i and ϵ_{it} are country-specific effects and an error term respectively; $y_{i,t-1}$ is introduced to proxy for convergence effects (i.e. initial income lagged one period), as is standard in growth regressions. In order to sweep out the country-specific (fixed) effects we transform (2) by taking first differences.

$$(y_{it} - y_{it-1}) = \beta^*(y_{i\,t-1} - y_{i,t-2}) + \gamma\,(x_{it} - x_{it-1}) + (\psi_i - \psi_{i,t-1}) + (\epsilon_{it} - \epsilon_{it-1})$$

This can be written as:

$$\Delta y_{it} = \beta^* \Delta y_{i,t-1} + \gamma\, \Delta x_{it} + \Delta \epsilon_{it} \ , \qquad \text{for} \quad t = 3, \ldots, T \qquad (3)$$

By construction the regressor ($y_{i,t-1}$ - $y_{i,t-2}$) and the error term (ϵ_{it} - ϵ_{it-1}) are correlated, so an OLS estimator will be inconsistent even if the vector of regressors x_{it} is exogenous (Hoeffler, 2002). To solve this endogeneity problem valid instruments are required to instrument for $\beta^* \Delta y_{i,t-1} = \beta(y_{i,t-1} - y_{i,t-2})$. The errors ϵ_{it} are serially uncorrelated and independent across countries i.e. $E(\epsilon_{it}\ \epsilon_{is}) = 0$, where $s \neq t$ and the initial condition satisfy $E(\epsilon_{it} y_{i1}) = 0$, where $t \geq 2$.

Note $y_{i,t-2}$ is a valid instrument for $\Delta y_{i,t-1}$, since it is uncorrelated with (ϵ_{it} - ϵ_{it-1}) and correlated with ($y_{i,t-1}$ - $y_{i,t-2}$). Further, because $y_{i,t-2}$ is predetermined with respect to x_{it-1} , values lagged two periods or more are valid instruments therefore endogenous regressors in (3) can be consistently and efficiently estimated with first differenced GMM estimator. All these instruments are generated internally and combined in an efficient manner by the GMM estimator to resolve the potential problem of endogeneity in (3), which 'makes GMM an appealing estimation method' (Nkurunziza and Bates, 2003: 15). The appropriateness of instruments is established by using the Sargan test of over-identifying restrictions. Hoeffler (2002) includes the investment to GDP ratio, the population growth rate and the average years of schooling as independent variables. We extend this set of variables to include other variables that are assumed to predict growth. This will also make results comparable with model (1).

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 3*: 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-value 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 represents 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 dividing 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 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, constraint 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 4: ***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 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 3. 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 3. 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 regimes 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 access valid instruments in order to get around the endogeneity problem, we use a dynamic panel estimation technique as in equation (2), i.e. a first difference GMM estimator similar to Hoeffler (2002). By using the GMM estimator we are able to assess the exogenous component of FDI on growth to determine causality. Table 5 reports the results.

Table 5: ***Dynamic Panel estimation (GMM) of the growth effect of FDI***

Variables	DIF-GMM	SYS-GMM
LnY_{t-1}	-.183	-.116
	(.336)	(.608)
FDI	.983	.579
	(.057)*	(.418)
HC	-3.696	.544
	(.007)***	(.036)*
Time Dummies	Yes	Yes
Observations	233	293
M_1	0.06	0.21
M_2	0.13	0.29
J (p-value)	0.25	0.00

Notes: *P*-values are below coefficients in parentheses. *** Significant at the 0.01 level, * significant at 0.10 level. DIF-GMM is the first difference GMM specification and SYS-GMM is the system GMM specification. M_1 is the test of no first-order serial correlation and M_2 is the test of no second-order serial correlation. The J (Sargan) statistic is the test of over-identifying restrictions of instruments validity under the null. All explanatory variables are their own instruments. DIF-GMM uses 3 and 4 lags and SYS-GMM uses 4/6 lags. Specifications use robust standard error. SYS-GMM includes a constant term. Full time dummies are included. LnY_{t-1} is initial income lagged one period. Countries with negative FDI inflows have been treated as zero inflows.

In Table 5, as in the Hoeffler (2002) augmented Solow framework, all variables in both specifications have similar signs. For the first difference GMM, however, human capital is significant and lagged initial income is insignificant. For the system GMM, human capital is significant and lagged initial income and FDI are insignificant. The system GMM is the Hoeffler (2002) preferred method as the estimator combines in a system the regression in levels with the regression in differences to provide a larger set of instruments i.e. lagged levels of the series are used to instrument the differenced equation and lagged differences of the series are used to instrument the level equation.

The efficiency of the system GMM over the differenced GMM depends on the assumption of no second-order serial correlation in the residuals and the J (Sargan) test of instrument validity. In the system GMM the J (Sargan) test rejects the null of instrumental validity; hence the extra instruments of the system GMM are not valid. For the first differenced specification the M_2 test suggests no second-order serial correlation in the residuals and the J (Sargan) statistic of instruments validity suggests that our specification passes these diagnostic criteria. For these reasons the differenced GMM is our preferred specification. Hoeffler (2002) includes population

growth rate, but because of data availability we could not use this variable; investment is measured as the investment/GDP ratio and human capital as the average years of schooling, hence a direct comparison of results is not possible. However, FDI has a significant and positive effect on growth. The next step is to address the potential endogeneity issue with model (2), arising from model (1), using the preferred method – first differenced GMM estimator. Results are reported in Table 6.

Table 6: ***Dynamic Panel estimation (GMM) of the growth effect of FDI***

	(1)	(2)	(3)
Variables	DIF-GMM	DIF-GMM	DIF-GMM
$\ln Y_{t-1}$	-.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. $\ln Y_{t-1}$ 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 3 and 4), 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 corroborated 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%,[71] a 1% increase in FDI increases economic growth on average .71%.[72] 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[73]. 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 suggestion 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

[71] 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.
[72] A % change in GDPC due to a % change in FDI/GDP is: dGDPC/meanGDPC =b lnFDI/GDP.
[73] http://pgpblog.worldbank.org/categories/advances_in_development_economics.

complementary effect of FDI and financial development on growth under such distorted conditions.

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 tendencies will not facilitate the efficiency in economic activity which 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 7 illustrates some basic facts about the growth experience of LAC over selected periods.

Table 7: 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 8 presents growth rates for selected Asian countries.

Table 8: ***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 8 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 3-4 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 for 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 defence.

Nazmi and Ramirez (2003) develop a dynamic optimisation 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.

$$Y_{it} = \gamma_0 \, intercept + \gamma_1 Z_{it} + \varepsilon_{it} \qquad (4)$$

In (4) 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 (4) 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 9 reports results.

6.2 Panel Evidence – LAC

Table 9*: 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 10 reports results.

Table 10: ***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 9. 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 10. Table 11 reports results.

Table 11: ***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 10. 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 argue 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. [74] 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 support is lacking. In the past many studies have investigated the effects of FDI on growth, but find no consistent evidence perhaps due to limited technique or data quality. We use the latest data mainly from the World Bank, World Development Indicators (2006) and a relatively efficient estimation technique to investigate the growth effects of FDI in a panel of developing countries. In this essay 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.

The inference to be drawn is 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 parallels 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 chapter updates 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

[74] 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.

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 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 step, 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 in general do not apply 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[75], 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. The evidence here helps us to understand the failure of the "one-size-fits-all" mantra of the "Washington Consensus".

[75] 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.

Appendix to Chapter 4

The appendix provides summary statistics for LAC and correlation matrices for LAC and the full sample.

Table 1A: ***Summary statistics for LAC sample (20)***

Variables	Mean	S.D	Min	Max
GDPC	.59	3.02	-9.61	7.32
FDI/GDP	2.24	2.50	.05	16.18
HC	4.76	1.54	1.07	7.9
FinDev	32.93	15.14	11.69	96.50
COUPS	.03	.10	0	.60
XCONST	4.92	2.09	.80	7

Table 2A: ***Correlation matrix for LAC sample (20)***

	GDPC	FDI/GDP	HC	FinDev	Coups	XCONST
GDPC	1					
FDI/GDP	0.31	1				
HC	0.27	0.48	1			
FinDev	.003	0.42	0.33	1		
COUPS	-0.13	-0.15	-0.28	-0.23	1	
XCONST	0.24	0.26	0.45	0.14	-0.37	1

Table 3A: ***Correlation matrix for developing countries sample (68)***

	GDPC	FDI/GDP	HC	FinDev	Coups	XCONST
GDPC	1					
FDI/GDP	0.21	1				
HC	0.20	0.31	1			
FinDev	-.06	-0.05	-0.04	1		
COUPS	-0.12	-0.11	-0.17	-0.03	1	
XCONST	0.18	0.10	0.44	0.06	-0.20	1

CHAPTER 5

THE ENDOGENOUS RELATION between FDI and GROWTH, and the role of POLITICAL INSTABILITY

1.0 Introduction

Foreign direct investment (FDI) and economic growth have attracted much attention in the last two decades or so, not least because they hold hopes of improving the lives of the vast number of poor people living in developing countries, but also because they are complementary to each other (Li and Liu, 2005). This suggests that, holding other things equal, faster growing economies will have higher inflows of FDI and higher levels of FDI will boost yet faster growth in the recipient country. This is especially possible in the current wave of globalization where goods, services, capital, and to a lesser extent labour cross national-state borders with less restrictions than before. Many theoretical models of capital liberalization, with their many assumptions, some "unrealistic"[76], make the argument for full capital liberalization. One argument goes as follows: 'By breaking the constraint that domestic investment is limited to the volume of national saving, capital inflows can be used to finance a more rapid pace of growth than a country could achieve on its own' (Bosworth, 2005: 01).

With this kind of assumption, these theoretical models give confidence to development agencies and national governments believing they can cherry-pick development policies that will improve economic performance. But many of these influential theories do not emphasise the short-term dynamics of capital liberalisation and the potential negative effects on developing countries' economies. Hence, the assumption that growth is expected to accompany capital inflows and the feedback to higher levels of capital inflows may not hold, yet many developing countries hinge the performance of their economies on this assumption.

This is widely believed to have contributed to the financial crises in East Asia in the late 1990s and Mexico in 1994, short-term capital that can enter and exit a country at the same speed, leaving that country in a worse position upon exit. According to Stiglitz

[76] Stiglitz (2006: 29) in his book "*Making Globalization Work*: *The next steps to global justice*" asserts that 'The results of any theory depend on its assumptions – and if the assumptions depart too far from reality, policies based on that model are likely to go far awry.'

(2000), this makes the case for FDI stronger in developing countries, so capital liberalisation policy should crowd out short-term capital (with strong state intervention) and crowds in FDI. Because FDI has longer-term predictability relative to the short-term variety, policy makers must incorporate FDI in the development process with less fear of "sudden stops" and thus fewer disruptions. This will also bring stability to the development experience in poor countries and tends to boost growth; instability through short-term capital flows has negative effect on economic growth.

If this argument holds much sway, the benefits of the potential complementary effect of FDI and growth will be realized in developing countries – higher standard of living and reliable provisioning of public goods through higher tax revenues. In this essay we investigate this effect, whether faster growing economies stimulate higher levels of FDI and if there might be a feedback effect of higher levels of FDI generating faster growth in the recipient economies, with a simultaneous equations model, using a three-stage least squares (3SLS) estimator similar to Li and Liu (2005). We go beyond many previous studies that just look at the unidirectional relationship from growth to FDI or the other way around, for e.g. Nair-Reichert and Weinhold (2001). This is important, in light of the ad hoc approach toward policies in developing countries, as it will provide a better understanding of the relationship between FDI and economic growth and inform the policy-setting agenda. Indeed 'over the last two decades, FDI and growth have reinforced each other in the world. In the process of globalization, the relationship between FDI and growth has become increasingly endogenous' (Li and Liu, 2005: 404), we take an empirical approach to this hypothesis.

We also introduce political instability in the simultaneous equations framework and show that political instability has different dimensions and therefore affects growth and FDI differently. Finally, we consider the question of whether these dimensions of political instability affect SSA differently relative to a global sample of developing countries: we find weak evidence that political instability affects SSA differently.

The rest of the chapter is organized as follows. Section 2 discusses the literature on capital flows and possible consequences. Section 3 looks at the empirical literature on the endogenous relationship between FDI and growth. Section 4 discusses the methodology. Section 5 reports empirical results. In Section 6 we investigate the effect

of political instability on growth and FDI. Section 7 assesses whether political instability affected SSA differently. The conclusions are in the final section.

2.0 Capital Flows

Capital inflows and consequences

All poor developing countries, with low saving rates and anaemic economic growth, welcome the inflows of foreign capital (both FDI and the short-term variety, but more so FDI): this enhances the surplus of the international reserves. And thus provides insurance against the intertemporal fluctuation of foreign exchange risks on the real economy. Because capital inflows are pro-cyclical, governments should anticipate the potential foreign exchange risk; during good times foreign investors are more likely to invest, but when things are bad they are more likely to reverse this trend. Thus capital inflows in the international reserves can smooth the demand for foreign exchange between peaks and troughs in the business cycle without severe adverse effects on the real economy. More important, capital inflows provide the discipline for policy makers to apply good macroeconomic policies; this is a restriction on expansionary macroeconomic policies to coincide with the political cycle, which is not likely to be time-consistent, as investors anticipate a reversal in the future.

The excess inflows of foreign capital, however, generates more economic activities, which if left unchecked will appreciate the real exchange rate, in a flexible exchange rate regime, and thus deteriorate the current account deficit through changes in the relative price of tradables. The possibility of the real exchange rate appreciation increases if domestic inflation rates are higher relative to trading partners' inflation rates, which is almost always the case in developing countries. Unlike their developed counterparts, a disproportionate share of the trade volume in developing countries takes place between developed and developing countries than among developing countries.

The exchange rate risks in developing countries are magnified if the inflows of foreign capital are denominated in foreign currency. This occurs because of the instability of developing countries' currency and thus to prevent losses arising from the volatility in the local currency. Garcia (2004) suggests that Latin American countries, in the 1980s

and 1990s, use exchange rate targeting as an anti-inflation strategy (Latin American countries experience some of the highest rates of inflation in recent memory). This results in high interest rate, over-valued exchange rate, and low inflation, which attract foreign investors, but this increases the exchange rate risk because foreign investors were 'intent on trying to predict the timing of the exchange rate correction' (Garcia, 2004: 13). But, if a developing country government expects that foreign investors anticipate a correction of the over-valued exchange rate in the future, they will try to defend the currency by further increasing the interest rate. This further amplifies the exchange rate risk, as developing countries cannot infinitely defend the exchange rate against depreciation, as the costs of output and unemployment will be too great, and hence a currency crisis is imminent. Governments in East Asia, during 1997-98, understand these consequences on the real economy: after a short period of defending the currency against depreciation, many East Asian countries 'surrendered to market forces' (Makin, 1999: 414).

In an empirical paper, Kaminsky *et al.* (1998) use the real exchange rate to predict the timing of a crisis. They find that the deviation of the exchange rate from trend is a signal of possible currency crisis. While capital inflows provide important signals of good investment conditions in developing countries, Calvo *et al.* (1993: 110) argue that it can also imply a 'lack of credibility in a government's policies [which] leads to high nominal returns on domestic financial assets.' Domestic macroeconomic policies that are not credible are likely to induce a reversal of capital inflows. However, Calvo *et al.* (1994) suggest that the foreign exchange risk in developing countries will be limited if a substantial proportion of the capital inflows are in the form of FDI.

A further risk posed by the inflows of capital in developing countries is over-intermediation of credit: this moral hazard results from inefficient allocation of resources to risky projects, because of the implicit assurance of government guarantee, and weak institutional structure. This is also possible in developed countries, where the failure of one or more important projects can adversely affect the economy, even with good institutional structure. A recent case in point is the bail out of American Insurance Group by the US Treasury, which if allowed to fail would have probably bring down the global economy. As Calvo *et al.* (1993) point out: it may not be optimal for the government not to provide this guarantee if the adverse shock

will be felt throughout the economy, even if a commitment is made in advance not to do so.

Further, Mishkin (1998) suggests that governments should make an explicit commitment to provide a "safety net" against adverse shocks in the economy, because of information asymmetry (i.e. foreign investors are not sure who government will guarantee), as foreign investors will not enter the domestic market, limiting the flows of FDI that provides long-term commitments. Accordingly, the government can reduce this risk by providing a general guarantee to all potential investors. This has the potential for investors to engage in excessively risky behaviour, however. It's worth noting that the IMF has a key role to play in this respect: by ensuring that developing countries which face fiscal constraints get IMF support, this signals "good" macro policies, with the implication of restricting the "speculative capital".

Dooley (1999), however, argues that capital inflows that seek government guarantee are "arbitrage capital" that has no long-term interest in the recipient economy, except to take advantage of government subsidy. This implies that such capital inflows have less to do with sound economic fundamentals and more to do with opportunistic behaviour motivated by governments of developing countries. Dooley (1999) explains the incentive for such position: in the absence of government guarantees foreign investors absorb their losses, but when there are government guarantees, only the government bears the losses. And the losses to developing countries are made worse if the guarantee to capital inflows is denominated in foreign currency, as suggested. To note an OECD country's example: as a measure to prevent capital flight and its adverse shock to the real economy, arising from the ensuing financial crisis, the Republic of Ireland has guaranteed the full inflows of capital for all existing and potential investors against losses.

Another consequence of foreign investment is to bid up domestic asset prices in developing countries; this is more relevant for portfolio investment in equity shares and real estate. Calvo *et al.* (1996) document that, for the year 1991, the share prices in Argentina increase by 400%, 100% in Chile, and 100% in Mexico during the onset of the inflows episode of 1990-1994. This is not unique to developing countries.

More recently, capital inflows in rich countries have resulted in unsustainably high housing prices with the effect of sharply reducing when the market starts its adjustment, thus transmitting negative shocks in the economy i.e. contractionary effects through reductions in household wealth and consumer spending. This is the wrong kind of growth that can be generated by capital inflows – housing and construction – as concluded by Rodrik (2009). This has been the experience in US and in some European economies following capital inflows from high saving economies of East Asia.

This illustrates that in their quest for higher returns abroad, foreign investment can generate unintended macroeconomic consequences and these are more severe for poor-developing countries with frail institutional structure. Like exchange rate risk, these adverse consequences are minimized if the capital inflows are FDI, as FDI is not intermediated by the banking system and hence 'no accompanying expansion in domestic credit and money occurs' (Calvo *et al.*, 1994). For example, they comment that, during the mid-1980s and early 1990s, only about 17% of capital inflows in Latin America were FDI relative to about 44% in Asia; policy makers in Latin America were therefore concern about the possible adverse effects arising from the sudden reversal on their economies. The picture, however, leading up to the financial crisis in Asia was grim: in 1996 inflows to Indonesia, South Korea, Malaysia, the Philippines, and Thailand of US$93 billion were converted to net outflows of US$12 billion, representing 11% of GDP for these countries (Makin, 1999). According to Calvo *et al*. (1994), to sort the "hot money" from that which offers long-term commitment to the economy, policy makers must establish a credible reputation underpinned by credible and consistent policies.

This is even more urgent, as developing countries facing sharp slowdown in capital inflows usually have little recourse to international financial institutions funds and, when they do, these countries face stringent fiscal retrenchment, which results in high political cost arising from social dislocation, and severe economic adjustment. And because developing countries are likely to cut off from the international capital market, during a period of capital inflows slowdown, they have to bear the pains of these political, social, and economic adjustments. These adjustments are persistent (as capital slowdown signals a weak economy), as capital inflows in the form of FDI that

offers some level of stability and confidence in the aftermath of a period of slowdown, postpones their investment decisions until the economy is stabilized: this is consistent with the location-conditions hypothesis of FDI discussed in Essay 1. Theoretically and in practice, this has the effect of a hysteresis outcome where no foreign investors want to make the first move, preferring to adapt a follow the leader strategy. Calvo and Reinhart (2000) document the experience of developing countries facing capital inflows slowdown, in the absence of external financing, which have to accommodate these adjustments. For instance, Argentina had to adjust to capital inflows slowdown of 20% of GDP from 1982-83. One implication here is that developing countries marginal productivity growth is slowed and if the feedback-effect hypothesis between FDI and growth holds an adverse second order marginal productivity growth effect is possible.

A further complication facing developing countries during a period of capital slowdown, in a world where markets are interconnected, is intraregional contagion. Economic shocks in one country are likely to spread to other economies in the same region and these result in investors not only postponing investment decisions in the first country, but also in the entire region. For example, Kaminsky and Reinhart (1998) conclude that the devaluation of the Thai baht in 1997 spread to other economies in East Asia through a series of devaluations and stock market shocks; there was evidence of fire-sale of FDI in East Asia also.

This parallels the experience in Latin America in that the tequila effects in Mexico, of 1994, spread to other economies in the region. The same holds true for African economies where political violence in neighbouring countries creates negative externalities for other countries, causing some observers to categorise Africa as one unstable country, instead of a group of countries. Furthermore, there are also interregional contagions among developing countries and between developed and developing countries (but there is a twist, the contagion effects seem to run from developed to developing countries rather than the other way around), as suggested by the latest bout of international capital inflows slowdown, the insulation of many developed countries from the 1997-98 events in East Asia, and the tequila effect in Mexico of 1994.

International capital inflows bring mixed blessings, as we have discussed, but developing countries will have to find ways of reducing these negative consequences, if they are to avoid these experiences, in order to maximize their growth potential. We now look at the empirical literature on the potential endogenous relationship between FDI and growth.

3.0 The Empirical Literature: The Feedback Relationship between FDI and Growth?

In this section we survey the empirical studies that attempt to particularly search for the potential endogenous effects between FDI and economic growth in developing countries. This is the central direction of the essay, although we look at the effects of political instability and whether SSA is affected differently, and must be interpreted as an addition to those studies. The approaches adopted in these studies are of different varieties: encompassing varying country mix, varying time periods, varying estimation procedures, and varying choice variables. Thus, the evidence doesn't speak with one voice, reflecting the mélange of approaches. In this essay we carefully consider this question, combining the potential determinants of FDI in Essay 1 and the effects of FDI on economic growth from Essay 2 in a system of simultaneous equations model.

Similarly, much controversy surrounds the unidirectional relationship between FDI and economic growth: for example, in Essay 2 we find effects of FDI on growth for the full sample, but we did not find significant effects for a subsample of LAC countries. There are essentially two approaches to address the endogeneity problem in economic variables within the context of FDI and economic growth: the single-equation approach that simply allows for 'bilateral causal testing' or uses instrumental variables to account for endogeneity and the less frequently used system of simultaneous equations approach (Li and Liu, 2005: 395). Unlike the traditional causal single-equation approach, a system of simultaneous equations (basically an instrumental estimation technique) allows us to explicitly investigate the potential feedback loop between FDI and economic growth. Hence we will now be able to make conclusive statements about the potential endogenous relationship between FDI and economic growth and therefore which direction policies should take. We now look at selected studies of potential interdependence between FDI and economic growth.

Li and Liu (2005) examine the causal relationship between FDI and economic growth, in both single equation and a system of simultaneous equations, using three-stage least squares for the latter. As is already known, single equations are not the most appropriate approach to address potential endogeneity between economic variables, so they rely on the system of simultaneous equations. In a panel of 84 developed and developing countries over 1970-1999 they find evidence of feedback effects between FDI and economic growth, but this was only for the sub-period 1985-99.

The problem in Li and Liu (2005) is that they make no distinction between developed and developing countries in their estimations and since both groups of countries obviously have different characteristics, it's not clear that similar results should hold for both groups. For instance, developed countries growth rates are more persistent relative to developing countries and since more FDI goes to developed countries in absolute values, it's possible that their results are driven by these facts. One way of addressing this potential heterogeneity is by splitting the sample between the different groups of countries. Moreover, at an applied level, their results are not the most informative in terms of policies in the average developing countries. That is not a concern in this essay, as we focus only on developing countries; hence, any effect is informative for developing countries in general.

Nair-Reichert and Weinhold (2001) use a mixed fixed and random (MFR) coefficient approach to allow for heterogeneity in the causal relationship between FDI and economic growth in a panel of 24 developing countries over 1971-1995. The motivation of the authors is not to assume that the coefficients on explanatory variables across developing countries are the same, which would have otherwise implied that 'either causality occurs everywhere or it occurs nowhere' (Nair-Reichert and Weinhold, 2001: 157). It's worth noting, however, that while developing countries have different political arrangements, are at different levels of institutional capabilities, and are at different income levels, all developing countries are competing for FDI, most developing countries experience erratic growth rates, and all developing countries are prone to external shocks.

Hence, the experience of the causal relationship of FDI and growth in one developing country provides important lessons for other developing countries; grouping

developing countries together thus treating coefficients on explanatory variables as homogeneous, we believe, is therefore not an important source of error. For example, in Essay 1, we didn't find substantial differences between LAC and non-LAC countries on the determinants of FDI, except along the lines of infrastructural quality. Using information on China's data, Hsiao and Shen (2003) find evidence of a bidirectional relationship between FDI and growth. They extend this study to include 23 developing countries; the evidence corroborates that of China's data. In principle, even if one assumes that there are substantial differences across developing countries on various dimensions, this will not bias results, but instead add important variation to the data to make results more robust.

However, the MFR estimator is a single-equation model in which the authors only investigate the causal relationship from FDI to economic growth. And while there is evidence of this effect, they suggest this relationship to be highly heterogeneous among developing countries. Durham (2004) applies two-stage least squares to examine the causal relationship between FDI and growth and equity foreign portfolio investment and growth, but this was unidentified, so a single equation was used with lagged independent variables in the panel of 80 countries. He finds that lagged FDI and lagged equity foreign portfolio investment have causal effect on growth, but this is largely dependent on the institutional structures in countries. A similar exercise was done by Reisen and Soto (2001), but they use a GMM estimator to account for causality. They too find FDI and portfolio equity as causing growth in their panel of 44 developing countries. We push beyond the single-equation approach and apply a system of simultaneous equations to consider the potential causal relationship between FDI and growth.

Bende-Nabende and Ford (1998) apply a system of simultaneous equations (i.e. three-stage least squares) to Taiwan's data in which output growth and FDI are treated endogenously. They find the causal relationship between growth and FDI to be bidirectional. However, Basu *et al*. (2003) argue that the two-way link between FDI and growth has different effects in closed as compared to open economies. Using a Granger-causality test they find evidence of bidirectional relationship both in the long run and the short run, and when they separate countries along measures of openness they observe that the direction of causality is from GDP to FDI in closed economies,

while in open economies FDI and growth has a strong two-way link. They take this as evidence suggesting that 'permanent foreign capital does not reach closed economies until after the countries have exhibited growth, showing that trade and financial restrictions do indeed impede the inflow of foreign capital' (Basu, *et al*., 2003:516).

Following the accession to EU of eight former centrally planned economies, using similar technique as Basu *et al*. (2003), Mencinger (2003) finds opposite results, confirming that FDI has a causal effect on economic growth and this effect is negative. He asserts a story to support the empirical finding: arguing that during the post-transitional phase government supports rapid privatisation with little investment in Greenfield projects and most of the proceeds from sales were absorbed in consumption goods reflected in the ratio of the volume of exports to imports. In contrast to Mencinger (2003), in a VAR framework using the Granger-causality test, Choe (2003) finds significant effects of a bidirectional relationship, but this result is stronger from economic growth to FDI.

Other empirical papers of the Granger-causality test between FDI and growth include Hansen and Rand (2004). They use a level equation and find support of FDI Granger causing growth across 31 developing countries from 1970 to 2000. They also find evidence of composition effect in the sense that a higher ratio of FDI in capital formation Granger causes growth. This study is also related to Nair-Reichert and Weinhold (2001) who argue for heterogeneity in coefficients on explanatory variables across countries; allowing for heterogeneity across developing countries, Hansen and Rand (2004) find no evidence of heterogeneity of the effect of FDI on growth across regions and therefore suggest that the gains from FDI on growth should be the same across the three regions investigated: Asia, Latin America, and Africa. Criticising the traditional Granger-causality test for its weakness in identifying forward-looking relationship between economic variables, Chowdhury and Mavrotas (2006) employ the Toda and Yamamoto (2005) methodology to test for the direction of causality in Chile, Malaysia, and Thailand over a 33-years period. They posit that the Toda and Yamamoto (2005) technique is an improvement on Granger-causality testing, as it reduces the possibility of spurious cointegration and orders of integration. They find that GDP causes FDI in Chile, while there is support for a two-way link in Malaysia and Thailand, somewhat supporting heterogeneity across countries.

Instead of only looking at the causal relationship between FDI and growth, Hsiao and Hsiao (2006) incorporate a third link – exports. Using data from East and Southeast Asia's fastest growing economies, they report a causal link from GDP to FDI and from exports to FDI in China, from FDI to exports and from exports to GDP for Taiwan, no causal link in Hong Kong, from FDI to exports and from FDI to GDP for Singapore, a bidirectional link for Malaysia of GDP and exports, a unidirectional link from GDP to exports for the Philippines, a two-way link of exports and GDP and between GDP and FDI and a one-way link from FDI to exports for Thailand. However, when they pooled the data, they only find feedback effects for exports and GDP and a unidirectional link from FDI to exports and GDP.

Having reviewed the empirical studies on the potential causal relationship between FDI and growth, the statistical evidence that emerges is that the literature is not settled. Some studies posit a link from FDI to growth, while other studies argue for a link from growth to FDI, and still others report a two-way link. This is within the context of panel cross-country studies and time series, but findings of case studies on single country do not converge. Because FDI has competitive advantages in international trade and an open trade regime is expected to benefit from improved economic performance through access to a larger market, exports have also been identified as a possible channel to explain the causal relationship of FDI and growth.

As suggested, possible explanations for the unsettled literature include different country sample, different ways of measuring FDI and growth, different sets of controls included in regressions, omitted-variables issues, and different techniques apply, and different time periods. Finally, the common thread, however, that binds this literature is that the causality issue has not been addressed systematically, hence it's not clear which direction the causality takes. This essay fills that gap, presenting evidence to clarify the direction of causality.

4.0 Methodology

Econometric method

Li and Liu (2005) specify a system of two equations, growth and FDI, and use 3SLS to estimate the model in search for the potential endogenous relationship between FDI and economic growth. We adopt this approach here. Following Cameron and Trivedi (2006), consider the *g*th of the *G* equations and the *i*th of *N* countries as follows:

$$y_{ig} = Z'_{ig}\chi_g + Y'_{ig}\beta_g + \varepsilon_{ig}, \qquad g = 1, \ldots, G \;, \quad i = 1, \ldots, N \tag{1}$$

Where Z_g is a vector of pre-determined variables that are orthogonal to the error term ε_g and Yg represents the vector of endogenous dependent variables ($y_1, \ldots, y_{g-1}, y_{g+1}, \ldots, y_G$) in the system and is therefore correlated with the errors. Hence the structural model for the *i*th country takes the form:

$$Y'_i \beta + Z'_i \psi = \varepsilon_i, \tag{2}$$

the vector of endogenous variables is given by $Y_i = [y_{i1}, \ldots, y_{iG}]'$, Z_i is the vector of exogenous variables ($z_{i1}, \ldots, z_{iG}$) i.e. all the instruments, $\varepsilon_i = [\varepsilon_{i1}, \ldots, \varepsilon_G]'$ where $E(\varepsilon\,\varepsilon') = \Sigma$ and $E(\varepsilon) = 0$ and β and ψ are parameter matrices. To derive the reduced form we make the endogenous variables the subject, which yields:

$$Y'_i = - Z'_i \psi \beta^{-1} + \varepsilon_i \beta^{-1}$$

and

$$Y'_i = Z'_i \xi + \Phi_i \tag{3}$$

where $\xi = -\psi \beta^{-1}$ denotes the parameters and $\Phi_i = \varepsilon_i \beta^{-1}$ denotes the errors. (3) can be estimated by standard OLS, but the estimates are inconsistent due to identification problems. Having satisfied the rank condition (which is sufficient for identification), which holds that the set of instruments Z_i' and the endogenous variables Y'_i must be correlated, efficient estimates are obtained from (1) by applying the 3SLS estimator. In the structural model all dependent variables are treated as endogenous and are instrumented by the other regressors in the model. The 3SLS estimator is obtained in three steps: we obtain the prediction of ξ from (3) by OLS and use this to recover the 2SLS prediction by replacing Y_g in (1). Finally, we obtain the 3SLS estimates for the system by regressing y_g on the estimates from the 2SLS.

The simultaneous relationship of economic variables is almost always present in statistical investigation. This has long been recognised in empirical studies, hence a system of simultaneous equations can correct the restrictions that any excluded equation has on a single equation. For example, 'if one assumes that the economic variables considered satisfy, simultaneously, several stochastic relations, it is usually not a satisfactory method to try to determine each of the equations separately from the data, without regard to the restrictions which the other equations might impose upon the same variables ' (Haavelmo, 1943: 02).

To investigate the potential endogenous relationship between FDI and economic growth we specify a system of simultaneous equations, using only significant variables from Essay 1 where we estimate a single equation of the potential determinants of FDI and Essay 2 where we estimate a single equation of the potential growth effects of FDI. Our structural system of simultaneous equations is as follows:

$$FDI_{it} = \beta_1 GDPC_{it} + \beta_2 S_{it} + \nu_{it} \qquad i = 1, \ldots, N \qquad t = 1, \ldots, T \tag{4}$$

$$GDPC_{it} = \beta_1 FDI_{it} + \beta_2 X_{it} + \alpha_{it} \qquad i = 1, \ldots, N \qquad t = 1, \ldots, T \tag{5}$$

where *i* and *t* are countries and each five-year period respectively. As described in the data chapter, *FDI* is net foreign direct investment inflows to country *i*, *GDPC* is GDP per capita in country *i*, and *S* is all the significant control variables from Essay 1: *DEBTSG* for debt burden, *INFRAS* for infrastructural quality, *XCONST* for governance quality, and *INFLA* for inflation. X is all the significant controls from Essay 2, they include: Y_0 for initial income at the beginning of each five-year period, *XCONST* , *HC* for human capital development, *SSA* is a dummy for sub-Saharan Africa, and *LAC* is a dummy for Latin American and the Caribbean. As before, countries with negative FDI inflows are treated as zero, as we are interested in the effects of inward FDI. In equations (4) and (5) *FDI* and *GDPC* are the endogenous variables and in the absence of ideal instruments, all the controls are treated as exogenous: these are crude instruments. In their paper, Li and Liu (2005) use the control variables as instruments.

Note that equations (4) and (5) are within a panel framework. However, the standard 3SLS is not applicable within a panel framework; hence (to apply the 3SLS) we

transformed the model to a non-panel framework by taking deviation from the means. The advantage of this approach is that it eliminates country-level fixed effects from the error disturbances. Baltagi (1981) developed an error component three stage-least squares (EC3SLS)[77] estimator applicable to a system of simultaneous equations within a panel framework. He asserts that the advantage of the EC3SLS over the standard 3SLS is that the latter does not make any assumption about the error component of the model i.e. does not account for the fixed effects in the error disturbances; estimates will therefore be biased. Taking deviation from the means, however, will eliminate the fixed effects in the error disturbances. Cornwell *et al*. (1992) also developed a 3SLS estimator, applicable to a system of simultaneous equations for a panel framework, similar to Baltagi (1981). An alternative approach is to estimate (4) and (5) equation by equation; this is not efficient, however, as it does not allow for correlation across error disturbances. The advantage of the latter approach is that if one of the equations is miss-specified it does not contaminate the other equations.

Before we proceed to estimate the system of simultaneous equations (4) and (5) on the transformed model, we first perform a Durbin-Wu-Hausman (DWH) test for endogeneity on the full sample. If the null of no endogeneity is significantly different from zero, then a single-equation estimator is biased and IV estimates based on a system of simultaneous equations are relatively more efficient. The DWH test of endogeneity can be implemented in two steps (Cameron and Trivedi, 2006). Consider the following two linear equations where *Y* and *X* are considered endogenous:

$$Y = \beta_1 X + \beta_2 P + \varepsilon$$

$$X = \beta_1 Y + \beta_2 H + \nu$$

We construct the reduced form equation with *Y* as a function of the exogenous (we take these as instruments) regressors *W*

$$Y = \beta_1 W + \Phi$$

and estimate the predicted residual, say μ,in an augmented equation,

$$X = \beta_1 H + \beta_2 P + \beta_3 \mu + \varphi$$

[77] The EC3SLS procedure is not in STATA.

If μ is significantly different from zero we take this as evidence of endogeneity between the dependent variables and hence a system of simultaneous-equations estimator is required to produce relatively efficient estimates. The DWH test of endogeneity on the residual of the transformed system (4) and (5) returns a *p*-value of (0.000) is highly significant, thus rejecting the null of no endogeneity and confirms the endogenous relationship between *FDI* and *GDPC.* Estimations that ignore this endogeneity will produce bias estimates.

In the following section we estimate the transformed system of simultaneous equations (4) and (5), using the IV 3SLS estimator. Greene (2003: 407) asserts that 'among all IV estimators that use only sample information embodied in the system, 3SLS is asymptotically efficient.' As in Essays 1 and 2, the sample remains 68 developing countries: the same mix of 31 SSA, 20 LAC, 13 Asia, and 4 North African countries.

5.0 Results

Having established endogeneity between FDI and economic growth in the sample, we first present estimates on the full sample (of the transformed model) using the 3SLS estimator. The first set of results is displayed in Table 1.

Table 1: ***FDI and Growth, simultaneous equations, 68 countries, 1975-2005***

Dependent Variables:	FDI	GDP per capita
DEBTSG	-.028	
	(.000)***	
INFRAS	.004	
	(.000)***	
INFLA	-.001	
	(.001)***	
GDPC	.196	
	(.002)***	
XCONST	.028	.083
	(.624)	(.446)
LnY_0		-5.398
		(.000)***
FDI		.960
		(.000)***
HC		.468
		(.056)*
SSA		-.210
		(.420)
LAC		-.216
		(.399)
Observations	293	293
R^2	0.26	0.19

Notes: P-values are below coefficients in parentheses. *** Significant at the 1% level, * significant at the 10% level. Both regressions have a constant term. *DEBTSG* is debt burden, *INFRAS* is the infrastructural quality, *INFLA* is inflation, *GDPC* is GDP per capita, *XCONST* is institutional quality, Y_o is initial income, *HC* is human capital, *SSA* is a dummy for sub-Saharan Africa, and *LAC* is Latin America and the Caribbean dummy. Regressions used transformed six five-year averages: 1975-79, 1980-84, 1985-89, 1990-94, 1995-99 and 2000-05. Augmented regression residual with a *P*-value (.000) rejects the null of no endogeneity between dependent variables: growth and FDI.

For the *FDI* regression, *DEBTSG*, infrastructural quality, inflation, and growth are significant with the expected sign. All variables have the expected sign in the growth regression, but only initial income, *FDI*, and human capital are statistically significant. The evidence appears to suggest that *FDI* has a significant-causal effect on growth, and growth appears to have a significant-causal effect on FDI. We first check these results by re-estimating only significant variables. Results are reported in Table 2.

Table 2: ***FDI and Growth, simultaneous equations, 68 countries, 1975-2005***

Dependent Variables:	FDI	GDP per capita
DEBTSG	-.029	
	(.000)***	
INFRAS	.004	
	(.000)***	
INFLA	-.001	
	(.000)***	
GDPC	.213	
	(.001)***	
LnY_0		-5.318
		(.000)***
FDI		.926
		(.001)***
HC		.592
		(.011)**
Observations	293	293
R^2	0.25	0.19

Notes: *P*-values are below coefficients in parentheses. *** Significant at the 1% level. Regressions have a constant term. *DEBTSG* is debt burden, *INFRAS* is the infrastructural quality, *GDPC* is GDP per capita, *INFLA* is inflation, Y_o is initial income, and *HC* is human capital. Regressions used transformed six five-year averages: 1975-79, 1980-84, 1985-89, 1990-94, 1995-99, and 2000-05.

All variables retain their sign, size and significance. *FDI* and growth retained their significance at the 1% level; further evidence suggesting that *FDI* and growth are causally related. With the exception of one or two, for example Botswana that grows at an average rate of 9 percent for the past thirty years (Stiglitz, 2006), growth experiences among SSA countries are generally poor; this provides enormous scope for improvement in economic performance. And SSA is the least attractive region for *FDI* inflows, given the unstable political economy, except for resource seeking *FDI*: the returns on resource-seeking *FDI* in SSA dwarf the cost of political instability and this partly explains why *FDI* still flows to the region despite the unstable political economy. Thus, it's plausible to argue that marginal inflows of *FDI* to SSA will stimulate positive economic performance (because of the huge economic slack) and this effect could be driving results in Tables 1 and 2. In other words, the causal effect of *FDI* and growth that we are interpreting to be in the data may not be systematic, but an artefact of a one-off inflow to a poor region that shifts it from a bad to a good equilibrium. We explore this possibility by re-estimating the baseline model of Table 1 without SSA countries; this will help us make a stronger statement about the causal effect of *FDI* and growth. Results are reported in Table 3.

Table 3: ***FDI and Growth, simultaneous equations, 37 countries, 1975 -2005***

Dependent Variables:	FDI	GDP per capita
DEBTSG	-.020	
	(.038)**	
INFRAS	.005	
	(.000)***	
INFLA	-.001	
	(.001)***	
GDPC	.077	
	(.319)	
XCONST	.139	.049
	(.027)**	(.717)
LnY_0		-5.688
		(.000)***
FDI		1.035
		(.002)***
HC		.259
		(.494)
Observations	188	188
R^2	0.34	0.21

Notes: P-values are below coefficients in parentheses. *** Significant at the 1% level, ** significant at the 5% level. Both regressions have a constant term. *DEBTSG* is debt burden, *INFRAS* is the infrastructural quality, *INFLA* is inflation, *GDPC* is GDP per capita, *XCONST* is institutional quality, Y_o is initial income, and *HC* is human capital. Regressions used transformed six five-year averages: 1975-79, 1980-84, 1985-89, 1990-94, 1995-99, and 2000-05. Augmented regression residual with a *P*-value (.000) rejects the null of no endogeneity between dependent variables: growth and *FDI*. A parsimonious model indicates that all significant variables retain their sign and significance.

The augmented regression suggests that there is endogeneity (*p*-value, .000) in this portion of the sample between *FDI* and growth. For the *FDI* equation, *INFRAS* and *INFLA* retain their size, sign, and significance, *XCONST* is now significant, and growth is insignificant albeit with the expected sign. Initial income retains its size, sign, and significance but *HC* is now insignificant with the expected sign in the growth equation. *FDI* remains statistically significant in the growth equation and has the expected sign. The size of the estimate is similar to those in Tables 1 and 2, providing further evidence of the endogeneous relationship between *FDI* and economic growth and this is not driven by a group of countries that have a poor-growth record, which provides the opportunity for rapid growth if the correct policies are introduced. This is reassuring. We put a further restriction on the data to see whether the endogenous effect of *FDI* and growth is systematic, by excluding all high-growth performers in Asia.

In recent times countries of East Asia have experienced some of the fastest rates of growth. As shown in Essay 2 and the data chapter, on average, these countries growth

rates have dominated those of LAC and SSA and they receive higher *FDI* inflows, in absolute value on average, relative to LAC and SSA. These countries have also introduced radical policies which facilitate a pass through of improved economic performance to the real economy from *FDI* activity. For example, China's policies toward *FDI* encourage local residents to have part ownership. The idea here is to limit the maximum repatriation of economic rent. And part ownership also provides the incentive for local residents to influence *FDI* activities that will have optimum effects on the economy, not only economic returns but also preserving the local environment. Rodrik (2009) concludes that by using industrial policies, China encourages foreign investment to transfer technology to boost exports quality above its income level: this partly explains its dynamic-growth path. It is, therefore, possible that this group of high-growth performers and recipients of disproportionate shares of *FDI* inflows could be driving the causal effect of *FDI* and growth in the sample. To account for this possibility we re-estimate the system of equations excluding those countries, but including SSA again. Results are reported in Table 4.

Table 4: ***FDI and Growth, simultaneous equations, 60 countries, 1975-2005***

Dependent Variables:	FDI	GDP per capita
DEBTSG	-.028	
	(.000)***	
INFRAS	.005	
	(.000)***	
INFLA	-.001	
	(.000)***	
GDPC	.259	
	(.000)***	
XCONST	-.018	.123
	(.764)	(.271)
LnY_0		-6.288
		(.000)***
FDI		.965
		(.000)***
HC		.385
		(.080)*
Observations	261	261
R^2	0.26	0.22

Notes: P-values are below coefficients in parentheses. *** Significant at the 1% level, * significant at the 10% level. Both regressions have a constant term. *DEBTSG* is debt burden, *INFRAS* is the infrastructural quality, *INFLA* is inflation, *GDPC* is GDP per capita, *XCONST* is institutional quality, Y_o is initial income, and *HC* is human capital. Regressions used transformed six five-year averages: 1975-79, 1980-84, 1985-89, 1990-94, 1995-99, and 2000-05. Augmented regression residual with a *P*-value (.001) rejects the null of no endogeneity between dependent variables: growth and FDI. Excluded countries are: China, South Korea, India, Indonesia, Malaysia, Thailand, Sri Lanka, and Singapore.

The augmented regression with *p*-value (.001) on the residual indicates endogeneity between *FDI* and growth. All variables in the *FDI* regression are significant, with the expected sign, except *XCONST*. Three variables appear to be important in the growth regression; we are interested in the endogenous relationship between *FDI* and growth, all other variables are treated as control. The proxy for institutional quality is insignificant in the *FDI* regression. *FDI* retains its significance and is positive and growth is significant with the expected sign: providing further support that *FDI* and growth are causally related after excluding those potential outlying countries that perform better on both *FDI* inflows and growth. It's worth noting that the *FDI* estimate is precisely estimated.

We conduct a further robustness check on our results by splitting the sample in two halves, each consists of three sub-periods, 1975-79, 1980-84, 1985-89 and 1990-94, 1995-99, 2000-05. We re-estimate our model for each transformed half of the sample. The trends toward liberalisation in many developing countries were intensified from

the early 1990s to the end of the sample period. During this period, the growth experience and *FDI* inflows to developing countries in general compared to the mid-1970s and late 1980s are better. Indeed, during the 1990s 'growth soared to levels not seen in a generation' (Stiglitz, 2004: 03). This growth was enhanced by technological revolution that improved the way business was conducted. Thus, we expect a relatively stronger causal effect of *FDI* and growth in the latter half of the sample. Results are reported in Table 5.

Table 5: ***FDI and Growth, simultaneous equations, 68 countries, 1975-89***

Dependent Variables:	FDI	GDP per capita
DEBTSG	-.010	
	(.093)*	
INFRAS	-.004	
	(.251)	
INFLA	-.0003	
	(.106)	
GDPC	.049	
	(.280)	
XCONST	-.017	.074
	(.819)	(.809)
LnY_0		-9.582
		(.000)***
FDI		3.045
		(.119)
HC		.325
		(.578)
SSA		-.036
		(.934)
LAC		-.179
		(.934)
Observations	134	134
R^2	0.10	-0.05

Notes: P-values are below coefficients in parentheses. *** Significant at the 1% level and * Significant at the 10% level. Both regressions have a constant term. *DEBTSG* is debt burden, *INFRAS* is the infrastructural quality, *INFLA* is inflation, *GDPC* is GDP per capita, *XCONST* is institutional quality, Y_o is initial income, and *HC* is human capital. Regressions used transformed three five-year averages: 1975-79, 1980-84, and 1985-89. Augmented regression residual with a *P*-value (.005) rejects the null of no endogeneity between dependent variables: growth and *FDI*. As in Tables 3 and 4, we drop all high-growth performers and recipients of largest share of *FDI* inflows from Asia and all SSA countries, in turn, and re-estimate the system. The *FDI* estimate is significant at conventional levels only when the former are excluded, while growth has the expected sign in both cases.

We first test for endogeneity and find evidence that *FDI* and growth are endogenously related (*p*-value .005 on the residual of the augmented regression). Only the variable for debt burden is marginally significant in the *FDI* regression. Dummies for LAC and SSA are insignificant in the growth regression as in Table 1. Although there is evidence

of endogeneity, *FDI* and growth are insignificant, though remain positive. As a final check, we estimate the system for the latter half of the sample. Results are reported in Table 6.

Table 6: ***FDI and Growth, simultaneous equations, 68 countries, 1990-2005***

Dependent Variables:	FDI	GDP per capita
DEBTSG	-.049	
	(.000)***	
INFRAS	.003	
	(.000)***	
INFLA	-.001	
	(.010)***	
GDPC	.164	
	(.023)**	
XCONST	-.254	.524
	(.034)**	(.006)***
LnY_0		-10.132
		(.000)***
FDI		1.041
		(.002)***
HC		.960
		(.018)***
SSA		.039
		(.883)
LAC		.072
		(.791)
Observations	159	159
R^2	0.17	0.14

Notes: P-values are below coefficients in parentheses. *** Significant at the 1% level, **significant at the 5% level. Both regressions have a constant term. *DEBTSG* is debt burden, *INFRAS* is the infrastructural quality, *INFLA* is inflation, *GDPC* is GDP per capita, *XCONST* is institutional quality, Y_o is initial income, and *HC* is human capital. Regressions used transformed three five-year averages: 1990-94, 1995-99, and 2000-05. Augmented regression residual with a *P*-value (.169) doesn't reject the null of no endogeneity between dependent variables: growth and *FDI*. As in Tables 3 and 4, we drop all high-growth performers and recipients of the largest share of FDI inflows from Asia and all SSA countries, in turn, and re-estimate the system. The *FDI* and the growth estimates are significant after dropping the former, while only *FDI* is significant after excluding the latter.

There is no evidence of endogeneity between *FDI* and growth in the latter half of the sample. This is confirmed by the insignificant residual in the augmented regression, a *p*-value (.169) doesn't reject the null of no endogeneity. This is, however, not supported by the positively significant *FDI* and growth coefficients in the system of simultaneous equations; this is not what we expect if the residual is insignificant in the augmented regression. All other variables are significant with the expected sign, except for institutional quality in the *FDI* regression and regional dummies in growth

regression. As suggested in Chapter 3, a negative coefficient on *XCONST* might be because we didn't control for the types of *FDI* e.g. resource seeking.

The evidence is suggestive, *FDI* and growth are endogenously related and the causal effect runs both ways: from *FDI* to economic growth and the other way round in our sample of developing countries, but the effect is stronger for the period 1990-2005 relative to the period 1975-1989. This is not surprising; as noted, *FDI* inflows to developing countries were larger for the period 1990-2005 and developing countries recorded some of the highest rates of growth during this period. Technologies have improved over the years, which imply that *FDI* has enhanced their production techniques, all this stands to increase productivity and hence higher growth for the host country. In principle we would expect *FDI* and growth to have a relatively stronger causal effect in the period 1990-2005; this is supported by the evidence. However, the surprising result is that even though there is evidence of endogeneity in the period 1975-1989, growth and *FDI* coefficients are insignificant in Table 5. The question is: given the evidence of endogeneity, why are we not picking up any significant causal relationship between *FDI* and growth in the period 1975-1989?

We offer two explanations for this paradox: during the mid 1970s to late 1980s MNEs have internalised all their economic rent and whatever positive effect is passed through to recipient countries is not sufficient to stimulate growth and in turn attract higher levels of *FDI*. For instance "fragmentation" of production has reduced the benefits for host countries (MNEs reap the gains); during this period policy makers were still trying to understand the dynamics of FDI. A large proportion of FDI takes the form of services and acquisition of infrastructure (e.g. water and electricity) and mergers, which are less beneficial compared to greenfield investments. MNEs have become sophisticated in their ability to circumvent restrictions that would allow them to share their returns with recipient countries. This reflects the political power of MNEs in which, 'If governments decide to tax or regulate them in ways they don't like, they threaten to move elsewhere' (Stiglitz, 2006: 188). And because other countries are willing to accept *FDI*, the threat[78] to move elsewhere serves as an incentive for *FDI*

[78] 'In Thailand and Peru, corporations threatened to move elsewhere if environmental regulations were enforced; in Peru, one mining company went so far as to pressure the government not to test children living near their mining operations to see if they had been exposed to health hazards. At one point, Papua New Guinea passed a law making it illegal to sue international mining companies outside the country even for enforcement of health, environmental, or legal rights, fearing that such suits would discourage investment in the country' (Stiglitz, 2006: 195).

to demand economic rent to the disadvantage of the host country. This is an important lesson for policy makers and development agencies that support policies favourable to attracting *FDI*.

A further explanation for this paradox is that the period 1975-89 was characterised by debt crises across many developing countries (especially LAC and SSA), hence FDI re-allocated their investment to faster growing economies of East Asia. However, it might be that the interaction between FDI and growth in this small group of East Asian countries are not strong enough to identify significant causal effect of FDI and growth in the first half of the sample. Furthermore, many countries in LAC and SSA were just beginning to experiment with democracy, which is a key factor in stimulating growth and investment as evidenced in the growth literature. Taken together it is not surprising that we did not identify significant causal effect between FDI and economic growth in the first half of the sample, in spite of the evidence of endogeneity. However, significant causal relationship between FDI and growth is identified in the latter half of the sample.

Our results support evidence by Chowdhury and Mavrotas(2006) for Malaysia and Thailand, Hsiao and Hsiao(2006), and Hsiao and Shen (2003) and others (see appendix to essay, Table 1A). But the studies closest to ours are: Benede-Nabende and Ford (1998), Li and Liu (2005), and Reisen and Soto (2001). Similar to our study, the latter studies include a large set of control variables and apply similar technique. In the case of Benede-Nabende and Ford (1998) and Reisen and Soto (2001) we test a larger sample. And Li and Liu (2005) find evidence of endogeneity effect only in the period 1985-99, 9 years into the period for which we find significant causal effect between FDI and growth.

The key differences with this essay is that our study extends to later periods, which makes it more current and we conduct extensive falsification checks (and the causal effect between *FDI* and growth is stable) to refute or confirm the causal effect of *FDI* and growth that we have identified. The extensive falsification checks provide a clearer way of locating the direction of the effect. And we don't believe that it's driven by cyclical variation in the data, as transformed six five-year averages and three five-year averages (even though we didn't find evidence of endogeneity) of Table 6 give

qualitatively similar results; nor does it appear that this effect is driven by any particular region that could be considered as outlier.

6.0 FDI and Growth: The role of political instability

In this section we introduce political instability in the system of simultaneous equations (4) and (5), assessing its effect on *FDI* and economic growth in our sample of developing countries. Violence and more generally political instability have afflicted many countries, but Africa is often cited as the region most affected. Quoting from Marshal and Gurr (2005), Blattman and Annan (2009: 01) assert that 'Civil conflict has afflicted a third of all nations and two thirds of Africa since 1991.' And political instability is not a recent phenomenon; Blomberg (1996) argues that between 1950 and 1987 one out of every two attempts to replace existing governments through unconstitutional means was successful. These internal conflicts are more widespread than international conflicts (Collier and Hoeffler, 2004).

Extreme violence perpetrated during episodes of political instability doesn't only affect life and property in the immediate aftermath, but can have persistent effects through grievances (ethnic or religious, political repression, political exclusion, and economic inequality) long after the restoration of normalcy. Collier and Hoeffler (2004) argue, however, that grievances don't adequately explain political instability and instead suggest that opportunities in the sense of increased exports of primary commodities and diaspora support, for example, have stronger explanatory power. Dube and Vargas (2008) corroborate this argument by reporting evidence on the differential effects of price shocks of factor-intensive commodities on political violence for Colombia. They report that increases in coffee prices – a labour intensive commodity – reduce political violence by making it less attractive for recruitment in paramilitary or guerilla armies (the opportunity cost effect) and increases in oil prices – a capital intensive commodity – increase government revenues for predation by these groups, the rapacity effect.

If anything, political instability is characterised by uncertainty and this has the effect of restricting the development potential of developing countries, as investment opportunities and thus economic growth become distorted, both contemporaneous and over longer horizon. A politically unstable country will potentially destroy its

intellectual capital by making it more rewarding to engage in corruption and other activities that generate distortions. Seen through this lens, political instability distorts incentives for development, but it's also possible that some dosage of political instability might be necessary to move a country to a good equilibrium by removing a corrupt regime from political office so as to restore confidence in governance. We call this "productive instability", purging of distortions and inefficiencies in governance through the forces of political instability, whether by constitutional means or otherwise.

There is some empirical evidential support for this line of thinking. For instance, Campos and Nugent (2003) find that political instability is positively related to investment in the medium to long run. This may depend, however, on the relative nature of physical and intellectual capital destruction: massive destruction of physical capital while intellectual capital is in large supply, 'since the relative abundance of one type of capital raises the marginal product of the scarce type, spurring on investment' (Blattman and Miguel, 2009: 58). The key point is that crises can engender positive economic and political reforms, thus increasing the disincentives of inefficiency and other distortions leading to productivity and higher output growth (Cerra and Saxena, 2005). The main focus of this section is the empirical response of *FDI* and economic growth to shocks arising from political instability.

There is a bulging literature that looks at the effects of political instability on economic development broadly and economic growth in particular. Cerra and Saxena, (2005) demonstrate that countries that experience political crises take a longer time to return to pre-crisis growth levels relative to those which experience financial crises. Abadie and Gardeazabal (2003) document the magnitude of political instability on economic performance arising from the terrorist attacks of the rebel group ETA on the Basque country in Spain. They find that these attacks account for a 10% decline of the Basque's economy compared to a counterfactual region's economy without terrorist attacks, and even stock markets respond to this information.

Political instability not only affects the home country, but can also adversely affect neighbouring countries. For example, Murdoch and Sandler (2004) find that a civil war at home can reduce home growth by 31% and 85% in the long run and short run

respectively, while a neighbouring conflict has the same effect on home growth of 30% in the long run and 24% in the short run; they further argue that the magnitude of these declines can be larger if the spillover of these negative externalities on the home country is diffused simultaneously by more than one neighbouring countries, particularly those furthest from home.

As more people move into poverty as a result of these declines, the most vulnerable in developing countries bear a disproportionate share. These are people who were initially constrained due to low human capital, poor health status, and other environmental restrictions for e.g. frequent droughts. These afflictions are amplified when interacted with an additional layer of civil conflict, especially if these conflicts are not anticipated so that precautionary measures can be instituted, therefore forcing the poorest in the most 'extreme forms of poverty and destitutions … and create possible poverty traps' (Justino and Verwimp, 2007: 03-04).

The authors study the effects of the 1994 genocide in Rwanda on poverty and income, arguably one of the worst cases of political instability. They conclude that the genocide increases poverty and reduces incomes across provinces, notwithstanding the unequal distribution, and not surprisingly, women were more likely to be affected. This complements a recent study by Dupas and Robinson (2009) on the economic impacts of the violence in the disputed Presidential elections in Kenya. Dupas and Robinson (2009) argue that as a result of the violence, households experience a fall in incomes and women, who offered "transactional sex", as their client base shrinks, were likely to engage in unsafe sex (increasing the risk of HIV). This draws attention to potential hidden costs of political instability, beyond the visible ones of deaths and maiming of people.

Other cross-country studies that examine the effects of political instability on growth include Nel (2003) and Svensson (1998). Using information on SSA, the former checks for the channel through which inequality affects growth and provides evidence that inequality reduces growth via the perception of political instability as opposed to the actual manifestations of political instability. The implication is that how the polities of developing countries are viewed, and this feeds future expectations, by private investors and influential multilateral agencies perhaps set the stage for growth

potential. Similarly, Svensson (1998) uses a large sample (100) of poor countries and reports that political instability depresses private investment, but this occurs through dysfunctional institutions. The explanation is that a polarised society invests little in legal infrastructure, which creates disincentives for private-investment accumulation. Investment and growth are identified as channels through which political instability reduces savings in SSA (Gyimah-Brempong and Traynor, 1996, 1999). They use the principal component analysis (PCA) method to create an index for political instability.

6.1 Political instability indicators

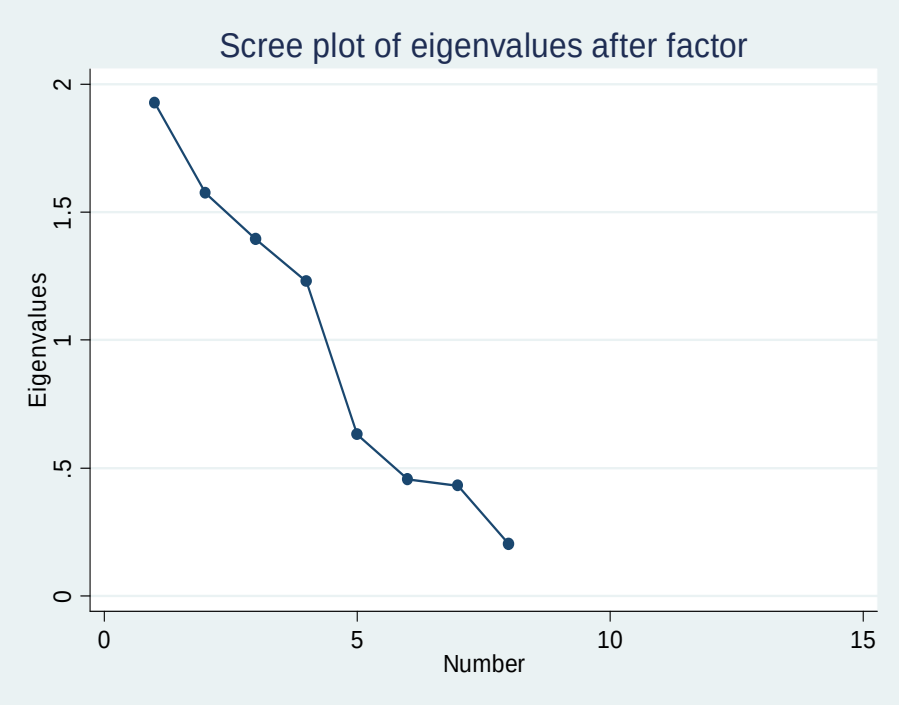
In this subsection we re-estimate our system of simultaneous equations, (4) and (5), with various dimensions of political instability. Jong-A-Pin (2009) empirically tests the effects of political instability on economic growth, using different dimensions of political instability. He asserts that political instability is multidimensional and therefore could have differential effects on economic growth, e.g. frequent legislative elections may explain growth outcomes, as regime changes may signal a break from previous distorting policies toward more credible policies. Conversely, it's possible that guerrilla warfare and purges don't affect growth outcomes, especially if they don't result in looting of private enterprises and riots.

The author uses 25 indicators of political instability to construct four measures of political instability, using the exploratory factor analysis (EFA) method: violence, protest, instability within the regime, and instability of the regime – each is explained by different sets of indicators. Within a dynamic framework, he finds that only instability of the political regime is consistently causally related to growth. EFA is based on a model structure. It separates variables with shared variances, to form a factor, from those with unique variances. In other words, it reveals 'any latent variables that caused the manifest variables to covary' (Costello and Osborne, 2005: 02).

To determine the number of appropriate factors we first use a scree test – a graphical method – and the Kaiser's criterion. The scree test holds that a factor with large evigenvalues (above one) and the Kaiser's criterion suggests that a factor with evigenvalues above one should be retained. In both cases we check these selection criteria with a Likelihood Ratio (LR) test by comparing the factor model with the

saturated model: a rejection of the null-hypothesis of equal estimates (between the factor model and the alternative saturated model) confirms the factor model. Due to data availability we use 13 indicators of political instability to construct different dimensions of political instability. The scree plot is displayed in Figure 1 with factors on the horizontal axis and eigenvalues on the vertical axis. Four factors have evigenvalues above one, as shown in the graphical representation of the scree plot.

Figure 1: Developing countries, 68, 1975-2003



Following the criterion of the scree plot, which holds that only factors with eigenvalues above one are relevant in explaining the different dimensions of political instability, four dimensions of political instability are identified as display in Figure 1. However, the Kaiser's criterion shows that only three factors have eigenvalues exceeding one and LR test (*p*-value 0.00) rejects the null-hypothesis of equality in support of the three factors model against the alternative saturated model (of all 8 factors in Figure 1). We therefore conclude that only three factors correctly explain political instability. Table 8 reports the rotated factors, their loadings and unique variances (part of the variance that doesn't explain any factor).

Table 7: ***Factor loading matrix and unique variances estimates***

Indicators	Regime Instability	Protest	Violence	Variance
Assassination	0.07	0.13	0.29	0.88
Revolution	-0.02	-0.00	1.01	0.00
Coups	0.24	-0.10	0.50	0.62
General strikes	0.04	0.45	-0.02	0.80
Guerrilla wars	-0.02	0.15	0.47	0.75
Government crises	0.39	0.07	0.12	0.79
Purges	0.16	-0.00	0.05	-0.00
Riots	-0.02	0.78	-0.07	0.39
Anti-government demonstration	0.02	0.82	0.06	0.32
Constitutional change	0.49	0.06	-0.01	0.75
Cabinet change	0.72	0.05	0.02	0.46
Elections	0.21	0.08	-0.11	0.95
Executive change	0.80	-0.04	-0.03	0.37

Notes: The factor extraction method is Maximum Likelihood. Factor loading matrix is rotated with Oblimin method. Estimates are based on 68 countries. Data are from the Cross-national Time-series Data Archives (2003). Variance is the unique variance of loadings that does not explain any factor.

We use the Maximum Likelihood method to identify the factors, as it reflects the underlying population dynamics thus allows for optimum solutions and factors with Loadings (indicators) above 0.30 best explain the factors (Castello and Osborne, 2005). Following Jong-A-Pin (2009) we identify three dimensions of political instability, those with loadings above 0.30, as indicated in Table 7. Factors with high loadings on cabinet changes, government crises, constitutional changes, and executive changes are labelled instability of the political regime: these reflect instability of the government. Factors with high loadings on anti-government demonstrations, strikes, and riots are labelled protest. Factors with high loadings indicating violence – coups, revolution, and guerrilla wars – are labelled violence. No indicator has cross-loadings (i.e. explaining more than one factor), an indication that political instability has different dimensions.

To investigate the effect of political instability, we reproduce the system of simultaneous equations, introducing the three dimensions identify as follows:

$$FDI_{it} = \beta_1 GDPC_{it} + \beta_2 S_{it} + \beta_3 K_{it} + v_{it} \qquad i = 1, \ldots, N \qquad t = 1, \ldots, T \qquad (6)$$

$$GDPC_{it} = \beta_1 FDI_{it} + \beta_2 X_{it} + \beta_3 K_{it} + \alpha_{it} \qquad i = 1, \ldots, N \qquad t = 1, \ldots, T \qquad (7)$$

where K_i = instability of the political regime, protest, and violence. All other variables remain as before. Following the discussion above, we expect all dimensions of political instability to have a negatively significant effect on *FDI* and growth. We recast equations (6) and (7) in a cross-section framework, which eliminates the time dimension of the model.

6.2 The effect of the dimensions of political instability

We present the results of the effect of political instability in Table 8, on the transformed equations (6) and (7), as the baseline specifications.

Table 8: ***Political instability, simultaneous equations, 68 countries, 1975-2005***

Dependent Variables:	FDI	GDP per capita
DEBTSG	-.028	
	(.000)***	
INFRAS	.004	
	(.000)***	
INFLA	-.001	
	(.000)***	
GDPC	.180	
	(.005)***	
XCONST	.040	.156
	(.499)	(.149)
REGIME	-.070	-.400
	(.464)	(.016)**
PROTEST	.068	-.403
	(.084)	(.020)**
VIOLENCE	.035	.044
	(.699)	(.792)
LnY_0		-5.498
		(.000)***
FDI		.930
		(.000)***
HC		.355
		(.148)
SSA		-.191
		(.463)
LAC		-.175
		(.492)
Observations	293	293
R^2	0.27	0.24

Notes: P-values are below coefficients in parentheses. *** Significant at the 1% level, ** significant at the 5% level. Both regressions have a constant term. *DEBTSG* is debt burden, *INFRAS* is the infrastructural quality, *INFLA* is inflation, *GDPC* is GDP per capita, *XCONST* is institutional quality, Y_o is initial income, *HC* is human capital, *SSA* is a dummy for sub-Saharan Africa, and *LAC* is Latin America and the Caribbean dummy. *REGIME*, *PROTEST*, and *VIOLENCE* are various dimensions of political instability. Regressions used transformed six five-year averages: 1975-79, 1980-84, 1985-89, 1990-94, 1995-99 and 2000-05. Augmented regression residual with a *P*-value (.000) rejects the null of no endogeneity between dependent variables: growth and FDI.

Two dimensions of political instability turn out to have the expected sign and are significant at convention levels – instability of the regime and protest. *FDI* and growth are positive and retain their significance. The introduction of the political instability measures improves the fit of the model. In this section we are interested in the different dimensions of political instability. The results suggest that political instability has different dimensions and these dimensions have differential effects on *FDI* and growth. As before, we re-estimate the model excluding insignificant variables. Results are reported in Table 9.

Table 9: ***Political instability, simultaneous equations, 68 countries, 1975-2005***

Dependent Variables:	FDI	GDP per capita
DEBTSG	-.027	
	(.000)***	
INFRAS	.004	
	(.000)***	
INFLA	-.001	
	(.001)***	
GDPC	.148	
	(.006)***	
REGIME		-.436
		(.000)***
PROTEST		.345
		(.011)**
LnY_0		-5.089
		(.000)***
FDI		1.191
		(.000)***
Observations	337	337
R^2	0.26	0.16

Notes: *P*-values are below coefficients in parentheses. *** Significant at the 1% level, ** significant at the 5% level. Both regressions have a constant term. *DEBTSG* is debt burden, *INFRAS* is the infrastructural quality, *INFLA* is inflation, and Y_o is initial income. *PROTEST* and *REGIME* are political instability measures. Regressions used transformed six five-year averages: 1975-79, 1980-84, 1985-89, 1990-94, 1995-99, and 2000-05.

All variables retain their sign and significance. While the quantitative impact of all variables is broadly similar, the significance of instability of the political regime improves. These suggest that mass protests and instability of the regime reduce growth, while these dimensions of political instability do not appear to affect *FDI* inflows. We expect these growth-reducing effects. In what follows, we do extensive robustness checks to identify the true effects of these dimensions of political instability.

As suggested by Blattman and Annan (2009), political instability has disproportionately afflicted SSA not only in terms of the actual manifestations, but also in terms of perception (Nel, 2003). If this argument is correct, it is possible that our results are driven by the 31 SSA countries in the sample and the estimates are not the true effect of instability of the regime and protests. To assess this argument, we drop all 31 SSA countries and re-estimate the model. Results are reported in Table 10. Later in the essay we address the question of whether SSA is different.

Table10: ***Political instability, simultaneous equations, 37 countries, 1975-2005***

Dependent Variables:	FDI	GDP per capita
DEBTSG	-.021	
	(.032)**	
INFRAS	.005	
	(.000)***	
INFLA	-.001	
	(.000)***	
GDPC	.059	
	(.427)	
XCONST	.150	.088
	(.019)**	(.510)
REGIME	-.052	-.339
	(.607)	(.070)*
PROTEST	-.064	-.616
	(.598)	(.008)**
VIOLENCE	.087	.023
	(.349)	(.898)
LnY_0		5.983
		(.000)***
FDI		1.093
		(.001)***
HC		.123
		(.740)
Observations	188	188
R^2	0.34	0.24

Notes: P-values are below coefficients in parentheses. *** Significant at the 1% level, ** significant at the 5% level, and *significant at the 10%. Both regressions have a constant term. *DEBTSG* is debt burden, *INFRAS* is the infrastructural quality, *INFLA* is inflation, *GDPC* is GDP per capita, *XCONST* is institutional quality, Y_o is initial income, and *HC* is human capital. *REGIME*, *PROTEST*, and *VIOLENCE* are various dimensions of political instability. Regressions used transformed six five-year averages: 1975-79, 1980-84, 1985-89, 1990-94, 1995-99 and 2000-05. Augmented regression residual with a *P*-value (.000) rejects the null of no endogeneity between dependent variables: growth and FDI.

The variables *REGIME* and *PROTEST* retain their sign and the former is now significant at the 10% level. It is important to note that notwithstanding the evidence of endogeniety (*p*-value .000) in the model, though remains positive, growth is insignificant in the *FDI* equation. Including the different dimensions of political instability and excluding SSA has dampened the significance of growth on *FDI*. It appears, however, that instability of the regime and *PROTEST* are important in explaining growth, while violence is not likely to explain *FDI* or growth. We conduct further falsification tests to check the robustness of these results.

Countries of East Asia are relatively stable, and they have been rewarded with relatively high levels of *FDI* inflows and fast growth. The inclusion of these countries

should, therefore, dampen the effect of *REGIME* and *PROTEST* on growth. Conversely, their exclusion should magnify the effect of *REGIME* and *PROTEST*. We test this hypothesis by dropping all high-growth countries of East Asia. Results are reported in Table 11.

Table 11: ***Political instability, simultaneous equations, 60 countries, 1975-2005***

Dependent Variables:	FDI	GDP per capita
DEBTSG	-.029	
	(.000)***	
INFRAS	.005	
	(.000)***	
INFLA	-.001	
	(.000)***	
GDPC	.251	
	(.000)***	
XCONST	-.016	.191
	(.807)	(.090)*
REGIME	.0005	-.429
	(.997)	(.016)**
PROTEST	-.100	-.269
	(.272)	(.094)*
VIOLENCE	.007	-.002
	(.950)	(.992)
LnY_0		-6.408
		(.000)***
FDI		.912
		(.000)***
HC		.337
		(.129)
Observations	261	261
R^2	0.27	0.27

Notes: P-values are below coefficients in parentheses. *** Significant at the 1% level, significant at the ** 5% level, * significant at the 10%. Both regressions have a constant term. *DEBTSG* is debt burden, *INFRAS* is the infrastructural quality, *INFLA* is inflation, *GDPC* is GDP per capita, *XCONST* is institutional quality, Y_o is initial income, and *HC* is human capital. *REGIME*, *PROTEST*, and *VIOLENCE* are various dimensions of political instability. Regressions used transformed six five-year averages: 1975-79, 1980-84, 1985-89, 1990-94, 1995-99, and 2000-05. Augmented regression residual with a *P*-value (.001) rejects the null of no endogeneity between dependent variables: growth and FDI. Excluded countries are: China, Korea India, Indonesia, Malaysia, Thailand, Sri Lanka, and Singapore.

Of the dimensions of political instability, instability of the political regime and *PROTEST* remain statistically significant with the expected sign. The effect of instability of the political regime and *PROTEST* on growth is not affected by countries that grow fast and relatively stable; their effect is not influenced by sample variations. *VIOLENCE* has the expected sign, but is still insignificant in the growth regression. The endogeneous relationship between FDI and growth holds after excluding this group of countries. We conduct further tests to confirm this result.

Blomberg (1996) suggests that the period 1950-87 is marked by duly-elected governments being removed from office through unconstitutional means. One implication is that the effect of political instability on economic variables should be

relatively stronger circa 1950-87. This period overlaps with the sample – 1975-2005. We test this fact by splitting the sample – 1975-79, 1980-84, 1985-89 and 1990-94, 1995-99, 2000-05 – and estimate each in turn. Results are reported in Table 12.

Table 12: ***Political instability, simultaneous equations, 68 countries, 1975-89***

Dependent Variables:	FDI	GDP per capita
DEBTSG	-.011	
	(.061)*	
INFRAS	-.003	
	(.375)	
INFLA	-.0003	
	(.061)*	
GDPC	.049	
	(.270)	
XCONST	-.107	.537
	(.211)	(.281)
REGIME	.084	-.791
	(.324)	(.067)*
PROTEST	-.005	.121
	(.957)	(.783)
VIOLENCE	-.220	.677
	(.009)***	(.295)
LnY_0		-9.071
		(.000)***
FDI		3.959
		(.073)*
HC		.286
		(.609)
SSA		-.060
		(.881)
LAC		-.133
		(.732)
Observations	134	134
R^2	0.14	-0.36

Notes: P-values are below coefficients in parentheses. *** Significant at the 1% level, * significant at the 10% level. Both regressions have a constant term. *REGIME*, *PROTEST*, and *VIOLENCE* are various dimensions of political instability. Regressions used transformed three five-year averages: 1975-79, 1980-84, and 1985-89. Augmented regression residual with a *P*-value (.005) rejects the null of no endogeneity between dependent variables: growth and FDI. When we exclude SSA and high growth countries from Asia *REGIME* remains significant (*p*-value 0.012 and *p*-value 0.081, respectively), and *VIOLENCE* is significant only when the latter are excluded.

PROTEST and growth are insignificant, albeit the latter has the expected sign. *VIOLENCE* is now significant with the expected sign in the *FDI* regression. *REGIME* is negative and significant in the growth regression; suggesting that instability of the regime reduces growth in the period 1975-89. To confirm that this period doesn't bias the effect of political instability on growth in the sample, we re-estimate the model for 1990-2005. Results are reported in Table 13.

Table 13: ***Political instability, simultaneous equations, 68 countries, 1990-2005***

Dependent Variables:	FDI	GDP per capita
DEBTSG	-.048	
	(.000)***	
INFRAS	.002	
	(.001)***	
INFLA	-.001	
	(.010)***	
GDPC	.142	
	(.079)*	
XCONST	-.222	.531
	(.068)*	(.004)***
REGIME	-.418	-.116
	(.156)	(.514)
PROTEST	.052	-.218
	(.616)	(.165)
VIOLENCE	.029	-.021
	(.745)	(.881)
LnY_0		-9.748
		(.000)***
FDI		.975
		(.005)***
HC		.805
		(.045)**
SSA		.033
		(.903)
LAC		.708
		(.777)
Observations	159	159
R^2	0.19	0.20

Notes: P-values are below coefficients in parentheses. *** Significant at the 1% level, ** significant at the 5% level, and *significant at the 10%. Both regressions have a constant term. *REGIME*, *PROTEST*, and *VIOLENCE* are various dimensions of political instability. Regressions used transformed three five-year averages: 1990-94, 1995-99, and 2000-05. Augmented regression residual with a *P*-value (.169) doesn't reject the null of no endogeneity between dependent variables: growth and FDI. When SSA and high growth and relatively stable Asian countries are excluded, in turn, *REGIME* is negatively significant only for the latter (*p*-values 0.094 and 0.606, respectively) in the growth equation. *PROTEST* is insignificant in both cases.

As in Table 6, there is no evidence of endogeneity in the sample for 1990-2005. However, growth and *FDI* are positively significant. For the period, although instability of the political regime and *PROTEST* are statistically insignificant, they are negative in the growth regression; partly reinforcing what is evidenced in the period 1975-89 where *REGIME* is significantly negative. We conclude that the significantly negative effect of *REGIME* and *PROTEST* on growth is not influenced by either period in the sample, but might be a general pattern that is observed in the sample (although this result is weaker for 1990-2005). Blomberg (1996) is supported by the evidence:

political instability is significant in the period 1975-89 and the effect is stronger for this period relative to the period 1990-2005. In a two-horse race, between *REGIME* and *PROTEST*, to explain growth *REGIME* comes out ahead. For this reason, we focus on *REGIME*.

Three indicators of political instability consistently explain *REGIME*: constitutional changes, cabinet changes, and executive changes (see appendix to essay). The period 1990-94 is the highest number of constitutional changes on average in the sample, 0.18, for executive changes 1990-94 is the highest on average, 0.19, and for cabinet changes 1990-94 is the highest on average, 0.58. For constitutional changes, forty countries[79] experience the average or above. For executive changes, forty three countries[80] experience the average or above. For cabinet changes, thirty seven countries[81] experience the average or above. We perform another robustness check by excluding all countries that experience the average and above on each indicator and re-estimate the transformed system of equations. This will clarify the possibility that the effect of *REGIME* on growth is not driven by these countries and also provides a robustness check on the effect of *PROTEST*. Table 14 reports results. System (1) excludes countries which experience average and above constitutional changes and system (2) excludes countries which experience average and above executive changes.

[79] Benin, Burkina Faso, Cameroon, Central Africa Republic, Congo Dem. Republic, Congo Republic, Cote d'Ivoire, Gabon, The Gambia, Ghana, Guinea, Bangladesh, Paraguay, Nicaragua, Haiti, Guatemala, Ecuador, Colombia, Chile, Zambia, Togo, Tanzania, Senegal, Sierra Leone, South Africa, Swaziland, Nepal, Singapore, Thailand, Algeria, Peru, Nigeria, Guinea-Bissau, Madagascar, Malawi, Mali, Mauritania, Mauritius, Mozambique, and Niger.

[80] Central Africa Republic, Benin, Congo Dem. Republic, Congo Republic, Cote d'Ivoire, The Gambia, Madagascar, Malawi, Mali, Niger, Nigeria, Sierra Leone, South Africa, Togo, Zambia, Bolivia, Brazil, Chile, Colombia, Costa Rica, Ecuador, El Salvador, Guyana, Haiti, Honduras, Mexico, Nicaragua, Panama, Paraguay, Trinidad and Tobago, Venezuela, Bangladesh, Pakistan, Philippines, Singapore, Korea, Sri Lanka, Thailand, India, Papua New Guinea, Algeria, Guatemala, and Peru.

[81] Burkina Faso, Cameroon, Central Africa Republic, Congo Dem. Republic, Congo Republic, Cote d'Ivoire, Gabon, Guinea-Bissau, Madagascar, Mauritania, Mauritius, Niger, Nigeria, Sierra Leone, Swaziland, Togo, Uganda, Zambia, Bolivia, Brazil, Chile, Colombia, Guatemala, Haiti, Honduras, Venezuela, Nepal, Pakistan, Korea, Sri Lanka, Thailand, India, Papua New Guinea, Algeria, Morocco, Tunisia, and Peru.

Table 14: ***Political instability, simultaneous equations, 1975-2005***

Dependent	FDI	GDP per capita	FDI	GDP per capita
Variables:	(1)	(1)	(2)	(2)
DEBTSG	-.019		-.045	
	(.080)*		(.001)***	
INFRAS	.004		.003	
	(.000)***		(.004)***	
INFLA	-.001		-.001	
	(.007)***		(.943)	
GDPC	.233		.124	
	(.039)**		(.369)	
XCONST	-.012	.251	-.125	.552
	(.909)	(.145)	(.340)	(.010)***
REGIME	-.008	-.372	-.300	.049
	(.955)	(.075)*	(.025)**	(.861)
PROTEST	.103	-.694	.149	-.637
	(.514)	(.007)***	(.321)	(.001)***
VIOLENCE	-.055	.191	-.136	-.880
	(.640)	(.337)	(.559)	(.015)**
LnY_0		-4.167		4.523
		(.000)***		(.000)***
FDI		.779		.286
		(.010)***		(.455)
HC		.211		.610
		(.500)		(.111)
SSA		-.083		-.249
		(.848)		(.583)
LAC		-.082		-.250
		(.791)		(.713)
Observations	142	142	99	99
R^2	0.30	0.25	0.32	0.37

Notes: P-values are below coefficients in parentheses. *** Significant at the 1% level, ** significant at the 5% level, and *significant at the 10%. All regressions have a constant term. *REGIME*, *PROTEST*, and *VIOLENCE* are various dimensions of political instability. Augmented regression residual with a *P*-value (.002 (1) and .001 (2)) rejects the null of no endogeneity between dependent variables: growth and FDI.

Both systems have evidence of endogeneity. *PROTEST* is negatively significant and the coefficient is precisely estimated across both systems, while *REGIME* is negative and marginally significant in system (1). *FDI* and growth have the expected sign, but significant in system (1). In Table 15, we exclude countries which experience average and above cabinet changes but, because of the sample size, we could not simultaneously exclude all countries with average and above scores on all three indicators: cabinet changes, constitutional changes, and executive changes.

Table 15: ***Political instability, simultaneous equations, 1975-2005***

Dependent Variables:	FDI	GDP per capita
DEBTSG	-.024	
	(.026)**	
INFRAS	.004	
	(.000)***	
INFLA	-.001	
	(.037)**	
GDPC	.304	
	(.003)***	
XCONST	-.017	.257
	(.852)	(.059)*
REGIME	-.045	-.371
	(.762)	(.090)*
PROTEST	.201	-.332
	(.164)	(.124)
VIOLENCE	-.064	-.159
	(.678)	(.532)
LnY_0		-4.697
		(.000)***
FDI		.910
		(.004)***
HC		.210
		(.501)
SSA		-.227
		(.474)
LAC		-.200
		(.511)
Observations	146	146
R^2	0.30	0.33

Notes: P-values are below coefficients in parentheses. *** Significant at the 1% level, ** significant at the 5% level, and *significant at the 10%. All regressions have a constant term. *REGIME*, *PROTEST*, and *VIOLENCE* are various dimensions of political instability. Augmented regression residual with a *P*-value (.000) rejects the null of no endogeneity between dependent variables: growth and FDI.

REGIME has the expected sign and is significant in the growth equation. *PROTEST* is insignificant in both equations. It's worth noting that *FDI* and growth are positive and significant across the system, confirming their causal relationship. These results are reassuring. The instability of the regime retards economic growth in developing countries. This result is robust to various sensitivity checks, for example sample variations and model specification. We interpret the evidence to suggest that growth and *FDI* are likely to be affected by different factors in developing countries and that political instability has different dimensions and should therefore not be treated as a "catch all" for all destabilising events in developing countries with the potential to negatively impact economic variables. For example, *REGIME* and *PROTEST* retards

growth but have no consistent direct effect on *FDI*. Moreover, *VIOLENCE* does not systematically affect either growth or *FDI* directly in the panel of developing countries.

We don't, however, interpret this to mean that *VIOLENCE* has no systematic effect on growth or *FDI*, rather, our interpretation is that violence that doesn't disrupt normal economic activities or is confined to remote locations is likely not to impact economic variables, especially if the violence is swift, and as noted, to correct distortions in economic outcomes, for example, preventing expropriation of private investments. Violence with this motivation is unlikely to retard growth or deter *FDI*, instead this will restore confidence in the economy thus enhances medium and long-term growth and be attractive to *FDI*. Furthermore, it seems as though there is a threshold level of violence (even though we have not explored this possibility), below which violence doesn't affect economic variables. The transformation of the panel data into a cross-section framework does not allow for the dynamics of violence on economic variables to be observed: this requires a panel framework. We, therefore, suggest great care with these interpretations.

The principal reason why instability of the regime, as defined here, is growth retarding is that it signals policy inconsistency over the medium to long-term horizon and economic indicators internalise these signals. If current policies are no guide to future policies, this distorts incentive for future planning and if the future is uncertain the opportunities for productivity growth will be reduced, as there will be less investment in technology and intellectual capital. We make the same conclusion for mass protests, which constantly disrupt the flow of economic activity.

Previous studies, discussed above, that don't take account of the effect of the different dimensions of political instability on growth have not provided a complete treatment of this relationship. We find that political instability has three dimensions. Our findings support Jong-A-Pin (2009) who finds that political instability has four dimensions. But our study is different from Jong-A-Pin (2009) in at least one important respect in that we estimate a system of simultaneous equations that assesses the different dimensions of political instability on growth and *FDI* simultaneously. And we find that these different dimensions have differential direct effect on growth and *FDI*.

7.0 Is SSA cursed by political instability?

It's suggested that SSA is likely to experience relatively higher incidence of political instability than other regions; if so, what role does political instability play in SSA growth outcomes? In particular, does political instability affect SSA differently compared to other regions? We explore this possibility in this subsection. From 1960 to 2001 eighty-two successful military coups occur in Africa (Collier and Hoeffler, 2005)[82]. This underscores the fact that, 'Africa is the most conflict ridden region of the World and the only region in which the number of armed conflicts is on the rise' (Stockholm International Peace Research Institute, 1999: 20)[83]. Moreover, 'In recent years, then, Africa has supplied far more than its share of violent political conflict' (Bates *et al.*, 2006: 13). This has implications for SSA economies. 'The level of political instability has been a significant factor in the lack of progress experience by the continent's economies' (Mbaku and Paul, 1989:63). This implies that SSA is being punished for the relatively high incidence of political instability. In contrast, East Asia and LAC are relatively stable regions reflected by the higher proportion of manufacturing FDI inflows. This provides an interesting opportunity to empirical investigate whether SSA is different. However, Collier and Hoeffler (2002) show that SSA is not prone to political instability risks by identifying two offsetting factors that make SSA similar to other developing countries: high ethnic and religious fractionalization, which makes it difficult for military mobilization and contributes to poor economic performance.

We pursue a different objective by empirically testing whether political instability makes it likely for SSA to experience slow growth or attract less FDI inflows relative to other developing countries. Easterly and Levine (1997)[84] argue that ethnic diversity explains SSA growth tragedies; they introduce assassination and antigovernment demonstrations as indicators of political instability. Guillaumont *et al*. (1999) use coups, foreign wars and civil wars as their political-instability index and find that political instability partly explains growth in Africa. Using the number of government changes, Haan and Siermann (1996) find mixed evidence of the effect of political instability on growth in Africa. Fosu (1992) uses coups d'état, attempted coups, and

[82] There are 145 plots and 109 failed attempts for the same period (Collier and Hoeffler, 2005). There are 56 successful coups between 1958 and 1984 (McGowan and Johnson, 1984).
[83] See Collier and Hoeffler, (2002: 13).
[84] Easterly and Levine (1997) look at the determinants of SSA poor growth, but we focus broadly on whether political instability affects economic indicators in SSA differently relative to developing countries in general.

coups plots as a measure of political instability and finds that political instability negatively affects growth in SSA, while Ojo and Oshikoya (1995) use coups d'état and civil liberty to proxy political instability in assessing the determinants of growth on a sample of SSA. A related study by Ghura (1995), using the number of people affected by wars, civil conflicts, ethnic violence, and natural disasters as a share of total population, finds significant effect for political instability on growth in SSA.

Considering that SSA is often seen as unstable and performs poorly on economic indicators, except for Guillaumont *et al.* (1999), it's surprising that no other study has focused on the potential differential effect of political instability on economic variables in SSA relative to other regions. While the latter arbitrarily use the sum of coups, foreign, and civil wars to construct their political-instability index, we don't adopt this approach; this introduces bias in the relationship. Instead, we don't arbitrarily apply any structure on the indicators, we use the EFA (and a larger set of indicators, which provides a richer measure of political instability and thus a better understanding of whether SSA is different) which constructs different dimensions of political instability. This is an important distinction, as we show previously that political instability has different dimensions and therefore has differential effect on economic indicators.

Our study will also help to explain SSA slow growth, which is related to Devarjan *et al.* (2003) who find that Africa's slow growth is affected by decline in total factor productivity (TFP) and not low investment as previously thought, but unable to identify the sources of decline in TFP.

To assess whether political instability affects economic indicators in SSA differently, we construct two interaction terms with the SSA dummy and the two dimensions of political instability – *PROTEST* and *REGIME* – which are likely to affect economic indicators in developing countries. In Table 10 we assess the influence of SSA on the dimensions of political instability by excluding it from the sample, but here we pursue a different strategy. We modify the specifications to account for the interaction effect of the dimensions of political instability and the SSA dummy as follows:

$$FDI_{it} = \beta_1 GDPC_{it} + \beta_2 S_{it} + \beta_3 K_{it} + \beta_4 F_{it} + \nu_{it} \qquad i = 1, \ldots, N \qquad t = 1, \ldots, T \qquad (8)$$

$$GDPC_{it} = \beta_1 FDI_{it} + \beta_2 X_{it} + \beta_3 K_{it} + \beta_4 R_{it} + \alpha_{it} \qquad i = 1, \ldots, N \qquad t = 1, \ldots, T \qquad (9)$$

where F_{it} = *PROTEST*×SSA and R_{it} = *REGIME*×SSA. All other variables remain unchanged. Again, we transformed (8) and (9) from a panel to cross-section framework. Mbaku and Paul (1989) assert that the relatively high incidence of political instability should exert adverse influence on SSA economic performance and Bates *et al*. (2006) highlight the disproportionate supply of political conflict in Africa, while Collier and Hoeffler (2002) identify two offsetting factors (ethnic diversity and poor economic performance) that make SSA political instability outcomes similar to other developing countries. Thus, we have no prior on the sign of the interaction terms. Results are reported in Table 16.

Table 16: ***Political instability, simultaneous equations, 68 countries, 1975-2005***

Dependent	FDI	GDP per capita	FDI	GDP per capita
Variables:	(3)	(3)	(4)	(4)
DEBTSG	-.028		-.028	
	(.000)***		(.000)***	
INFRAS	.004		.004	
	(.000)***		(.000)***	
INFLA	-.001		-.001	
	(.000)***		(.000)***	
GDPC	.178		.190	
	(.004)***		(.002)***	
XCONST	.045	.160	.067	.161
	(.441)	(.144)	(.533)	(.143)
REGIME	-.004	-.396	-.064	-.258
	(.974)	(.040)**	(.506)	(.148)
PROTEST	.084	-.564	.073	-.508
	(.446)	(.005)***	(.458)	(.007)***
VIOLENCE	.091	.252	.033	.088
	(.428)	(.229)	(.716)	(.601)
REGIME×*SSA*	-.198	.046		-.468
	(.296)	(.896)		(.053)*
PROTEST×*SSA*	-.115	.567		.445
	(.610)	(.179)		(.152)
VIOLENCE×SSA	-.121	-.514		
	(.534)	(.149)		
LnY_0		-5.684		-5.583
		(.000)***		(.000)***
FDI		.976		.951
		(.000)***		(.000)***
HC		.322		.365
		(.175)		(.127)
SSA		-.237		-.183
		(.356)		(.472)
LAC		-.190		- .183
		(.447)		(.462)
Observations	293	293	293	293
R^2	0.27	0.24	0.26	0.24

Notes: P-values are below coefficients in parentheses. *** Significant at the 1% level, ** significant at the 5% level, and *significant at the 10%. Both regressions have a constant term. *REGIME*, *PROTEST*, and *VIOLENCE* are various dimensions of political instability. *REGIME*×SSA, *PROTEST*×SSA, and *VIOLENCE*×SSA are interaction terms.

We estimate two systems of simultaneous equations as displayed in Table 16, first with all three interaction terms (3) and secondly with only two interaction terms (4), together with all three dimensions of political instability. One of the interaction terms is marginally significant at conventional levels: *REGIME*×SSA. This effect, however, is not robust across the systems of simultaneous equations. It's remarkable how all

significant variables are precisely estimated across both systems of simultaneous equations. Based on these results, there is some evidence to suggest that political instability affects economic indicators, particularly growth, in SSA differently relative to a global sample of developing countries. This result does not support Collier and Hoeffler (2002) who hold that the risk of political instability in SSA should be no higher than other developing countries and hence the effect of political instability on economic indicators should be no different. Given the relatively higher incidence of political instability in SSA as suggested by Mbaku and Paul, (1989) and Bates *et al*. (2006), it would appear that SSA is being punished differently through low growth (even though this is not conclusive). There is mild evidence of political instability curse on SSA economic performance compared to other regions.

Stable regimes, therefore, appear to be important for SSA to improve economic performance, particularly growth. Accounting for the effect of political instability in SSA, growth and *FDI* are consistently significant across specifications with the expected sign, further supporting previous results.

8.0 Conclusions

The goals of this essay were three-fold: to clarify the direction of causality, if there were one, between FDI and economic growth, to identify the different dimensions of political instability and to investigate the effect of these dimensions of political instability on economic growth and FDI, and finally, to examine whether the effect of the different dimensions of political instability affect SSA differently.

Firstly, the extant literature on the direction of causality between FDI and growth is mixed. We find evidence to disentangle this ambiguity. FDI and growth are endogenously related. The evidence suggests that the direction of causality between growth and FDI runs both ways: from FDI to growth and from growth to FDI. Our evidence supports findings by Chowdhury and Mavrotas (2006) and Hsiao and Shen (2003).

Given the evidence, it seems then that FDI has the potential to enhance growth in developing countries (and this higher growth will attract higher levels of FDI), perhaps not only through its embodied technology, but also through other channels for

example instigating competition among local enterprises and constrains policy makers to adopt growth-inducing policies through threats of relocation. Therefore, policy makers in developing countries who are thinking about growth strategies must incorporate FDI as a critical factor in achieving this goal; this is how we interpret the directions of causality between FDI and growth. This also strengthens the evidence in Essay 2 whereby FDI enhances growth directly in a single-equation framework, albeit not in a subsample of LAC.

Secondly, political instability has different dimensions and they affect growth and FDI differently. Previous attempts which don't account for the different dimensions of political instability are questionable. We find evidence that instability of the regime and protest reduce growth, although the latter is less robust. Violence doesn't affect growth or FDI; again caution is advised when interpreting this finding, for the very reason that the cross-section framework does not account for the dynamics of violence on growth and FDI. The main finding is supported by Jong-A-Pin (2009).

As a final exercise, we ask whether SSA economic performance is constrained differently by political instability. What is relevant for a global sample of developing countries may not apply to SSA: political instability does exert a differential constraint on SSA economic performance. We find this to be so through a (marginally) significant interaction effect of the political instability index and a SSA dummy. We thus posit that the image of SSA as an unstable region may weigh heavily on investors decisions and this image is fed by the actual incidence of political instability. Using the evidence here, the task of escaping a potential political instability trap is for SSA to put the right institutions in place that will successfully resolve political conflicts. This may require radical reform of the judicial processes to efficiently dispense justice.

APPENDIX to Chapter 5

The appendix provides summary of previous empirical studies, results on endogeneity tests, details on EFA, definition of political instability indicators, and identification of factors use in text.

Table 1A: Summary of empirical studies on the endogenous relationship of FDI and economic growth and other significant variables

Authors	Chowdhury & Mavrotas(2006)	Hsiao & Hsiao(2006)	Nair-Reichert & Weinhold (2001)	Mencinger (2003)
Sample Period:	1969-2000	1986-2004	1971-95	1994-2001
Sample Type:	Annual	Panel	Panel	Annual
Sample:	Chile, Malaysia & Thailand	8 Developing Countries	24 Developing Countries	8 EU Members
Econometrics Strategy:	Toda-Yamamoto Test	Granger-Causality Test	MFR	Sim-Causality Test
Causality:	Chile; GDP causes FDI Malaysia; GDP causes FDI FDI causes GDP Thailand; GDP causes FDI FDI causes GDP	Exports causes GDP GDP causes Exports FDI causes GDP FDI causes Exports	ΔFDI causes Growth (FDI×Openness) causes Growth	FDI_{t-1} causes Growth

Table 1A cont.,: Summary of empirical studies on the endogenous relationship of FDI and economic growth and other significant variables

Author	Li & Liu (2005)		Bende-Nabende & Ford (1998)	
Sample Period:	1985-99		1959-95	
Sample Type:	Annual		Annual	
Sample:	84 Developed & Developing Countries		Taiwan	
Econometrics Strategy:	3SLS		3SLS	
Dependent Variable: GDP per capita	√		ΔOutput	
FDI/GDP		√		ΔFDI
Independent Variables: FDI/GDP	Positive			
Population growth	Positive			
Capital growth	Positive			
Education	Negative			
GDP per capita		Positive		
Initial GDP	Negative	Positive		
Investment			Positive	
ΔEmployment			Positive	
ΔOpen			Negative	
ΔFDI			Positive	
$\Delta Infrastructure_{t-1}$			Positive	Negative
Δliberalization				Positive
ΔEducation				Negative
ΔOutput				Positive

Table 1A cont., Summary of empirical studies on the endogenous relationship of FDI and economic growth and other significant variables

Author	Hsiao & Shen (2003)				Reisen & Soto (2001)
Sample Period:	1982-98		1976-96		1986-97
Sample Type:	Annual		Annual		Annual
Sample:	China		23 Developing Countries		44 Developing Countries
Econometrics Strategy	3SLS		VAR		GMM
Dependent Variables: GDP per capita	√		√		GNP per capita
FDI		√		√	
Independent Variables: GDP_{t-1}	Positive	Positive	Positive	Positive	
FDI	Positive		Positive		
FDI_{t-1}		Positive		Positive	Positive
FDI_{t-2}		Negative		Positive	
GDP_{t-2}			Negative		
Portfolio equity $Flows_{t-1}$					Positive
Long-term Bank $Credits_{t-1}$					Negative
Short-term Bank $Credits_{t-1}$					Negative
Long-term Bank $Credits_{t-1}$×bank capitalization					Positive
Short-term Bank $Credits_{t-1}$×bank capitalization					Positive
GNP_{t-1}					Positive
National $Saving_{t-1}$					Positive
$(National\ Saving_{t-1})^2$					Negative
$Trade_{t-1}$					Positive
Government $Consumption_{t-1}$					Negative
$log(Trade_{t-1})$					Positive

ENDOGENEITY TESTS

Table 2B*: Augmented OLS, 68 countries – 1975-2005*

Dependent Variables:	GDP per capita
LnY_0	-5.901
	(.000)***
XCONST	.182
	(.089)*
HC	.253
	(.289)
INFRAS	.005
	(.006)***
INFLA	-.001
	(.069)*
DEBTS	-.045
	(.004)***
Hsng_res	.415
	(.000)***
R^2	.28
Observations	293

Notes: *Hsng_res* is residuals from first stage estimation. Estimates correspond to Table 1. Estimates based on transformed six five-year periods. Regression has a constant.

Table 3C: *Augmented OLS, 37 countries – 1975-2005*

Dependent Variables:	GPD per capita
LnY_0	-5.872
	(.000)***
XCONST	.238
	(.063)*
HC	.184
	(.568)
INFRAS	.004
	(.021)**
INFLA	-.001
	(.071)*
DEBTS	-.058
	(.151)
Hsng_res	.485
	(.000)***
R^2	.30
Observations	188

Notes: *Hsng_res* is residuals from first stage estimation. Corresponds to Table 3. See notes to Table 2B.

Table 4D: ***Augmented OLS, 60 countries – 1975-2005***

Dependent Variables:	GPD per capita
LnY_0	-7.509
	(.000)***
XCONST	.205
	(.066)*
HC	.148
	(.550)
INFRAS	.006
	(.001)***
INFLA	-.001
	(.047)**
DEBTS	-.049
	(.002)***
Hsng_res	.353
	(.001)**
R^2	.32
Observations	261

Notes: *Hsng_res* is residuals from first stage estimation. Corresponds to Table 4. See notes to Table 2B.

Table 5E: ***Augmented OLS, 68 countries – 1975-89***

Dependent Variables:	GPD per capita
LnY_0	-11.018
	(.000)***
XCONST	-.030
	(.906)
HC	.554
	(.376)
INFRAS	-.011
	(.447)
INFLA	-.001
	(.106)
DEBTS	-.046
	(.087)*
Hsng_res	.776
	(.005)***
R^2	.33
Observations	134

Notes: *Hsng_res* is residuals from first stage estimation. Corresponds to Table 5. Estimates based on transformed three five-year periods ending 1989. Regression has a constant term.

Table 6F: ***Augmented OLS, 68 countries – 1990-2005***

Dependent Variables:	GPD per capita
LnY_0	-12.667
	(.000)***
XCONST	.316
	(.045)**
HC	.944
	(.023)**
INFRAS	.005
	(.004)***
INFLA	-.001
	(.364)
DEBTS	-.073
	(.000)***
Hsng_res	.148
	(.169)
R^2	.43
Observations	159

Notes: *Hsng_res* is residuals from first stage estimation. Corresponds to Table 6. Estimates based on transformed three five-year periods ending 2005. Regression has a constant term.

Exploratory Factor Analysis (EFA)

Factor analysis 'addresses itself to the problem of analyzing the interrelationship among a large number of variables and then explaining these variables in terms of their common underlying dimension factor' (Hair *et al*., 1987: 235). Factor analysis therefore allows for the observe variables to reflect the characteristics of the underlying latent variables; each observed variable is a function of its underlying latent variable. This identification is achieved, by isolating the "common variance structure" (communalities) among a range of variables in fewer indices (factors), without loss of information in these factors. The key point about factor analysis is that no prior is made about the relationship between the manifest variables and the factors (Everitt and Dunn, 2001). Following the latter, the basic setup of the factor analysis model takes the form where the vector of manifest variables $\mathbf{Z}' = [\, z_1, z_2, z_3, \ldots, z_s]$ is linked to the latent variables , $p_1, p_2, p_3, \ldots, p_s$, and $g < s$, through the model,

$$Z_1 = \gamma_{11}\, p_1 + \gamma_{12}\, p_2 + \ldots + \gamma_{1g}\, p_g + \mu_1,$$

$$Z_2 = \gamma_{21}\, p_1 + \gamma_{22}\, p_2 + \ldots + \gamma_{2g}\, p_g + \mu_2,$$

$$\vdots$$

$$Z_s = \gamma_{s1}\, p_1 + \gamma_{s2}\, p_2 + \ldots + \gamma_{sg}\, p_g + \mu_g\,.$$

The factor model in its matrix equivalent is,

$$\mathbf{Z} = \boldsymbol{\nu}\mathbf{p} + \boldsymbol{\mu}, \qquad (1)$$

where,

$$\boldsymbol{\nu} = \begin{pmatrix} \gamma_{11} & \cdots & \gamma_{1g} \\ \vdots & & \vdots \\ \gamma_{s1} & \cdots & \gamma_{sg} \end{pmatrix} \qquad \mathbf{p} = \begin{pmatrix} p_1 \\ \vdots \\ p_g \end{pmatrix} \qquad \boldsymbol{\mu} = \begin{pmatrix} \mu_1 \\ \vdots \\ \mu_s \end{pmatrix}$$

and $\boldsymbol{\nu}$ is the factor loadings, $\mu_1, \ldots, \mu_s$ are assumed independent across equations and between the factors $p_1 \ldots, p_g$. Hence the relationship between $Z_1, \ldots, Zs$ is due to their effect on the $p_1, \ldots, p_g$ i.e. the factors. Without loss of information we assume that **Z** is a null matrix. Given the assumption of zero correlation between factors, we can decompose the variance σ_i^2 of the observed variables Z_i in its component parts – unique and communality, which is,

$$\sum_{j=1}^{g} \gamma_{ij}^{\,2} + \delta_i \,,$$

where δ_i is the unique variance i.e. variance that is orthogonal to **p** and $y_i^{\,2} = \sum_{j=1}^{g} \gamma_{ij}^{\,2}$ is the communality i.e. shared variance of **p. P** constitutes the different dimensions of political instability and are used in the system of simultaneous equations to consider their effect on economic outcomes, in particular FDI and economic growth. The covariance $\boldsymbol{\Sigma}$ of Z_i and Z_j in (1) is therefore, $\sigma_{ij} = \sum_{l=1}^{g} \gamma_{il}\, \gamma_{jl}$.

Political instability indicators

Table 7G: ***Political indicators, 68 Developing Countries, 1975-2003***

Indicators:	Definition
General Strikes	Any strike of 1,000 or more industrial or service workers that involves more than one employer and that is aimed at national government policies or authority.
Guerrilla Warfare	Any armed activity, sabotage, or bombings carried on by independent bands of citizens or irregular forces and aimed at the overthrow of the present regime.
Government Crises	Any rapidly developing situation that threatens to bring the downfall the present regime - excluding situations of revolt aimed at such of overthrow.
Purges	Any systematic elimination by jailing or execution of political opposition within the ranks of the regime or the opposition.
Riots	Any violent demonstration or clash of more than 100 citizens involving the use of physical force.
Revolutions	Any illegal or forced change in the top governmental elite, any attempt at such a change, or any successful or unsuccessful armed rebellion whose aim whose aim is independence from the central government.
Anti-Government Demonstrations	Any peaceful public gathering of at least 100 people for the primary purpose of displaying or voicing their opposition to government policies or authority, excluding demonstrations of a distinctly ant-foreign nature.
Coups d'Etat	The number of extraconstitutional or forced changes in the top government elite and/or its effective control of the nation's power structure in a given year.
Major Constitutional Changes	The number of basic alterations in a state's Constitutional Structure.
Cabinet Changes	The number of times in a year that a new premier is named and/or 50% of the cabinet posts are occupied by new ministers.
Legislative Elections	The number of elections held for the lower house of a national legislature in a given year.
Executive Changes	The number of times in a year that effective control of the Executive power changes hands.
Assassinations	Any politically motivated murder or attempted murder of a high government official or politician.

Notes: Cross-national Time-series Data Archives (2003).

Identification of factors

Table 8H: ***Dimensions of Political Instability, 1975-2005***

Factors:	Eigenvalues
Regime	1.79
PROTEST	1.45
VIOLENCE	1.71
LR test of 3 factors vs saturated model	0.00

Notes: Corresponds to Figure 1 and Tables 7 and 8. Estimates based on transformed six five-year periods.

Table 9I: ***Factor loading matrix and unique variances estimates***

Indicators	Regime Instability	Protest	Violence	Variance
Assassination	0.08	0.02	0.60	0.62
Revolution	0.15	-0.10	0.71	0.44
Coups	0.35	-0.01	0.07	0.86
General strikes	0.04	0.39	0.05	0.78
Guerrilla wars	-0.10	0.05	0.87	0.25
Government crises	0.47	-0.12	0.11	0.74
Purges	0.11	-0.02	0.06	0.98
Riots	-0.01	1.00	-0.03	0.00
Anti-government demonstration	0.08	0.66	0.11	0.54
Constitutional change	0.35	0.03	0.08	0.86
Cabinet change	0.74	0.04	0.04	0.44
Elections	0.23	0.04	-0.15	0.94
Executive change	0.82	0.01	-0.06	0.34

Notes: The factor extraction method is Maximum Likelihood. Factor loading matrix is rotated with Oblimin method. Estimates are based on 37 countries. Data are from the Cross-national Time-series Data Archives (2003). Variance is the unique variance of loadings that does not explain any factor. Corresponds to Table 10.

Table 10J: ***Dimensions of Political Instability, 1975-2005***

Factors:	Eigenvalues
Regime	1.62
PROTEST	2.13
VIOLENCE	1.41
LR test of 3 factors vs saturated model	0.00

Notes: Corresponds to Table 10. Estimates based on transformed six five-year periods.

Table 11K: ***Factor loading matrix and unique variances estimates***

Indicators	Regime Instability	Protest	Violence	Variance
Assassination	0.10	0.17	0.26	0.87
Revolution	-0.03	0.01	1.01	0.00
Coups	0.21	-0.16	0.54	0.60
General strikes	0.07	0.42	-0.06	0.82
Guerrilla wars	0.02	0.17	0.48	0.71
Government crises	0.36	0.26	0.08	0.77
Purges	0.17	0.01	0.04	0.96
Riots	-0.03	0.59	-0.08	0.66
Anti-government demonstration	0.00	0.88	0.03	0.22
Constitutional change	0.51	0.08	-0.00	0.74
Cabinet change	0.75	0.06	0.01	0.43
Elections	0.16	0.05	-0.10	0.97
Executive change	0.78	-0.08	-0.01	0.39

Notes: The factor extraction method is Maximum Likelihood. Factor loading matrix is rotated with Oblimin method. Estimates are based on 60 countries. Data are from the Cross-national Time-series Data Archives (2003). Variance is the unique variance of loadings that does not explain any factor. Corresponds to Table 11.

Table 12L: ***Dimensions of Political Instability, 1975-2005***

Factors:	Eigenvalues
Regime	1.85
PROTEST	1.53
VIOLENCE	1.48
LR test of 3 factors vs saturated model	0.00

Notes: Corresponds to Table 11. Estimates based on transformed six five-year periods.

Table 13M: ***Factor loading matrix and unique variances estimates***

Indicators	Regime Instability	Protest	Violence	Variance
Assassination	0.21	-0.03	0.15	0.92
Revolution	-0.01	-0.04	0.70	0.52
Coups	0.01	-0.01	1.00	0.00
General strikes	-0.02	0.56	0.02	0.69
Guerrilla wars	0.14	0.03	0.02	0.98
Government crises	0.53	-0.14	-0.01	0.70
Purges	0.30	-0.35	-0.02	0.79
Riots	-0.04	0.72	-0.02	0.48
Anti-government demonstration	0.06	0.74	0.10	0.45
Constitutional change	0.59	-0.12	-0.09	0.66
Cabinet change	0.77	0.08	-0.03	0.41
Elections	0.32	0.24	-0.21	0.82
Executive change	0.64	0.02	0.24	0.46

Notes: The factor extraction method is Maximum Likelihood. Factor loading matrix is rotated with Oblimin method. Estimates are based on 68 countries over 1975-89. Data are from the Cross-national Time-series Data Archives (2003). Variance is the unique variance of loadings that does not explain any factor. Corresponds to Table 12.

Table 14N: ***Dimensions of Political Instability, 1975-89***

Factors:	Eigenvalues
Regime	1.74
PROTEST	1.61
VIOLENCE	1.77
LR test of 3 factors vs saturated model	0.00

Notes: Corresponds to Table 12. Estimates based on transformed three five-year periods.

Table 15O: ***Factor loading matrix and unique variances estimates***

Indicators	Regime Instability	Protest	Violence	Variance
Assassination	0.06	0.01	0.51	0.73
Revolution	0.17	0.03	0.59	0.60
Coups	0.37	-0.12	0.05	0.86
General strikes	-0.04	0.39	0.14	0.81
Guerrilla wars	-0.04	-0.00	1.00	0.00
Government crises	0.23	0.37	-0.07	0.78
Purges	0.01	0.02	0.01	1.00
Riots	0.06	0.63	0.15	0.52
Anti-government demonstration	-0.03	0.92	-0.04	0.18
Constitutional change	0.40	0.07	0.01	0.82
Cabinet change	0.82	0.09	-0.01	0.30
Elections	0.21	0.05	0.16	0.93
Executive change	0.82	-0.09	0.00	0.34

Notes: The factor extraction method is Maximum Likelihood. Factor loading matrix is rotated with Oblimin method. Estimates are based on 68 countries over 1990-2005. Data are from the Cross-national Time-series Data Archives (2003). Variance is the unique variance of loadings that does not explain any factor. Corresponds to Table 13.

Table 16P: ***Dimensions of Political Instability, 1990-2005***

Factors:	Eigenvalues
Regime	1.80
PROTEST	1.33
VIOLENCE	2.00
LR test of 3 factors vs saturated model	0.00

Notes: Corresponds to Table 13. Estimates based on transformed three five-year periods.

Table 17Q: ***Factor loading matrix and unique variances estimates***

Indicators	Regime Instability	Protest	Violence	Variance
Assassination	0.01	0.03	0.67	0.54
Revolution	0.09	-0.11	0.75	0.40
Coups	0.22	0.01	0.06	0.94
General strikes	0.14	0.39	0.07	0.81
Guerrilla wars	-0.08	0.08	0.80	0.37
Government crises	0.59	-0.20	0.06	0.60
Purges	0.14	-0.00	0.06	0.97
Riots	-0.02	1.00	-0.03	0.00
Anti-government demonstration	0.07	0.68	0.10	0.50
Constitutional change	0.24	0.09	0.10	0.91
Cabinet change	0.69	0.08	0.05	0.49
Elections	0.31	0.10	-0.17	0.89
Executive change	0.82	0.04	-0.04	0.33

Notes: The factor extraction method is Maximum Likelihood. Factor loading matrix is rotated with Oblimin method. Estimates are based on 60 countries over 1975-2005. Data are from the Cross-national Time-series Data Archives (2003). Variance is the unique variance of loadings that does not explain any factor. Corresponds to Table 14 (1). Countries with above average (0.18) constitutional changes are excluded.

Table 18R: ***Dimensions of Political Instability, 1975-2005***

Factors:	Eigenvalues
Regime	1.73
PROTEST	1.30
VIOLENCE	2.23
LR test of 3 factors vs saturated model	0.00

Notes: Corresponds to Table 14 (1). Estimates based on transformed six five-year periods.

Table 19S: ***Factor loading matrix and unique variances estimates***

Indicators	Regime Instability	Protest	Violence	Variance
Assassination	-0.09	0.13	0.04	0.83
Revolution	-0.09	0.03	1.01	0.00
Coups	0.20	-0.07	0.77	0.29
General strikes	0.14	0.30	0.02	0.90
Guerrilla wars	0.18	-0.12	0.38	0.79
Government crises	0.20	0.40	0.10	0.76
Purges	0.13	0.12	0.08	0.95
Riots	0.03	0.84	-0.01	0.28
Anti-government demonstration	-0.01	0.90	-0.00	0.20
Constitutional change	0.22	0.07	0.02	0.94
Cabinet change	0.35	0.13	0.05	0.84
Elections	0.06	0.08	-0.13	0.98
Executive change	1.00	0.01	-0.00	0.00

Notes: The factor extraction method is Maximum Likelihood. Factor loading matrix is rotated with Oblimin method. Estimates are based on 60 countries over 1975-2005. Data are from the Cross-national Time-series Data Archives (2003). Variance is the unique variance of loadings that does not explain any factor. Corresponds to Table 14 (2). Countries with above average (0.19) executives changes are excluded.

Table 20T: ***Dimensions of Political Instability, 1975-2005***

Factors:	Eigenvalues
Regime	1.80
PROTEST	1.35
VIOLENCE	2.09
LR test of 3 factors vs saturated model	0.00

Notes: Corresponds to Table 14 (2). Estimates based on transformed six five-year periods.

Table 21U: ***Factor loading matrix and unique variances estimates***

Indicators	Regime Instability	Protest	Violence	Variance
Assassination	0.10	0.23	0.37	0.77
Revolution	0.04	0.02	1.00	0.00
Coups	0.08	-0.14	0.72	0.46
General strikes	-0.13	0.43	-0.02	0.82
Guerrilla wars	0.09	0.25	0.47	0.66
Government crises	0.25	0.26	0.08	0.83
Purges	0.30	0.05	0.09	0.89
Riots	0.06	0.81	0.06	0.32
Anti-government demonstration	-0.05	0.86	0.04	0.27
Constitutional change	0.44	0.08	0.01	0.79
Cabinet change	0.88	-0.02	0.02	0.23
Elections	0.26	0.12	-0.16	0.90
Executive change	0.65	-0.00	0.05	0.59

Notes: The factor extraction method is Maximum Likelihood. Factor loading matrix is rotated with Oblimin method. Estimates are based on 60 countries over 1975-2005. Data are from the Cross-national Time-series Data Archives (2003). Variance is the unique variance of loadings that does not explain any factor. Corresponds to Table 15. Countries with above average (0.58) cabinet changes are excluded.

Table 22V: ***Dimensions of Political Instability, 1975-2005***

Factors:	Eigenvalues
Regime	1.32
PROTEST	2.13
VIOLENCE	2.04
LR test of 3 factors vs saturated model	0.00

Notes: Corresponds to Table 15. Estimates based on transformed six five-year periods.

CHAPTER 6

CONCLUSIONS

1.0 Summary of Empirical Essays

Ever since the first wave of liberalisation in developing countries in the 1980s, much emphasis is placed on the role of FDI to stimulate good economic performance. This links to a large body of research in economics to understand the pathways for development in poor developing countries; this thesis adds to that effort. In particular, the major aims of the thesis were to examine the determinants of FDI in developing countries (the subject of Chapter 3), the effect of FDI on economic growth in developing countries (the subject of Chapter 4), and the potential endogenous relationship between FDI and economic growth in developing countries, accounting for the role of political instability (the subject of Chapter 5).

As argued in Chapter 1, we believe that the literature hasn't systematically investigated the potential determinants of FDI. Against this background, we sought to provide a better treatment of the potential determinants of FDI. Because economic performance is driven by multiple factors, some of which are very difficult to measure (e.g. confidence in the political leadership to execute the right policies), in Chapter 3 we include a broad set of explanatory variables that are likely to exert influence on the location of FDI. In particular, with the appropriate estimator, we assess macroeconomic indicators, governance indictors, and political instability indicators. The implication is that we are now able to say something about factors that will affect FDI to developing countries and whether this applies across different regions of developing countries, in particular whether LAC is different from other regions.

The second empirical essay (Chapter 4) is grounded in the proposition that endowment deficiencies in developing countries are unlikely to eliminate the growth effect of FDI (better endowments and/or policy/governance may both attract FDI and strengthen the effect of FDI), contrary to the influential studies in the literature cited in Chapter 1. We evaluate this proposition and present evidence suggesting that the payoff for developing countries participating in globalization through FDI is positive, but to vary degrees across different regions. The main results appear quite robust.

Given the case for reverse causality discussed in Chapter 1, the final empirical essay collects in Chapter 5 the potential determinants of FDI and the potential growth effect of FDI in a system of simultaneous equations. Within this framework we are able to identify the direction of causality between FDI and economic growth in developing countries, although we prefer to interpret the results as capturing correlations and tendencies (empirical patterns) rather than inferring causality. The empirical strategy adopted here takes the literature a step further in resolving the direction of the relationship between FDI and economic growth: the effect appears to run both ways i.e. from FDI to growth and from growth to FDI. We have two other empirical sections in Chapter 5. The first takes account of the potential differential effect of different indices of political instability on FDI and growth; this supports the hypothesis that FDI and growth respond to indices of political instability differently. Second, relative to its high growth counterparts in East Asia, say, political instability might be important in explaining why SSA failed to achieve good economic outcomes. The evidence supports this conjecture: political instability might be the proximate determinant of poor economic performance in SSA (although the evidence is weak).

2.0 Discussion of main findings and policy implications

There is a theoretical basis to argue that FDI will improve host developing countries economic performance. In this light, policy makers across developing countries create policies that are favourable to FDI. In Chapter 3, we evaluate these potential determinants. We find that high debt, high inflation, and constraints on the executive (XCONST) are likely to discourage FDI to developing countries, while large domestic markets and good infrastructure quality are likely to attract FDI. Except for XCONST, these results are not surprising because high and persistent debt raises concerns about future taxes on business activities and high inflation reduces real income (one of the key motivations for FDI to locate abroad). The negative coefficient on XCONST can be explained by low governance in the sample (it should not be interpreted as suggesting that good governance is bad for foreign investment). In general, FDI is attracted to countries with better governance, but particular types of FDI are attracted by country characteristics irrespective of governance. For example, respect for property rights and other features of good governance are low in SSA in part because they are endowed with natural resources (the 'resource curse' argument) yet countries of SSA attract high levels of resource-seeking FDI. This paradox is explained

by high expected rates of return on resource-seeking FDI in SSA, and foreign investors in such markets may be undeterred by, and in some cases even attracted to, corrupt governments. In such cases where governance is low a high value of XCONST, relatively more restrictions on government, will deter FDI.

Is LAC different from other developing countries for the determinants of FDI? We find that infrastructure quality affects LAC differently compared to other regions. In particular, good infrastructure quality attracts FDI to LAC, but there is no significant effect for other developing countries. This suggests that infrastructure is more important (relative to other developing regions) for the type of FDI attracted to LAC. The effect for LAC takes account of Caribbean countries – small island states. The use of the GMM estimator or where appropriate lagged explanatory variables, a large number of potential determinants of FDI, and allowing regional variation provide robust results compared to previous studies. That good infrastructure attracts FDI to LAC provides more information for policy makers in LAC about development strategies: a focus on improving infrastructure is likely to attract FDI. More detailed country and sector studies would be required to identify which types of infrastructure (e.g. roads, ports, and telecommunications) are most important in any specific country.

This supports the growth objective of developing countries: FDI is good for growth, primarily because in various ways it contributes to higher productivity. Our finding that the impact of FDI on growth is direct, i.e. not conditional on values of other country characteristics, suggests that the gains from higher productivity are unconditional on other growth determinants. This goes against an extreme interpretation of studies such as Alfaro *et al*. (2004), Hermes and Lensink (2003), and Borensztein *et al*. (1998) that argue that the effect of FDI is conditional. This evidence, however, does not imply that higher values of other determinants of growth will not magnify the growth effect of FDI (they should, and may also make the country more attractive for FDI). Policy makers should promote other policies that support growth, such as sound financial systems and a skilled labour, to attract FDI.

The growth effect of FDI is not the same for all regions. In particular, we find no evidence that FDI has had a direct impact on growth for LAC. One reason may be

heterogeneity in growth drivers within LAC and how these relate to the type of FDI. For example, manufacturing is relatively more important for growth in South America, but agriculture is more important in Central America whereas services may be more important in the Caribbean. While FDI in manufacturing may have a direct growth effect, FDI in agriculture (such as plantations) or services (especially utilities) may have little impact on growth in the medium term. The effect of human capital development on growth is stronger for LAC, than developing countries as a group, so conditional effect may be relevant. For example, a more skilled workforce attracts FDI in manufacturing that has a greater impact on growth.

The results in Chapter 5 suggest that there is a two-way link between FDI and growth: FDI boost growth and growth in turn makes the host economy more attractive to FDI. The evidence also suggests that political instability affects growth, but the effect depends on the dimensions of political instability and appears to vary for different regions. For example, while instability of the regime and protest affect growth, violence doesn't appear to a systematic effect on either growth or FDI. To combine all indicators into one index of political instability (as others have done) may mask information about which dimension affects FDI and growth. Given the higher incidence of political instability in SSA relative to other regions, we find some evidence to suggest that the different dimensions of political instability affect SSA differently, in particular instability of the political regime.

Policy makers in developing countries need a clear picture of where the constraints lie: to identify the different dimensions of political instability addresses this concern in part. Thus, what appears to matter for growth are protest and instability of the regime, neither seems to matter for FDI, but the latter seems to affect SSA differently. Hence, the higher incidence of political instability in SSA does explain low growth in SSA. Measures that improve institutions and reduce levels of political instability are required in SSA to a greater extent than in other regions.

As for the policies we suggest, they will at least expand the options available to developing countries. But the mapping from policies to improved economic performance is far from certain. Hence, we don't impress upon policy makers to completely adopt these policies, as they may not guarantee safe routes to

development. Again, as the Barcelona Development Agenda (2004) pointed out, no one set of policies are certain to ignite development.

3.0 Limitations and direction of future research

As much as we believe that the results in the thesis will nudge policy makers in developing countries to improve economic policies, there are obvious limitations. First, we start with the data quality. Data quality on developing countries is poor, this includes missing data points and when interpolations have to be made, they may not accurately capture the counterfactual. We hope that the World Development Indicators minimize this risk. Even though we include services to capture trade openness, it doesn't appropriately capture trade policy, as suggested in the data chapter; a better approximation for trade policy is information on tariff structures.

Beside the limitations of measuring specific variables, the use of aggregate data poses its own problems: coefficients on aggregate data must be interpreted in terms of average values. Many countries in the sample are not average countries: average countries don't grow as slowly as most SSA or as fast as East Asian countries. In other words, what is relevant for the average country might be irrelevant for both extremes. So, much information is lost in grouping average countries with those below and above average performance. Still, even within average countries there are differences. The goal of future research then is to conduct detailed case studies on individual countries. The effect is to test the robustness of these results.

On the potential determinants of FDI in Chapter 3, as a plausible extension, further research should evaluate the level at which each potential determinant will affect FDI: this requires threshold analysis and could provide deeper insights about development strategies. Another limitation of the thesis is that we address endogeneity with lagged values which are not the most appropriate approach to solve identification problems: we take this approach because of lack of good instruments. We, however, share criticisms about the inadequacies of lagged values – 'the dubious exclusion restrictions, serial correlation, [and] permanent country factors' (Easterly, 2008: 99). This makes the empirical results less robust. In Chapter 5 we transformed the panel model to a cross-section framework in order to apply the standard 3SLS estimator: this

eliminates the dynamic feature of the model, hence we were not able to assess how the variables change overtime.

The results from the thesis, nonetheless, help us to understand those economic policies which are likely to improve development in developing countries. In particular, the thesis provides insights on how to increase the inflows of FDI to developing countries, provides insights on the direct growth effect of FDI, and provides insights on the endogenous relationship between FDI and growth and the effect of the different dimensions of political instability on growth and FDI. And we also learn that developing countries are different. Yet, there's so much about development we still don't know.

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