Essays on Foreign Direct Investment, Institutions, and Economic Growth

by

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January 2010

ABSTRACT

The aim of this thesis is to explore and study various dimensions of the interaction between one of the most important institutional quality aspects, namely property rights, and one important aspect of integration into the world economy: foreign direct investment (FDI), and links them to economic growth. In particular, this thesis explores whether the interaction between institutions and FDI has any implication for economic growth and whether there is any complementarity between the role of institutions and the role of FDI in fostering economic growth.

To achieve this aim, the thesis was designed to include four empirical chapters in addition to two chapters: one for the introduction and the other for the conclusion. The first two empirical chapters studied the interrelationship between FDI and institutions. And the other two empirical chapters studied the implication of the interrelationship and the complementarity between FDI and institutions for economic growth. Chapter one motivated the thesis and set its aim and structure. The second chapter studies the role of institutions in determining FDI inflows and shows that institutional quality is one of the most important determinants of FDI. Based on this result, chapter three introduces a hypothesis that foreign investors will create a demand for better institutions in host countries, and that governments competing to attract more FDI will be induced to provide such institutions, leading to improvements in institutional quality in host countries. The empirical evidence reported in this chapter supports this hypothesis and shows that FDI inflows have a positive impact on property rights in host countries. Chapter four explores whether institutions play a role in determining the contribution of FDI to economic growth. The results presented in this chapter show that a host country needs to achieve a minimum level of institutional quality in order to be able to benefit from the positive externalities offered by FDI. Based on the results of chapter three, chapter five investigates whether the

positive impact of FDI in institutional quality on host countries can be considered as a new growth-enhancing role for FDI. The results reported in chapter five show that the impact of FDI on economic growth that works via institutions, is a significant one, and is generally greater and more robust than the direct impact.

Over all, the major contribution of this thesis is that it shows that a better understanding of the contribution of FDI to economic growth requires taking into account the interrelationship and the complementarity between FDI and institutions.

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ACKNOWLEDGMENTS

During the process of writing my thesis, I have accumulated enormous intellectual and material debts to many people. First of all, I am highly indebted to my supervisors, Professor Ronald MacDonald and Doctor Norbert Fiess. Their constructive comments and suggestions, and their sincere encouragement helped me to overcome the struggle of writing a PhD thesis. Without their generous support and assistance, I could have never completed this thesis. I also thank my external examiner Professor John Weiss and internal examiner Dr Joe Byrne.

I am also grateful to the academic staff at the Economics Department, University of Glasgow, for their helpful comments during PhD workshop sessions, which helped me to improve my work in many ways. I particularly benefited from comments by Dr Luis Angeles, Dr Céline Azémar, Dr Joe Byrne, Professor Jim Malley, Professor Farhad Noorbakhsh, and Professor Gabriel Talmain. My gratitude extends to the administrative staff in the department, particularly to Ms Jane Brittin for her sincere help and support.

Finally, I cannot find words to express my appreciations for my parents, my brother, and sisters who helped me in many ways to write this thesis. Last but not least, my deep gratefulness for my wife, who continuously supported me throughout my PhD, and for my sons, and my daughter for their patience on having such a busy dad.

DECLARATION

I declare that the thesis does not include any work-forming part of a thesis presented successfully for another degree. I declare that the thesis represents my own work except where referenced to others.

ABBREVIATIONS

2SLS	Two-Stage Least Square
3SLS	Three-Stage Least Square
BERI	Business Environment Risk Intelligence
EFW	Economic Freedom of the World
FDI	Foreign Direct Investment
FIMLH	Full-Information Maximum Likelihood
GDP	Gross Domestic Product
GMM	Generalised Method of Moment
ICRG	International Country Risk Guide
IMF	International Monetary Fund
IV	Instrumental Variable
LIML	Information Maximum Likelihood
MNEs	Multinational Enterprises
OECD	Organisation of Economic Co-operation and Development
PRS	Political Risk Services Group
R & D	Research and Development
UNCTAD	United Nations Conference on Trade and Development

1. Introduction

1.1. Motivation

1.1.1. Economic growth

Explaining the course of economic growth and determining factors that might affect it, have been for a long time, and continue to be, one of the most important topics of economic literature. In fact, the research into this particular topic has been the inspiration for the whole subject of Economics. The work of Adam Smith, the father of Economics, mostly attempted to answer questions about the sources of differences in wealth across nations, as the famous title, *An Inquiry into the Nature and Causes of the Wealth of Nations*, tells. And after more than 200 years, this enquiry into the sources of differences in income levels across countries, or over time within the same country, is still as important as it was centuries ago. One can find many examples across economic literature where the same fundamental question has been asked again and again by economists. And given the fact that income levels in the USA and Western Europe are so many times greater than income levels in much of sub-Saharan Africa, it is not surprising that David Landes asks the same question in, *The Wealth and Poverty of Nations*, at the end of the twentieth century.

The relevance of this question can be shown by the simple data presented in Figure 1 and Figure 2. These Figures effectively illustrate the persisting gap in living standards and incomes that divides the world's population into a small monitory of rich and a huge majority of poor. The income level in Burundi, the poorest country in the world in 1965, was almost two hundred times lower than the income level in Switzerland, the richest country in the world in 1965. Moreover, about three quarters of world's population lived in countries that had income levels less than one-tenth of the income level of the richest country in 1965. Comparing the years 1965 and 2005 shows that not much has been

achieved in the last fifty years or so. In fact, one might say that the gap is even wider. The income level in the Democratic Republic of Congo, the poorest country in the world in 2005, was more than four hundred times lower than the income level in Norway, the richest country in the world in 2005. And again, more than three quarters of world's population lived in countries that had income levels less than one-tenth of the income level of the richest country in 2005. The huge differences in per capita income levels across countries is a reflection of the fact that some economies are growing rapidly and have managed to sustain high growth rates for a long period of time, while others are not growing at all (Barro and Sala-i-Martin 2004).

To illustrate the importance of sustaining high economic growth rates in explaining the huge differences in income levels across countries, Barro and Sala-i-Martin (2004) use the example of the United States economy. During the period from 1870 to 2000, the United States economy sustained an average growth rate of 1.8 annually, resulting in a tenfold increase in real per capita GDP from $3340 in 1870 to $33,330 in 2000. Barro and Sala-i-Martin (2004) state that it is sustaining this growth rate over a long period of time that makes the United States the second-richest country in the world in 2000 after Luxembourg. To further emphasise the importance of economic growth, Barro and Sala-i-Martin (2004) show that if the United States economy experienced a lower growth rate, like those experienced by India, Pakistan, or Philippines during the period 1900 to 1987, then it would have experienced less than a threefold increase in per capita GDP from $3340 in 1870 to $9450 in 2000, and would have ranked 45th instead of second in the world. Another illustration of the importance of economic growth is given by Durlauf et al (2004), who stress that the division of the world's population into a small monitory of rich and a huge majority of poor, is a result of the fact that the UK and other Western countries managed to sustain positive economic growth rates during the 18th and 19th centuries, while the rest of the world failed to sustain positive growth rates for much of this time. Thus, although the level of incomes was low across the world in 1700, it was the sustained

growth in Western Europe that steadily increased per capita GDP, and gradually Western countries outperformed countries elsewhere in the world, resulting in the income gap between developed countries in the West and developing countries.

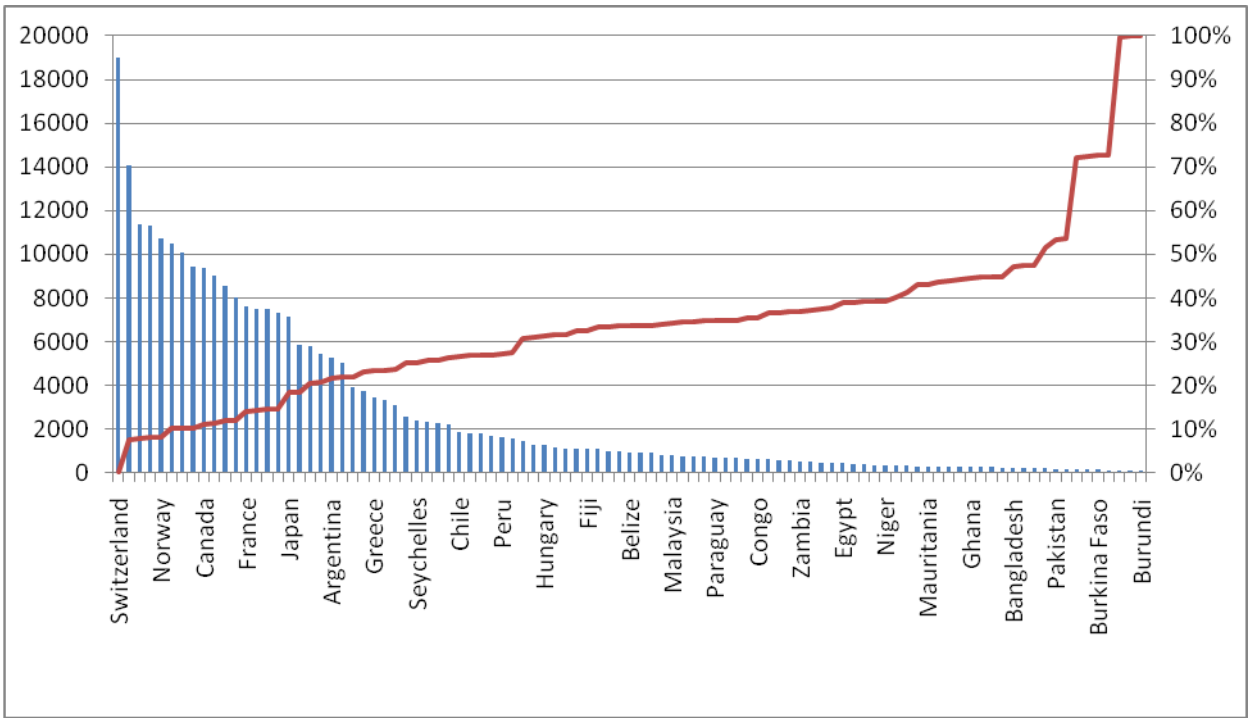

Figure 1: The world income distribution (1965): GDP per capita in 1965 (left axis) and cumulative percentage of world population (right axis). Source: World Bank, World Development Indicators (2008).

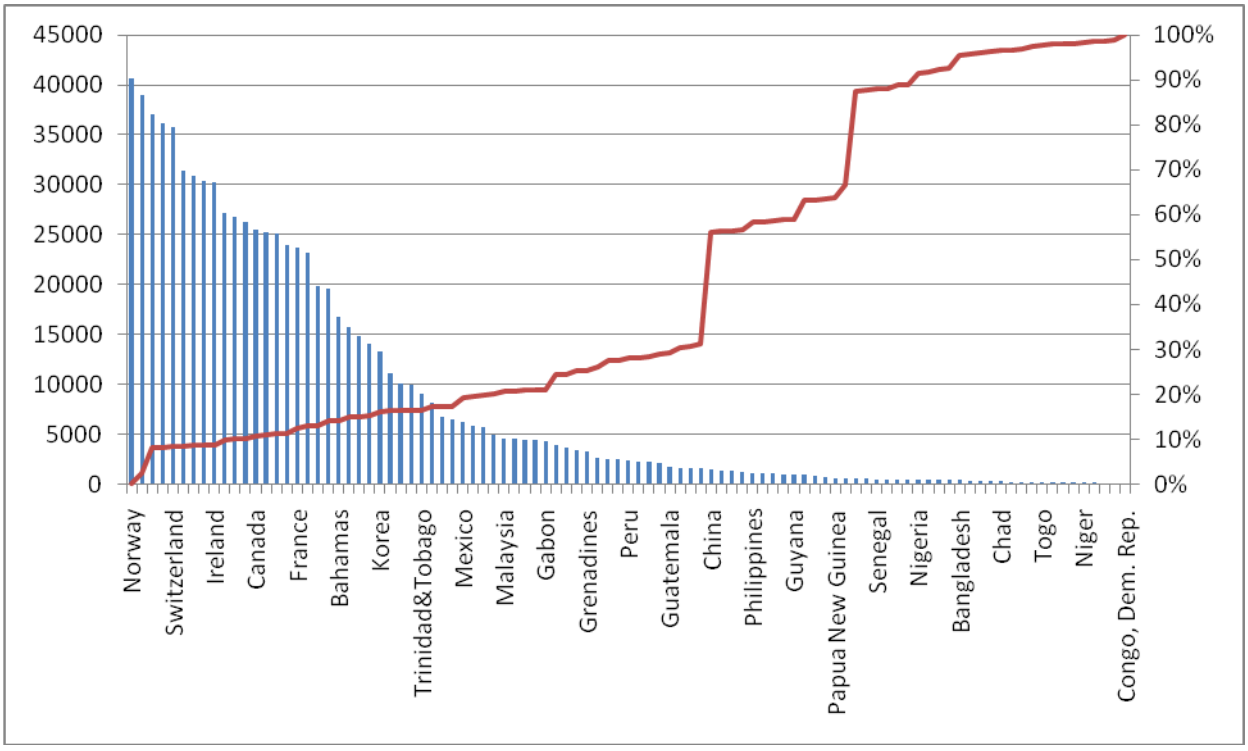

Figure 2: The world income distribution (2005): GDP per capita in 1965 (left axis) and cumulative percentage of world population (right axis). Source: World Bank, World Development Indicators (2008).

The importance of economic growth can be further illustrated by the data in Table 1. The Table reports averages of GDP per capita in 1965 and 2005 for some income groups and geographical regions in absolute figures, and as ratios of the average GDP per capita in high income group. It also reports the average annual growth rates of GDP per capita during the period from 1965 to 2005, and the factors of increase in GDP per capita achieved during the same period. The Table makes clear that there were enormous disparities in average GDP per capita across income groups and geographical regions in 1965. For example the average GDP per capita level in low income countries was only 2.44 % of the average GDP per capita level in high income countries. The per capita GDP in East Asia and Pacific was only 1.38% of the average of high income countries, while the same ratio was 4.68% for Sub-Saharan Africa in 1965.

During the period from 1965 to 2005, although there were some differences in economic growth rates across various income groups and regions, the huge disparities in income level seemed to persist. However, two slightly remarkable experiences can be highlighted. East Asia and Pacific achieved the highest economic growth rate, 5.82, and increased the income level by a factor of 10.21, and as a result, the income gap between the region and high income countries group decreased slightly. This is shown by the increase in the ratio of the average income in the region to the income in the high income group, from 1.38% in 1965 to 5.27% in 2005. On the other hand, sub-Saharan Africa recorded the lowest average growth rate, 0.41, and as a result, increased the income level by a factor of 1.17. And because of this low growth rate, the income gap between sub-Saharan Africa and high income countries increased, as shown by the decrease in the ratio of the average income level in sub-Saharan Africa to the income in high income countries from 4.68% in 1965 to 2.05% in 2005.

Table 1: Statistics on growth and GDP per capita (1965-2005)

	GDP per capita, 1965	*GDP Per Capita relative to High Income countries*	*GDP per capita, 2005*	*GDP Per Capita relative to High Income countries*	*Average annual growth rate,1965-2005*	*Factor of increase*
High income countries	10583	100.00%	28243	100.00%	2.48	2.67
Middle income countries	611	5.77%	1876	6.64%	2.70	3.07
Low income countries	258	2.44%	398	1.41%	1.03	1.54
East Asia & Pacific	145	1.38%	1487	5.27%	5.82	10.21
Latin America & Caribbean	2314	21.87%	4385	15.53%	1.57	1.89
Middle East & North Africa	812	7.68%	1795	6.36%	1.97	2.21
South Asia	201	1.91%	605	2.15%	2.50	3.00
Sub-Saharan Africa	494	4.68%	579	2.05%	0.41	1.17
Growth miracles						
Botswana	294	2.78%	4414	15.63%	7.02	15.00
Singapore	2733	25.82%	26739	94.68%	6.02	9.78
South Korea	1296	12.25%	13282	47.03%	5.97	10.25
Growth disasters						
Congo, Dem. Rep.	316	2.99%	89	0.32%	-2.95	0.28
Liberia	699	6.61%	129	0.46%	-2.10	0.18
Niger	383	3.63%	166	0.59%	-1.75	0.43
Venezuela	6090	57.55%	5000	17.70%	-0.33	0.82

Source: World Bank, World Development Indicators (2008)

In general, one can say that regions or income groups that grew faster than the high income group, managed to reduce the income gap and make some improvements in their relative living standards, whereas regions or income groups that grew slower than the high income group, increased the income gap between them and the high income group, and witnessed deterioration in their relative living standards.

Despite the persistence of the income gap during the period from 1965 and 2005, some countries showed exceptional performance that further highlights the importance of growth. These countries are known in the literature as growth miracles and growth disasters. Table 1 shows some examples of both groups. As can be seen from the Table, growth miracles, represented by Botswana, Singapore, and South Korea, grew by rates that

are more than double that achieved by the high income group. They increased their income level by factors varying from 9.78 to 15, and as a result, made tremendous reductions in income gap, and increased the ratio of their incomes to the income level of the high income group from: 2.78% to 15.63% in Botswana, from 25.82% to 94.68% in Singapore, and from 12.25% to 47.03% in South Korea. Growth disasters, on the other hand, experienced absolute deterioration in their per capita income level as they recoded negative growth rates during the period 1965-2005. Countries in this group include the Democratic Republic of Congo, with its growth rate of -2.95, which resulted in a reduction in income level from $316 in 1965 to $89 in 2005, and a drop in the ratio of its income relative to the high income group from 2.99% in 1965 to 0.32% in 2005. The same applies to Liberia, Niger, and Venezuela, all of which recorded negative growth rates and witnessed relative and absolute reduction in their per capita income level[1].

The examples of growth miracles and growth disasters make it clear that economic growth could result in vast improvements to human wellbeing. Therefore, economists believe that a better understanding of what determines economic growth could contribute significantly to improving the living standards of many people around the globe and alleviate poverty. Some economists even believe that there is no question of greater relevance to the majority of the world's population or of any greater academic significance than the question of what explains differences in economic growth across countries and what can be done to accelerate economic growth (Rodride et al 2004). Lucas (1988:3) describes the importance of these questions by saying "*Once one starts to think about them, it is hard to think about anything else*".

In response to this most important question, and with the increase in data availability, economic literature has shown a resurgence of interest in testing and quantifying various theories of economic growth and explaining post-1960 growth experience (Temple 1999).

[1] Appendix I provides a list of the countries included in data presented in Figure 1 and 2, and Table 1.

One important aspect of the recent empirical growth literature is the differentiation between the proximate sources of growth and the deeper sources of growth (Rodrik 2003). The proximate sources of growth; capital accumulation and technological progress, only partly explain variations in economic growth across countries, and are considered as a first step in explaining economic growth (Temple 1999). In other words, proximate sources of growth do not provide much insight into the process of generating economic growth because, using North and Thomas' words (1973:3), "*they are growth*". Explanations of growth based on proximate sources raise more questions than they answer. For example, these explanations do not answer questions like what policy options can accelerate economic growth (Temple 1999), and more importantly, they do not explain why some countries invest more than others in physical and human capital, and why some countries are so much more productive than others (Rodrik et al 2004).

Better understanding of the process of generating economic growth requires more than studying the role of proximate sources of growth. Thus, empirical growth literate has recently shown greater interest in studying the deeper determinants of economic growth, and factors that explain the differences in accumulation and technological progress and productivity growth. Deeper sources of growth work through influencing the proximate sources of growth; i.e. they affect the factor inputs and total factor productivity (Temple, 1999). Several variables have been proposed in the recent literature as deep determinants of growth, such as population growth and demographic transition, financial development, economic policy etc (Temple, 1999). However, two factors have received great deal of attention in the recent literature. These factors are the quality of institutional environment and the degree of openness to trade and capital flow, and integration into the world economy.

Examining the relationship between institutions and integration into the world economy on the one hand, and economic growth on the other, has attracted much interest. However, a

substantial part of this literature has investigated whether it is institutions or integration that matter more for growth. In the words of Rodrik et al (2004: 2), the literature shows an interest in running "*horse races*" between institutions, and integration views. Two groups of researchers, among others, have been involved in this race, where the integration view is represented by Dollar and Kray (2003), and institutions are represented by Rodrik et al (2004). Indeed, it is of great importance to examine which determinant "*trumps everything else*", however, it is also important, perhaps more important, to examine whether the interactions between institutions, and the process of the integration into the world economy, has any implications for economic growth. Yet this research area has attracted very little attention in recent empirical growth literature. This thesis tries to fill this gap in the economic literature by exploring and studying various dimensions of the interaction between one of the most important institutional quality aspects, namely property rights, and one important aspect of integration into the world economy, namely foreign direct investment (FDI), and links them to economic growth. In particular, this thesis explores whether the interaction between institutions and FDI has any implications for economic growth, and whether there is any complementarity between the role of institutions and the role of FDI in fostering economic growth.

1.1.2. Institutions

The need for an institutional framework that supports markets, facilitates economic exchange, defines and protects rights, registers and enforces contracts etc has been explicitly recognized by economists at least since Adam Smith's *Wealth of Nations* (Tanzi, 2000). However, it is the work of North (1981 and 1990), Weingast (1995 and 1997), and Olson (1982) among others, that has highlighted the relevance of institutions, and particularly property rights protection, for economic development and growth, and has inspired a burgeoning literature linking institutions to economic growth. North (1990: 107) assigns an essential role for institutions by stating that "*they are the underlying*

determinant of the long-run performance of economies". Moreover, North (1990: 54) emphasizes the role of institutions in determining economic growth by asserting that "*the inability of societies to develop effective, low-cost enforcement contracts is the most important source of both historical stagnation and contemporary underdevelopment in the third world*".

Institutions play this essential role because they, as defined by North (1990), are the rules of the game in a society and, therefore, they are the framework that shapes the way individuals of a society interact, and guides the economic behaviour of agents. And more importantly, institutions determine the security for property rights in a society. Property rights are the rights of a firm or individual to assets, to the incomes gained from the use of these assets, and to any other contractual obligations due to the firm or individual (North, 1990). By determining the security and the certainty over property rights, institutions also determine the incentives for investment and innovation (Baumol, 1990) and as such, the low security of property rights over physical capital, profits, and patents, reduces incentives and opportunity to invest, innovate, and obtain foreign technology (Mauro, 1995) and (Parente and Prescott, 1992). In another words, uncertainty about property rights creates a wedge between the marginal product of capital and the rate of return that can be privately appropriated by investors (Svensson, 1998). Moreover, poor institutions allow and encourage unproductive activities which can slow down economic growth as resources are driven away from the most productive activities. An example is spending much time and effort securing the required permits to open up a factory or to start a business (Gamber and Scott 2007). This diversion of scarce resources away from productive activities has profound negative effects on economic growth.

On the other hand, proficient and established institutions provide an appropriate environment for growth-enhancing activities like investment, innovation, and entrepreneurship, and permit society to function smoothly as individuals are able to invest

their time in fruitful activities (IMF, 2003) and (World Bank, 2002). In another words, more secure property rights will increase the incentive to entrepreneurs to adopt new and efficient technologies that maximize long term performance. It seems that there is not much dispute that the quality of institutions, and particularly the security of property rights, is a significant determinant of economic growth.

This claim has been supported by vast empirical evidence as many empirical studies have found a positive relationship between institutions and economic growth. The early studies that explored this relationship used various measures of political attributes like indices of political stability, including number of coups, revolutions, and political assassinations, or indices of political freedom and civil liberties, such as Gastil's (1983) index, because of the scarcity of indices that directly measure the status of property rights protection. However, the availability of subjective indices that measures various attributes of property rights protection such as the International Country Risk Guide (ICRG) and the Business Environment Risk Intelligence (BERI) has made it easier for recent papers to directly test North's notions about the importance of institutions and property rights for economic growth.

Among the pioneering studies that explored the relationship between institutional quality and economic growth, is that of Kormendi and Meguire (1985), who use Gastil's indices of political freedom (civil liberties and political rights) to proxy institutions, and found that institutions have a marginal impact on economic growth. Scully (1988) uses the same index to examine the impact of institutions on economic growth. His results support the claim that institutions matter for growth. Dawson (1998) also uses Gastile's index to explore the role of institutions in economic growth. He finds that institutions affect growth directly through influencing total factor productivity, and indirectly through influencing investment. Applying extreme bound analysis to identify the robust determinants of growth and investment, Levine and Renelt (1992) find that the index of revolution and coups is

among the robust variables that explain cross-country variation in investment but not growth. Barro (1991) finds that institutional attributes related to political instability, such as coups, revolutions, and political assassinations, are significantly related to investment. Mauro (1995) uses the quality of bureaucratic index to explore the role of institutions in economic growth, and finds that corruption lowers investment and therefore hinders economic growth.

Knack and Keefer (1995) are the first to use indictors that are closely related to those institutions emphasized by North, Weingast, and Olson. They use ICRG and BERI to test the relevance of institutions to economic growth and find strong support for the notion that institutions, and property rights in particular, are crucial to economic growth and investment. Hall and Jones (1999) find that institutions have a substantial impact on labour productivity and growth. Acemoglu et al (2001) document that institutional quality has a strong impact on income level. Rodrik et al (2004) find that institutions trump all other growth determinants. Acemoglu and Johnson (2005) identify property rights institutions as one of the main determinants of economic growth.

It seems that there is consensus that institutions matter for growth, and that building high quality institutions that enforce contracts, and that specify and protect property rights, is one of the preconditions for sustaining economic growth. However, economic literature does not provide much insight into how to attain well-functioning institutions (Shirley, 2005). In particular, available empirical evidence on the determinants of institutional quality and property rights link institutions to historical, cultural, and geographical variables (Levine 2005). It is an explicit assumption in this literature that institutions are persistent and change very slowly over time (Acemoglu et al, 2001). Yet North (1990:6) states that "*we live in a world where the rapidity of institutional change is very apparent*". In fact, Kaufmann et al (2009) report that between 1998 and 2008, many countries have made a tremendous improvement in different governance and institutional indicators

including the *Rule of Law* index, one of the indictors of property rights protection, while many countries witnessed dramatic deterioration in theirs within the same period[2]. What explains these changes? The available empirical literature does not provide much insight to answer this question.

Recently, the notion that the forces of globalization have induced radical change in institutional quality in local economies has been widely debated (Campbell, 2004). However, exploring the impact of FDI inflows on property rights has received very little attention in the recent literature[3], despite its intuitive appeal not only for its obvious academic relevance, but also for its policy implications. If FDI is found to have a positive impact on property rights, then openness to foreign capital can be proposed as a strategy for improving institutional quality in developing countries. This is particularly important as the available evidence shows that using aid as a strategy to enhance institutional quality in developing countries has been generally unsatisfactory or has even had negative results (Brautigam and Knack, 2004) and (Shirley, 2005).

[2] Appendix I provides list of the countries that made significant changes in their institutional quality within the period 1996-2008.

[3] To my knowledge these is not any published work that links institutional change to FDI. The exception is a work in progress by Ahlquist and Prakash (2005) which is mainly about exploring whether there is positive dependency as opposite to the negative dependency on FDI but the work says nothing about institutions and institutional change.

1.1.3. Foreign direct investment

Foreign direct investment is defined as investment made to acquire a lasting management interest in an enterprise operating in a country other than that of the investor and in general, foreign investment must be at least 10% ownership of an enterprise to be considered as FDI (Patterson et al, 2004). Usually, foreign direct investments are made by large Multinational Enterprises (MNEs) through a merger or acquisition, or through the construction of a new facility. The general perception of Multinational Enterprises is twofold: the first is that they play a dominant role in research and development activities and in generating new technologies, and the second is that they have a powerful influence on local economies (Balaam and Veseth, 2008) and as such, Multinational Enterprises and their activities have stimulated wide debate, making the question about the domestic consequences of their activities one of the most persistent questions asked by academics and policy makers alike (Dunning and Lundan 2008). However, the debate about foreign direct investment and Multinational Enterprises has increased recently as a result of the staggering increase of FDI both in developed and developing countries since the late 1980s, and the increase in the importance of Multinational Enterprises in the global economy.

As shown in Table 2, there has been a dramatic rise in FDI inflows across the globe; the average annual FDI inflows across the world increased from just US $23.97 billion in 1970s, to US $92.70 billion in the 1980s, with a factor of increase of 3.87. Then it increased with a factor of 4.34 to reach an annual average of US $402.05 in the 1990s. After this rapid increase, FDI inflows across the globe witnessed a period of less dramatic increase, since average annual FDI inflows was US $1041.2 billion during 2000-2007, with a factor of increase of 2.59. This rapid increase was in developed and in developing countries alike, as can be seen from Table 2 and Figure 3. However, most of these direct investments were flowing to developed countries; the share of developed countries in these

investments was always more than two thirds during the period from the 1970s to the 2000s. But developing countries increased their share in total FDI inflows gradually from 25.05% in 1970s to 30.82% in 1990s, before it dropped to 29.11% in the 2000s. This increase reflects the fact that FDI inflows to developing countries grew slightly faster than FDI inflows to developed countries during the period from the 1970s to the 1990s.

This rapid increase in FDI inflows has been reflected in increasing the significance of the role played by FDI in host economies. One way to illustrate the increase in the significance of FDI is to use the FDI – GDP ratio. The Table shows that this ratio increased from just 0.46% in the 1970s to 2.57% in the 2000s across the globe. The Table also shows that this ratio is slightly higher in developing countries than in developed countries, which might suggest that although developing countries receive a far smaller share of total FDI inflows, the significance of these inflows to their local economies is higher. Despite the reduction in the growth rate of FDI inflows from 22.08% in the 1990s to 11.39 in the 2000s in developed countries, and from 22.82% in the 1990s to 12.71% in the 2000s in developing countries, its share in GDP continued to increase from 1.25% in the 1990s to 2.38% in the 2000s in developed countries and from 2.08% in the 1990s to 3.12% in the 2000s in developing countries.

Table 2: Foreign direct investment inflows, trends and shares

	World				*Developed Countries*				*Developing Countries*			
	1970s	1980s	1990s	2000s	1970s	1980s	1990s	2000s	1970s	1980s	1990s	2000s
FDI in US $	23.97	92.70	402.05	1041.20	18.05	72.10	279.52	717.80	5.92	20.60	118.13	291.85
FDI as percentage of Total FDI	100	100	100	100	74.95	74.63	68.17	67.99	25.05	25.36	30.82	29.11
FDI-GDP Ratio	0.46	0.64	1.40	2.57	0.43	0.62	1.25	2.38	0.61	0.72	2.08	3.12
FDI-Domestic Investment Ratio	2.01	2.86	6.45	11.49	1.84	2.82	5.90	11.03	2.84	3.10	8.49	12.42
FDI Annual growth rates	14.74	19.06	20.77	11.45	17.05	20.71	22.08	11.39	31.00	25.70	22.82	12.71
Exports Annual growth rates	20.42	5.98	6.77	11.33	18.79	7.21	5.88	9.51	25.67	3.11	9.10	14.17
Imports Annual growth rates	20.26	6.05	6.70	11.25	19.39	6.81	6.16	10.03	23.63	3.99	8.54	13.36

Source: UNCTAD World Investment Report (2008).

These changes in the FDI – GDP ratio show that the significance of FDI to host economies increased on average, despite the slower growth rate of FDI recorded in the 2000s (See Figures 3 and 4). The significance of FDI to host economies becomes even clearer if one uses the ratio of FDI to cross fixed capital formation in host economies. The Table shows that for the world as whole, this ratio increased from 2.01% in the 1970s to 11.49% in the 2000s. Comparing this ratio in developed and developing economies shows that the significance of FDI has increased enormously in both groups. However, the fact that the FDI – gross fixed capital formation ratio is slightly higher in developing countries, as compared with the ratio in developed countries, supports the notion that the significance of FDI to developing countries is higher, despite the fact that they attracted a far smaller share of FDI than the developed countries. Another illustration of the increased importance of FDI inflows is shown by comparing the growth rate of FDI inflows with those of exports and imports. Table 2 shows that in the 1970s, the growth rate of FDI flows was considerably lower than the growth rates of exports and imports either one considers the whole world or the developed and developing countries. However, in the 1980s and 1990s, FDI grew with a rate more than three times higher than those of exports and imports. But in the 2000s, the growth rates of FDI, exports, and imports became more or less comparable.

This increase in the FDI inflows, and its growing importance, has revitalized the debate about FDI and its potential positive effects on host countries, and about how to boost them, costs, negative implications and how to minimize them, and how to attract a higher share of its inflows. One particular research area that has received growing attention recently is the growth effects of FDI on host countries. This literature has been stimulated by the fact that while economic theory states that FDI can be an important source of economic growth, the empirical literature has been unable to provide unambiguous evidence about the positive impact of FDI on economic growth (Campos and Kinoshita, 2002; Carkovic and Levine, 2005).

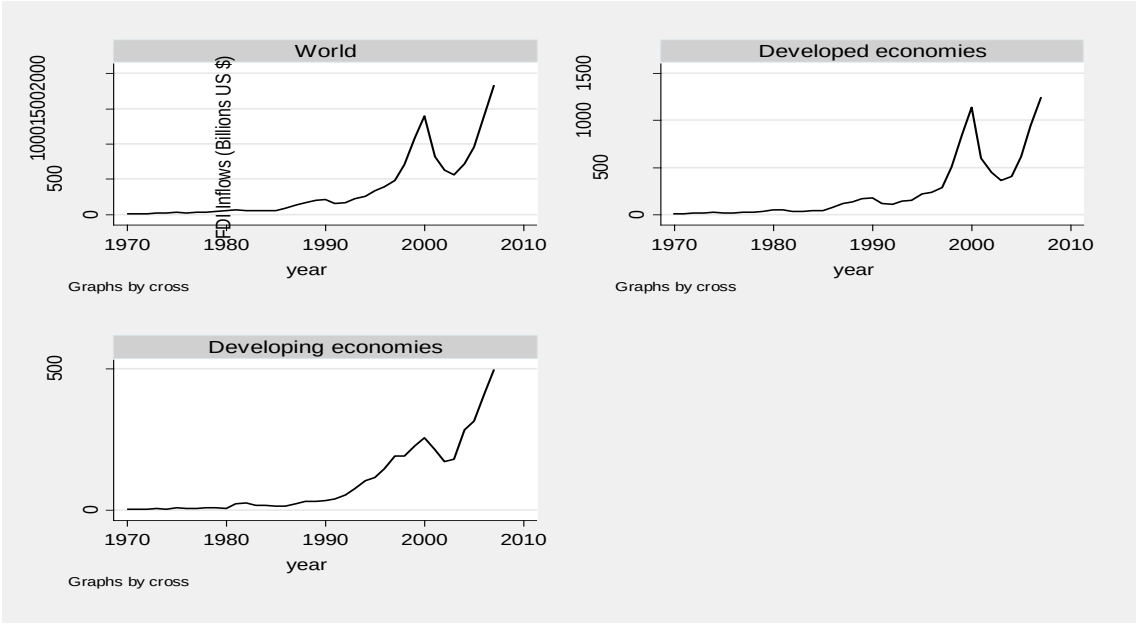

Figure 3: FDI net inflows in US $ Billion

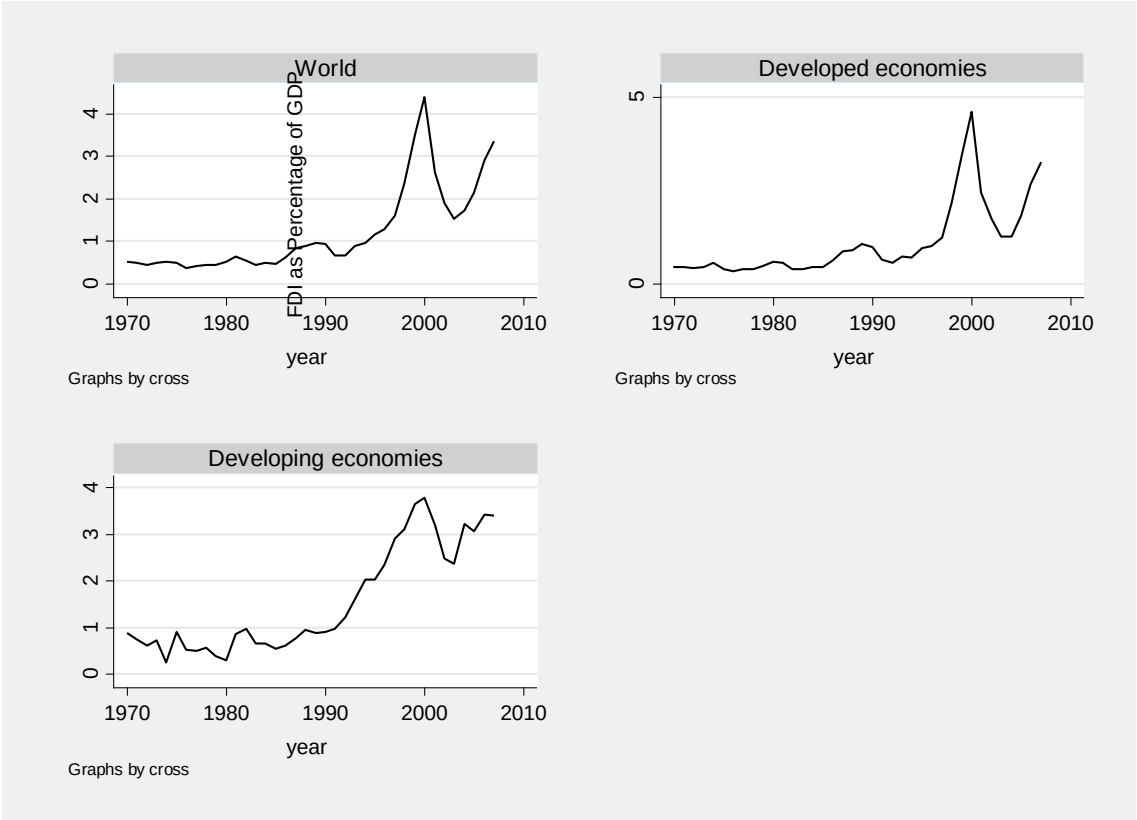

Figure 4: FDI net inflows as percentage of GDP

Economic theory attributes an important role for FDI in fostering economic growth in developing countries because, on the one hand, modern economic growth theories stress the crucial role of technological progress and the creation of new ideas in determining the rate of growth (Barro and Sala-i-Martin, 2004; Grossman and Helpman, 1993), and, on the other hand, FDI literature states that FDI is one of the most important channels through which advance technologies can be transferred to developing countries (Findlay, 1978; Blomstrom, 1986). FDI plays this role because the literature on Multinational Enterprises shows that Multinationals possess technological advantages over local firms (Caves, 2007; Markusen, 2004).

However, despite these theoretical propositions, empirical literature on growth effects of FDI provides mixed evidence. The ambiguity of this empirical evidence on growth effects of FDI has been justified in FDI literature by providing two explanations. The first one is that not all host countries are capable of benefiting from FDI externalities. In particular, host countries need to reach a minimum threshold of absorptive capacity, such as the quality of human capital and the development of the financial sector etc, before they can benefit from the growth effects of FDI (OECD, 2002). The second line of explanation states that not all kinds of FDI are capable of providing host countries with positive externalities. In particular, the positive growth effects attributed to FDI in the literature are confined to manufacturing FDI, whereas primary FDI has negative effects on growth (Alfaro, 2003; Aykut and Sayek, 2007). While the role of institutional quality in determining the impact of FDI on economic growth as one aspect of the absorptive capacity of the host countries is generally recognized in the literature (World Bank, 2001), the empirical literature gives little attention towards exploring its role in determining the contribution of FDI to economic growth. Thus it might be informative to explore the role of institutions in determining the impact of FDI on economic growth.

Another research area that has received considerable attention in the recent literature, is the furious competition between countries to attract more FDI inflows, and the resultant effects of this competition on policy variables and institutions in host countries. There are two lines of argument in this debate. In the first, scholars argue that in competing to attract FDI, countries may be forced to adopt policies with deleterious effects, such as lowering environmental standards, corporate taxes, and labour rights (Oman, 2000). Some authors even argue that Multinational Enterprises and foreign investors lobby local governments and use their bargaining power to force them to make these negative changes (Cola et al, 2006). These negative effects of FDI are known as the "race to the bottom" (Oman, 2000). The second line argument suggests that the "race to the bottom" hypothesis is an exaggeration, and that competition between countries does not have harmful consequences for policy variables and institutions in host countries. And in fact, the competition may have positive implications, such as improving the environmental quality in host countries, i.e. the competition between countries actually leads to a "race to the top" (Bhagwati, 2007). In line with this argument, Loungani and Razin (2001) and Feldstein (2000) state that the global mobility of foreign investments may limit the ability of governments to adopt bad policies or regulations, and encourage them to embrace good policies, institutions and growth-enhancing legal traditions etc. However, these possible effects of FDI tend to be overlooked by the literature.

If FDI is found to have positive implications for institutional quality in host countries, then, in principal, FDI can contribute to economic growth in host countries through this channel, i.e. through improving institutional quality. However, the economic literature shows little or no interest at all in exploring the significance of this channel of influence. Exploring this channel of influence may enhance the understanding of the contribution of FDI to economic growth, and may provide policy makers with additional justification for the efforts spent in attracting FDI, particularly in light of recent evidence, such as the work

of Carkovic and Levine (2005), that casts doubt regarding the growth effects of FDI, and therefore deeply questions the merits of various incentives provided to foreign investors.

1.2. Thesis aim and structure

The aim of this thesis is to investigate various aspects of the relationship between foreign direct investment inflows and institutional quality on host countries in an attempt to reach a better understanding of the contribution of FDI to economic growth. In particular, the thesis will empirically examine the implication of the interrelationship and the complementarity between FDI and institutions to the contribution of FDI to economic growth.

To achieve this aim, the thesis will contain four core empirical chapters (Essays) in addition to an introductory chapter and a concluding chapter. The first two empirical chapters will address the interrelationship between foreign direct investment and institutions. In particular, the first of these two chapters will assess the role of institutions in determining FDI inflows, and investigate how important institutional quality is for FDI. This chapter is titled *The Role of Institutional Quality in Determining Foreign Direct Investment*. The analysis and evidence in this chapter will be used to build the argument of the other empirical chapter, which will investigate whether FDI has an influence on institutional quality in host countries. This chapter will endogenize institutions and empirically test the hypothesis that FDI inflows may positively influence institutional quality in host countries, as foreign investors may create effective demand for better institutions, and governments competing to attract FDI may be encouraged to provide such institutions. This chapter is titled *Integration into the World Economy and Institutional Quality: the Impact of FDI on Property Rights*.

The other two empirical chapters will study the implications of the relationship between FDI and institutions for the contribution of FDI to economic growth. The first will

investigate the role played by institutions in determining the contribution of FDI to economic growth, i.e. this chapter tests whether institutional quality on host countries is a precondition for reaping the positive externalities of FDI. This chapter aims to demonstrate the importance of complementarity between FDI and institutions for the contribution of FDI to economic growth. This chapter is titled *Institutions and Foreign Direct Investment Contribution to Economic Growth*. The other empirical chapter will test whether FDI affects economic growth through institutions, i.e. it will investigate whether FDI has positive contributions to economic growth that work through improving institutional quality in host countries. The chapter will assess the significance of this possible channel of impact. The last chapter will conclude the thesis, highlighting the main findings and stating their academic significance and their policy implications.

Appendix I

List of the countries and data used in Table 1 and Figures 1 and 2

country	*GDP per capita 1965*	*GDP per capita 2005*	*Average annual growth rate 1965 2005*
Norway	12899	40618	2.96
Japan	10595	38972	3.40
United States	16417	37008	2.13
Iceland	12888	36136	2.74
Switzerland	22180	35783	1.22
Denmark	14169	31464	2.07
Sweden	14113	30873	2.01
Hong Kong, China	4855	30395	4.90
Ireland	5973	30286	4.11
United Kingdom	11781	27200	2.13
Singapore	2733	26740	6.02
Finland	8994	26310	2.82
Canada	11284	25437	2.14
Austria	9001	25299	2.64
Netherlands	10450	25062	2.35
Belgium	9224	23945	2.44
France	9464	23693	2.37
Australia	10450	23181	2.12
Israel	7663	19850	2.54
Italy	7222	19548	2.54
Bahamas, The	12167	16723	1.16
Spain	5324	15713	2.82
New Zealand	9235	14840	1.31
Greece	4901	14002	2.87
Korea, Rep.	1296	13282	5.97
Portugal	3124	11153	3.40
Malta	1207	10042	5.54
Oman	1072	9951	6.47
Trinidad and Tobago	4206	9067	1.99
Argentina	5859	8094	1.17
Seychelles	2486	6789	2.58
Uruguay	3874	6548	1.41
Mexico	3098	6177	1.83
Hungary	1775	5857	3.09
Chile	1951	5671	2.71
Venezuela, RB	6091	5000	-0.33
Malaysia	973	4609	4.04
Costa Rica	1946	4502	2.27
Panama	2200	4440	1.96

Botswana	294	4415	7.02
Gabon	2621	4279	1.92
Brazil	1559	3959	2.38
Belize	1022	3707	3.33
South Africa	2690	3427	0.77
St. Vincent and the Grenadines	1115	3306	2.88
Colombia	1160	2658	2.07
Thailand	384	2496	4.87
Dominican Republic	724	2471	2.75
Peru	1925	2399	0.72
Fiji	1097	2300	1.80
El Salvador	1858	2202	0.54
Algeria	1215	2117	1.59
Guatemala	1088	1762	1.25
Egypt, Arab Rep.	547	1630	2.90
Ecuador	868	1589	1.55
Morocco	683	1566	2.12
China	100	1452	7.20
Paraguay	749	1360	1.60
Honduras	819	1305	1.33
Syrian Arab Republic	575	1257	2.17
Philippines	677	1118	1.33
Congo, Rep.	645	1101	1.50
Bolivia	1017	1065	0.26
Sri Lanka	292	1009	3.09
Guyana	684	995	1.22
Indonesia	195	943	3.96
Nicaragua	1262	842	-0.63
Cameroon	520	679	0.83
Papua New Guinea	515	628	0.79
Pakistan	234	606	2.56
India	193	589	2.70
Cote d'Ivoire	678	560	-0.52
Senegal	548	501	-0.18
Lesotho	167	496	2.92
Sudan	284	449	1.38
Mauritania	448	444	0.39
Nigeria	336	438	0.99
Zimbabwe	470	428	-0.01
Kenya	261	426	1.26
Haiti	696	403	-1.24
Bangladesh	260	400	1.11
Zambia	608	356	-0.89
Benin	288	321	0.39
Ghana	270	282	0.18
Chad	234	274	0.72
Rwanda	176	256	1.69
Burkina Faso	140	252	1.54
Nepal	138	239	1.30
Togo	268	237	0.16

Madagascar	367	233	-1.08
Central African Republic	328	218	-0.94
Sierra Leone	246	216	0.05
Niger	384	166	-1.75
Malawi	109	138	0.99
Liberia	699	129	-2.10
Burundi	98	100	0.27
Congo, Dem. Rep.	317	89	-2.95

Examples of countries that experienced significant institutional change from 1998-2008

Institutions attribute	*countries made significant improvement*	*countries witnessed significant deterioration*
Government Effectiveness	Israel	Maldives
	China	Zimbabwe
	Tajikistan	Cote D'Ivoire
	Indonesia	Chad
	Colombia	Mauritania
	Malaysia	Fiji
	Bosnia-Herzegovina	Belize
	Algeria	Togo
	Ethiopia	Spain
	Iraq	Bolivia
	Georgia	Belarus
	Hong Kong	Italy
	Korea, South	Lebanon
	Serbia	
	Afghanistan	
	Rwanda	
Regulatory Quality	Slovakia	Zimbabwe
	Angola	Eritrea
	Tajikistan	Bolivia
	Belarus	Venezuela
	Congo, Dem. Rep.	Argentina
	Libya	Maldives
	Georgia	Ecuador
	Iraq	Cote D'Ivoire
		Gabon
		Uruguay
Rule of Law	Latvia	Zimbabwe
	Estonia	Eritrea
	Albania	Venezuela
	Serbia	Bolivia
	Liberia	Argentina
	Georgia	Cote D'Ivoire
	Rwanda	Trinidad And Tobago
		Ecuador
		Kyrgyzstan
		Thailand
Control of Corruption	Estonia	Eritrea
	Indonesia	Zimbabwe
	Tanzania	Cote D'Ivoire
	Albania	Greece
	Georgia	
	Hong Kong	
	Rwanda	
	Serbia	
	Liberia	

Source: Kaufmann et al (2009)

2. The Role of Institutional Environment in Determining Foreign Direct Investment Inflows[4]

2.1. Introduction

The importance of the socio-political factors in determining FDI inflows has been long understood and emphasized in economic literature. Thus, the inclusion of various measures of social and political attributes of the host country in factors explaining FDI inflows is not a recent aspect of FDI literature. One can cite studies as early as Basi (1963) who investigated the effects of political instability on FDI (Schneider and Frey, 1985). In the past few years however, there has been a resurgence of interest in this subject, with special focus on factors representing institutional quality. A growing number of papers that address this topic have been published, resulting in a burgeoning literature linking FDI inflows to institutions.

Three factors contributed to the emergence of this interest. First, since the influential study of North (1990), there has been growing awareness of the important role played by institutions in shaping the incentives for investment and economic activities in general. Second, there was fast growth of FDI inflows during the 1990s, and growing interest in transition countries and developing countries in attracting a bigger share of these flows. Third, foreign investors have demonstrated a greater interest in institutional quality relative to conventional "natural assets" as a location advantage of a potential host country (Bevan, Estrin et al. 2004). Taking these factors into account, it is natural to find such interest in investigating the role of institutions in determining FDI inflows.

[4] A paper based on the analysis of this chapter was submitted to Open Economies Review and a revised version has been invited which will be submitted soon.

There are strong reasons to believe that countries with sound institutional environments (including efficient bureaucracy and low corruption, rule of law, good enforcement of contracts etc.), will attract more FDI. According to recent surveys of the relevant literature, nevertheless, there has been no clear evidence in favour of institutions. Lim (2001) says that the empirical results in this regard are mixed. He also notices that evidence on regulatory, bureaucratic red tape and judicial transparency, are less encouraging compared with evidence on political risk. Blonigen (2005) provides some examples of papers providing evidence in favour of institutions, like Wei (2000), and some providing evidence against institutions; such as Wheeler and Mody (1992), concluding that more convincing evidence requires more studies in the future. Both authors attribute the inconclusive evidence to various measurement, conceptual, and methodical problems in the empirical literature.

The aim of this chapter is to investigate the role of institutional quality in determining FDI, addressing some of the drawbacks of the empirical literature so that a better understanding of the relevance of institutions to FDI can be achieved. In particular, the chapter surveys the recent empirical literature and identifies areas that need future investigation, and addresses them in way that may help to reduce the inconclusiveness of the empirical evidence, and to reach a better assessment of the role played by institutions in determining FDI.

The rest of the chapter is organised as follows: section 2.2 discusses the theoretical arguments linking institutions to FDI. This theoretical discussion will provide the basis for evaluating the empirical literature. Section 2.3 critically reviews the recent empirical literature, highlighting issues that need further investigation. Section 2.4 presents the empirical results. Section 2.5 concludes the chapter.

2.2. FDI inflows and institutions: Theoretical overview

To reach a better understanding of the role of institutions in determining FDI inflows, it is necessary to link frameworks addressing the determinants of FDI to those addressing effects of institutions on economic activities in general, and on investment incentives in particular. One way of doing this is by collaborating Dunning's eclectic paradigm or OLI paradigm with North's views on effects of institutions on investment and economic activities. Dunning's paradigm has been developed basically to explain the behaviour of Multinational Enterprises (MNEs) i.e. to explain why firms owns foreign production facilities. However, it has been used widely to analyze the determinants of FDI inflows (Gastanaga, Nugent et al. 1998). North's views on institutions, on the other hand, are mainly about the effects of institutions on economic activities and investment, but they can also be applied to FDI.

2.2.1. The eclectic paradigm and the determinants of FDI inflows

According to Dunning (1993) and (2001), a firm has to meet three conditions to become a Multinational Enterprise. These conditions are: (1) possession of certain assets that provide the firm with some advantage over other firms in the host country. Otherwise, the firm would not be able to overcome the additional costs of operating in a foreign market, such as the cost of dealing with foreign administrations, regulatory and tax systems, and customer preferences, and would become non-competitive vis-à-vis indigenous firms. These assets can be tangible, like patented products or production processes, or intangible, such as managerial, marketing, and entrepreneurial skills. Dunning calls these assets ownership advantage or O advantages. (2) If the firm satisfies the first condition, it must find it beneficial to exploit the ownership advantages through FDI and keep them internally, rather than selling or leasing them, in order to prevent the asset from being

replicated by competitors. This advantage is called internalization advantage or I advantages. (3) The firm must find it profitable to combine ownership and internalization advantages with some locational advantages - L advantages - in the host country, such as low input costs, large and growing markets, and so on. Otherwise, the foreign market could be served exclusively through exports.

The third condition can help to explain the distribution of FDI across countries, because it is a country-specific advantage. Dunning identifies several locational advantages that may make some countries more attractive than others for Multinational Enterprises (MNEs). These locational advantages may include variables including: availability of natural resources, input prices and quality, infrastructure quality, investment incentives, economic system and strategies, etc. (Dunning 1993; 1998). Dunning (2001) argues that considering a variable as a locational advantage must rest on the assumption that firms seek to site their value-added activities at the most profitable locations. In general, one might say that any variable that has a potential effect on the profitability of the firm's decision about where to invest, may be included in the variable set affecting the distribution of FDI across countries. Thus, the eclectic paradigm provides us with a flexible tool to analyze FDI determinants, allowing us to test several hypotheses about the determinants of FDI inflows.

This flexibility makes the eclectic paradigm a popular theoretical framework for studying FDI determinants; however, it is not without limitations. One limitation is that a large number of variables have been suggested as potential determinants of FDI inflows on the base of the paradigm, which may undermine the paradigm's value as an analysis tool. However, Dunning (2001) argues that there is only modest truth in this argument. Another limitation is that the paradigm does not provide us with clear expectations of the relative importance of different determinants. This means that the only way to give any speculation about the relative importance of various determinants is through empirical investigations.

2.2.2. Institutions and FDI

North (1990) defines institutions as the rule of the game in a society. According to this definition, institutional framework consists of all kinds of human-devised constraints that shape human interactions, including economic exchange. Institutions can be formal, such as constitutions, laws etc, or informal, such as conventions, customs and so on. They are created to reduce the uncertainty associated with human interaction and exchange, and to determine what individuals should or should not do under different conditions, providing societies with predictable frameworks for interaction.

North argues that institutions affect economic activities because they affect transaction and transformation costs. Transaction costs are those costs associated with economic exchange and consist of: (1) The cost of measuring the values of what is being exchanged. (2) The cost of protecting rights, and policing and enforcing agreements. These costs arise because of incomplete information about the behaviour of the other party of economic exchange. Without institutions, there would be uncertainties over the behaviours of parties of economic exchanges. The other party may cheat, shirk, or deny agreements, if he/she finds it in his/her interests to do so. Because of this uncertainty, a risk premium will be included in the transaction cost. Institutions, both formal and informal, arise to provide exchange parties with rules and procedures that reduce the uncertainties involved in economic exchange. Informal institutions like codes of conduct, norms of behaviour, and conventions can reduce these uncertainties, but they can do that in personal simple exchange where exchange parties have a great deal of information about each other and they find it in their interests to live up to the agreement. Both self-interest and social sanctions provide the enforcement mechanism in such exchanges, and reduce the payoff of cheating, lying, etc. However, in complex, impersonal exchanges, where the returns on opportunism, cheating and shirking are high, a coercive third party is needed to enforce agreements and reduce

uncertainties. States can play this role and provide exchange parties with the enforcement mechanism via rules, laws, effective judicial systems, and other formal institutions.

Thus, when property rights are poorly protected and contracts are difficult to enforce, risk premium will be high and so transaction costs which, in turn, foreclose any complex impersonal exchange and economic activities will be restricted to simple interpersonal exchange.

Institutions can also affect economic activities by affecting transformation or production cost. North (1990) argues that production process is a function not only of the level of technology used, but also of the quality of institutions, and hence institutions play an important role in determining production costs. Institutions play this role because of their effects on the environment within which firms interact. Production process involves transforming inputs of land, labour, and capital, into output of goods and services. The efficiency of production process requires secure provision of these inputs. Firms will find it difficult to operate efficiently if they are not able to ascertain the quantity and quality of their inputs and hence their outputs. Thus, when there is variability in the quality or quantity of inputs, firms have to allocate more time and resources to organization, supervision, coordination, monitoring, and metering. Institutions can affect the variability in the quality or quantity of inputs, because they determine the enforceability, measurement, and uncertainty problems involved in input markets. Therefore, institutions can affect production costs by affecting the time and resources allocated to dealing with problems of inputs variability. They can also affect production costs by affecting the extent of production interruptions. Production process can be adversely affected when long queues or briberies are required to get different kinds of permits or different kinds of public services, all of which are determined by the efficiency of institutions.

The previous discussion makes it clear that institutions have potential effects on FDI inflows and that countries with good institutions will, ceteris paribus, attract more FDI. Institutions play this role because they affect transaction and transformation cost, which in turn affects the profitability of establishing production facilities in the host country. However, the impact of institutions of FDI may go beyond these effects (Henisz and Williamson 1999). Several reasons make Multinational Enterprises, MNEs, particularly sensitive to the institutional quality of the host country. For example, Henisz and Williamson (1999) and Henisz (2000) stress that in countries where property rights are not well protected, Multinational Enterprises face two kinds of political hazard or expropriation risk. First, a host country's government may find it tempting to behave in an opportunistic way and appropriate some of the returns of MNEs, or even nationalize them (the direct hazard). Second, because they have better access to political processes, host country partners or host country competitors may persuade the government to favour them at the expense of Multinational Enterprises (the indirect hazard). Moreover, recent developments in the global economy have changed the way that Multinational Enterprises perceive the locational advantages they seek, making them increasingly prefer locations which offer the best economic and institutional facilities (Dunning, 1998). The focus of Multinationals has moved from traditional locational advantages, like labour cost, availability of natural resources etc, to creative locational advantages which include knowledge-based assets, infrastructure and institutions (Narula and Dunning, 2000) and (Bevan, Estrin et al. 2004). The importance of institutions for Multinational Enterprises can be attributed to the fact that they represent the major immobile factors in a globalized market (Mudambi and Navarra 2002), and that Multinationals need them to efficiently utilize their core competencies, and augment and improve their firm-specific advantages (Dunning, 1998) and (Bevan, Estrin et al. 2004).

2.3. FDI inflows and institutions: Empirical evidence review

This section discusses recent findings of empirical studies that use cross-country regression to investigate the role of institutions in determining FDI inflows, highlighting issues that need further investigation. Table 3 provides an overview of the different studies in terms of country samples, time periods, and institutional variables used, and summarizes the main findings. The literature appears to offer several lessons. First, the majority of the studies show that institutions have significant effects on FDI. This can be broadly interpreted as a general consensus that institutions, however defined or measured, matter for FDI. Nevertheless, few studies do not find institutions to be significantly related to FDI. One example comes from Asiedu (2002), who concludes that neither political risk nor expropriation risk have significant effects on FDI. Another example comes from Noorbakhash et al (2001), who find that democracy and political risk are insignificantly related to FDI. Moreover, some authors, like Harms and Ursprung (2002), and Jun and Singh (1996), report that the effects of institutions on FDI are not robust.

These results may cast a doubt about the relevance of institutions to FDI, suggesting that institutions are not a robust determinant of FDI. However, they may be merely a result of sampling or measurement problems. Studies that tend to reject any significant impact of institutions on FDI are generally based on rather small country samples. For example, Noorbakhsh et al (2001) use 36 developing countries, while June and Singh (1996) use 31 countries. Using a small and limited country sample may, as noted by Campos and Kinoshita (2003), underestimate the effect of the relevant determinant if it exhibits a limited variation within that particular sample. As institutional indicators usually exhibit little time variation, inference on their impact should therefore ideally be based on large samples. This means that large samples, which represent the whole global market, not a

subset of it, should be used if one needs to properly assess the role of a specific determinant.

Measurement problems, on the other hand, result from using an inappropriate index to capture the impact of institutions. One aspect of the measurement problem is related to using indictors that capture only partly the quality of property rights. Although the above discussion shows that the central argument in North's proposition is that the absence of secure property and contractual rights raises transaction and transformation costs, and therefore discourages investment, including foreign direct investment, the Table shows that diverse measures of institutional quality have been used in the empirical literature, encompassing measures of democracy, political instability, corruption, political rights and civil liberties, property rights, social tension, etc. Most of these indicators do not directly capture the quality of property rights. For example, Knack and Keefer (1995) argue that measures of political instability, such as coups, revolutions, and political assassinations, or political freedom and civil liberties, capture only incompletely many of the relevant threats to property rights. They notice that the argument for using indicators of political instability to proxy property rights is that rulers who are facing the risk of losing power are more likely to expropriate rights, because they think that they will not incur the future cost of their present actions, and that the times of political instability are usually accompanied by periods of weak systems for protecting property rights.

However, Knack and Keefer (1995) argue that there are good reasons make us believe that indictors of political instability only partially capture property rights. One reason is that indices of political instability do not take into account the impact of losing power as a result of constitutional change, which is likely to have the same impact on rulers' actions with regard to the protection of property rights. In other words, the actions of rulers who are facing the risk of losing power as a result of constitutional change and their implication to property rights protection are not taken into account by measures of political instability.

Table 3: Summary of recent studies of the impact of institutions on FDI

Author(s)	*Sample*	*Institutions aspects considered & sources*	*Main results*
(Addison and Heshmati 2004)	110 countries	Democracy; Freedom House.	Democracy has a positive effect on FDI.
(Asiedu 2002)	71 developing countries, 1988-97	Political risk; Barro & Lee 1993. Expropriation risk; ICRG PRS.	Political risk and expropriation risk have no significant effects on FDI.
Asiedu 2005	22 African countries,1984-2000.	Corruption, rule of law; ICRG PRS, Political risk; Cross-National Time Series Data Archive.	Less corruption, political stability, and reliable legal system can attract FDI
(Busse and Hefeker 2007)	83 developing countries,1984-2003.	12 subcomponents of ICRG, Investment profile, internal and external conflict, ethnic and religious tension, rule of law, democracy, Military in politics Government stability, Socio-economic conditions, Quality bureaucracy, Corruption.	Government stability, the absence of internal conflict and ethnic tensions, basic democratic rights and ensuring law and order are highly significant determinants of FDI
(Busse 2004)	69 developing &emerging market countries, 1972-2001	Democracy; Freedom House	There is a powerful positive link between democracy and FDI, but this does not hold for 1970's and 1980's.
(Campos and Kinoshita 2003)	25 transition economies, 1990-1998.	Rule of law; ICRG & quality of bureaucracy; Campos 2000.	Both institutional aspects are positive and significant.
(Drabek and Payne 2002)	49 countries, 1991-95.	ICRG Political Risk Index; PRS.	A nation that takes steps to increase the degree of transparency in its policies and institutions could expect significant increase in FDI inflows.
(Gastanaga, Nugent et al. 1998)	22 less-developed countries,1970-95.	Nationalization risk, Contract enforcement, Bureaucratic delay; Business Environmental Risk Intelligence. BERI. Corruption; Mauro 1995.	Different institutional characteristics are shown to have significant effects on FDI.
(Globerman and	144 countries 1995-97	Governance Index, Rule of law, Political instability	The general Governance Index is more important than its

Shapiro 2002)		Regulatory quality, Government effectiveness, Graft and corruption, Voice and accountability; Kaufmann et al 1999	subcomponent and than Human development index and Infrastructure index.
(Harms and Ursprung 2002)	62 developing & emerging-market countries, 1989-97	Democracy; Freedom House. Political risk: expropriation, exchange control, and contract repudiation; ICRG. Business Environment: corruption, bureaucratic quality and law and order; ICRG PRS.	FDI appear to be attracted by countries in which civil and political freedom is respected. Other institutional aspects do not have robust effects on FDI.
(Jensen 2003)	114 countries, 1970-97.	Democracy; Polity III data Jagger & Gurr 1996, Government Reputation, Expropriation, Corruption, Rule of law, Bureaucratic quality; Easterly Data Set Easterly 1999.	Democracy has a robust positive effect on FDI. Other institutional aspects have no significant effects on FDI or on the effect of democracy on FDI.
(Jun and Singh 1996)	31 countries, 1970-93.	Political risk, Operational risk; Business Environmental Risk Intelligence. BERI. Political rights; Freedom House.	Institutional aspects have positive but not robust effects on FDI.
(Kolstad and Tøndel 2002)	61 developing countries, 1989-2000.	12 subcomponents of ICRG, Investment profile, internal and external conflict, ethnic and religious tension, rule of law, democracy, Military in politics Government stability, Socio-economic conditions, Quality bureaucracy, Corruption.	Foreign investors are concerned about and deterred by ethnic tension and internal conflict in a country. They pay less attention to external conflict, law and order and military in politics. Government stability and bureaucratic quality do not matter for FDI. Democracy is a very robust determinant of FDI.
(Li and Resnick 2003)	53 developing countries, 1982-95	Democracy; Polity IV. Property rights protection; Knack & Keefer 1995.	Democratic institutions affect FDI inflows both positively, by improving property rights, and negatively, by imposing constraints on FDI and host country's government.
(Méon and Sekkat 2005)	107 countries.	ICRG Political Risk Index; PRS, Corruption; Transparency International & Rule of law & Government effectiveness index; Kaufmann et al 1999.	It is Political risk in general that determines FDI not only one aspect of institutions such as corruption.
(Noorbakhsh, Paloni et al. 2001)	36 developing countries, 1980-94.	Democracy; Freedom House, Political instability; Euromoney.	Democracy and political risk have no significant effect on FDI.

Another reason is that there are many examples of rulers who systematically expropriate rights while managing to stay in power for a long time, and who successfully repress any coups or revolutions against them. The ignorance of such cases by measures of political instability would make poor specification and enforcement of property rights positively associated with political stability.

The same can be applied to measures of democracy and other measures of political and civil freedom. While democratic regimes generally tend to enhance economic and other rights, including property rights, there is nothing to guarantee that this would always be the case. Moreover, there is nothing preventing autocratic regimes from respecting property rights. In fact, and as noted by Clague et al (1996), there are lots of examples of bad democracies and good autocracies. In general, one might say that although these indices proxy to some extent the security of property rights, there are considerable measurement errors embodied in them, making them inappropriate measures for institutional quality and property rights in particular.

The other measurement problem is related to using only one single index like the *Expropriation Risk* or *Rule of Law* to capture the status of property rights. To the extent that investors make their decision with respect to the overall state of property rights rather than a single aspect of them, using an index that captures only one aspect of property rights quality will underestimate their role in determining FDI. To better assess the role of institutions on determining FDI inflows, a comprehensive indicator for institutions and property rights in particular should be used.

Second, despite the general agreement about the role played by institutions in determining FDI, the surveyed literature is difficult to interpret in terms of policy implications. The literature provides little guidance about the relative importance of institutional reform as a means to attract FDI. Policy makers may be interested in whether institutional reform has a

larger pay-off than other policies in terms of attracting FDI. Gastanaga et al (1998) acknowledge the scarcity of research on the effects of policy variables in general, and institutions in particular, on FDI. Apart from Gastanaga et al (1998) and Asiedu (2005), the surveyed literature does not provide much insight into the relative importance of institutions in determining FDI. The work of Gastanaga et al (1998) tests whether policy and institutional variables have any effects on FDI. They find institutional variables like contract enforcement, nationalization risk, and bureaucratic delay to have significant effects on FDI, but they do not try to compare them with the impact of other policy variables. The exception to this is corruption. They find that a doubling in the corruption index has an effect on FDI inflows that is approximately equal to a percent increase in the corporate tax rate.

Asiedu (2005), on the other hand, provides evidence comparing the effects of institutions on FDI with the effects of non-policy variables like the availability of natural resources and market size, concluding that countries that are small or lack natural resources can attract FDI by improving their institutions. Both of the studies use rather limited country samples, which makes generalizing the results to other countries problematic. More importantly, given the growing interest of many countries in attracting FDI inflows, policy makers may be interested more in knowing the relative importance of institutions compared with other policy tools they have rather than non-policy variables. This can help them to build their priorities for attracting FDI.

Third, although some authors acknowledge that institutions may differently affect different sectors, especially FDI in primary sectors, there has been no attempt to study institutions' effects on FDI at sectoral level. Asiedu (2002), explaining the insignificance of political risk in determining FDI inflows, states that FDI in primary sectors like petroleum, is very profitable even after controlling for political risk. More interestingly, Busse (2004) finds that the effect of democracy on FDI changes over time. In the 1970s and 1980s the effect

of democracy is not significant (in fact, in the 1970s, it is actually negative), while it is positive and significant in the 1990s. He partly attributes this result to the change of FDI structure in developing countries from the primary sector to manufacturing and services. Spar (1999) argues that FDI in the primary sector may not be sensitive to institutional quality in the host country: as resource-seeking FDI depends on the availability of raw materials compared to other kinds of FDI, choices are greatly limited when choosing between alternative investment sites. Referring to Spar's (1999) views, Busse (2004) states that FDI inflows to developing countries in the 1970s was driven largely by a search for raw materials, and that because of the importance of these sectors for both MNEs and host governments, they may arrive at an agreement in which host governments protect and maintain MNEs' access to natural resources, and in turn the host governments benefit from the inflows of investment of MNEs, and increase their earnings from selling the raw materials which directly relate to their power. Such an agreement makes MNEs follow natural resource deposits regardless of regime type in the host country.

Busse (2004) states that it is difficult to test Spar's hypothesis without getting the data on FDI inflows at sectoral level. Fortunately, UNCTAD has recently published data on FDI inflows at sectoral level, which makes it possible to examine Spar's hypothesis. More importantly, if primary FDI is found to be insensitive to institutional quality in host countries, then this may explain why some studies that use samples cover time periods or/ and countries in which primary FDI represents large share in aggregate FDI fail to find institutions significantly related to FDI.

2.4. Model and data description

This section specifies the model used in the empirical investigation of the relationship between institutions and FDI. It also provides a simple description of the data set used in the empirical investigation.

2.4.1. Model description

To empirically investigate the role played by institutions in determining FDI, the following simple model is used

$$FDI_{it} = \alpha_i + \beta Inst_{it} + CV_{it}'\delta + \varepsilon_{it} \quad (1)$$

Where

FDI, the dependent variable, is the log of net FDI inflows expressed as a percentage of GDP to take into account the effect of the country size.

$Inst$ is an indicator of institutional quality. It is constructed from the International Country Risk Guide (ICRG) which is provided by the Political Risk Services (PRS) Group. Since the beginnings of the 1980s, PRS Group has been providing information on 12 subcategories of political risk indicators that assess different aspects of institutional quality of 142 countries. ICRG is an indicator based on the evaluation of group expertise to meet the need of foreign investors for an indicator of potential risks to international business operations. Although ICRG and other institutional indices are subjective indicators, two facts give them some credibility (Clague et al, 1996). First, firms producing these kind of indictors have strong incentives to make them as accurate as possible, so that they can sell them to foreign investors. Second, these indicators are being used in practice by foreign investors to evaluate the institutional quality of potential host countries. Besides, ICRG has been used widely in economic literature to proxy institutions. Another advantage of ICRG is that it provides a consistent cross-sectional time series measure for several aspects of institutional quality. The index used in this chapter is constructed from combining two subcomponents of ICRG: *Investment Profile* index and *Law and Order* index. These indicators measure the quality of institutions that are related to property rights, such as expropriation risk, risk of contract repudiation by the government, the strength and

impartiality of the legal and judicial system, and observance of the law. *Inst* varies from 0 to 12, where higher values indicate better institutions and secure property rights.

CV is a vector of controlling variables drawn from the empirical literature of FDI determinants.

α_i is a common fixed-effect term.

ε_{it} is the disturbance term.

i denotes cross-section unit with $i = 1, 2, ..., N$; N is the number of countries.

t denotes time-periods with $t = 1,\ 2, ..., T$; T is number of time periods.

Choosing the set of controlling variables is to some extent problematic, because the empirical literature suggests a large number of variables as potential determinants of FDI, and while some of these are proposed by various theories of FDI, others are included because they can be linked intuitively to FDI (Moosa and Cardak, 2006). However, some of these variables have appeared repeatedly significant in different studies, which lends them some sort of robustness as important determinants of FDI. Two variables have appeared repeatedly in the empirical literature: market size indicator and trade openness. For example, Chakrabarti (2001) applies extreme bound analysis to assess the robustness of a number of variables as FDI determinants, and concludes that market size, as measured by GDP per capita, is the most robust determinant of FDI and that openness to trade, measured by trade – GDP ratio, is more likely to be correlated with FDI than any other potential determinant. Moosa and Cardak (2006), on the other hand, find that openness, measured by export – GDP ratio, and infrastructure quality, measured by telephone lines per thousand people, to be the most robust determinants of FDI.

Given this evidence, and following the main-stream of FDI literature, the controlling variable vector will include the following variables:

LGDPpc, the log of GDP per capita, which is used to capture the influence of market size of the host country. FDI literature documents that a market size measure is expected to have a positive impact on FDI, as a large market means a greater demand for goods and services which attracts market-seeking FDI.

Open, the ratio of merchandised trade to GDP, which is used to capture the influence of trade openness on FDI.

Tele, the number of telephones per 1000 population, which is used to proxy the quality of physical infrastructure of the host country. *Tele* is expected to be positively correlated with FDI, as good infrastructure augments the efficiency of investment, and therefore attracts FDI, especially efficiency-seeking FDI.

In addition to these three variables, the set of controlling variables will include other policy-related variables. The inclusion of policy-related variables allows us to compare the relevance of institutional quality to foreign investors vis-à-vis policy options available to policy makers to attract FDI. Thus the model will include the following three variables:

Tariff, the mean of tariff rate, which is used to capture the impact of trade policy on FDI. The literature documents that a more liberal trade policy and low level of tariff attract FDI.

Infl, the inflation rate, which is measured by the annual percentage change in the consumer price index. Inflation rate is used as a proxy for macroeconomic stability. Macroeconomic stability reduces the level of uncertainty encountered by investors and increases the level of confidence in the economy, which encourages FDI.

$LTax$, the log of top marginal corporate income tax rate, which is used to capture the impact of the corporate statutory tax rate on FDI. Higher tax rates are expected to reduce FDI.

Thus, the model that will be used as a benchmark to assess the role played by institutions in determining FDI, takes the following form:

$$FDI_{it} = \alpha_i + \beta Inst_{it} + \delta_1 LGDPpc_{it} + \delta_2 GDPG_{it} + \delta_3 Open_{it} + \delta_4 Tele_{it} + \delta_5 Tariff + \delta_6 Infl_{it} + \delta_7 LTax + \varepsilon_{it} \quad (2)$$

2.4.2. Data description

The empirical analysis is based on 69 developing countries and covers the period from 1981 to 2005. A list of the countries included in the sample, and data sources for all variables used in the analysis, are presented in Appendix II. The choice of countries and the time period is determined by the availability of the data. All data were sampled at 5-year intervals for 25 years from 1981 to 2005, that is, 1981-1985, 1986-1990, 1991-2000, and 2001-2005. Transforming data from annual observations to five-year averages has several advantages. First, it may help to limit the impact of business cycles on the estimated coefficient, as FDI net inflows vary widely from year to year, resulting in large fluctuations that may obscure the impact of persistent variables like institutions on FDI. Second, averaging the data over five-year intervals reduces the number of observations with zero or negative values, which would otherwise be excluded from the regression analysis. Excluding such observations is likely to bias the country sample. Moreover, some of the explanatory variables included in the benchmark model, such as the average tariff rate and the top rates of corporate income tax, are available only as five year averages.

Table 4 gives summary statistics of the variables included in the benchmark model and Table 5 shows the correlation matrix for all the explanatory variables and the log of FDI, the dependent variable.

Table 4: Descriptive statistics of the variables used in benchmark model

Variable	*Obs*	*Mean*	*Std. Dev.*	*Min*	*Max*
FDI	255	0.28	1.43	-6.75	3.01
LGDPpc	255	7.29	1.11	4.44	10.21
GDPG	255	1.83	2.98	-8.97	10.95
Open	255	61.66	47.67	11.43	317.73
Tariff	255	19.10	15.67	0.00	98.80
Infl	255	56.82	256.32	-1.34	2692.45
Tele	255	100.17	119.20	0.19	568.55
LTax	255	3.62	0.36	2.30	4.47
Inst	255	6.66	1.81	2.13	11.41

The correlation matrix shown in Table 5 gives a first but crude approximation of the relationship between FDI and its determinants. The Table shows, as expected, that FDI has a negative correlation with tariff rate, inflation, and tax rate. The Table also shows that FDI is positively correlated with indictors of market size, log of GDP per capita and GDP growth rate, the ratio of trade to GDP, infrastructure quality, and institutional quality. However, the Table shows that the relationship between FDI and indicators of openness to trade is particularly strong. On the other hand, the correlation between FDI and market size variables, *LGDPpc and GDPG*, is not that strong. The same applies to inflation and infrastructure quality. Institutions and tax level have a fairly strong correlation with FDI, as shown by the sizes of the correlation coefficients.

Table 5: Correlation matrix of the variables included in benchmark model

	FDI	*LGDPpc*	*GDPG*	*Open*	*Tariff*	*Infl*	*Tele*	*LTax*	*Inst*
FDI	1.000								
LGDPpc	0.187*	1.000							
Growth	0.200*	0.053	1.000						
Open	0.416*	0.194*	0.161*	1.000					
Tariff	-0.429*	-0.588*	-0.067	-0.303*	1.000				
Ifla	-0.157*	-0.102*	-0.318*	-0.066	0.089	1.000			
Tele	0.231*	0.859*	0.079	0.187*	-0.559*	-0.111*	1.000		
LTax	-0.344*	0.260*	-0.131*	-0.222*	0.077	-0.058	0.185*	1.000	
Inst	0.342*	0.708*	0.247*	0.270*	-0.567*	-0.220*	0.768*	0.099	1.000

* indicates significance at the 0.05 level or better.

The correlations between FDI and the variables included in the benchmark model are further illustrated in Figure 5.

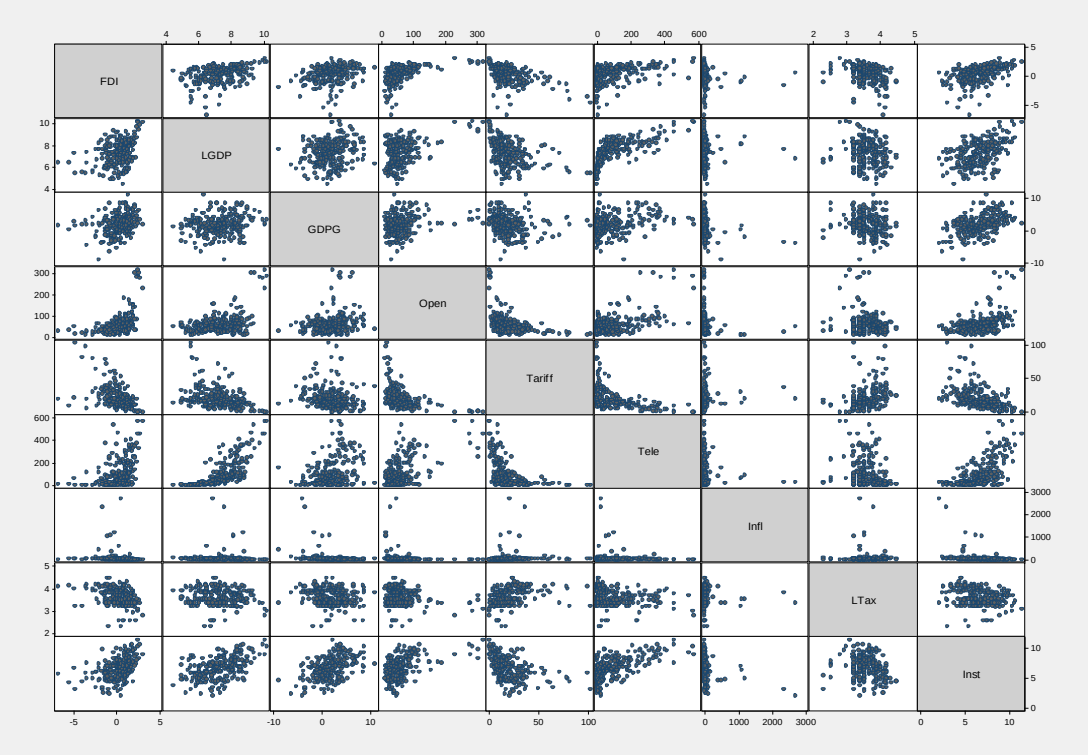

Figure 5: Correlation matrix of regression variables

2.5. The empirical results

To empirically assess the role played by institutions in determining FDI inflows, Model 2 will be estimated using a panel approach. The empirical investigation will first cover the impact of institutions on aggregate FDI, and then the role of institutions at sectoral level will be considered.

2.5.1. The results from aggregate FDI

Table 6 contains the results obtained by estimating different variants of Model 2. The results are based on a random-effects model, since the Hausman (1978) test suggests using a random-effects model instead of a fixed-effects model. And as mentioned above, the dependent variable is the log of FDI-GDP ratio expressed as five-year averages.

Column 1 of Table 6 reports the results of the benchmark Model without the institutions variable, *Inst*. The results shows that FDI were attracted to countries with growing markets, as the coefficient on GDP growth rate, *GDPG*, is positive and significant. This may indicate that market-related variables are important for FDI. However, the other market size indicator, the log of GDP per capita, appears insignificant, indicating that market size is not an important factor in explaining the variations of FDI within the considered sample. This result seems to contradict the results of most empirical studies on FDI determinants. Nevertheless, it is not an uncommon result in the empirical literature. For example, Lunn (1980), UNCTC (1992), and UNCTAD (1998) find market size insignificantly related to FDI. The results in column 1 also show that trade openness, as measured by trade-GDP ratio, has a positive and significant impact on FDI, and that countries with higher trade-GDP ratio attracted, ceteris paribus, more FDI. The importance of a liberal trade regime for FDI is further supported by the negative and significant impact of Tariff rate on FDI. Column 1 also shows that infrastructure, as measured by the number of telephone lines per

thousand population, and macroeconomic stability, as measured by the percentage change on consumer price index, are insignificantly related to FDI. The results also show that tax level plays a significant role in determining FDI, as higher corporate income tax reduces FDI inflows. In column 2, the indicator of institutional quality is added to the model. The results in column 2 indicate that institutions play significant roles in determining FDI inflows, as shown by the positive and significant coefficient on the institutions variable, *Inst*. This means that FDI is attracted to countries with high quality institutions that protect property rights.

Table 6: FDI Determinants: Random-Effects regressions, 1981-2005 (5-year averages)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
LGDPpc	0.023	-0.026	-0.035	-0.019	-0.027	0.015	-0.007
	(0.19)	(-0.22)	(-0.22)	(-0.16)	(-0.22)	(0.14)	(-0.04)
GDPG	0.053**	0.040*	0.027	0.036	0.042*	0.030	0.035
	(2.27)	(1.70)	(0.84)	(1.38)	(1.72)	(1.20)	(0.86)
Open	0.009***	0.008***	0.010***	0.008***	0.008***	0.006**	0.008**
	(3.60)	(3.40)	(3.30)	(3.43)	(3.49)	(2.53)	(2.24)
Tele	0.001	0.001	-0.001	0.001	0.001	0.001	-0.001
	(1.33)	(0.83)	(-0.38)	(0.81)	(0.71)	(1.12)	(-0.36)
Tariff	-0.026***	-0.024***	-0.023***	-0.022***	-0.024***	-0.023***	-0.020**
	(-4.09)	(-3.82)	(-3.06)	(-3.08)	(-3.87)	(-3.47)	(-2.19)
Infl	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
	(-1.20)	(-0.80)	(-0.51)	(-0.92)	(-0.77)	(-0.91)	(-0.38)
LTax	-0.582**	-0.493**	-0.298	-0.425*	-0.506**	-0.523*	-0.444
	(-2.32)	(-2.05)	(-0.90)	(-1.87)	(-2.10)	(-1.94)	(-1.18)
Inst		0.114**	0.187**	0.103**	0.111**	0.111**	0.185**
		(2.27)	(2.52)	(2.03)	(2.19)	(2.17)	(2.41)
Sch			0.337				0.373
			(1.12)				(1.27)
BMI				0.029			0.008
				(0.75)			(0.19)
Gov					0.009		0.023
					(0.54)		(0.81)
Reso						0.009	0.004
						(1.17)	(0.31)
cons	1.955*	1.292	-0.205	0.764	1.235	1.158	-0.270
	(1.82)	(1.19)	(-0.13)	(0.62)	(1.10)	(1.04)	(-0.14)
R2	0.396	0.403	0.408	0.400	0.406	0.440	0.4609
Wald test	177.5	186.3	150.6	189.5	182.0	179.2	155.96
No. countries	69	69	51	69	69	68	51
No. observations	255	255	159	255	253	242	152

z-values reported in parentheses. *, **, and *** denote significance at 10%, 5%, and 1%, respectively

To test the sensitivity of these results, other potential FDI determinants are added to the benchmark model. In column 3, the level of human capital, as measured by the average years of secondary schooling in the total population, *Sch*, is added to the set of the controlling variables. A number of papers argue that the level of human capital is an important factor in determining FDI, especially in an increasingly globalized world (Noorbakhsh, Paloni et al., 2001). However, the results show that the human capital indicator, *Sch*, does not play a significant role in determining FDI within the sample considered. With regards to the impact of institutions on FDI, controlling for the impact of human capital does not affect the significance of the institutional quality indicator, *Inst*. In column 4, the impact of exchange rate distortion, as measured by the index of difference between official exchange rate and black market rate, is controlled for. However, the results show that the coefficient on the exchange rate distortion index, *BMI*, is not significant although it has the expected sign. Again, the relevance of institutions to FDI is not affected by controlling for exchange rate distortion. In column 5, the role of government size, *Gov*, as measured by the ratio of government spending to GDP is controlled for. The results show that controlling for government size does not affect the significance of institutions. In column 6, the role of the availability of natural resources, *Reso*, as measured by the ratio of primary exports to GDP, is added to the model. The availability of natural resources is expected to be positively correlated with FDI, as abundant natural resources are expected to attract more FDI, especially resources-seeking FDI. The results shown in column 6 indicate that although *Reso* has the expected sign, it is not significantly related to FDI. Moreover, controlling for the role of resource availability does not affect the significance of institutions. Even more interesting is that controlling for all of these variables at the same time in column 7 does not affect the relevance of institutions to FDI.

Several aspects of the results from different variants of Model 2 can be highlighted: **First,** it seems that institutions have a positive and significant impact on FDI and that this impact is not sensitive to controlling variables changes.

Second, as far as the country sample and time period covered is concerned, it seems that FDI is driven mainly by the liberty of the trade regime and institutional quality, and to a lesser extent, by corporate tax level, while market size indicators, infrastructure quality, and macroeconomic stability did not play a significant role in determining FDI inflows. Given these results, it might be interesting, especially for policy makers, to explore the relative importance of institutions in attracting FDI inflows compared with other variables, particularly with policy related variables like tariff rates and taxes. This is particularly important as empirical literature provides little guidance on the relative contribution of institutional quality in attracting FDI. Using beta[5] coefficient estimates can help to assess the relative importance of the contributions of various variables included in the benchmark.

Table 7 compares the impact of a favourable change in each of the explanatory variables by one standard deviation on log of FDI expressed as units of standard deviations. For example, a reduction in Tariff rate by one standard deviation will increase the log of FDI-GDP ratio by 0.26 standard deviation. The Table also reports the *P-value* of the estimated coefficients. As can be seen from the Table, the contribution of institutions in attracting FDI is greater than the contribution of taxes, and the growth of the market size. However, the contribution of institutions is far less than the contribution of the tariff rate and the contributions of trade ratio.

[5] Beta coefficient, or standardised coefficient, is used to overcome the problem of unit measurement since beta coefficients measure the impact of a one-standard-deviation change in a given regressor on the dependent variable.

Table 7: Relative contribution of explanatory variables in attracting FDI

Variable	*$LGDP_{pc}$*	*GDPG*	*Open*	*Tariff*	*Infl*	*Tele*	*LTax*	*Inst*
Coefficient	-0.020	0.084	0.267	0.260	0.039	0.065	0.124	0.144
P- Value	0.827	0.089	0.001	0.000	0.422	0.408	0.040	0.023

The coefficients on *LGDPpc*, *Infl* and *Tele* are not significant. The results from this Table indicate that institutional quality is a very important factor in attracting FDI. However, it is of lower importance than liberalizing the trade regime.

Third, it seems that using an institutional quality indicator that proxies the quality of property rights protection helps to reduce the inconclusiveness of the evidence regarding the relevance of institutions to FDI reported by some empirical studies. However, it is informative to investigate the role played by other aspects of institutions and to verify whether institutions related to property rights dominate other aspects of institutional quality proposed by the empirical literature on FDI. If property rights institutions are found to be the most relevant institutional aspect to FDI, then this explains why some studies that use either indicators capturing a subset of property rights protection or indicators capturing institutional aspects other than property rights, fail to find a significant relationship between institutions and FDI.

To assess the role played by other institutional aspects in determining FDI, ICRG subcomponents are rearranged to proxy four institutional aspects that are considered by empirical literature as potential determinants of FDI, namely democracy (*Demo*), corruption (*Corr*), political instability (*Polt*), and social tension (*Soci*)[6]. Table 8 reports the results of adding the various institutional aspects indicators to the benchmark model. Column 1 reports the results of the benchmark model. In the next five columns, various institutional variables are added to the model one at time, and then all of them at once in column 6. The results reported in Table 8 show that other institutional aspects have no

[6] Appendix II shows how these indicators are constructed.

significant impact on FDI if the property rights aspect of institutions is controlled for. Moreover, the property rights indicator maintains its significance at least at 10% in all columns. The reduction in the significance of the property rights indicator in some specifications may be a result of the high correlation between the property rights indicator and other institutional variables, particularly the correlation with *Polit* and *Demo*. These results suggest that institutions linked to the protection of property rights are the most relevant institutions to FDI, and that the impact of other aspects of institutions on FDI, if any, work through their effects on property rights.

Table 8: FDI and institutional variables, Random-Effects regressions, 1981-2005 (5-year averages)

	(1)	(2)	(3)	(4)	(5)	(6)
$LGDP_{pc}$	-0.047	-0.055	-0.064	-0.066	-0.023	-0.062
	(-0.38)	(-0.44)	(-0.51)	(-0.52)	(-0.18)	(-0.47)
GDPG	0.053**	0.053**	0.056**	0.056**	0.047*	0.051**
	(2.37)	(2.38)	(2.53)	(2.49)	(1.90)	(2.12)
Open	0.007***	0.007***	0.007***	0.007***	0.007***	0.007***
	(3.00)	(3.04)	(2.91)	(3.09)	(2.92)	(2.91)
Tele	0.001	0.001	0.001	0.001	0.001	0.001
	(1.22)	(1.19)	(1.36)	(1.15)	(1.02)	(0.99)
Tariff	-0.027***	-0.026***	-0.027***	-0.026***	-0.027***	-0.027***
	(-4.97)	(-4.93)	(-5.06)	(-4.86)	(-5.14)	(-5.15)
Infl	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
	(-0.89)	(-0.89)	(-0.86)	(-0.89)	(-0.91)	(-0.90)
LTax	-0.358*	-0.364*	-0.374*	-0.365*	-0.417*	-0.473**
	(-1.72)	(-1.74)	(-1.80)	(-1.73)	(-1.83)	(-1.98)
Inst	0.098**	0.090*	0.089*	0.088*	0.132**	0.118**
	(2.06)	(1.78)	(1.86)	(1.79)	(2.28)	(2.03)
Demo		0.015				0.021
		(0.49)				(0.63)
Corr			0.057			0.053
			(0.86)			(0.72)
Polti				-0.028		-0.040
				(-1.01)		(-1.29)
Soci					0.032	0.036
					(0.82)	(0.81)
Cons	1.156	1.176	1.215	1.101	1.527	1.722
	(1.06)	(1.07)	(1.12)	(1.01)	(1.29)	(1.43)
R2	0.410	0.409	0.408	0.419	0.409	0.416
Wald test	197.6	200.0	198.5	199.9	197.0	205.0
No. countries	68	68	68	68	68	68
No. observations	251	251	251	251	251	251

z-values reported in parentheses. *, **, and *** denote significance at 10%, 5%, and 1%, respectively.

2.5.2. The results from sectoral FDI

The studies surveyed above use aggregate FDI data to explore the role played by institutions in determining the variations of FDI inflows. However, some papers argue that the impact of institutions on FDI may differ across primary, manufacturing, and services sectors. For example, Asiedu (2002) finds that institutional indicators like political instability and expropriation risk are insignificantly related to FDI. She argues that this result should not be surprising, since a country like Angola, which ranked first in attracting FDI in Sub Saharan Africa, is also a highly instable country. The reason for this, according to Asiedu, is that FDI to Angola is driven mostly by the availability of petroleum resources, and that the returns on these investments are high enough to cover the risk of political instability. Asiedu (2002) concludes that political risk and expropriation risk are less relevant for primary FDI, particularly in the oil sector.

Moreover, Busse (2004) argues that democracy matters more for FDI in the manufacturing and services sectors, but less for FDI in the primary sector. He outlines that there are claims that MNEs support repressive regimes and neglect political freedom, and adds that there is some anecdotal evidence that MNEs, especially in extractive industries, do not refrain from investing in non-democratic countries, and that they even collude with these non-democratic regimes. The examples include Shell in Nigeria, Uncoal in Myanmar, British Petroleum in Columbia, and United Fruit in Guatemala. Busse (2004) argues that primary FDI as a resource-seeking FDI has little choice as where to invest, but has to follow resource deposits. This fact, according to Busse (2004), may cause primary FDI to be less sensitive to the institutional quality of the host country. Busse (2004) tries to verify the hypothesis that FDI in the primary sector may not be sensitive to democracy, but he does so by studying aggregate FDI in the 1970s and 1980s. His main argument is that most FDI inflows to developing countries in the 1970s and 1980s were driven to the primary sector, and that studying the relationship between aggregate FDI and democracy in these

periods may help to uncover the relationship between primary FDI and democracy. Busse (2004) finds that democracy is insignificantly related to FDI in the 1970s and 1980s, but that it becomes significant in the 1990s. He considers his results as support for Spar's hypothesis, but states that testing Spar's hypothesis requires using disaggregated data on FDI.

Despite these arguments and evidence, the literature on FDI determinants shows little or no interest in exploring the impact of institutions in different FDI sectors. The aim of this section is to investigate the influence of institutions on FDI in the main economic sectors: primary, manufacturing, and services.

First, an approximate exploration of the relationship between institutions and FDI in primary, manufacturing, and services sectors is shown in Table 9. This Table shows the correlation matrix of institutions and FDI in various sectors, and as can be seen from the Table, the simple correlation coefficient between the log of primary FDI inflows, *LFDIP*, and institutional quality indicator, is very low and insignificant, while the same coefficients for manufacturing FDI, *LFDIS*, and services FDI, *LFDIT*, are relatively high and significant. It is clear from the Table that the relationship between institutions and FDI on the primary sector is not a strong one, at least compared with FDI in manufacturing and services sectors. A further insight into the relationship between institutions and FDI in various sectors is shown in Figure 6, which shows a scatter graph for the relationship between institutions and FDI in various sectors. Another feature of Table 9 and Figure 6 is that the correlation between institutions and FDI on the service sector appears relatively strong compared to the correlation between institutions and FDI in the manufacturing sector. This suggests that FDI in the services sector is more sensitive to institutions than FDI in the manufacturing sector.

Table 9: Correlation matrix of institutions and FDI in various sectors

	LFDIP	*LFDIS*	*LFDIT*	*Inst*
LFDIP	1			
LFDIS	0.251*	1		
LFDIT	0.335*	0.581*	1	
Inst	0.088	0.356*	0.509*	1

* indicates significance at the 0.05 level or better.

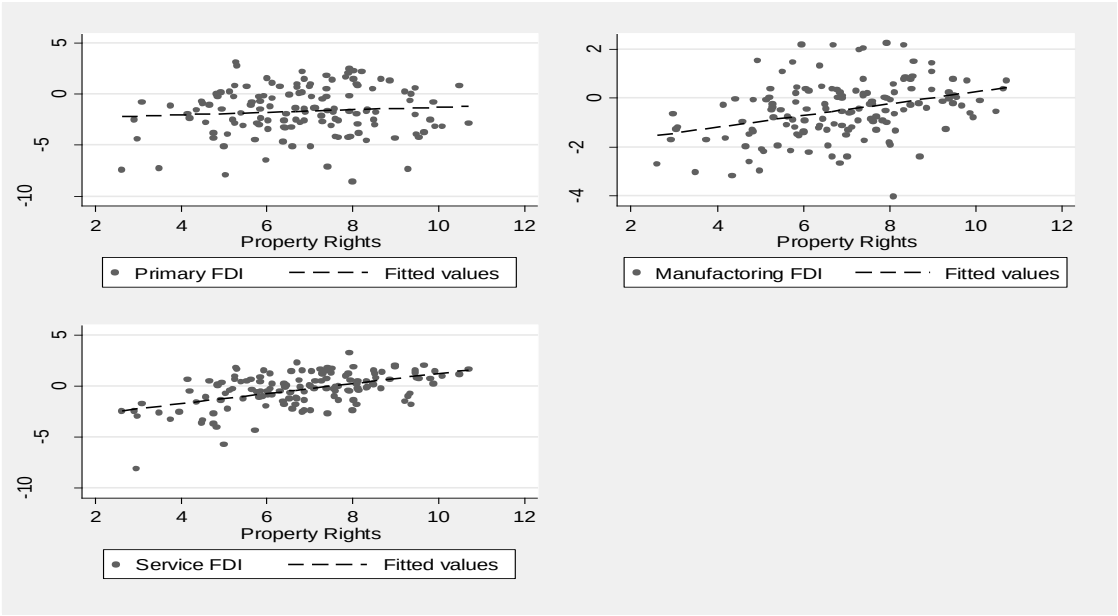

Figure 6: Simple correlation between institution and FDI in various sectors

Table 9 and Figure 6 can be considered as the first support for the hypothesis that FDI in the primary sector is not sensitive to institutional quality in host countries, and that the relevance of institutions to FDI may vary across sectors. However, testing this hypothesis requires more than simple correlation coefficients or scatter graphs.

To investigate whether institutions affect FDI differently in different sectors, one needs to specify the determinants of FDI at sectoral level, and to control for sector specific determinants. However, this is not an easy task, since the literature on FDI determinants by

sectors is very rare, especially when it comes to primary FDI. It is important to stress that the intention here is not to provide a perfect model specification to sectoral FDI. However, better evaluation of the role of institutions at sectoral level requires controlling for sector specific determinants. One way to do this is to use the benchmark model as a general framework to study various sectors, and to adjust it either by adding or excluding variables in the light of theoretical arguments and empirical evidence proposed by the relevant literature.

One important adjustment to the benchmark model is related to modelling primary FDI. Dunning (1993) argues that the locational advantages for natural resource-seeking FDI are the availability of resources, the level of taxes, and the quality of transport infrastructure. Besides, it is difficult to argue that primary FDI, as resource-seeking FDI, is affected significantly by the market size of a host country or its growth rate. The same applies to trade openness indicators. Thus, primary FDI is modelled as a function of the availability of natural resources measured by *Reso*, tax level, *LTax*, in addition to the ratio of paved roads as a percentage of total roads, *Road*, to proxy the quality of transport infrastructure, while market size indictors, $LGDP_{pc}$ and *GDPG*, and trade openness indicators, *Open* and *Tariff*, are dropped.

For manufacturing FDI, most of the variables on the benchmark model are relevant, however, Stobaugh (1969) argues that GDP as whole, or GDP per capita, may not be a good indicator for market size for a specific industry or sector. He proposes using manufacturing output to proxy the market size. Following this proposal, Root and Ahmed (1979) use the ratio of manufacturing output to GDP as a potential determinant of FDI in the manufacturing sector. Thus, following this argument, and given that the log of GDP per capita appears insignificantly related to aggregate FDI in Table 6, the ratio of manufacturing output to GDP, *Manuf*, will be used instead of the log of GDP per capita to proxy the market size. Other variables will stay the same.

To model service FDI, some changes to the benchmark model are needed, because there are some reasons to believe that the determinants of services FDI may differ from those proposed by the benchmark model. First, Kolstad and Villanger (2004) notice that services FDI is by and large a non-tradable sector, and its products are not exchanged across country borders. Thus it is difficult to argue that tariff rates may affect services FDI to any large extent. Second, satisfying the demand for services requires in general a physical presence in a host country, and thus services FDI can be considered generally as market-seeking FDI (Kolstad and Villanger, 2004). Therefore, market size indictors are expected to be important for services FDI. Thus services value added as percentage of GDP, will be used to proxy the market size of this sector. However, the empirical literature on services FDI shows that the source of demand for the products of services FDI does not come only from local business in host countries, but also from foreign investors in other sectors, particularly in the manufacturing sector (Kolstad and Villanger, 2004). FDI in services like finance, business, transport, and post and telecommunications, known generally as producers services (Norads, 2001), are expected to follow manufacturing FDI in order to provide them with essential components for their success in the global market (Kolstad and Villanger, 2004). Following this line of argument, one may expect that a greater degree of integration in the world economy, such as in the large international trade sector, will increase the demand for producer services, particularly in finance and insurance, and in telecommunications etc and therefore attract more services FDI. Kolstad and Villanger (2004) find services FDI to be positively and significantly related to manufacturing FDI, and to the ratio of trade to GDP. Thus services FDI will be modelled as a function of all the explanatory variables included in the benchmark model, apart from the tariff rate, and the log of manufacturing FDI as ratio of GDP, *LFDIS*, will be added to the set of the explanatory variables.

To test whether FDI in different sectors reacts differently to institutional quality in host countries, the random effects panel technique is used. The dependent variables are the log of five year averages of FDI to GDP ratio in various sectors.

Table 10 reports the results of estimating the determinants of FDI in the three sectors; primary, manufacturing, and services. Columns 1, 4, and 6 in Table 10 show the results of regressing FDI in primary, manufacturing, and services FDI, respectively, on institutional quality index alone. This may help to give an initial indication of the heterogeneity in the impact of institutions on FDI in various sectors. The results in columns 1, 4, and 6 show that institutions are positively and significantly related to FDI in primary, manufacturing, and services sectors. However, it seems that the relevance of institutions to services FDI is particularly strong, as can be seen from the volume of the coefficient of institutions, which is nearly double the volume of manufacturing and primary FDI. Moreover, the relatively low value of *t* statistics of institutions coefficient in the equation of primary FDI, may suggest that the relationship between institutions and primary FDI is not very strong, at least compared with the relations between institutions and manufacturing and services FDI.

Of course, a proper evaluation of the role of institutions requires controlling for other potential determinants in each sector. In column 2, the availability of natural resources and tax level are controlled for by introducing *Reso* and *LTax*. The results show that primary FDI is positively and significantly related to the availability of natural resources as measured by the ratio of primary exports to GDP. The results also show that primary FDI reacts negatively and significantly to taxes. More related to the aim of this chapter is the finding that the institutional quality indicator loses its significance once these variables are controlled for.

Table 10: Determinants of FDI by sector, Random Effects regressions, 1981-2005 (5 year averages)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Primary FDI			Manufacturing FDI		Services FDI	
Inst	0.260**	0.081	0.157	0.276***	0.159**	0.592***	0.218***
	(2.27)	(0.71)	(1.37)	(6.57)	(2.42)	(7.01)	(3.04)
Reso		0.130***	0.121***				
		(5.27)	(5.10)				
LTax		-2.133***	-1.863***		-0.156		-0.616**
		(-3.06)	(-2.75)		(-0.51)		(-2.02)
Road			-0.024***				
			(-2.58)				
Manuf					0.039*		
					(1.78)		
Open					0.003		0.014***
					(0.84)		(2.75)
Tariff					-0.019***		
					(-2.63)		
Infl					-0.001***		0.001
					(-4.92)		(0.24)
Tele					-0.001		-0.001
					(-1.06)		(-1.06)
Serv							0.047***
							(2.60)
LFDIS							0.631***
							(5.44)
cons	-3.452***	4.214	3.743	-2.444***	-1.423	-4.376***	-2.294
	(-3.78)	(1.54)	(1.45)	(-7.50)	(-1.20)	(-6.52)	(-1.32)
R2	0.008	0.411	0.474	0.127	0.287	0.259	0.549
Wald test	5.2	30.3	46.3	43.2	86.5	49.1	210.7
No. countries	52	42	42	55	45	53	44
No. observations	133	109	109	140	112	138	110

z-values reported in parentheses. *, **, and *** denote significance at 10%, 5%, and 1%, respectively.

In column 3, the quality of transport infrastructure as measured by the ratio of paved roads to total roads, *Road*, is controlled for. Contrary to what is expected, the coefficient on *Road* is negative and significant, a result that is difficult to explain. However, controlling for road quality does not affect the result that institutions enter insignificantly in the primary FDI equation.

In general, these results suggest that institutions do not play a significant role in determining FDI in the primary sector. This result can be considered as an empirical support to the argument made by Spar (1999), Asiedu (2002), and Busse (2004), which states that primary FDI may not be sensitive to institutional quality in host countries.

In column 5, other potential determinants of manufacturing FDI are controlled for. The results show that taxes, infrastructure quality, as measured by *Tele*, and trade ratio, do not play significant roles in determining FDI in this sector. On the other hand, the results show that trade barriers, as measured by tariff play a significant role in determining FDI inflows to this sector where high tariff rates discourage manufacturing FDI. This may indicate that manufacturing FDI to the sample countries were largely vertical FDI. However, the market size consideration still play a role in attracting manufacturing FDI although it is not that strong role as shown by the low *t* statistics of the coefficient on *Manuf*, the ratio of manufacturing output to GDP. Macroeconomic stability, as measured by *Infl*, appears to play a highly significant role where higher inflation rates discourage FDI in the manufacturing sector. More related to this chapter's aim is that institutions appear to play a significant role in determining FDI flows to this sector.

In column 7, other potential determinants of services FDI are controlled for. The results show that taxes, contrary to the results found in the manufacturing sector, play a significant role in determining services FDI, while macroeconomic stability does not. In another contrast with manufacturing FDI, services FDI is affected significantly by the market size indicator, *Serv*; the ratio of services value added to GDP. The results show that services FDI is not only attracted by the demand of local agents and businesses, but also by the demand of foreign investors in the manufacturing sector, as shown by the significant coefficient on the log of manufacturing FDI – GDP ratio. Moreover, services FDI is also attracted by the volume of international trade in host countries, which indicates that

services FDI reacts also to the demand resulting from increasing integration in the world market.

However, services FDI shows some similarities to manufacturing FDI. For a start, they are both insensitive to the quality of infrastructure in the host country, as shown by the insignificant coefficient on *Tele* in columns 5 and 7. Another similarity is that they both react significantly to institutional quality in host countries. However, it seems that the impact of institutions on FDI in the services sector is stronger than on manufacturing FDI, though it is difficult to test this claim empirically, as columns 5 and 7 are not directly comparable.

2.6. Conclusion

This chapter aims to assess the role of institutional quality in determining FDI inflows, and to address some of the issues related to the inconclusiveness of the empirical evidence reported in the relevant literature. The analysis in this chapter covers 69 developing countries during the period from 1981 to 2005. The main results of this chapter can be summarized as follows:

First, institutional quality plays a significant role in determining FDI inflows, as institutions appear to have a consistent effect on FDI under different model specifications and various controlling variables. Therefore, institutional quality can be considered as a quite robust determinant of FDI. Moreover, compared with the impact of other variables on FDI, institutions appear to have a rather strong influence, as the impact of institutions on FDI is greater than those of the growth of the market size, the degree of macroeconomic stability, infrastructure quality, and tax levels. Thus, institutional quality can be considered as one of the most important factors that foreign investors consider when deciding where to invest.

Second, compared with other institutional attributes, such as democracy, corruption, political instability, and social tension, property rights protection is the most relevant institutional quality to foreign investors, and once the property rights index is controlled for, other institutional attributes lose their significance. This result can be considered as a possible explanation for the failure of the studies that use indices other than the property rights index to proxy institutions to find a robust relationship between institutions and FDI, as these indices may not fully capture the status of property rights protection, which is the most important institutional attribute for foreign investors.

Third, the relevance of institutional quality is not equally important across all sectors of FDI. In particular, institutional quality does not have a robust impact on primary FDI, while it does have a positive and robust impact on both manufacturing FDI and services FDI. Moreover, there is tentative evidence that services FDI is more sensitive to institutional quality than manufacturing FDI. This result can be considered as support for Spar's notion that primary FDI is not particularly sensitive to institutional quality on host countries. It also helps explain why some studies that use country samples or time periods where primary FDI represents a large share on FDI inflows, fail to find a robust relationship between institutions and FDI.

Beside the academic significance of these results, as they help to reduce the inconclusiveness of evidence regarding the impact of institutions on FDI, and provide a better assessment of the relevance of institutions to FDI, they also have some important policy implications. First, the result that institutional quality is one of the most important determinants of FDI, and that the impact of institutional reform on FDI is higher than the impact of maintaining macroeconomic stability, or improving infrastructure quality, or reducing tax rates, helps policy makers to build their policy option priorities for attracting FDI.

Second, the result that property rights protection is the most important institutional quality attribute for FDI, means that reforming the legal system and strengthening the judicial system is an effective policy for attracting FDI. Given that these aspects belong to a lower level of institutions, and that they are easier to change than higher levels of institution, like democracy, political stability, or social and cultural characteristics (Jütting, 2003), policy makers have a good chance to attract FDI inflows through institutional reform.

Third, the result that the relevance of institutions to FDI varies across sectors, implies that institutional reform may not be an effective policy tool for countries trying to attract FDI in the primary sector, and that institutional reform can attract more FDI in the services sector than in the manufacturing sector. And given the increasing share of services FDI in total FDI inflows in recent years (UNCTAD, 2004), the importance of institutional reform as a policy tool for attracting FDI in general, may increase in future.

Finally, and with particular relevance to this thesis, there is clear evidence that institutions matter to foreign investors, and that they give institutional quality greater importance when considering where to invest. Thus it is quite natural to assume that foreign investors will create a demand for better institutions, and that countries that compete to attract more FDI, and/or retrain the existing stock of FDI, will be induced to provide such institutions. The next chapter will develop this hypothesis and empirically investigate it.

Appendix II

List of countries included in the empirical analysis

Asia	*East Europe*	*Latin America and Caribbean*	*Middle East and North Africa*	*Sub-Saharan Africa*
China	Bulgaria	Argentina	Egypt	Botswana
Hong Kong	Croatia	Bolivia	Iran	Cameroon
Indonesia	Czech Republic	Brazil	Jordan	Congo
Korea	Estonia	Chile	Morocco	Congo
Malaysia	Hungary	Colombia	Syrian	Cote d'Ivoire
Papua New Guinea	Latvia	Costa Rica	Tunisia	Gabon
Philippines	Lithuania	Dominican Republic	Turkey	Ghana
Singapore	Poland	Ecuador		Kenya
Thailand	Romania	El Salvador		Malawi
Bangladesh	Russian Federation	Guatemala		Nigeria
India	Slovak Republic	Guyana		Senegal
Pakistan	Slovenia	Honduras		South Africa
Sri Lanka	Ukraine	Jamaica		Tanzania
		Mexico		Uganda
		Nicaragua		Zambia
		Panama		Zimbabwe
		Paraguay		
		Peru		
		Trinidad and Tobago		
		Venezuela		

Definition of Variables and Data Sources

Variable	Definition	Source
FDI	Log of Foreign direct investment net inflows as % of GDP	World Bank, World Development Indicators.
LGDPpc	Log of GDP per capita US $	World Bank, World Development Indicators.
GGDP	GDP Growth (annual %)	World Bank, World Development Indicators.
Open	Merchandise trade as % of GDP	World Bank, World Development Indicators.
Tele	Telephone mainlines (per 1,000 people)	World Bank, World Development Indicators.
Tariff	Mean tariff rate.	EFW, 2006 Annual Report. The Fraser Institute.
Infl	Consumer prices (annual %)	World Bank, World Development Indicators.
LTax	Log of Top Marginal Income Tax Rate.	Economic Freedom of the World, 2006 Annual Report. The Fraser Institute.
Inst	Simple Average of indices of Law and Order & Investment Profile, scale 0-12.	Calculated from ICRG Data, PRS Group.
Sch	Average years of higher schooling in the total population.	Barro R. and J.W. Lee.2000.
BMI	Index of Difference between official exchange rate and black market rate, 0-10 scale.	EFW, 2006 Annual Report. The Fraser Institute.
Gov	Government consumptions as a % of GDP	World Bank, World Development Indicators..
Reso	Ratio of Primary exports to GDP	World Bank, World Development Indicators.
Demo	Simple Average of indices of Democratic Accountability& Military in Politics, Scale 0-12.	Calculated from ICRG Data, PRS Group.
corr	Simple Average of indices of Bureaucracy Quality & Corruption, scale 0-12.	Calculated from ICRG Data, PRS Group.
Polti	Simple Average of indices of Internal Conflict and external Conflict	Calculated from ICRG Data, PRS Group.
Social Tension	Simple Average of indices of Socioeconomic Conditions, Ethnic Tensions& Religion in Politics, Scale 0-12.	Calculated from ICRG Data, PRS Group.

3. Integration into the World Economy and Institutional Quality: The Impact of FDI on Property Rights[7]

3.1. Introduction

The impact of foreign direct investment (FDI) on host countries is a well researched topic, and the bulk of the literature focuses on the impact of FDI on economic growth. However, with the rapid growth of FDI inflows during the 1990s, and the growing competition among countries to attract FDI flows, researchers have recently shown a resurgence of interest in studying new aspects of the impact of FDI flows on host countries. Most of the work in this area argues that the increase of FDI inflows in the 1990s, and the competition among governments to attract FDI, have led to "bidding wars" in which governments were forced to adopt policies with a negative impact on host countries' economies, such as a reduction in tax rates, deterioration in standards of the environment, and workers' rights (see, for example, Oman, 2000). Some of these negative aspects, known as the "race to the bottom" effects, are supported by empirical evidence. For example, Garretsen and Peeters (2007) find that FDI inflows lead to lower corporate tax rates. However, foreign investors do not only search for lower tax rates; they also demand better institutional quality, and governments competing to attract FDI may be induced to supply them with an efficient institutional framework. FDI may therefore have positive impact on institutional quality in host countries. This aspect of FDI effects has not received much attention from FDI literature.

[7] A paper based on the analysis of this chapter has been accepted on 16-12-2009 for publication in Economic Inquiry.

Institutional quality has been identified as one of the most important, if not the most important, determinant of economic growth. Hall and Jones (1999) find that differences in income growth are largely explained by differences in institutional quality. Knack and Keefer (1995) identify property rights as being crucial for growth and investment. While there is considerable consensus that institutions matter for growth, how efficient institutions come about, and what explains differences in institutional quality between and within countries, still remains an open question. The empirical evidence on the determinants of property rights links institutions to cultural, historical, and geographic factors (see, for example, Levine, 2005). If property rights are mainly determined by factors like culture or geography, then what explains changes in institutions over time? And if property rights are only determined by unchangeable factors like history and geography, then there is not much prospect for developing countries to achieve high quality institutions. There is a clear need to link institutions to changeable, if not controllable, variables. Such evidence would provide a basis for institutional reform that enables developing countries to build high quality institutions.

The hypothesis that this chapter introduces and empirically investigates, is whether FDI inflows have a positive impact on property rights in the host country. Testing this hypothesis may have both academic and practical significance. First, it explores a new dimension of the impact of FDI inflows on the host country, which may advance our understanding of the contribution of FDI inflows to economic growth in the host country. Second, it provides a new argument and empirical verification on explaining differences in property rights, which is one of the most important aspects of institutional quality.

The rest of the chapter is organised as follows: section 3.2 briefly discusses the theory of property rights determinants, with more emphasis on the empirical literature. Section 3.3 introduces arguments for linking property rights to FDI inflows. The empirical results are presented in section 3.4, and section 3.5 concludes the chapter.

3.2. Determinants of institutional quality

According to La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1999), theories that explain determinants of institutional quality, and in particular property rights protection and contract enforcement, can be grouped into three broad categories: economic, political and cultural. Beck, Demirguc-Kunt, and Levine (2003), and Levine (2005), add the endowments category. While economic theory stresses the role of social efficiency when creating institutions, political theory focuses on the redistributional aspects. Cultural theory emphasizes the role of social beliefs, and endowment theory points to the role of geographical factors, such as the availability of natural resources or climate, in shaping institutions[8].

Economic theory, represented by Demsetz (1967) and North (1981), argues that institutions are created when it is efficient to do so. To repeat the example provided by La Porta et al. (1999), private property rights are created when land becomes scarce, and when their benefits exceeds the cost of their enforcement. As institutions are generally considered efficient, economic theory sees poor property rights as a reflection of insufficient resources and high costs. Within this view, economic development creates a demand for good institutions, and governments will oblige, if benefits exceed enforcement costs.

Political theory, represented by Marx (1872), North (1990), and Olson (1993), states that institutions are designed by the elite to retain existing power structures. History provides many examples that demonstrate that institutions are shaped by the ability of powerful groups to extract rents, rather than social efficiency considerations: Russian Czars, Ottoman Sultans and Tokugawa Shoguns all created institutions that increased their

[8] This section is a summary of the discussions in La Porta et al. (1999) and Beck et al. (2003).

absolute authority and control, resulting in a poor definition and enforcement of property rights (see La Porta et al., 1999, and references therein). According to this view, political divergence in society (social, ethnic, class or other) has a negative impact on government performance and property rights.

The other prediction of this theory is based upon the historic circumstances within which Common and Civil laws have been developed. Common Law was developed, in part, as a tool to limit the authority of the crown and to protect property rights, while Civil Law was developed to restrain the authority of sovereigns over their subjects. Thus political theory argues that Civil law, compared with Common law, has a negative impact on property rights.

Cultural theory, represented by Weber (1958), Banfield (1958), Putnam (1993), and Landes (1998), states that institutions are a reflection of the beliefs in a society. In some societies, intolerance and distrust run so high that governments cannot function effectively, which creates poor institutional quality and insufficient property rights protection (La Porta et al., 1999). Landes (1998) argues that Catholicism and Islam are hostile to institutional development. The reason for this, according to Landes (1998) and Putnam (1993), is that these two religions tend to foster "vertical bonds of authority", which limits the security of property rights and private contracting (Levine, 2005).

Endowment theory, represented by Engerman and Sokoloff (1997) and Acemoglu et al. (2001), states that today's institutions are affected by factor endowments and initial conditions at the time of colonisation. Two versions of the endowment theory exist: Engerman and Sokoloff (1997) emphasize that natural resource endowments, related to mining and crops, often gave rise to highly unequal societies, where the ruling elite prevents the development of egalitarian institutions, and instead favours institutions that foster their hegemony (Levine, 2005). Acemoglu et al. (2001) establish a link between

settler strategies of European colonialists and institutional quality in developing countries today. They argue that in areas where disease produced high mortality rates, Europeans did not settle, but set up ‘extractive colonies’ (e.g. Congo). The institutions of these ‘extractive colonies’ favoured the elite, and facilitated the extraction of wealth; only in ‘settler colonies’ where European colonialists settled, did they create institutions that supported property rights (e.g. Australia) .

3.3. Foreign direct investment and property rights

There is growing evidence that greater integration into the global economy has an impact on institutional quality. For example, Bonaglia et al. (2001) provide robust empirical support that higher import openness lowers corruption. Li and Reuveny (2002) establish that trade openness and portfolio investment have negative impacts on democracy, while FDI has a positive one. Larrain and Tavares (2004) show evidence that FDI is a robust predictor of corruption, and that larger FDI inflows reduce the level of corruption in the host country. Al-Marhubi (2004) finds that trade openness has a positive impact on governance indictors, and concludes that openness may encourage governments to adopt better governance to reap the full benefits of integration into the world economy. Mosley and Uno (2007) find FDI to be positively and significantly correlated with labour rights, while trade openness impacts on them negatively.

This section develops arguments that facilitate a better understanding of the possible impact of FDI on property rights. Given the results of the previous chapter, which state that institutions matter for foreign investors, one can argue that FDI affects both the demand and the supply of property rights, and through this, FDI leads to better institutional quality. The demand for property rights arises because property rights allow foreign investors and Multinationals to capture potential rents and benefits in host countries; governments

competing to attract FDI, on the other hand, may be induced to supply property rights when it is advantageous to do so.

3.3.1. Demand side

Foreign direct investors may create an effective demand for better institutional quality in host countries. This may be the case for two reasons: first, there is growing evidence that foreign investors consider institutional quality, especially property rights, as an important factor for their business success. In fact, chapter two of this thesis shows that institutional aspects related to property rights are one of the most important determinants of FDI inflows. Moreover, the results of the previous chapter show that institutions matter for foreign investors more than many other factors, such as tax levels, macroeconomic stability, infrastructure, and market size. Second, there is evidence that Multinational Enterprises tend to manipulate their business environment in order to maximize profits and to achieve their business goals. For example, Poynter (1985) finds that some Multinational Enterprises attempt to change government policy by entering domestic political processes. Moreover, according to Navaretti and Venables (2006), at times, foreign investors rely on domestic interest groups with a vested interest to pressurize the government to change the FDI incentive scheme in their favour. Libman (2006) provides evidence that Multinational Enterprises have played an important role in shaping the course of reform and institutional change in some transitional countries. Given the above points, it seems plausible to assume that foreign investors have an incentive to lobby for institutional change when faced with a poor property rights and business climate. FDI inflows should therefore create a higher demand for better institutional quality and property rights.

3.3.2. Supply side

The demand for property rights is not enough to explain the existence of property rights. To understand the impact of FDI inflows in property rights, one needs to include the supply side in the analysis, by explaining why governments would respond to the demand of foreign investors to improve institutional quality. One way to understand the incentives of the government is provided by North (1981). He assumes that the government acts like a discriminating monopolist, offering property rights protection to different groups of constituents in return for tax revenues. Using this argument, one may argue that governments might find it advantageous to provide foreign investors with property rights, and to ensure contract enforcement so that they can enjoy the benefits of FDI inflows, which ultimately strengthen the government's position. While this might explain why governments protect property rights and enforce contracts, it does not explain why governments would commit to this role if they find it to their advantage to renege on their commitments. For example, policy makers may try to alter property rights for their own benefits after investment has taken place (North and Weingast, 1989).

Two factors may prevent governments from reneging on their commitments, or at least make it costly for them to do so. The first factor is reputation. The fact that foreign investors can, at least in the medium and long-run, reallocate their investments to another country, makes governments value the long-run effects of reneging on their commitments. Thus, building a good reputation can induce governments to honour their commitments at the present time, so as to retain the opportunity to attract FDI inflows in the future. The other factor is related to devising more complex institutional arrangements to limit a ruler's incentives to renege. Bullow and Rogoff (1989) show that reputation alone may not be enough to prevent reneging in developing countries, and that more complex institutional arrangements are necessary to police reneging (North and Weingast, 1989). In the context of FDI inflows to developing countries, Buthe and Milner (2008) stress that governments

try to assure foreign investors about their commitments by binding themselves by various kinds of agreements and treaties, such as bilateral investment treaties, preferential trade agreements, and multilateral agreements. These international commitments, although not determining government behaviour, are more credible than domestic commitments, because reneging on these commitments is more costly.

The above arguments can be supported by the fact that since the beginning of the 1980s, many countries, in an attempt to attract FDI inflows, have introduced several changes in their regulatory frameworks. The aim of these changes was to create stronger incentives for foreign investors. According to UNCTAD (2002), in 2001 alone, 71 countries introduced 208 changes to their FDI laws, and 194 of these changes created a more favourable climate for attracting more FDI. Furthermore, many countries have tried to increase their commitment to provide a better regulatory framework for FDI, by entering into bilateral investment treaties. The number of these treaties has increased rapidly over recent decades (UNCTAD, 2002). Table 11 and Figure 7 show the evolution of the number of Bilateral Investment Treaties concluded between 1980 to 2006. Table 11 shows the average number of annual treaties signed in the 1980s, 1990s, and 2000s. As can be seen from the Table, the average number of treaties for the world as whole, increased from just 20 in the 1980s, to 148 in the 1990s, and much of this increase took place in developing countries; the number of signed treaties increased from 15 to 105. The annual number of signed treaties witnessed a slight reduction in the 2000s, but it is still high compared to the number in the 1980s, as Figure 7 shows. It seems plausible to view these changes to domestic regulations and investment treaties, at least in part, as host governments' response to foreign investors' demand for a better investment climate, including better institutions, and as a result of the competition between countries to attract FDI inflows.

Table 11: Bilateral investment treaties: Average annual count

	1980s	1990s	2000s
World	20	148	111
Developed countries	16	88	57
Developing economies	15	105	92

Source: UNCDAT World Investment Report 2008

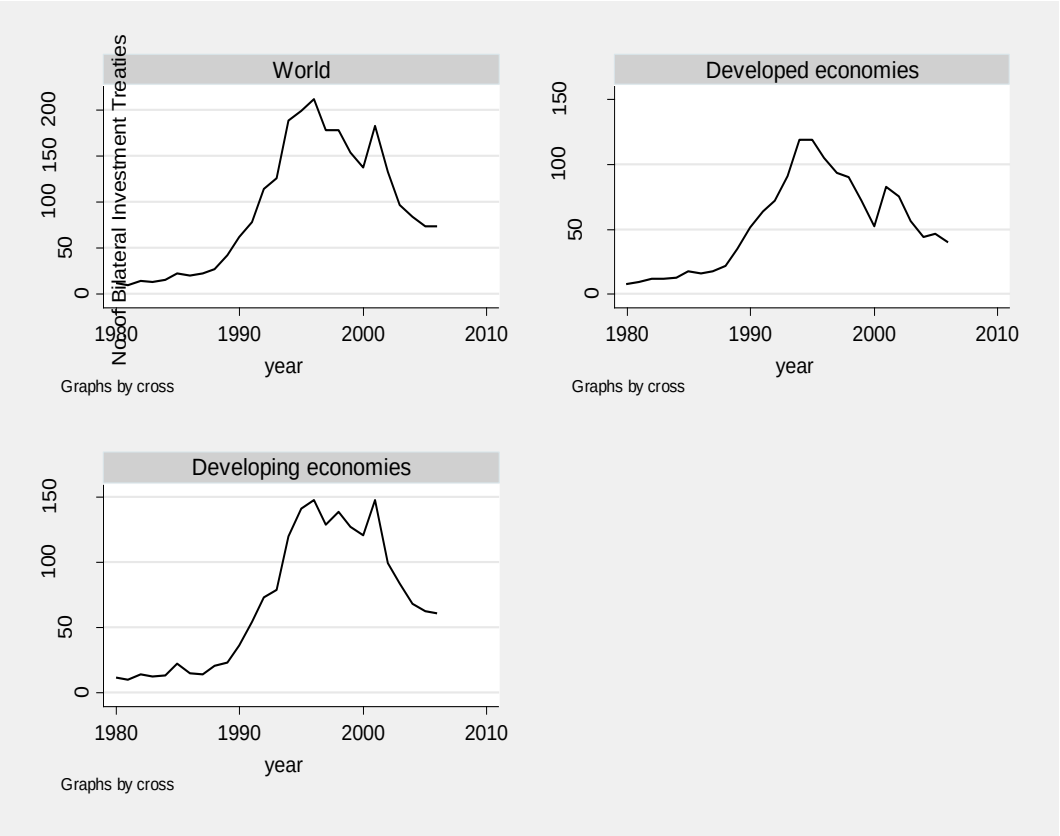

Figure 7: The annual number of bilateral investment treaties

In summary, one can expect that in a search for higher profits, foreign investors will demand more secure property rights; host governments, aware of the potential benefits of FDI for growth and development, will respond. In an attempt to retain established FDI and attract new FDI, governments will further try to signal a high level of commitment by binding themselves through various international treaties. It therefore seems entirely plausible to expect that FDI inflows have a positive impact on institutional quality, and in particular, on the protection of property rights.

3.4. Empirical results

The previous sections laid out a hypothesis about the impact of FDI inflows on property rights. This section attempts to empirically verify this hypothesis. To ensure comparability of the analysis of this chapter with the existing work on the determinants of institutional quality, the cross-sectional analysis of La Porta et al. (1999), Beck et al. (2003) and Levine (2005) will be replicated first. Their work will then be expanded in several directions, which significantly adds to the literature on determinants of institutional quality and property rights. In particular, the cross-sectional analysis in La Porta et al. (1999), Beck et al. (2003) and Levine (2005) will be extended to a dynamic panel setting which allows us to study variations over time. Furthermore, the analysis will control for the possibility that some of the regressors, in particular FDI, could be endogenous. Moreover, North (1990) argues that previous levels of institutional quality determine current levels (see below). The use of a dynamic panel framework also enables us to test this hypothesis. Finally, to gain robustness, we present results from different estimation techniques.

In general, this model will be estimated:

$$Inst = B_1 + B_2\, polit + B_3 Econ + B_4 FDI + B_5 Cultr + B_6 Endo + B_7 V + \varepsilon$$

Where: *Inst* is the institutional quality index. *Polit* is a vector of variables representing the political theory. *Econ* is a vector of variables capturing the impact of economic development. *FDI* is the ratio of foreign direct investment inflows to gross domestic product. *Cultr* is a vector of variables capturing the impact of culture. *Endo* is a vector of variables representing the endowment theory. V is a vector of controlling variables and ε is the disturbance term.

3.4.1. Results from cross-sectional estimations

To investigate the impact of FDI inflows on institutional quality, the empirical analysis starts by using the same data set as La Porta et al. (1999). To measure institutional quality, La Porta et al. (1999) use the *Property Rights Index* in the year 1997. This index is broadly based on the degree of legal protection of private property, the extent to which the government protects and enforces laws that protect private property; the probability that the government will expropriate private property, and a country's legal protection of private property. This index takes values between 1 and 5, with higher values indicating greater protection of private property.

As already mentioned above, La Porta et al. (1999) empirically evaluate the contribution of political, cultural and economic theories in explaining institutional quality, and they also control for geography. Political theory is tested by the degree of ethno-linguistic fractionalization as well as the origin of commercial law. The *Ethno-linguistic fractionalization* Index *(Ethn)* is an average of several measures of ethnic diversity. The index ranges from 0 to 1, and is expected to have a negative impact on property rights. The higher ethnic and linguistic division, the poorer property rights are. A country's Company Law or Commercial Code can stem from five different origins: (1) English Common Law (*BCLaw*), (2) French Commercial Code (*FCLaw*), (3) German Commercial Code (*GCLaw*), (4) Scandinavian Commercial Code (*ScCLaw*), (5) Socialist/Communist laws (*SoLaw*). Given the historical context within which these Laws have been developed, as already explained earlier, it is expected that, with respect to English Common Law, French, German, Scandinavian, and socialist laws have a negative impact on the property rights index.

The relative shares of Roman Catholics (*Cath*), Protestants (*Prots*), and Muslims (*Islam*) in a country (*religious composition of population*) proxy cultural determinants of institutional

quality (La Porta et al., 1999). It is expected that relative to Protestantism, Catholicism and Islam have negative impacts on property rights.

La Porta et al. (1999) use the logarithm of the average of GNP per capita in current US dollars during 1970-1995 (*LGNPpc*) as a proxy for economic determinants of institutional quality. Per capita income is expected to have a positive impact on the property rights index. La Porta et al. (1999) further use latitude (*Latit*), scaled to take values between 0 and 1, to control for geography. They argue that latitude impacts upon institutional quality, as more temperate regions have more productive agriculture and healthier climates, which allows them to develop better economically and possibly also institutionally.

The results are summarized in Table 12. Column 1 replicates Column 3 in Table 4 in La Porta et al. (1999). It serves as a benchmark to which the other variables discussed above will be added, and in which the impact of FDI on property rights will be explicitly tested. Column 1 replicates La Porta et al. (1999)'s finding that political variables, represented by ethno-linguistic fractionalization (*Ethn*) and French legal origin (*FCLaw*), have the expected negative impact on property rights. Column 2 controls for the impact of economic and geographic factors, by including the log of GNP per capita (*LGNPpc*) and latitude (*Latit*). The results show that both of them have the expected positive impact on property rights, however, ethno-linguistic fractionalization (*Ethn*) loses its significance. In Column 3, the average of FDI-GDP ratio during 1970-1995 (*FDI*) is added to test the impact of FDI on the property rights index. Column 3 shows that FDI has a positive and significant correlation with property rights. In all further model specifications, FDI will be retained as a regressor. In Column 4, the impact of cultural factors on property rights is controlled for by including the percentage of the population which is Catholic (*Cath*), Muslim (*Islam*) or of other non-protestant faiths (*Oth.Relig*). The results show that FDI does not lose its significance even after controlling for the cultural determinants of property rights.

However, the results show that cultural factors do not have a significant impact on property rights once we control for other factors.

Table 12: FDI and institutions, Cross-Sectional regressions (Dependent variable: Property rights index 1997)

	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)+*
	OLS	OLS	OLS	OLS	OLS	IV
Ethn	-0.826***	0.332	0.387	0.474	-0.103	-0.257
	(-2.76)	(1.26)	(1.39)	(1.64)	(-0.24)	(-0.34)
FCLaw	-0.704***	-0.559***	-0.483***	-0.560***	-0.728**	-0.604
	(-3.51)	(-3.84)	(-3.14)	(-2.99)	(-2.37)	(-1.15)
SocLaw	-1.386***	-1.114***	-1.133***	-1.273***	-	-
	(-3.65)	(-4.26)	(-4.47)	(-4.30)		
GCLaw	1.084***	0.068	0.285	0.270	-	-
	(4.91)	(0.28)	(1.07)	(1.08)		
ScnCLaw	0.879***	-0.531**	-0.394	-0.030	-	-
	(3.08)	(-2.03)	(-1.42)	(-0.06)		
Latit		1.638***	1.964***	2.178***	-	-
		(3.30)	(3.83)	(3.67)		
LGNPpc		0.417***	0.365***	0.342***	-	-
		(5.79)	(5.09)	(3.82)		
FDI			0.110**	0.113***	0.182***	0.468**
			(2.57)	(2.71)	(2.74)	(2.16)
Cath				0.007	-0.011	-0.031
				(1.27)	(-1.22)	(-1.59)
Islam				0.003	-0.007	-0.018
				(0.56)	(-0.85)	(-1.39)
Oth.Relig				0.006	-0.012	-0.033
				(1.06)	(-1.40)	(-1.40)
Indp					0.502	1.379
					(0.91)	(1.67)
Mort					-0.191**	0.023
					(-2.07)	(0.19)
Cons	3.981***	0.191	0.262	-0.091	5.039***	4.988***
	(16.97)	(0.38)	(0.51)	(-0.12)	(6.65)	(4.59)
N	124	124	121	121	69	36
F (p-value)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
R2	0.527	0.535	0.665	0.676	0.578	0.611

Values in parentheses are White heteroskedastic adjusted t-values. *, **, and *** denote significance at 10%, 5%, and 1%, respectively. F is F-statistics.

+FDI is instrumented by the by real exchange rate, infrastructure, and continental dummies for Africa and Latin America.

The validity of these instruments is supported by Sargan Test χ^2 (3) = 5.36 (Prob> χ^2 = (0.147)).

Column 5 shows the results based on data from Beck et al. (2003) and Levine (2005). Beck et al. (2003) and Levine (2005) basically use the same data set as that used by in La Porta

et al. (1999), but they include only countries with either British or French legal origin, as most countries are based on these legal traditions.

The other difference between La Porta et al. (1999), and Beck et al. (2003) and Levine (2005), is that the latter two studies introduce the endowment factor as an additional determinant of institutional quality. Beck et al. (2003) and Levine (2005) follow Acemoglu et al. (2001), and use the settler mortality rate; the log of the annualized deaths per thousand European soldiers in European colonies in the early 19th century (*Mort*), to test endowment theory. The Column shows that French legal origin (*FCLaw*) has the expected negative impact on property rights, while Ethnic Fractionalization (*Ethn*) has the expected negative sign, but is insignificant. The results also show that FDI maintains a significant and positive impact on property rights. Column 5 shows that non-Protestant religions (Oth.Relig) have a negative but insignificant impact on the property rights index. Settler mortality rate (Mort) has a negative and statistically significant correlation with property rights, which accords with the predictions of the endowment theory.

Beck et al. (2003) and Levine (2005) argue that the longer a country has spent in independence, the more time it has had to develop sound institutions, and hence the better its property rights might have become. They, therefore, use the percentage of years since 1776 that a country has been independent (*Indp*) to control for the impact of independence on property rights. The results show that independence (*Indp*) does not have a significant impact on property rights, though it has the expected sign.

So far there has been no consideration of the endogeneity problem. It should be noticed that the above results may be subject to endogeneity bias. There is a large body of literature showing that FDI is determined by institutional quality. In fact the claim that FDI may have a positive impact in institutions, is based on the assumption that foreign investors consider institutions as an essential factor for their business and therefore demand

institutions of high quality. And as shown in the previous chapter, institutions and property rights in particular, have a significant correlation with FDI. Thus, Column 6 tries to control for endogeneity bias by using the instrumental variable approach (IV). The choice of appropriate instruments should be driven by the literature of FDI determinants. A good instrument should be highly correlated with FDI but not with the disturbance term of property rights regression. Several empirical studies show that real exchange rates and infrastructure quality are among the significant determents of FDI inflows (Froot and Stein, 1991), (Blonigen, 1997), and (Dunning and Lundan, 2008). Therefore, FDI is instrumented by real exchange rates and infrastructure (measured by number of landlines per thousand of people), in addition to continental dummies for Africa and Latin America. The result of IV regression, reported in Column 6, shows that the estimated coefficient on FDI is still significantly positive, which can be interpreted as evidence that the impact of FDI on property rights is robust to endogeneity bias.

The above results make it very clear that compared to other determinants, the correlation between FDI and property rights is highly significant in a cross-sectional setting. These results can be interpreted as offering base-line support to the hypothesis that FDI has a positive impact on institutional quality, and that countries that attract more FDI enjoy greater protection of property rights. However, these results are not without limitations, as they do not consider changes in property rights over time. This issue is taken up in more detail below.

3.4.2. Results from panel data estimations

The cross-sectional approach helps us to explain the differences in property rights across countries, i.e. identifying which characteristics explain why one country has a higher degree of property rights protection than another. However, a panel framework is needed to assess how institutions are affected by FDI over time, and how different determinants interact dynamically. To investigate the time dimension of variations in property rights, a sample of 70 developing countries over the period 1981-2005 is used. Data availability restricts the sample size and the time period covered. Appendix III describes the sample and data sources used in the subsequent analysis. The property rights index is constructed by combining two ICRG sub-indices: *Law and Order* and *Investment Profile,* both of which are published by the Political Risk Services Group. The index is scaled to take values between 0 and 12, with higher values indicating better protection of property rights. The *Law and Order Index* assesses the strength and impartiality of the legal system, popular observance of the law, and the effectiveness of sanctions. The *Investment Profile Index* assesses contract viability, expropriation risk, and profits repatriation.

A panel dataset is constructed with data averaged over each of the 5-year periods between 1981 and 2005. Within the sample, some countries have made remarkable improvements in their property rights indices, while others experienced deterioration, as shown in Table 13 and Figure 8. For example, Morocco's property rights index increased from 4.5 in the period 1981-85, to 9.94 in the period 2000-05. Bolivia, which started from a very low score; 2.12, in the 1980's, reached a high score of 7.4 in 2000-05. The same applies to Chile and Tunisia. Zimbabwe, on the other hand, showed a decline in its score from 4.25 in 1984-85, to 2.47 in 2000-05. Cote d'Ivoire and Venezuela also experienced a fall in the property rights index.

Table 13: Changes in averages of institutional quality Index for selected countries

country	*1981-85*	*1986-90*	*1991-95*	*1996-2000*	*2001-05*
Morocco	4.542	4.542	7.567	9.875	9.938
Bolivia	2.125	3.092	5.150	7.533	7.400
Chile	5.417	7.000	8.108	9.475	10.483
Tunisia	4.500	4.500	7.025	9.367	9.225
Venezuela, RB	6.104	6.892	6.883	6.300	4.925
Cote d'Ivoire	7.167	6.775	5.908	6.208	5.517
Zimbabwe	4.250	4.708	5.750	6.050	2.475

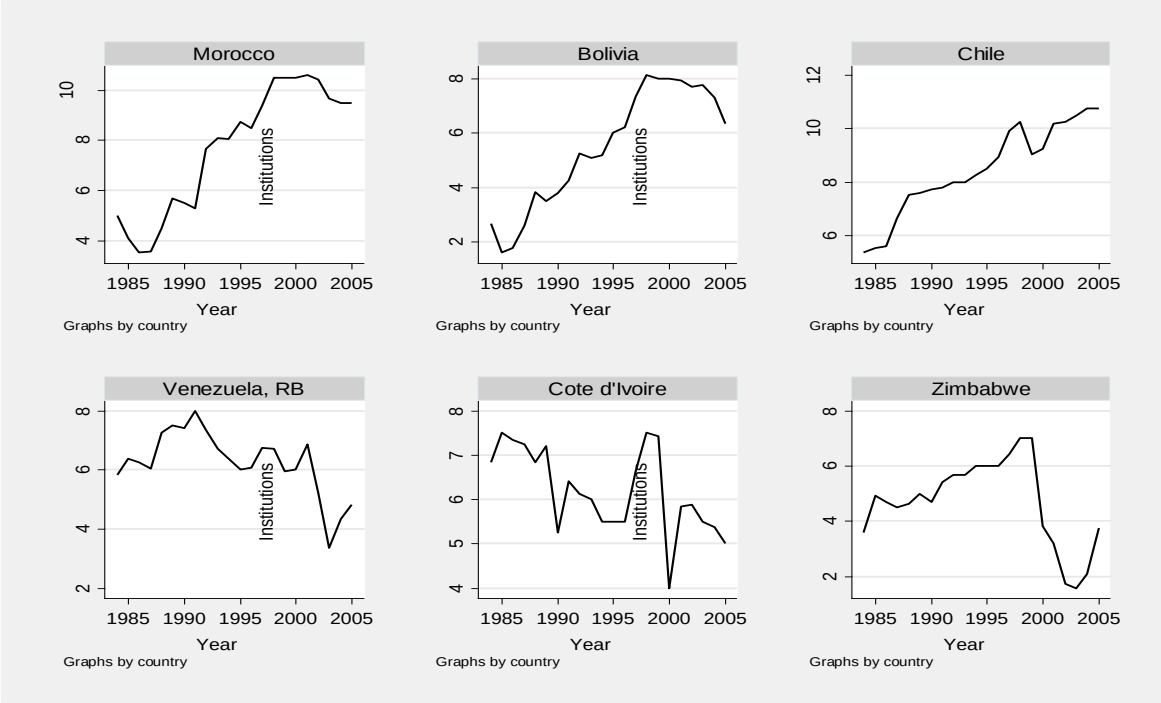

Figure 8: Changes in averages of institutional quality Index for selected countries

The panel analysis is started with a Random Effects model. This model specification allows us to capture the impact of the time-invariant variables that represent culture, political, and endowment theories. One limitation of this technique is that it does not allow

for the endogeneity of some of regressors, particularly FDI. To reduce the problem of endogeneity, all endogenous variables are lagged by one period, that is, five years. System GMM will also be used where lagged differences and levels of the endogenous variables are used as instruments.

The results are reported in Table 14. Column 1 includes political variables, Ethno-linguistic fractionalization index (*Ethn*) and French legal origin (*FCLaw*), in addition to lagged *FDI* inflows. Both of the political variables have the expected sign, although it is not statistically significant. FDI has the expected positive sign and is highly significant. In Column 2, variables representing cultural theory are added; the results show that Catholicism has a negative and significant correlation with the property rights index, while Islam has no significant correlation with property rights. The FDI term is still significant and positive, and the Ethno-linguistic fractionalization index (*Ethn*) becomes significantly related to property rights, while French legal origin dummy (*FCLaw*) becomes positively but insignificantly correlated with property rights.

Column 3 controls for endowment and economic effects, by including settler mortality (*Mort*) and GDP per capita growth[9] (*Growth*). The results show that while settler mortality has a negative but insignificant impact, lagged economic growth has a positive and significant impact on property rights, which confirms economic theory. FDI remains significant even after controlling for the impact of economic growth, which shows that FDI influences property rights beyond its contribution to economic growth and development.

Using settler mortality reduces the sample size from 70 to 57 countries, as data on settler mortality are available only for a limited number of countries. To deal with this problem, settler mortality rate is replaced with the ratio of primary exports to GDP (*Reso*). This variable is widely used in the literature to represent natural resources abundance (e.g.

[9] GDP per capita is also used to control for economic effects but it provides poor results. However, the significance of FDI is not dependent on using GDP per capita growth rather than GDP per capita.

(Sachs and Warner, 1995b). Using the primary export ratio is in accordance with the view of Engerman and Sokoloff about endowments. Column 4 shows the results; the coefficient on primary export ratio suggests that natural resource endowments have a negative correlation with property rights, which gives some support for Engerman and Sokoloff's view. However, it is not significant. Controlling for natural resources endowment does not affect the significance of FDI; interestingly Catholic dummy becomes statistically significant.

Table 14: FDI and institutions: Panel Data Regressions, (Dependent variable: Institutions index(1981-2005) 5-year intervals)

	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*
	RE(1)	RE(1)	RE(1)	RE(1)	RE(1)	FE(2)	Sys GMM(3)	Sys GMM(4)
Ethn	-0.671	-0.947**	-0.327	-0.246	-0.074	-	0.019	-
	(-1.50)	(-2.07)	(-0.59)	(-0.47)	(-0.14)		(0.07)	
FCLaw	-0.352	0.232	0.490	0.373	0.415	-	0.648**	0.688***
	(-1.23)	(0.63)	(1.15)	(0.91)	(1.02)		(2.47)	(3.05)
GDPG	-	-	0.163***	0.133***	0.129***	0.119***	0.209***	0.236***
			(4.65)	(3.87)	(3.71)	(3.27)	(2.71)	(3.38)
FDI	0.237***	0.241***	0.172***	0.200***	0.173***	0.162***	0.116**	0.124***
	(6.50)	(6.59)	(4.93)	(5.00)	(4.59)	(3.13)	(2.24)	(2.71)
Cath	-	-0.016**	-0.011	-0.014**	-0.011	-	-0.004	-0.008**
		(-2.47)	(-1.57)	(-2.20)	(-1.63)		(-1.08)	(-2.12)
Islam	-	-0.007	-0.005	-0.010	-0.008	-	-0.004	-0.006*
		(-1.25)	(-0.76)	(-1.58)	(-1.19)		(-1.06)	(-1.88)
Mort	-	-	-0.174	-	-	-	-	-
			(-1.31)					
Reso	-	-	-	-0.019	-0.025**	-0.009	-0.010	-0.005
				(-1.62)	(-2.13)	(-0.28)	(-1.38)	(-0.76)
Open	-	-	-	-	0.007**	0.014**	0.004	0.004*
					(2.49)	(1.98)	(1.49)	(1.87)
LInst	-	-	-	-	-	-	0.619***	0.492***
							(5.90)	(4.83)
Ethn.Ten	-	-	-	-	-	-	-	0.231***
								(4.67)
Cons	6.342***	6.860***	6.596***	6.432***	5.877***	4.991***	1.081	1.211*
	(18.59)	(16.97)	(9.50)	(14.42)	(11.33)	(10.60)	(1.3)	(1.73)
R2	0.385	0.392	0.423	0.411	0.532	0.210	-	-
Wald test	51.44	58.62	86.72	69.37	77.67	-	644.64	902.91
No. countries	70	70	57	68	68	68	68	68
No. observations	278	278	224	240	240	240	240	240

(1) Random effects model, z-values reported in parentheses. (2) Fixed effects model, t-values reported in parentheses (3) System GMM. Arellano-Bond test for AR (2) in first differences: z = -1.01, Pr > z = 0.312, Hansen test of over identification restrictions χ^2 (32) = 34.29, Prob > χ^2 = 0.359.

4) System GMM. Arellano-Bond test for AR (2) in first differences: z = -1.24, Pr > z = 0.215. Hansen test of over identification restrictions: χ^2 (32) = 33.67 , Prob > χ^2 = 0.386. Model 7 & 8 include time dummies. *, **, and *** denote significance at 10%, 5%, and 1%, respectively.

Rodrik (2000) argues that openness to trade could help developing countries to build sound institutions. A growing body of empirical evidence shows that trade has a positive impact on some aspects of institutions, such as corruption (see, for example, Bonaglia et al., 2001, and Al-Marhubi, 2004). Thus Column 5 controls for openness by including lagged trade-GDP ratio (*Open*)[10]. The result shows that trade ratio has a positive and significant impact on property rights; the negative impact of natural resource abundance becomes significant, while Catholic dummy loses its significance. Interestingly, FDI maintains its positive and significant correlation with property rights, while political and cultural variables lose their significance.

In Column 6, the fixed effects technique is used to investigate the role played by FDI in determining property rights. This technique concentrates on variations within countries, which gives insights into how variations in FDI contribute to explaining the variations of property rights index in each country around its own mean. In other words, the fixed effects technique allows us to investigate what causes property rights to change over time within each country. However, this advantage comes at the cost of dropping time-invariant variables. Column 6 shows that FDI remains significant, as does GDP growth term. Trade ratio also enters positively and significantly. This result suggests that these three variables played a positive role in determining changes in property rights index during the period of the analysis[11]. The endowment variable (*Reso*), on the other hand, loses its significance, although it maintains a negative sign. This may be due to the fact that the primary exports to GDP ratio varies little over time, which implies that the endowments view explains differences in property rights across countries, but not over time.

So far, the endogeneity of FDI has been dealt with by using the lagged value of FDI inflows. A more appropriate way to address endogeneity is to use the instrumental variable

[10] Trade – GDP ratio can be endogenous as it quite possible the degree of openness depends on the quality of institutions.

[11] Note that, as in the previous models, we lagged all of these variables one period, i.e. five years, in order to mitigate the possible endogeneity bias.

approach. Arellano and Bond (1991) show that in a dynamic panel setting, lagged differences of endogenous variables can be used as effective instruments. Including the lagged value of the property rights index, further allows us to study to what extent past institutional quality determines present institutional quality. North (1990) argues that history matters for institutional change, in the sense that institutional quality in the past has an impact on current institutional quality. North states that the institutional framework provides society with opportunities (both political and economic opportunities), and agents try to benefit from these opportunities within the existing institutional framework; however, they also try to maximise profits by altering the existing institutional framework. North (1990) argues that the nature of the existing institutional quality may provide incentives for agents to alter it. To illustrate, in an inefficient institutional framework, organizations will form with the specific purpose of benefiting from the opportunities offered by this inefficient framework, and these organizations will devote resources to maintain these inefficiencies.

North (1990) states that this mechanism explains the persistence of inefficient institutions in developing countries. On the other hand, organizations embedded in an efficient institutional framework will devote resources to maintain efficiency, as this serves their interests. North (1990) states that this mechanism explains the development of the American economy in the nineteenth century. Based on this argument, one would expect that lagged property rights have a positive impact on the current institutional quality, as efficient institutions provide agents with incentives to further increase the level of efficiency, promoting even more efficient institutions in the future.

Column 7 shows the results from system GMM estimation. In this Column, the lagged dependent variable (*LInst*) is included as an additional explanatory variable. In this specification, the lagged dependent variable and the time-invariant country-specific error terms are correlated, and both random and fixed effects models produce inconsistent

estimations. Arellano and Bond (1991) solve this problem by using the generalized method of moment (GMM). They eliminate the country-specific error term by taking the first difference of the model, and then use the lagged levels of the dependent variable as instruments for the first differences of the dependent variable. The same procedure can be applied to any endogenous variable within the set of explanatory variables. This technique is often called difference-GMM (Baum 2006). Arellano and Bover (1995) and Blundell and Bond (1998) acknowledge a potential weakness in difference-GMM, since the lagged levels are often poor instruments for first-differenced variables (Baum, 2006). They propose, therefore, using lagged levels as well as lagged differences as instruments. This technique is generally referred to as system-GMM. Both difference and system-GMM require an absence of second-order serial correlation in the residuals of the differenced model. As standard errors of the difference and system-GMM estimators are shown to have a severe downward bias (Baum 2006), the Windmeijer (2005)'s finite-sample correction is applied to correct this bias. The Hansen test of the over-identifying restrictions is used to test overall appropriateness of instruments.

In Column 7, FDI inflows (*FDI*), economic growth (*Growth*), and trade ratio (*Open*) are treated as endogenous variables. As shown in Column 7, the basic assumption of no second-order serial correlation is satisfied. The Hansen test approves the validity of the instruments used. The results show that the lagged value of property rights has a positive and significant impact on the current level of the property rights index, which supports North's hypothesis. More importantly, FDI still has a positive and significant impact on the institutional quality index. Economic growth maintains its significance, while trade ratio loses its significance. Interestingly, all cultural and political variables lose their significance, apart from French legal origin which becomes significant but with the wrong sign. This can be interpreted as evidence that political and culture theory is sensitive to model specifications or sample changes. This may call for other proxies for the political factors. One attempt could be made by replacing the ethno-linguistic fractionalization

index (*Ethn*), which primarily measures ethnic division, with an index that captures the degree of tension resulting from racial, ethnic, or language divisions[12]. It seems reasonable to assume that the degree of social tension that results from ethnic and religious division is more important for institutional quality than ethnic division *per se*. One can cite many cases in developed countries where ethnic linguistic groups live in relative harmony without negative implications on institutional quality. For example, Canada and Belgium have Ethno-linguistic indices of 0.376 and 0.364, which are above the sample average, but they score among the highest on the property rights index, at 10.73 and 11.95 respectively. An additional advantage of using the ethnic tension index (*Ethn.Ten*) rather than the ethnic division index (*Ethn*) is that the former is time-variant, and hence allows us to study the impact of political variables on institutional quality over time.

The results are shown in Column 8. As can be seen here**,** this change has led to substantial improvements in the results. Political factors, represented by the ethnic tension index (*Ethn.Ten*), now have the expected sign: improvements in the ethnic tension index have a positive and significant impact on institutional quality index (*Inst*)[13]. However, French legal origin is still significant but with the wrong sing. More interestingly, cultural factors become significant with the right signs. More related to this chapter's object, FDI maintains its significance which can be viewed as additional support for the main hypothesis of this chapter.

To summarize the results so far, FDI appears to be a robust predictor of property rights. The impact of FDI on institutional quality is not sensitive to model specifications, control variables, or estimation techniques. This supports the hypothesis that FDI inflows have a positive impact on the quality of institutions in host countries.

[12] The Ethnic Tension index is published by PRS Group.

[13] Note that the index is scaled to take values between 0 and 12, with higher values mean less tension.

3.5. Conclusion

This chapter introduces a hypothesis regarding the impact of FDI inflows on institutional quality in host countries, and provides an empirical assessment for it. The results show that FDI inflows have a positive and highly significant impact on property rights. These results seem very robust and are not affected by model specification, controlling variables, or estimation techniques. The main conclusion of this chapter is that FDI inflows can explain differences in property rights across countries and over time. In particular, FDI inflows have a positive influence on property rights in the host country.

This conclusion has several important implications for academic and practical purposes. First, it shows a new mechanism by which FDI inflows may positively affect economic performance in the host country. And given the importance of institutional quality in determining economic growth, this mechanism may be comparable to other positive effects of FDI. The results suggest that foreign investors do not only import high quality manufacturing and production technology to the host county, but that they also import high quality social technology and institutions. The findings of this chapter are also a significant step towards understanding the determinants of institutional quality and institutional change. They establish the integration into the world economy, and openness to FDI inflows in particular, as a new factor in determining property rights.

Some policy implications emerge from this conclusion. First, there appears to be a positive interaction between integration into the world economy as a developmental strategy, and institutional reform, where efforts spent in attracting FDI may well reinforce institutional reform efforts. Furthermore, a policy more open to FDI may lead to improved institutional quality. Further analysis is needed to underpin these policy recommendations however.

Finally and with particular relevance to the aim of this thesis, the results provided in this chapter suggest that FDI may affect economic growth rate indirectly through improving institutional quality in host countries. However, this claim requires further analysis to empirically test whether such a channel of impact really exists, and if so, how significant it is. Chapter five will address this area of analysis.

Appendix III

List of countries included in the empirical analysis.

Asia	*Latin America and Caribbean*	*Middle East and North Africa*	*Sub-Saharan Africa*
Bangladesh	Argentina	Egypt	Angola
Hong Kong, China	Bolivia	Jordan	Botswana
India	Brazil	Lebanon	Burkina Faso
Indonesia	Chile	Morocco	Cameroon
Korea, Rep.	Colombia	Syrian	Congo, Dem. Rep.
Malaysia	Costa Rica	Tunisia	Congo, Rep.
Pakistan	Dominican Republic	Turkey	Cote d'Ivoire
Papua New Guinea	Ecuador		Ethiopia
Philippines	El Salvador		Gabon
Singapore	Guatemala		Gambia, The
Sri Lanka	Guyana		Ghana
Thailand	Haiti		Guinea
	Honduras		Kenya
	Jamaica		Madagascar
	Mexico		Malawi
	Nicaragua		Mali
	Panama		Mozambique
	Paraguay		Namibia
	Peru		Niger
	Suriname		Nigeria
	Trinidad and Tobago		Senegal
	Uruguay		Sierra Leone
	Venezuela		South Africa
			Sudan
			Tanzania
			Uganda
			Zambia
			Zimbabwe

List of the variables used in the empirical analysis

Variable	**Definition**	**Source**
FDI	Net FDI inflows as Percentage of GDP	World Bank, World Development Indicators
Growth	GDP per capita Growth (annual %)	World Bank, World Development Indicators
Inst	Average of indices of Law and Order & Investment Profile, scale 0-12.	Calculated from ICRG Data, PRS Group.
Ethn.Ten	Tensions among ethnic groups, Scale 0-12.	Calculated from ICRG Data, PRS Group.
Reso	Ratio of primary exports to GDP	World Bank, World Development Indicators
Open	Export + Imports as Percentage of GDP	World Bank, World Development Indicators

Ethn.Ten index is an assessment of the degree of tension within a country attributable to racial, nationality, or language divisions. Lower ratings are given to countries where racial and nationality tensions are high because opposing groups are intolerant and unwilling to compromise. Higher ratings are given to countries where tensions are minimal, even though such differences may still exist.

4. Institutions and Foreign Direct Investment Contribution to Economic Growth

4.1. Introduction

The question of whether foreign direct investment (FDI) helps to improve economic growth has been one of the fundamental questions in development and international economics, and has received a lot of attention in the economic literature in recent years. However, it seems that this question has not been settled yet. Given recent developments in growth theory, which emphasize the importance of improvements in technology, efficiency, and productivity in determining growth, FDI can have a positive impact on growth (Lim, 2001). FDI, which is viewed as a mixture of capital, know-how and technology (De Mello, 1997), can increase the level of existing technology in host countries in many ways. However, given the available empirical evidence, it is difficult to conclude that there is a universal relationship between FDI and economic growth (Lipsey, 2003). Empirical evidence has shown that FDI can have positive, negative, or insignificant impacts on economic growth (Li and Liu, 2005).

More recently, some empirical studies have highlighted the fact that not all host countries are capable of fully reaping positive externalities offered by FDI, and that the positive impact of FDI on economic growth depends crucially on the absorptive capacity of host economies (World Bank, 2001). The term ‘absorptive capacity’ includes factors such as level of human capital, degree of financial development, level of economic development, etc. Several empirical papers show that host economies need to reach a certain level of absorptive capacity, called threshold of development, to be able to benefit from FDI. It

seems that these empirical papers have provided one explanation for the disparities between earlier empirical studies (OECD, 2002). Nevertheless, more recently, Carkovic and Levine (2005) argue that taking the role of absorptive capacity into account does not help to reduce the inconclusiveness of the evidence regarding the growth effects of FDI.

Another explanation, however, is that not all types of FDI are capable of providing host countries with positive externalities. This issue was acknowledged as early as 1950 by Singer, who argues that FDI inflows to developing countries do not have a positive impact on economic growth because they are concentrated on the primary sector. It is rather astonishing that this issue has received far less attention from the relevant literature. One exception is Alfaro (2003) who studied the impact of FDI on economic growth in the primary, manufacturing, and services sectors. She finds that while total FDI exerts an ambiguous effect on growth, the impact of FDI varies greatly across sectors. Services FDI has an ambiguous effect on growth, manufacturing FDI has a positive impact, and primary FDI has a negative one. Given these results, she concludes that differentiated incentives must be given to different types of FDI; in particular, primary FDI should be discouraged. Her findings are further confirmed by Aykut and Sayek (2007). The negative impact of primary FDI is also found by Khaliq and Noy (2007).

Although the importance of institutional quality as one aspect of host countries' absorptive capacity, is generally recognized in the literature (World Bank, 2001), neither Carkovic and Levine (2005) nor Alfaro (2003) consider the role of institutions when examining the impact of FDI on economic growth. The aim of this chapter is to re-examine the impact of FDI inflows on economic growth, taking into account the role of institutional quality in host countries. The rest of this chapter is organized as follows: Section 4.2 provides an overview of the relevant economic literature. Section 4.3 describes the data set and the methodology used. Section 4.4 presents and discusses the empirical results. Section 4.5 concludes the chapter.

4.2. FDI and growth: Cross-Country evidence overview

The literature related to the impact of FDI on economic growth is so vast that it is difficult to provide a comprehensive review of it, even if one limits the review to cross-country evidence. Instead, this section focuses on two aspects of this literature; the role played by absorptive capacity of host countries, and different types of FDI in determining the impact of FDI on economic growth.

4.2.1. The role of the absorptive capacity: Host countries' characteristics

The concept of host countries' absorptive capacity has helped to explain the ambiguity of the contribution of FDI to economic growth documented by earlier literature. Several studies have found that FDI alone has an ambiguous role in contributing to economic growth. However, when it is interacted with some characteristics of host countries, FDI turns to have a robust positive impact on growth.

Among the pioneering studies that consider the role of host countries' characteristics in determining the contribution of FDI to economic growth, is that of Blomstrom, Lipsey, and Zejan (1996), who find that FDI has a positive impact on growth in higher-income countries, and does not have a robust impact in lower-income countries, concluding that a host country must reach a certain threshold of economic development before it can benefit from FDI. Inspired by the hypothesis of Bhagwati (1978), Balasubramanyam, Salisu, and Sapsford (1996) and (1999) investigate the role of trade regime in determining the impact of FDI on growth. They find tentative evidence that FDI contributes positively to growth in countries that adapt outward-oriented trade regimes, while its impact vanishes in countries that adapt inward-oriented trade regimes. Borenzstein, De Gregorio, and Lee (1998) find

that FDI can have a positive contribution to growth only if a host country has sufficiently high levels of human capital. This result is further confirmed by The World Bank (2001).

Financial development is also considered as one aspect of the host country's absorptive capacity. Financial constraints may hinder the ability of domestic firms to benefit from the positive externalities offered by FDI. A number of papers have shown that FDI can exert a positive influence on economic growth if a minimum level of financial development has been reached by a host economy. Hermes and Lensink (2003) find that the development of the financial system of the host country is a precondition for FDI to positively influence economic growth. This result is further confirmed by Alfaro et al (2004) and Durham (2004).

Absorptive capacity also includes the institutional quality of the host country. Given the growing literature emphasising the role of institutional quality in determining investment efficiency and economic growth, Olofsdotter (1998) states that the adoption of new technology imported by FDI can be facilitated if high quality institutions are provided. His empirical results suggest that the positive impact of FDI on growth is stronger in countries with better institutional quality, and particularly, bureaucratic efficiency. Along the same line of argument, Durham (2004) finds that institutional quality is a precondition for FDI having a positive impact on economic growth. More specifically, Durham (2004) finds that FDI has a positive impact in countries that have reached a minimum threshold of the property rights protection index.

4.2.2. The role of sectoral characteristics

The role played by differences in FDI sectors, in determining the impact on economic growth, has received very little attention in the empirical literature. Dutt (1997) is among the first papers to empirically investigate the relationship between the sectoral FDI inflows and economic growth. Dutt (1997) is inspired by the hypothesis of Singer (1950) about the

impact of FDI on economic growth in developing countries. Singer (1950) stresses that FDI inflows to developing countries may not have positive impacts on their growth and development potential. This is because FDI in developing countries goes mainly to primary sectors and not to manufacturing sectors. Singer (1950) argues that because of the low income elasticity of demand for primary products, technological advances in the sector will benefit consumers, in the form of lower prices, rather than producers, in the form of higher incomes. Based on this argument, Dutt (1997) states that manufacturing FDI in developing countries is likely to have more positive implications for them, because it involves greater technological development and, more importantly, does not result in deterioration in the host economies' terms of trade. On the other hand, Dutt (1997) argues, primary FDI in developing countries is attracted to industries which produce less technologically advanced products competing with similar products from other developing countries, which results in deterioration in the host countries' terms of trade. Using cross-country growth equations and data on 47 countries for the period 1985-1994, Dutt (1997) fails to find empirical support for his previous argument. FDI on both primary and manufacturing sectors appears insignificant in his analysis.

More recently, Alfaro (2003) has investigated the impacts of primary, manufacturing, and services FDI on economic growth. She argues that the ability of FDI to convey positive externalities and advantages to host countries might differ across primary, manufacturing, and services sectors. In particular, the often-mentioned benefits of FDI, such as transferring production technology, innovative capacity, organizational and managerial skills, and the provision of access to international markets, seem to be exclusively related to manufacturing FDI rather than to primary FDI (Alfaro, 2003). This is because the scope for backward and forward linkages between foreign and domestic firms is far more limited in the primary sector as compared with the manufacturing sector (UNCTAD, 2001). Referring to Hirschman (1958), Alfaro (2003) emphasizes that linkages between foreign and domestic firms are weak in agriculture and mining sectors, which may limit the impact

of primary FDI on economic growth in the host country, leading to 'enclave' types of development. However, Hirschman (1958) also notices that primary production activities may exert some developmental effects as they increase exports. Exports, in turn, can be used to finance imports which are very powerful agents of development and growth.

More recently, UNCTAD (2007) has identified several channels through which primary FDI may positively affect economic performance in host countries. In general, primary FDI can help host countries to exploit their natural endowment, which provides opportunities for economic development and growth if they are used successfully. According to UNCTAD (2007), multinational national enterprises, MNEs, can help host countries to exploit their natural endowments in many ways. First, MNEs provide host countries with the financial resources required for investment in the extractive industries. As some extractive industries are highly capital-intensive and require large funds, some developing countries face financial barriers to exploiting their natural resources endowments. Thus, primary FDI inflows help these countries to overcome these financial barriers. Second, extractive activities usually involve sophisticated technology that not all countries have the necessary skills to utilize. MNEs' participation in these extractive industries, transfers the necessary technology and skills to the host countries, which enables them to overcome technology barriers. Moreover, by assisting them overcome these barriers, primary FDI enhances development and growth potential in the host countries, by increasing the exports and foreign exchange earnings required to finance imports of goods and services, as well as creating government revenue.

However, the development implications of these increases in foreign exchange earnings and government revenue will ultimately depend on how these resources are put to use. A successful exploitation of this potential for development and growth requires a good institutional framework that can translate these resources into economic growth. One example is Botswana, which has had one of the fastest growth rates in Africa and among

all developing countries. According to Aykut and Sayek (2007), two factors helped Botswana to achieve these high growth rates: (1) large FDI inflows to its diamond and mining industries, which boosted foreign exchange earnings and government revenues; (2) sound policy and high quality institutional framework that wisely exploited these revenues to support long-term economic growth. Coolidge and Rose-Ackerman (1999) state that what makes Botswana different from other African countries is the fact that Botswana has managed to attract large FDI inflows and adopted a sound institutional environment. Another example is Chile where primary FDI to its natural resources and mining sector boosted foreign exchange earnings and government revenues, whereas, sound policy and high quality institutions channel these resources to foster economic growth (De Gregorio, 2003). Thus, one could argue that primary FDI may have a positive impact on economic growth if a host country has high quality institutions.

4.3. Model and data description

This section specifies the model used to empirically investigate of the role played by institutional quality of a host country in determining the contribution of FDI inflows to economic growth. It also provides a simple description to the data set used in the empirical investigation.

4.3.1. Model description

Most of the empirical work on FDI and economic growth basically follows the influential work of Barro (1991) and Mankiw et al (1992), which derives an empirical model specification that includes the initial income level to control for the conditional convergence hypothesis. In addition to the initial income per capita, most of the empirical work on FDI and economic growth includes some controlling variables that are shown by growth literature to have some degree of robustness in their correlation with growth. One

problem with this approach is that there is no decisive list of the candidate variables, and as a solution, most of the empirical papers test the sensitivity of their results by including additional controlling variables. Therefore, the benchmark model specification in this chapter follows the voluminous growth regression literature and takes the following form:

$$Growth = \beta_1 + \beta_2 LGDPpc_{80} + \beta_3 Sch + \beta_4 Inv + \beta_5 Inst + \beta_6 FDI_i + \varepsilon \qquad (1)$$

Where:

Growth is the average of GDP per capita growth. $LGDPpc_{80}$ is the log of real GDP per capita at the beginning of the period, 1980. *Sch* is the log of the average years of secondary schooling in the total population which measures human capital. *Inv* is gross capital formation share in GDP. *Inst* is an index measuring institutional quality. *FDI* is FDI –GDP ratio

Although, the specification of the benchmark is not totally non-arbitrary, it can be justified. The log of average years of secondary schooling (*Sch*) proxies the role of the stock of human capital on determining economic growth, which is one of the most important determinants of growth, and frequently appears significant in growth models. Investment share in GDP (*Inv*) is another important determinant of growth, and has been found to be among the few variables that have a robust correlation with growth (Levine and Renelt, 1992). Moreover, the inclusion of investment share helps us to test whether FDI affects economic growth beyond its contribution to capital formation i.e. through positive externalities. The institutional quality index (*Inst*), on the other hand, apart from being increasingly considered in the growth literature as one of the main determinants of economic growth, is a variable of special interest in this chapter, since the aim of this chapter is to study the role played by institutional quality in determining the contribution of FDI to economic growth.

This hypothesis can be tested by adding the interaction term of institutions and FDI i.e. by multiplying *FDI* by *Inst* and adding the resulting term to Model 1 as follows:

$$Growth = \beta_1 + \beta_2 LGDPpc_{80} + \beta_3 Sch + \beta_4 Inv + \beta_5 Inst + \beta_6 FDI + \beta_7 (FDI \times Inst) + \varepsilon \quad (2)$$

This specification allows us to assess the role of institutions in determining the impact of FDI on economic growth. Three possible results can be highlighted: (1) If β_6 and β_7 are both positive (negative), then FDI has an unambiguously positive (negative) impact on economic growth, and institutions enhance this impact. (2) If β_6 is positive and β_7 is negative, then FDI has a positive impact on economic growth and this impact is diminishing with the improvements in institutional quality. (3) If β_6 is negative and β_7 is positive, then there is a threshold of institutional quality beyond which FDI can have positive impact on economic growth. This threshold can be computed by finding the partial effect of *FDI* on *Growth* as follows:

$$\frac{\partial Growth}{\partial FDI} = \beta_6 + \beta_7 Inst \qquad (3),$$

And then calculating the institutions threshold, which is the precise break-even point of equation (3) i.e. the threshold is computed as follows:

$$\beta_6 + \beta_7 Inst = 0;\ Inst = \frac{-\beta_6}{\beta_7};\ (4)$$

Thus, the institutions threshold $= \frac{-\beta_6}{\beta_7}$.

To ensure that the interaction term does not capture the effects of FDI or institutions, both of the variables are kept in Model 2. The sensitivity of the model is tested by controlling for other determinants of economic growth.

4.3.2. Data description

To study the impact of FDI by sectors on economic growth, I follow Alfaro (2003) and combine two sources of data: (1) UNCTAD's *World Investment Directory* (WDI). (2) OECD's *The International Direct Investment Statistics Year Book.* These two sources provide comparable data on FDI broken down by sector. In total, the sample covers 62 countries: 40 developing countries and 22 developed countries. The data generally covers the period 1980 to 2005, though this may vary from country to country. Institutional quality is proxied by using subcomponent indices of the International Country Risk Guide (ICRG) published by Political Risk Services Group (PRS). They are: (1) *Investment Profile* which measures expropriation risk and (2) *Law and Order* which measures strength and impartiality of the legal system and rule of law. The institutional quality index is the sum of the two indices, and is scaled to take values between 0 and 12, with higher values indicating better institutions. Appendix IV provides a list of countries covered by the study. It also provides the definition and the sources of other variables included in the analysis. All variables are averaged over the period 1980-2005, as cross-sectional regression analysis will be used to test the hypothesis of this chapter.

Table 15 provides a summary of descriptive statistics for the key variables used in the analysis, and Table 16 shows the correlation matrix of the key variables. The correlations between FDI and the variables included in the benchmark model are further illustrated in Figure 9.

Table 15: Descriptive statistics for the key variables

Variable	*Obs*	*Mean*	*Std. Dev.*	*Min*	*Max*
Growth	62	1.68	1.67	-1.93	8.49
LGDPpc80	62	8.09	1.36	5.23	10.02
Sch	62	0.51	0.62	-1.44	1.59
Inv	62	22.89	4.58	14.53	38.12
Inst	62	7.54	1.90	4.42	10.63
FDI	62	2.09	2.40	-6.65	11.38
Primary FDI	62	0.81	2.47	-0.12	15.65
Manufacturing FDI	62	0.87	1.22	-0.18	6.91
Services FDI	62	1.21	1.30	0.00	7.17

Table 16: Correlation matrix of the key variables

	Growth	*LGDPpc80*	*Sch*	*Inv*	*Inst*	*FDI*
Growth	1.00					
LGDPpc80	-0.09	1.00				
Sch	0.23	0.79*	1.00			
Inv	0.55*	-0.24	-0.04	1.00		
Inst	0.27*	0.80*	0.74*	0.02	1.00	
FDI	0.25	0.10	0.04	0.17	0.14	1.00

* indicates significance at the 0.05 level or better.

The correlation matrix shown in Table 16 gives an initial but crude approximation of the relationship between economic growth rate and FDI. The Table shows that FDI has a positive but insignificant correlation with economic growth. The insignificance of FDI gives a first insight into the nature of the relationship between economic growth and FDI, i.e. the contribution of FDI to economic growth is ambiguous and may depend on the host countries' characteristics.

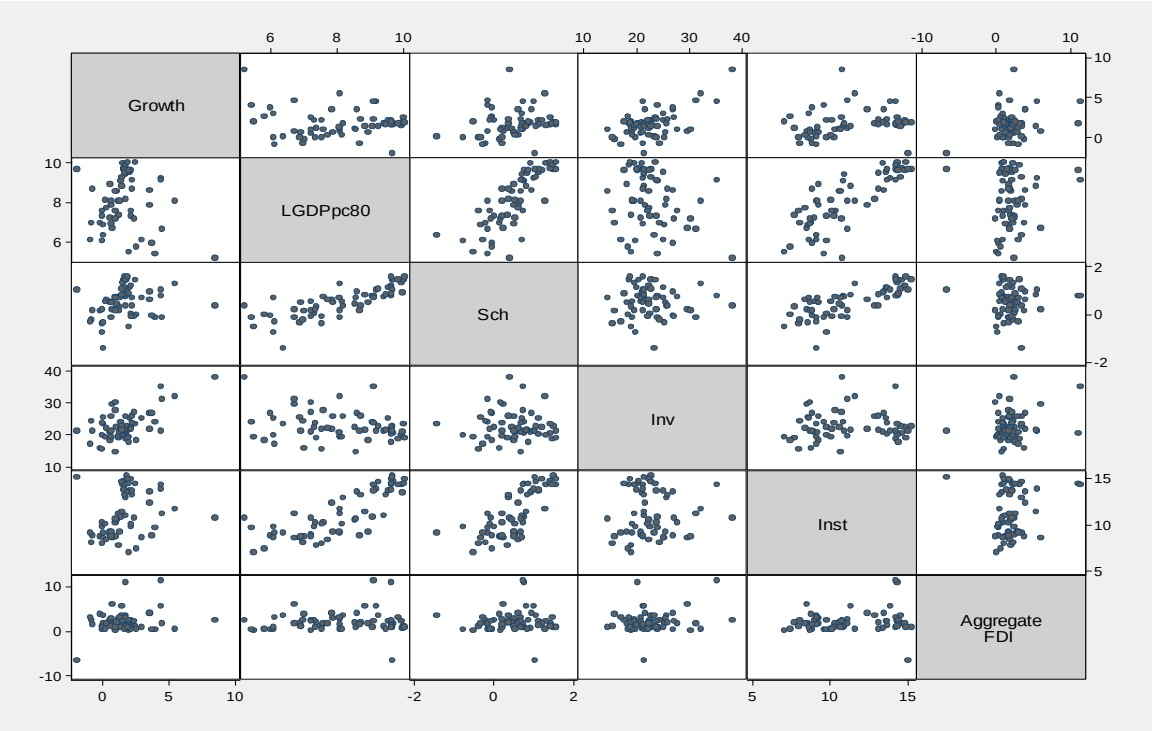

Figure 9: Correlation matrix of the key variables

4.4. Empirical results

The analysis is started by applying the ordinary last square method (OLS) to the benchmark model. The results are shown in Table 17. Column 1 shows that all the explanatory variables have the expected sign and are significant, except FDI, which has the right sign but is not significant. This result represents the problem of the empirical literature studying the impact of FDI on economic growth; while theory states that FDI has a positive impact on growth, empirical results show that total FDI alone has an ambiguous impact on economic growth. In column 2, the interaction term between FDI and institutions is added to the model. The results show that FDI has a negative and significant sign, while the coefficient of the interaction term is positive and significant. This indicates that the impact of FDI on economic growth depends on the institutional quality of the host countries. In particular, this result indicates that there is a threshold of institutional quality beyond which FDI has a positive impact on growth.

Table 17: Growth and FDI: OLS cross-sectional results (Dependent variable: Average of GDP per capita growth 1980-2005)

	(1)	*(2)*	*(3)*	*(4)*
LGDPpc80	-1.108***	-1.076***	-1.059***	-1.207***
	(-4.14)	(-4.09)	(-4.25)	(-4.72)
Sch	1.401***	1.426***	1.229***	1.422***
	(3.84)	(3.92)	(3.54)	(3.59)
Inv	0.113**	0.113**	0.092**	0.064
	(2.58)	(2.66)	(2.34)	(1.62)
Inst	0.505***	0.291	0.147	0.605**
	(3.22)	(1.63)	(0.79)	(2.49)
FDI	0.133	-0.904***	-0.859***	-0.576**
	(1.37)	(-3.06)	(-2.82)	(-2.18)
(FDI×Inst)		0.112***	0.108***	0.062**
		(3.28)	(3.10)	(2.04)
Infl			-0.001	-0.001
			(-1.19)	(-0.89)
Credit			0.700**	0.736
			(2.01)	(1.63)
Cons	3.267*	4.933***	3.799**	2.518
	(1.68)	(2.94)	(2.27)	(1.11)
N	62	62	62	40
F (p-value)	(0.000)	(0.000)	(0.000)	(0.000)
R2	0.531	0.597	0.618	0.671

Values in parentheses are White heteroskedastic adjusted t-values. *, **, and *** denote significance at 10%, 5%, and 1%, respectively. F is F-statistics.

To gain some robustness, we expand the list of the explanatory variables to include some other variables that appear to have some significant correlation with economic growth in the relevant literature. These variables are: (1) Inflation measured by percentage change in the consumer price index to proxy macroeconomic stability; (2) Ratio of domestic credit to private sector to GDP to proxy the role of financial development in determining economic growth, which has been emphasized in the literature since the pioneering work of King and Levine (1993).

The results are reported in column 3. The column shows that the ratio of domestic credit to private sector to GDP is significant, which confirms the importance of financial development in determining growth. However, inflation appears to be insignificant. More relevant to the aim of this chapter is that the coefficient on FDI remains negative and significant, and the coefficient on the interaction term remains positive and significant, which confirms the previous findings that there is a threshold of institutional quality that

has to be achieved in order for a host country to enjoy the positive externalities of FDI. The values of the estimated coefficients in column 3 indicate that the institutions threshold is 7.95, and that all countries with an institutional quality index above 7.95 will benefit positively from FDI inflows.[14] The data shows that within the sample used, 29 out of 62 countries satisfy this condition during the period 1990-2005. Table 18 shows a list of these countries.

Table 18: Countries that achieved the institutional threshold

Africa:
Tunisia.
Asia:
South Korea**,** Singapore**,** Thailand.
Latin America:
Chile**,** Costa Rica.
Europe and others:
Australia**,** Austria**,** Belgium**,** Canada**,** Cyprus**,** Denmark**,** Finland**,** France**,** Germany**,** Greece**,** Hungary**,** Iceland**,** Ireland**,** Israel**,** Italy**,** Netherlands**,** New Zealand**,** Norway**,** Portugal**,** Spain**,** Sweden**,** United Kingdom**,** United States.

These results confirm the findings of Durham (2004). However, one limitation of Durham's results is that his model does not include institutions alongside the interaction between institutions and FDI. This may cause the interaction term to capture the impact of institutions rather than the impact of the interaction between institutions and FDI. Thus, the appropriate way to test whether the impact of FDI on growth depends on institutions is to include both FDI and institutions alongside the interaction term (Hermes and Lensink, 2003).

In column 4, the sensitivity of the results is tested by dropping the developed countries from the sample. The results show that dropping the developed countries from the sample

[14] The threshold is computed by dividing the coefficient on FDI by the coefficient on the interaction term as in model 4 p. 100 i.e. – (-0.859/0.108)=7.95.

does not affect the main findings of this chapter as the coefficient on FDI is still negative and significant and the coefficient on the interaction term still positive and significant.

In Table 19, the role of each FDI sector is investigated by dropping FDI and the interaction term and adding FDI in primary, manufacturing, and services sectors. In column 1 in Table 19, primary FDI is added to the model. The results show that primary FDI has a negative sign; however, it is not significant. Column 2 shows that manufacturing FDI has a positive and significant impact on economic growth, while column 3 shows that services FDI has an insignificant impact.

Table 19: Growth and FDI by sector: OLS cross-sectional results (Dependent variable: Average of GDP per capita growth 1980-2005)

	(1)	***(2)***	***(3)***	***(4)***	***(5)***
LGDPpc80	-0.987***	-0.923***	-1.026***	-0.985***	-1.189***
	(-4.07)	(-4.05)	(-4.19)	(-4.13)	(-4.78)
Sch	0.898**	1.098***	1.061***	0.929**	1.206**
	(2.28)	(3.44)	(2.95)	(2.46)	(2.63)
Inv	0.114***	0.094**	0.109***	0.120***	0.083*
	(2.97)	(2.39)	(2.82)	(3.09)	(1.99)
Inst	0.386**	0.294*	0.391**	0.347*	0.620***
	(2.21)	(1.76)	(2.17)	(1.97)	(2.83)
Infl	-0.001*	-0.001*	-0.001	-0.001	-0.001
	(-1.72)	(-1.82)	(-1.43)	(-1.48)	(-1.16)
Credit	0.588*	0.720**	0.614*	0.622*	0.713
	(1.78)	(2.04)	(1.77)	(1.89)	(1.65)
FDI.PRIM	-0.086			-1.013***	-0.685*
	(-1.54)			(-3.62)	(-2.01)
FDI.MANUF		0.224**			
		(2.10)			
FDI.SERV			-0.041		
			(-0.31)		
(FDI.PRIM×Inst)				0.154***	0.103*
				(3.23)	(1.82)
Cons	1.594	1.324	1.751	1.523	1.723
	(0.91)	(0.71)	(0.97)	(0.87)	(0.89)
N	62	62	62	62	40
F (p-value)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
R2	0.527	0.535	0.512	0.538	0.665

Values in parentheses are White heteroskedastic adjusted t-values. *, **, and *** denote significance at 10%, 5%, and 1%, respectively. F is F-statistics.

These results confirm the findings of Alfaro (2003). However, primary FDI appears insignificant, though with a negative sign[15]. To test the hypothesis of this chapter about the role of institutions in determining the contribution of primary FDI to economic growth, the interaction term between primary FDI and institutions is added to the Model. The results are reported in column 4. In this column, the coefficient on primary FDI becomes significantly negative, while the coefficient of the interaction term is significantly positive, which indicates that institutions play a role in determining the contribution of primary FDI to economic growth. In particular, primary FDI can contribute positively to economic growth if a host country acquires a sufficiently high institutional quality that can utilize the positive externalities offered by primary FDI. The values of the estimated coefficients on column 4 suggest that all countries with institutional quality above 6.58 will benefit positively from primary FDI. In the sample used in this chapter, 40 countries out of 62 attain this level of institutional quality. Table 20 presents countries that achieved the institutional quality threshold required to benefit from primary FDI.

Table 20: Countries that achieved the institutional threshold

Africa:
Tunisia, Zambia.
Asia:
China, India, Jordan, South Korea, Singapore, Thailand.
Latin America:
Argentina, Chile, Costa Rica, Dominican Republic, Mexico, Paraguay, Trinidad and Tobago, Uruguay.
Europe and others:
Australia, Austria, Belgium, Canada, Cyprus, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Turkey, United Kingdom, United States.

[15] The reason for this difference between these results and Alfaro's could be due to the difference in model specifications, since the model in this chapter controls for more variables. When the same variables used by Alfaro are included in the model, primary FDI becomes significantly negative.

To get an estimate of how important institutions have been in enhancing the contribution of primary FDI to economic growth, one can ask the hypothetical question of how countries with different levels of institutional quality would benefit from a given increase in primary FDI inflows. To give an illustration, one can show how a change of institutional quality of a host country from the second quartile to the third quartile, would affect the contribution of an increase in primary FDI by one standard deviation[16]. An increase of one standard deviation of primary FDI would increase economic growth by 0.183% points, if the host country's institutional quality is equal to the second quartile, while the same increase of primary FDI would increase economic growth by 1.146% points if the host country has institutional quality equal to the third quartile[17]. This means that improving the institutional quality of a host country from the second to the third quartile would increase the contribution of primary FDI to economic growth by 0.962% points, which is quite large, given that the same result requires increasing the ratio of domestic investment to GDP by approximately two standard deviations i.e. by 8.019 % points[18].

In column 5, the sensitivity of the results is tested by dropping the developed countries from the sample. The results show that dropping the developed countries from the sample does not affect the main findings of this chapter as the coefficient on primary FDI is still negative and significant and the coefficient on the interaction term is still positive and significant.

[16] According to the sample used, the second quartile of institutions equals 7.06; the third quartile equals 9.59; one standard deviation of primary FDI equals 2.47.

[17] In both cases, the contribution of increasing primary FDI to growth is computed as follows: $\beta_7 \times \Delta FDI.PRIM + \beta_8(\Delta FDI.PRIM \times Inst)$. i.e. in the first case, the contribution of an increase in primary FDI by 2.47 equals $(-1.013 \times 2.47) + (0.154 \times 2.47 \times 7.06) = 0.183$ and in the second case equals $(-1.013 \times 2.47) + (0.154 \times 2.47 \times 9.59) = 1.146$

[18] In column 4 Table 19, the coefficient on investment share (*Inv*) is 0.120 and thus increasing growth rate by 0.962 point requires increasing *Inv* by 0.962/.120= 8.019. Table 15 shows that the standard deviation of *Inv* is 4.58. Thus two standard deviations equal 9.16.

So far there has been no consideration of the endogeneity bias. It should be noticed that the above results may be subject to endogeneity bias. In fact, there is a large body of literature showing that FDI is determined by economic growth in host countries, since economic growth is an indicator of the potential market size. Moreover, institutional quality is also determined by economic development and growth. Thus, in Table 21, the possible endogeneity bias is controlled for by using the instrumental variable approach (IV). Choosing appropriate instruments should be driven by the literature of FDI and institutions determinants. A good instrument should be highly correlated with FDI and institutions, but not with the disturbance term of growth regression. Several empirical studies show that real exchange rate is among the significant determents of FDI inflows (Froot and Stein, 1991; Blonigen, 1997; Alfaro et al, 2007). Moreover, Wheeler and Mody (1992) find that current FDI is determined by lagged levels of FDI, therefore lagged FDI and real exchange rates can be used to instrument FDI. Because real exchange rate is available only for a limited number of countries, only lagged FDI is used to instrument FDI, in order to maintain the same sample size. However, using both lagged FDI and real exchange rates produces results similar to those reported in Table 21.

Regarding institutions, the literature on institutional quality determinants states that institutions are determined by political variables like the degree of ethno-linguistic fractionalization, and the origin of commercial law, and by cultural variables, such as religious composition of population, and also by geographical variables like latitude (La Porta et al., 1999). Thus, institutions are instrumented by using these variables. The results are shown in Table 21. All models report the test statistic for no over-identification restrictions to confirm the validity of the instruments. Column 1 and column 2 in Table 21 control for the endogeneity of FDI and institutions.

Table 21: Growth and FDI: IV Cross-Sectional results (Dependent variable: Average of GDP per capita growth 1980-2005)

	(1)	*(2)*	*(3)*
LGDPpc80	-0.764**	-0.793**	-1.071***
	(-2.40)	(-2.47)	(-4.10)
Sch	1.304**	1.122**	0.748*
	(2.38)	(2.29)	(2.01)
Inv	0.160**	0.136**	0.139***
	(2.61)	(2.25)	(3.74)
Inst	-0.285	-0.367	0.546**
	(-0.89)	(-1.18)	(2.31)
FDI	-3.141***	-2.901***	
	(-3.26)	(-2.91)	
Infl		-0.000	-0.001
		(-0.19)	(-1.06)
Credit		0.757*	0.312
		(1.75)	(0.80)
(FDI×Inst)	0.344***	0.320***	
	(3.46)	(3.12)	
FDI.PRIM			-0.924***
			(-3.72)
(FDI.PRIM×Inst)			0.136***
			(3.20)
Cons	6.664**	5.175**	1.636
	(2.64)	(2.22)	(0.82)
N	61	61	60
F (p-value)	(0.000)	(0.000)	(0.000)
R2	0.310	0.378	0.544
OIR test	0.387	0.798	3.684
(Prob>χ2)	0.943	0.850	0.298

Values in parentheses are White heteroskedastic adjusted t-values. *, **, and *** denote significance at 10%, 5%, and 1%, respectively. F is F-statistics. Total FDI is instrumented by lagged FDI (average of 1970-1979); Institutions are instrumented by UK legal origin dummy, Protestants dummy, Ethno-linguistic fractionalization index, and latitude.

The results confirm the previous findings of this chapter. The coefficient on FDI is still significantly negative, and the coefficient on the interaction term is positive and significant, which confirms that institutions play a role in determining the contribution of FDI on economic growth.

Column 3 includes primary FDI. One might ask whether to consider primary FDI as an endogenous variable or not. It is difficult to argue that primary FDI is determined by economic growth in host countries, which is an indicator of market size potential because primary FDI is a resources-seeking FDI. Dunning and Lundan (2008) provide a list of the candidate determinants of resources-seeking FDI; they are: the possession of natural

resources, infrastructure, tax level, and other incentives. Chapter two shows that primary FDI is determined by the availability of natural resources, measured by the ratio of primary exports to GDP, and the level of corporate income tax.

The endogeneity of primary FDI is tested by using marginal corporate income tax rate and ratio of primary export to GDP as instruments for primary FDI. Hausman test statistics could not reject the exogeneity of primary FDI as is clear from the *P- Value* of $\chi^2(1)$ which equals 0.3117. Thus, in column 3 in Table 21, primary FDI is entered as an exogenous variable, while institutions index is entered as an endogenous variable. Column 3 shows that the main result of this chapter is not affected by allowing for the endogeneity of institutions, since the coefficient on primary FDI is still significantly negative, and the coefficient on the interaction term between institutions and primary FDI is still significantly positive.

4.5. Conclusion

The question of whether FDI inflows contribute positively to economic growth and development is one of the most fundamental questions in international and development economics. It gains this importance not only from its obvious academic relevance, but also from its practical implications. One of these implications is whether the incentives given to foreign investors are justified. In spite of this importance, this question has not yet been settled.

In an attempt to answer this question, researchers have recently shown greater interest in studying the impact of FDI on economic growth by sector. One conclusion of this body of research is that primary FDI has negative effects on economic growth and should, therefore, be discouraged. Nevertheless, there is anecdotal evidence that primary FDI helps

host countries to exploit their natural resource endowments, which increases host countries' foreign exchange earnings and government revenues, and that countries with good institutions, like Botswana and Chile, have utilized these earnings and revenues to boost economic growth and development.

This chapter re-examines the impact of FDI on economic growth, taking into account the interaction between institutional quality of host countries and FDI. Contrary to the findings of the recent studies, the results of this chapter show that primary FDI contributes positively to economic growth if a host country achieves a minimum threshold of institutional quality. This result seems robust to model specifications, various controlling variables, and endogeneity bias. The results show that out of the 61 countries covered in the chapter, 40 countries acquired this minimum threshold and therefore benefited from primary FDI during the period 1990-2005. One implication of this result is that policy makers should direct their efforts towards improving institutions to benefit positively from primary FDI rather than discouraging it.

The chapter also provides evidence that helps to reduce the inconclusiveness of the empirical evidence regarding the contribution of FDI to economic growth. In particular, the results reinforce and improve upon the suggestion in the empirical literature that institutional quality in host countries is one attribute of the absorptive capacity upon which the contribution of aggregate FDI to economic growth depends.

Appendix IV

A list of countries included in the empirical analysis

Asia	*Latin America and Caribbean*	*Middle East and North Africa*	*Sub-Saharan Africa*	*Others*
Bangladesh	Argentina	Iran, Islamic Rep.	Kenya	Australia
China	Bolivia	Jordan	South Africa	Austria
India	Brazil	Tunisia	Zambia	Belgium
Indonesia	Chile			Canada
Korea, Rep.	Colombia			Cyprus
Pakistan	Costa Rica			Denmark
Papua New Guinea	Dominican Republic			Finland
Philippines	Ecuador			France
Singapore	El Salvador			Germany
Sri Lanka	Guyana			Greece
Thailand	Honduras			Hungary
Turkey	Jamaica			Iceland
	Mexico			Ireland
	Nicaragua			Israel
	Panama			Italy
	Paraguay			Netherlands
	Peru			New Zealand
	Trinidad and Tobago			Norway
	Uruguay			Portugal
	Venezuela, RB			Spain
				Sweden
				United Kingdom
				United States

Definition of Variables and Data Sources

Variable	Definition	Source
FDI	Foreign direct investment net inflows as % of GDP	World Bank, World Development Indicators.
LGDPpc80	Log of GDP per capita US $	World Bank, World Development Indicators.
Growth	GDP per capita Growth (annual %)	World Bank, World Development Indicators.
Infl	Consumer prices (annual %)	World Bank, World Development Indicators.
LTax	Log of Top Marginal Income Tax Rate.	Economic Freedom of the World, 2006 Annual Report. The Fraser Institute.
Inst	Simple Average of indices of Law and Order & Investment Profile, scale 0-12.	Calculated from ICRG Data, PRS Group.
Sch	Average years of higher schooling in the total population.	Barro R. and J.W. Lee.2000.
Reso	Ratio of Primary exports to GDP	World Bank, World Development Indicators.
Credit	Domestic credit provided by banking sector (% of GDP)	World Bank, World Development Indicators.
Inv	Gross capital formation (% of GDP)	World Bank, World Development Indicators.

5. FDI, Institutions, and Economic Growth: Is There a New Growth-Enhancing Role for FDI?

5.1. Introduction

The rapid increase in the flow of foreign direct investment during the late 1980s and the 1990s, has motivated a voluminous empirical literature focusing on the domestic consequences of FDI inflows. The main research area of this literature has been the growth effects of FDI, with particular emphasis on identifying factors that enable host countries to appropriate the beneficial effects of FDI. Examples of these studies include, but are not limited to: Balasubramanyam, Salisu et al. (1996) Borensztein, De Gregorio et al. (1998), Hermes and Lensink (2003), and Durham (2004). Another research area that has received less, but steadily growing attention in the recent literature, is the effects of FDI on policy variables and institutions in host countries. While some of the studies in this research area emphasize that FDI has negative impacts on some policy variables, such as tax level (Garretsen and Peeters, 2007) and environmental regulations (Cole, Elliott et al., 2006), others provide evidence that FDI has a positive impact on institutional variables including democracy (Li and Reuveny, 2002) and corruption (Felipe Larraín and Tavares, 2004). These two research areas have stayed separate from each other despite the fact that if FDI can positively affect institutions, then it can affect growth indirectly. The aim of this chapter is to bring together these two research areas into a single research study that seeks to explore the indirect impact of FDI on growth, and to test whether FDI has a new growth-enhancing role that works via institutions.

Given that recent economic growth literature states that institutional quality is one of the most robust determinants of economic growth, and the evidence presented in chapter three that FDI positively influences property rights in host countries, exploring whether FDI has an indirect impact on growth becomes an area worthy of study. Such study can be empirically carried out by developing a simultaneous equation model which includes FDI, institutions, and growth as endogenous variables that are jointly determined, and explicitly specifies the channel of influence from FDI to economic growth through institutions. In such a model, the impact of FDI on economic growth can be decomposed into: (1) direct impact and (2) indirect impact that works via institutions. This allows us to answer the question of whether and how FDI affects growth directly and via institutions.

The question of whether FDI has growth effects that works via influencing institutions, is crucial for understanding the contribution of FDI to economic growth, and it also has some important implications. For example, if the impact of FDI on growth through institutions is a significant one, a failure to take it into account will result in underestimating the development role of FDI. Moreover, if FDI appears to have a positive impact on growth through institutions, then the current view that developing countries should attract FDI will be strengthened, and promotions of FDI will be justified. In addition, if FDI is proved to have an indirect impact on growth, then the scope of the literature on growth effects of FDI will enlarge to include additional impacts that work via institutions.

The rest of the chapter will be organized as follows: section 5.2 provides a simple model that describes the relationships among FDI, institutions, and growth, and highlights the contributions of FDI and institutions to economic growth as they feature in the literature. Section 5.3 develops an econometric model that will be used to test the main hypothesis of the chapter. Section 5.4 describes the data, presents the results, and discusses the findings. Section 5.5 concludes the chapter.

5.2. FDI, institutions, and growth: A simple model

To understand the complex role played by FDI in determining economic growth, one needs a model that helps organize our thinking about economic growth; such a model should show all the possible interactions and feedbacks between FDI and other determinants of growth, especially institutions. Rodrik (2003) provides a model that can serve this purpose. Rodrik uses this model to simplify the complex nature of the process of generating economic growth, and to identify and sort out the complex web of causality running among factors that affect economic growth. In this model, Rodrik distinguishes between the "proximate" and "deep" determinants of economic growth. Proximate determinants of economic growth include accumulation of physical and human capital, as well as productivity and technological improvements, while deep determinants include institutions, integration into the world economy, and geography. The model shows that economic growth is not only affected by these determinants, but that it also affects these determinants, and most importantly, is affected by the interactions and feedbacks among these determinants. Thus, the model provides a simple but very effective framework for studying economic growth and answering some interesting questions. For example, Rodrik, Subramanian, and Trebbi (2004) use a similar variant of this model to answer the question of which factor; institutions, integration, or geography, "trumps" the other determinants of economic growth, a question that helps to identify the relative importance of the "deep" determinants of economic growth. Another example is Bonaglia, Braga de Macedo, and Bussolo (2001), who use a very similar framework to study the impact of globalisation on governance and institutions, and show how globalisation, governance, and economic performance affect each other in very complex mutual relationships. In this model and its two variants, the term "integration" or "globalisation" includes not only the flow of international trade, but also the flow of international capital and investment. However, both Rodrik et al (2004) and Bonaglia et al (2001) consider only the role of

trade. The model used in this chapter departs from these studies in two ways: first, it considers and highlights the role of FDI as another aspect of integration into the world economy; second, its main aim is to explore the role of FDI in determining economic growth directly and indirectly, through its impact on institutional quality.

The modified version of Rodrik's model is shown in Figure 10. This Figure illustrates some stylised facts about the interactions among FDI, institutions, and economic growth; it reveals links operating at different levels between FDI and other determinants of economic growth, which can help to explore the role of FDI in determining economic growth, and then to devise a reasonable empirical strategy for answering the core question of this chapter. The first panel of this model shows the "proximate" determinants of economic growth, where growth is determined by accumulation of physical and human capital, productivity, and technological progress. In other words, the first panel decomposes the sources of economic growth into two factors: the increase in factor inputs in physical and human capital (which is known as capital deepening), and the improvements in productivity with which these inputs are aligned to produce goods and services.

Rodrik (2003) describes the analysis provided by the first panel as the "standard" way that most economists use to understand the determinants of economic growth. He also notes that although this panel gives a straightforward decomposition of the sources of economic growth, it does not provide many deeper insights in understanding the process of economic growth. Physical and human capital accumulation, productivity improvements, and technological progress, can be viewed as proximate sources of economic growth, and a proper understanding of growth process requires explaining and answering questions like what factors affect capital accumulation and productivity and technological progress? How to attain higher level of productivity and technology? Why do some economies tend to accumulate more capital and achieve higher levels of productivity than others?

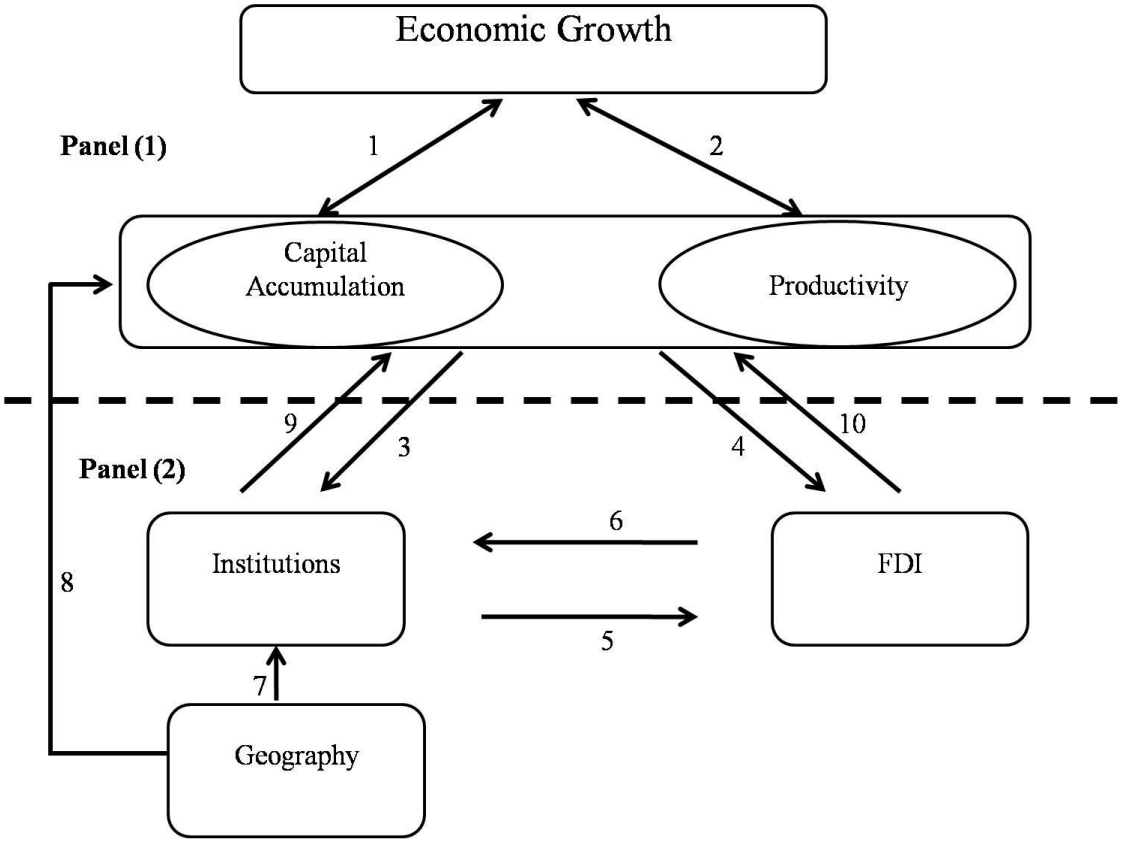

Figure 10: A simple model for economic growth

These questions are addressed in the second panel. And as shown in this panel, the answers to these questions are closely related to institutions, integration into the world economy, and geography. The second panel of Figure 10 shows that the proximate sources of growth are themselves driven by some deeper and more fundamental factors. Rodrik (2003) calls these factors the "deeper" determinants of growth. Rodrik states that the literature provides three major variables as deeper determinants. They are: integration into the world economy, institutions, and geography.

5.2.1. FDI and growth: The direct impact

A large body of economic literature states that FDI, as a combination of capital stock, technology and management experience, and entrepreneurial abilities, can affect economic growth in two distinct ways. On the one hand, FDI, particularly Greenfield FDI, represents

a new addition to the host country's capital stock, and therefore may positively contribute to economic growth. However, in the standard neoclassical growth model, the contribution of FDI to economic growth as capital accumulation is limited, because of the diminishing returns to capital (De Mello, 1997). In other words, according to the neoclassical growth model, the impact of FDI on economic growth is similar to the impact of domestic investment, in that it is a transitory impact and does not affect the long-term economic growth rate (Campos and Kinoshita, 2003). Long-term economic growth is affected only by technological progress and/or population and labour force growth, all of which are considered to be exogenously determined according to the neoclassical growth model (Barro and Sala-i-Martin, 2004).

In endogenous growth models, on the other hand, FDI is considered as a catalyst for technological progress and productivity improvements, and it therefore has a long-term effect on economic growth (OECD, 2002). In these models, FDI has an endogenous effect on economic growth because it creates increasing returns to capital through positive externalities and spillover effects (De Mello, 1997). In general, one might say that economic literature states that the contribution of FDI to economic growth does not stem only from its contribution to capital accumulation, but also from its role as a vehicle for transferring knowledge and advanced technology and other managerial experience, all of which are expected to increase productivity level and technological progress, leading to higher economic growth rates in host countries.

Technology can be transferred through a variety of channels, including international trade. However, FDI and the activities of Multinational Enterprises (MNEs) in host countries represent the major channels through which technology diffusion can take place (Borensztein, De Gregorio et al., 1998). This is because Multinational Enterprises conduct most of the research and development (R and D) around the globe and therefore they are among the firms acquiring the most advanced technology in the world. Moreover, FDI

does not only provide the host economy with advanced technology, but also with the necessary complements of these technologies, such as management experience and entrepreneurial abilities (OECD, 2002).

The positive role played by FDI and Multinational Enterprises in transferring technology and increasing the level of productivity in host economies can be performed though several complex mechanisms. These mechanisms operate through the interactions of Multinational Enterprises with the host economy, including transacting with domestic firms that supply Multinationals with intermediate products, or using the output of Multinationals, the competition with domestic firms in the same industry, and training local workers (OECD, 2002).

Advanced technology can be transmitted to the host economy as a result of the cooperation of Multinationals with domestic firms, particularly with their suppliers of intermediate products. The efforts of Multinational Enterprises to increase their competitiveness in world markets may encourage them to help their local suppliers to improve the quality of the intermediate products that Multinationals use in their production operations. This can be done through providing domestic firms with technical assistance, know-how, and the organizational skills they need to improve the quality of their output, which ultimately improves the quality of Multinationals' products (OECD, 2002). Moreover, the assistance of Multinationals to domestic suppliers may go even further, including assistance in purchasing raw materials and intermediate products, and in getting access to international markets and production networks (OECD, 2002). However, technology transmission can occur without assistance from Multinational Enterprises, as the competition among domestic firms to supply Multinational Enterprises with intermediate products may force them to adopt modern technology, so that they can supply the Multinationals (Lipsey, 2004). Furthermore, the impact of Multinationals' transactions with domestic firms is not limited to their suppliers, but includes domestic firms that buy Multinationals' products.

Positive externalities to domestic firms in these industries include the benefit of using higher-quality products and enjoying lower-prices, all of which helps to increase their productivity (OECD, 2002).

Another way in which technology improvements occur is through the competition between domestic and foreign firms. The advent of more advanced foreign firms may force domestic firms operating within the same industry to improve their existing technology and adopt more efficient and up-to-date technology in order to survive the intense competition with foreign firms (Lipsey, 2004). However, it is also possible that advanced technology can be transmitted to domestic firms as a result of demonstration effects. The entry of multinational corporations to the host economy, and the introduction of new products and new technologies, will expose domestic firms to the superior technology of Multinationals, and this exposure may encourage them to copy and imitate not only the new advanced method of production used by Multinationals, but also their managerial practices and organizational arrangements (Saggi, 2002).

The advent of FDI and the entry of multinational corporations can also improve the level of productivity in the host countries by training domestic workers, and hence augment the existing human capital in the host economy (De Mello, 1997). When Multinationals employ domestic workers, they usually get the chance to acquire knowledge of the advanced technology and managerial practices used by Multinationals. This knowledge and these skills can be transmitted to the rest of local economy when these workers leave the Multinationals and set up their own firms, or work for other domestic firms (OECD, 2002). In this way, the switch of Multinationals workers and managers to domestic firms helps to increase the productivity level of the domestic economy and fosters the process of technology transfer.

5.2.2. Institutions and growth

A large body of economic literature documents evidence that institutional quality plays an important role in determining economic growth rate, by affecting the incentives for investment in physical and human capital, and technological progress and innovations. In fact, there is a general agreement that institutional quality, particularly the security of property rights, is one of the key factors which assists towards long- term economic growth (Knack and Keefer, 1995) and (Rodrik, Subramanian et al., 2004). North (1990) postulates that the primary cause of the underdevelopment and low growth rates in developing countries is the failure to develop institutional environments that effectively define and protect property rights and enforce contracts, while the sustained growth achieved by developed countries has been the result of sound institutions that foster exchange and protect property rights. Institutional environment plays this role because it sets the incentives of actions, and defines the available choices which ultimately determine not only economic growth, but also the way the whole society evolves.

One way in which institutional quality can affect economic growth, is related to the role played by institutions in determining transaction costs and the implication of this to the market size, specialization, and technological progress. Trade and transactions among individuals involve some sort of risk and uncertainty about the behaviour of the other party involved in the exchange. This risk and uncertainty stems from the fact that different parties may have asymmetric information, and that transactions are not always instantaneous. Parties of exchange, therefore, may act opportunistically when the payoff for such behaviour exceeds the payoff for other alternatives. For example, Parties of exchange may cheat or lie about the quality of what is being traded, or they may shirk from their responsibilities, or renege on their deals and not live up to agreements. Thus, transacting and trading involve some sort of costs related to this risk and uncertainty, and to the time, effort, and resources devoted to defining, protecting, and enforcing agreements

and property rights, in addition to any losses resulting from imperfect monitoring and policing of the agreements (North, 1990). As Coase (1992) argues, exchange Parties consider transaction costs when they make their decisions regarding trade and exchange, and when transaction costs are so high that they exceed the expected gains of trade, individuals will refrain from trading, which will reduce the volume of trade and limit the market size.

To elaborate more on the role of institutions and how they affect individuals' behaviour regarding cooperation and trading with others, and therefore transaction cost, North (1990) uses the terminology of game theory. North documents that the literature of game theory shows that individuals usually find it to their advantage to cooperate with other, including trading and exchange, when the game is repeated, when they possess complete information about the other parties of exchange, and when the exchange involves a small number of individuals. However, North (1990) argues that individuals may find it to their advantage to act opportunistically or decide not to cooperate with others when the exchange is not repeated, when they do not have enough information about the other party of the exchange, or when the exchange involve lots of parties. In such cases, individuals may find the payoff for opportunistic behaviour (e. g lying, shirking, and other sorts of defection) higher than the payoff for cooperation. As a result, North concludes that impersonal complex cooperation and exchange cannot be sustained without the intervention of a coercive state that provides a well-developed institutional framework.

When institutional environment does not provide formal, well established mechanisms for enforcing contracts and adjudicating and settling disputes among parties, individuals will incur high transaction costs, such as search and information costs related to finding an honest trading partner, deciding on the terms of trade, policing and enforcing the agreement etc. (Shirley, 2005). In such institutional environments, individuals will refrain from engaging in complex impersonal trading that extends across space and time, and that

involves individuals whom they do not already know. They will limit their transactions to individuals they know and have a great deal of information about, and individuals with whom they have kinship relations, such as ethnic or religious connections, or any other social networks. These ways of trading provide them with mechanisms of enforcing contracts and policing agreements that reduce transaction costs. These mechanisms include threats to reputation that increase the cost of opportunistic behaviour in repeated transactions, and threats to ostracise individuals from kinship ties that increases the cost of opportunistic behaviour in transactions between the members of the same social network (North, 1990). In this way, they keep the level of transaction cost low, but they do so at the expense of reducing the volume of trade, and lowering the extent of specialization and division of labour. In other words, they resort to reducing the volume and the extent of their transactions and lowering the degree of specialization as insurance against the high risk and uncertainty involved in complex impersonal exchange. In general, one might say that in countries where institutions are not well developed, the level of trade and market size will be smaller and the degree of specialization and division of labour will be lower, while improving institutional quality will reduce transaction costs and allow individuals to capture the gains of trade which will encourage them to engage in complex impersonal exchanges that extend across time and place.

By affecting the extent of trade, market size, and the degree of specialization and division of labour, institutional environments also affect the rate of technological progress and productivity. North and Thomas (1973) explain how market size affects the rate of technological progress. Their main argument is that the expansion of market size helps to raise the private rate of return on innovative activities. They argue that when the markets expand, and when the division of labour become more specific, the reward for finding ways to improve production methods increases. They argue that the expansion of markets, and the resulting increase in specialization degree, allows individual entrepreneurs to concentrate on a narrow range of activities which help them to direct their innovative skills

to more limited problems, thus increasing the rate of technological and productivity improvements. Moreover, the expansion of the market size will not only encourage innovation, but will also encourage the adoption and dissemination of advanced technology already present in other countries (North and Thomas, 1973). To sum up, institutional improvements lower transaction costs and widen the market size, increasing potential gains from specialization and trade, and encouraging the invention and adoption of new technology which ultimately increases the rate of economic growth.

The institutional environment affects the rate of technological progress beyond the effect that is attributable to increasing market size and specialization, because it also determines whether inventors or entrepreneurs would get appropriate returns for their efforts. Institutions may discourage innovation if inventors and entrepreneurs could not be sure that they will obtain the fruits of devoting their time and resources to innovations. This will reduce and delay the adoption of new technology, which ultimately reduces the economic growth rate.

Schmookler (1966) argues that, contrary to the popular idea that scientific discoveries stimulate inventions, it is economic reward and taking advantage of potentially profitable opportunities that stimulate invention and technological progress. Schmookler (1966) provides evidence that the effort to seize profitable opportunities or to reduce the cost of production is the main force behind many cases of remarkable industrial inventions. Schmookler's argument means that there is a link between factors that affect market conditions and determine the expected reward for innovative activities on the one hand, and innovation rates on the other (Grossman and Helpman, 1993). Referring to Medieval China, Baumol (1996) shows that institutional quality in general, and the risk of expropriation of private gains from innovative activity by the government, hindered technological progress, despite the fact that Medieval China witnessed some major inventions like the printing press. Baumol (1996) argues that the institutional environment

that encouraged individuals to become bureaucrats rather than entrepreneurs, in order to gain high status and wealth, explains at least partly, the lagging of China behind the industrialized countries.

North (1990) explains how institutional quality in general, and the risk of expropriation in particular, affects the incentives to innovation and technological progress, and thus economic growth. As shown above, sustaining impersonal exchanges that extend across time and place and involve large numbers of individuals, requires some kind of third-party enforcement. Put another way, institutions must be created to provide sufficient information for parties to exchange and to enforce contracts and police agreements through the threat of coercion and punishment. The role of the third party can be played by a state that is strong enough to enforce rules that define and protect property rights and police, and enforce contracts. However, North (1990) explains that a strong state poses a dilemma, because any party strong enough to enforce rights, is also strong enough to expropriate them, and since rulers have their own utility function, they may be encouraged to use their power to expropriate rights or alter them for their advantage. Therefore, sustaining impersonal exchange that allows individuals to capture gains from trade and productive activity, requires not only a strong third party that enforce rights, but also a strong third party that acts impartially.

Impartiality here means that the state must show credible commitment to neutrality, and never engage in predatory activities that expropriate private rights, violate contracts, or pursue redistributive policy that radically alters individuals' wealth or income. North argues that complete impartiality of state is difficult to achieve even in developed countries. However, there is a huge difference in institutional environment with regard to impartiality of the state between developed and developing countries, and this difference reflects on the quality of institutions and the protection of property rights, and therefore on the rate of technological progress and productivity.

To summarize, one can say that when individuals and entrepreneurs decide how to allocate their time, efforts and innovative skills, they take the expected returns of their activities into account. If property rights are well protected, individuals will devote time and resources to take advantage of the profitable opportunities. However, if property rights are not protected, either because the state is too weak to protect them or strong enough to protect them, but at the same time is not self-controlled not to expropriate them, entrepreneurs will not risk their time and resources in investments that might be expropriated. Thus, in a low-quality institutional environment, entrepreneurs will be forced to use technology that employs low levels of capital, and to adopt short-term prospects for their businesses, and keep them small in scale, all of which leads to slow economic growth (North, 1990).

5.2.3. Geography and growth

The argument that geography exerts some influence on economic growth is based on the observation that geographical factors such as climate zones, disease ecology, resource endowments, distance from the coast, etc, tend to play a crucial role in determining various key economic variables ranging from the quality and quantity of economic resources to institutional quality and economies' socio-political structures. Economic literature documents that the impact of geography on economic growth is twofold: geography affects economic growth indirectly though effects on institutional quality, and directly through effects on economic resources and their productivity. These effects are shown by arrows 7 and 8, respectively, in Figure 10.

Arrow 7 shows that the impact of geographically related variables on economic growth works through their long-term effect on institutional quality. There are three major arguments in the literature that support this channel of influence. The first one is put

forward by Hall and Jones (1999), who stress the role of climate, particularly the distance from the equator, in shaping institutional quality. Their argument is based on three basic elements: first, that Western European countries have long adapted Adam Smith's idea and built high quality institutions that protect property rights, and have established the principle of check and balance in governments. Second, Western Europeans carried with them these principles and institutions wherever they settled, and therefore helped to improve institutional quality in their settlement regions. Third, the settlement of Western Europeans around the globe was influenced by the climate, because Western Europeans were more likely to settle in locations that have a climate similar to that of Western Europe i.e. temperate regions that are far from the equator. Hall and Jones (1999) further argue that the influence of Western Europeans on institutions tends to be persistent and is changing very slowly over time. Thus, they conclude that institutional quality is influenced at least partly by climate, and the distance from the equator in particular.

The second argument is advanced by Acemoglu, Johnson, and Robinson (2001). Their argument is basically similar to Hall and Jones's, in that they also stress the role of Western Europeans in influencing institutional quality in the regions where they settled. However, they highlight a different geographical factor that influenced the distribution of Western Europeans around the globe. According to Acemoglu, Johnson and Robinson (2001), the settlement of Western Europeans was determined by the disease burden and the mortality rates they faced. They also provide further elaboration on the way that Western Europeans influenced institutions in colonized countries. Europeans adapted different colonization policies regarding building institutions in colonized regions, depending on disease ecology. On the one hand, Europeans settled in large numbers in regions where they faced low disease burden, and they built "settler colonies" which were similar to their home countries, in that they had institutions that effectively defined and protected private property rights, and promoted representation, check and balance in their governments. On the other hand, in high disease burden environments, where they faced high mortality rates,

Western Europeans did not settle, but rather exploited and transferred as much as possible, the resources of these colonies, through setting up “extractive states” and built institutions that did not strongly support private property rights or competition, and nor did they promote principles of representation and check and balance in governments. These extractive colonies were largely characterized by institutions that promoted monopolies, trade restrictions, and even compulsory work and slavery on cash crop plantations and other mines, in order to extract resources. Thus, Acemoglu, Johnson and Robinson (2001) argue that disease environment affects the institutional quality in colonized regions through influencing Europeans’ settlement and their institutional building policy. Regions characterized by high disease burden ended up having poor institutions, whereas regions characterized by low disease burden and low mortality rates among settlers ended up having high quality institutions. These differences in institutional quality endured even with the end of colonialism.

The third argument is offered by Engerman and Sokoloff (2000). This argument gives a slightly different explanation for the way in which geography affects institutions. In general, this argument stresses the role played by factor endowments, and their implication for production technology established by Europeans in their colonies in shaping the institutional quality. In colonies endowed with climate and soils that made them suitable for growing sugar, coffee, and other crops that require large economies of scale to be produced, Europeans established large slave plantations to exploit these colonies, with slaves being brought to them from Africa. Using this method of production created high levels of inequality in wealth and human capital, and led to the emergence of a small, elite class of landholders that enjoyed disproportionate political power. In these colonies, the elite were able to use their power to build institutional structures that reinforced their political and economic domination, by establishing rules and laws to limit access of non-elites to opportunities, reducing competition, and hindering innovation, all of which led to poor institutional quality. The same can be applied to colonies endowed with rich mineral

deposits, as well as an abundance of native labour power. This pattern of production method and institutions is in sharp contrast to the colonial experience in colonies endowed with climate and soil that were suitable for grain agriculture that can be produced at a small-scale level. These colonies witnessed a completely different path of development in which there was more equal distribution of wealth and human capital, and a high degree of homogeneity in the population, all of which encouraged the adoption of an institutional framework that fosters equality and provides opportunities to all members of its population, leading to high quality institutions. Thus, according to Engerman and Sokoloff (2000), it is the availability of resources endowment, especially crops and minerals, that shaped institutional quality and their influence tends to be persistent and long lasting.

The direct impact of geography on economic growth is shown by arrow 8. Economic literature holds that geographically-related variables, such as climate and location, can directly affect economic growth. They play this role because they influence not only the quantity of economic resources, but also the productivity of these resources. For example, Gallup, Sachs, and Mellinger (1999) find evidence that the productivity of land in tropical regions is considerably lower than the productivity of land in more temperate regions, other things being equal. In other words, the agriculture land in tropical regions tends to produce smaller crop yields because soils are generally fragile and of low fertility. The productivity of land in tropical regions is also adversely affected by the high prevalence of crop pests and parasites that hinder the growth of plants (Easterly and Levine, 1997).

Geographical factors also affect economic growth by influencing human capital. For example, the prevalence of infectious diseases, such as malaria, yellow fever etc, in tropical climates, adversely affects human health and reduces life expectancy. These sorts of infectious diseases are prevalent in tropical regions and rare in other regions, because tropical climates tend to have the ecological conditions that favour them and foster their transmission. Another geographical factor that can affect economic growth is location. For

example, a costal location and the accessibility to navigable waterways, positively affects economic growth through reducing transport costs, increasing openness to trade, and enlarging market size, accelerating the diffusion and transmission of new technology etc. Therefore economies in regions that are costal or have access to navigable water tend to grow faster than in regions that are landlocked.

5.2.4. FDI – Institutions interrelationships: A new growth-enhancing role for FDI

One interesting feature of Figure 10 is that it makes clear that economic growth is a very complex process, which is determined not only by each of these factors, but also by the interactions and the web of cause-effect relations that links them together. Sorting out this complex web of causality has been problematic for studies trying to disentangle the impact of these variables on economic growth. However, it can also be useful in allowing us to study how one variable may affect growth via another variable or variables.

The figure shows that with the exception of geography, most of the variables included in the model are both a cause and effect, not only for economic growth, but also for each other. For example, institutional quality can be regarded as a cause of economic growth arrow (9) and as a result of growth arrow (3). FDI can positively affect growth arrow (10), however, it is also possible that countries that grow faster will attract more FDI, as shown by arrow (4). More related to the aim of this chapter is the interrelationship between FDI and institutions. As the figure shows, institutional quality determines FDI, with better institutions attracting more FDI, as can be seen from arrow (5). And arrow (6) shows that FDI in turn affects institutions. FDI plays this role because it creates effective demand for better institutions, and provides governments with incentives to adopt favourable rules or

improve the enforcement of existing ones. Thus FDI can contribute to economic growth via improving institutional quality; arrows (6) and (9).

5.3. Model specification

To empirically investigate the indirect effect of FDI on economic growth, one needs to specify a model that allows us to capture the interrelationships that exist among FDI, institutions, and economic growth. In particular, one needs a model that allows us to endogenize institutions, with FDI included as a determinant of institutional quality. Therefore, this chapter specifies a basic econometric model that consists of a series of three main equations describing the behaviour of the endogenous variables. In particular, the model consists of a cross-country growth equation, and two other equations; one for FDI and the other for institutions.

5.3.1. The growth equation:

The first endogenous variable in the model, *Growth*, is economic growth, which is measured as the average of growth rate of real Gross Domestic Product (GDP) per capita over the period 1980-2005. The growth equation specification follows the commonly accepted form in the cross-country growth literature (Barro, 1991), and includes a group of economic variables that have been identified by empirical growth literature as robust determinants of economic growth (Levine and Renelt, 1992). In addition to FDI and institutions, the growth equation includes five variables. The first variable, *LGDP80*, captures the impact of initial income level and is approximated by the log of GDP per capita in 1980. According to conditional convergence hypotheses, the impact of initial income level on economic growth is negative after controlling for other variables affecting economic growth (Barro and Sala-i-Martin, 2004). The other two variables capture the impact of physical and human capital on economic growth. Physical capital, *Inv*, is

measured by the average of cross capital formation as a ratio to GDP, while human capital, *LSch*, is measured by the log of average years of secondary schooling in the total population; both of the variables are expected to have a positive impact on economic growth. The equation also includes two dummy variables one for sub-Saharan African countries and one for Latin American countries. As regards FDI and institutions, both of the variables are expected to have a positive impact on economic growth, as they have positive externalities that increase the productivity of economic resources.

5.3.2. The institutions equation:

The second endogenous variable, *Inst*, is institutions. *Inst* is measured by the ICRG index, which is scaled to vary from 0 to 12, with higher values indicating better institutional quality. Following the empirical literature on the determinants of institutional quality and property rights (Levine, 2005) and (La Porta, Lopez-de-Silanes et al., 1999), institutional quality is related to a set of variables representing the role of political, cultural, and geographical factors. The impact of political factors is approximated by two variables. The first variable, *Ethn*, is the index of the ethno linguistic fractionalization, and is expected to have a negative influence on institutional quality and property rights protection, because societies characterized by a high degree of ethnic and linguistic diversity are more likely to experience higher political tension, which has a negative impact on institutional quality (La Porta, Lopez-de-Silanes et al., 1999). In such societies, governments tend to restrict political freedoms and use their coercive powers to redistribute resources to their advantage, and to expropriate rights rather than protect them (Levine, 2005). The second political variable, *BCLaw*, is a dummy variable for British Common Law, and is expected to have a positive influence on institutional quality, because compared with other legal systems such as French Civil Law, British Common Law tends to limit the state's power

and better protect private property rights (Shirley, 2005) and (La Porta, Lopez-de-Silanes et al., 1999).

Cultural influence is captured by including the percentage of protestant affiliation, *Prots*. Compared with other religious affiliations, Protestantism tends to be more egalitarian and tolerant, and less hierarchical. Thus Protestantism tends to encourage the creation of institutions that protect private property rights (La Porta, Lopez-de-Silanes et al., 1999). Therefore, the percentage of Protestant affiliation, *Prots*, is expected to positively influence institutional quality.

The impact of geographically related variables is captured by the log of settler mortality rate, *Geog*, which is expected to have a negative impact on institutional quality. In addition to these factors, the institutions equation also includes the other two endogenous variables; *Growth* and *FDI*. Economic growth is expected to have a positive impact on institutions, because the process of economic growth and development tends to create higher demand for better institutions, and to provide the necessary resources for building such institutions. FDI inflows also tend to create demand for better institutions and encourage governments to provide such institutions, and thus FDI is expected to positively influence institutions.

5.3.3. The FDI equation:

The third endogenous variable in the model, *FDI*, is foreign direct investment, which is measured as the average of foreign direct investment net inflows as ratio of GDP over the period 1980-2005. The specification of the FDI equation includes, in addition to GDP per capita growth rate and the indicator of institutional quality, four other variables which are identified by FDI literature as key determinants of FDI (Lim, 2001) and (Chakrabarti, 2001). The first variable, *LGDPpc*, is the log of the average of GDP per capita over the period 1980-2005, which is included to capture the impact of market size on FDI, and is expected to have a positive sign, since the increase in market size increases the profitability

of FDI. The second variable, *Tarif*, is the average of the tariff rate. The average tariff rate is included to proxy the impact of trade barriers on FDI. Trade barriers have an ambiguous influence on FDI, because higher trade barriers encourage horizontal FDI that seeks to serve the domestic market, while lower trade barriers encourage vertical FDI that has an outward orientation, and seeks to compete in international markets. Thus, the final impact of trade barriers depends on the empirical investigation.

The third variable, *Tele*, is the average of the number of telephone mainlines per 1,000 of people. *Tele* is used to approximate the impact of infrastructure on FDI, and is expected to have a positive influence. The fourth variable, *LTax*, is the log of the average of the top marginal income tax rate, which is expected to have a negative impact on FDI. The FDI equation also includes the other two endogenous variables: GDP per capita growth rate, *Growth*, to capture the impact of economic growth on FDI, and the average of the institutional quality index. *Growth* is included to capture the role of market growth potential in encouraging FDI inflows, while the institutional quality index captures the role of the institutional environment on FDI.

5.3.4. The complete model

The complete model used in this chapter to estimate the impact of FDI on economic growth has the following formula:

$$Growth = \delta_0 + \delta_1 LGDP80 + \delta_2 Inv + \delta_3 LSch + \delta_4 Inst + \delta_5 FDI + \delta_6 Latin + \delta_7 Africa + \varepsilon \quad (1)$$

$$Inst = \gamma_0 + \gamma_1 Ethin + \gamma_2 BCLaw + \gamma_3 Prots + \gamma_4 Geog + \gamma_5 Growth + \gamma_6 FDI + \nu \quad (2)$$

$$FDI = \psi_0 + \psi_1 LGDPpc + \psi_2 Tarif + \psi_3 Tele + \psi_4 LTax + \psi_5 Inst + \psi_6 Growth + \upsilon \quad (3)$$

As can be seen from equations (1), (2), and (3), this model contains three endogenous variables:

Growth: the average of growth rate of real Gross Domestic Product (GDP) per capita

Inst: Institutions measured by ICRG index

FDI; the average of foreign direct investment net inflows as ratio to GDP

The model also includes a wide range of exogenous variables. While it is very difficult to argue that some of these variables are completely exogenous, the exogeneity here means that they do not appear on the left-hand side of any of the structural equations and that they are assumed to be determined outside the model. The following is a list of the exogenous variables included in our model.

LGDP80: The log of GDP per capita in 1980.

Inv: The average of cross capital formation as ratio to GDP.

LSch: The log of average years of secondary schooling in the total population

Latin A dummy variable for Latin American countries.

Africa A dummy variable for sub-Saharan African countries.

Ethn: An index measuring the probability that two randomly selected individuals in a country will not speak the same language.

BCLaw: Dummy variable that takes on value of one if a country's legal system is British Common Law origin.

Prots: The percentage of the population that follows the Protestantism affiliation.

Geog: The log of annualized deaths per thousand European soldiers in European

colonies in the early 19th century.

LGDPpc: The log of the average of GDP per capita.

Tarif: The average of the tariff rate.

Tele: The average of the number of telephone mainlines per 1,000 people.

LTax: The log of the average of the top marginal income tax.

5.3.5. How does FDI affect economic growth?

The interest of this chapter centres on the way in which FDI affects economic growth directly and indirectly via institutions. Equation (1) shows that a change in FDI by one unit causes economic growth to change by an amount equal to δ_5. Furthermore, Equation (1) shows that a change in institutional quality index by one unit causes economic growth to change by an amount equal to δ_4. However, equation (2) shows that a change in FDI by one unit can also induce a change in the institutions index by an amount equal to γ_6 which means that the effect of change in FDI by one unit is not limited to its direct influence on growth, but also includes the indirect impact via institutions channel. Thus, the total impact of FDI on growth equals the sum of direct impact and indirect impact.

This effect can be calculated by finding the derivative of growth with respect to FDI, which is equal to

$$\frac{\partial Growth}{\partial FDI} = \delta_4 \frac{\partial Inst}{\partial FDI} + \delta_5$$

The above expression makes it clear that the impact of FDI on economic growth is twofold: the direct impact, which is equal to δ_5 and the indirect impact, which is equal to

δ_4 multiplied by the derivative of institutions with respect to FDI. Equation (2) in the model shows that the derivative of institutions with respect to FDI is $\frac{\partial Inst}{\partial FDI} = \gamma_6$. Thus the total impact of FDI on economic growth equals $(\delta_4 \times \gamma_6) + \delta_5$. Estimating the above complete system of equations and finding δ_4, γ_6, and δ_5 allows us to test whether and how FDI affects economic growth.

5.4. Data and model estimation

This section describes the data set used to estimate the model and presents the results of the estimation.

5.4.1. Overview of the data

As can be seen from the model specification, estimating the model requires combining a wide range of diverse data sets, that vary in their availability, with differences in their number of observations for different variables. And because some data sets cover a limited number of countries, as is the case with the settler mortality rate, the analysis is restricted to a small number of countries. The analysis is also restricted in terms of time coverage, because the data on the institutional quality index, ICRG, is available only from the beginning of the 1980s. Thus, the time period under study is 1980-2005 and the data refers to a diverse cross section of 42 developed and developing countries. However, to gain some robustness and to expand the sample, settler mortality rate is replaced with the absolute value of latitude, which covers a larger number of countries, expanding the analysis to cover 74 countries. Table 22 provides summary statistics for the endogenous variables in this study, which may help in the interpretation of the estimated coefficients, and for measuring the impact of changes in FDI on both economic growth and institutions.

Table 22: Descriptive statistics for the dependent variables

variable	Mean	SD	Min	Max
Growth	1.387	1.516	-2.353	5.599
FDI	2.660	2.955	0.200	16.089
Inst	6.606	1.706	3.325	10.370

Table 23 shows the simple correlations between the dependent variables in the model, which helps in exploring the nature of the relationships between them. This Table documents a positive and significant correlation between economic growth on the one hand, and FDI on the other, with a correlation coefficient of 0.449. This positive correlation is also illustrated in Figure (11). The data also indicates a positive association between institutions and economic growth, with a positive and significant correlation coefficient of 0.5. Figure (11) shows a scatter plot of economic growth rate and institutional quality. As regards the relationship between FDI and institutions, Table 23 and Figure (11) show a significant positive correlation between the two variables.

Table 23: Correlation matrix of dependent variables

	Growth	*FDI*	*Inst*
Growth	100	-	-
FDI	0.449*	-	-
Inst	0.500*	0.435*	-

* indicates significance at the 0.05 level or better.

Correlation coefficients presented in Table 23 represent a first approximate test for the hypothesis that FDI may exert indirect positive impact on economic growth by positively influencing institutions. First, the Table shows that FDI has a positive correlation with institutional quality. This means that countries receiving higher FDI inflows tend, on average, to have better institutional quality as measured by the ICRG index. Second, the Table shows that there is a positive correlation between economic growth and institutions, which means that countries that have well-functioning institutions tend to grow faster.

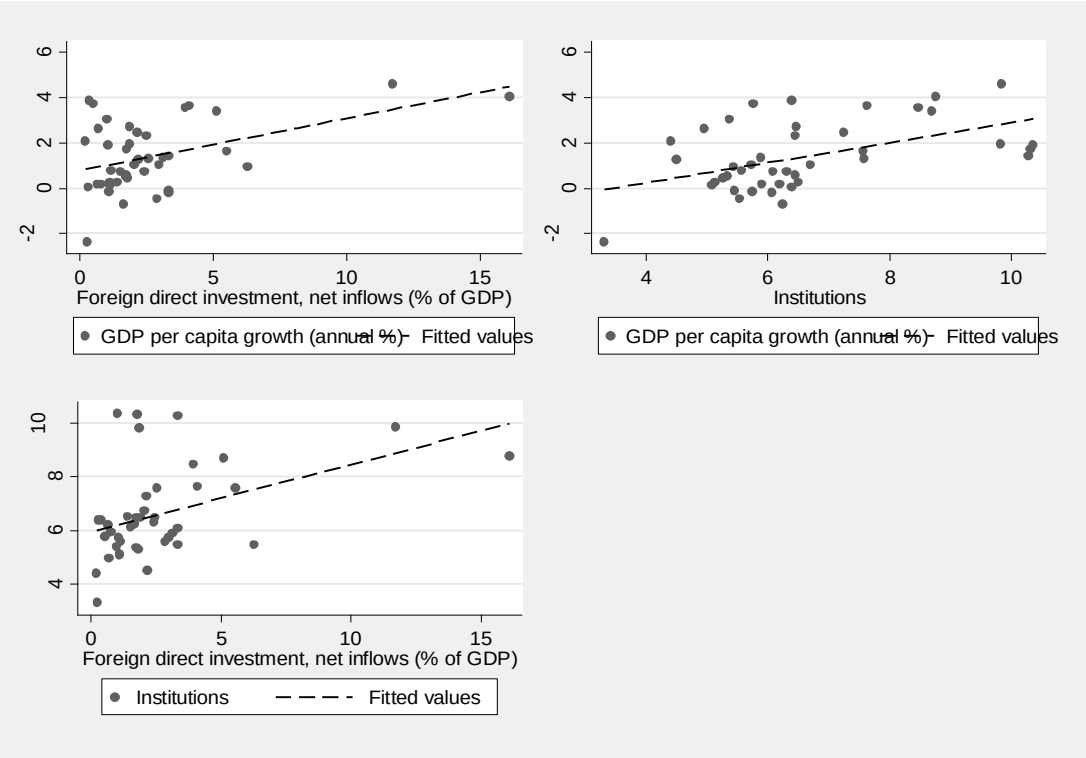

Figure 11: Association between growth, institutions, and FDI (small sample).

Thus, one can infer that these correlations provide some support to the claim that FDI exerts a positive influence on growth via institutions. However, it is quite possible that these correlations are the results of the feedback and reverse causality among the involved variables. For example, one cannot rule out the possibility that the positive correlation between institutions and FDI is a result of the impact of institutions on FDI, not the other way around. Similarly, the positive correlation between institutions and economic growth may be the result of the impact of growth on institutions. As a consequence, testing whether FDI exerts influence on economic growth via institutions channel requires a more sophisticated technique that can deal with the endogeneity problem and take account of the feedback relationships between FDI, institutions, and economic growth.

5.4.2. Estimation method[19]

In a simultaneous equation model, like the one developed in the previous section, a dependent variable in one equation can be an explanatory variable in other equations in the model. For example, in equation (3), FDI is the dependent variable, which is determined by institutions, growth, and other variables, but at the same time FDI enters the institutions equation and the growth equation (equations (2) and (1) respectively), as an explanatory variable. As a result, some of the explanatory variables in simultaneous equation models are endogenous and, therefore, are correlated with the disturbance terms in all the structural equations of the model. As a consequence, using Ordinary Least Square, OLS, to estimate the structural equations will result in inconsistent estimates for the model parameters. A consistent estimation for the model parameters requires using an estimation method that can deal with the endogeneity problem.

But before considering the method of the estimation, the identifiability of the model has to be checked to see whether the parameters of the model are estimable. Putting the model in a clear mathematical notation makes it easier to find out whether the model is identified, and therefore whether the parameters are estimable or not. Bringing all the variables to the left-hand side of the equations, the structural form of the model described in the above section can be written in matrix terms as

[19] The discussion in this subsection is derived largely from: Kmenta (1971) and Greene (2003).

$$\begin{pmatrix} 1 & -\delta_4 & -\delta_5 \\ -\gamma_5 & 1 & -\gamma_6 \\ -\psi_6 & -\psi_5 & 1 \end{pmatrix}\begin{pmatrix} Growth \\ Inst \\ FDI \end{pmatrix}+\begin{pmatrix} -\delta_0 & -\delta_1 & -\delta_2 & -\delta_3 & -\delta_6 & -\delta_7 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ -\gamma_0 & 0 & 0 & 0 & 0 & 0 & -\gamma_1 & -\gamma_2 & -\gamma_3 & -\gamma_4 & 0 & 0 & 0 & 0 \\ -\psi_0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\psi_1 & -\psi_2 & -\psi_3 & -\psi_4 \end{pmatrix}\begin{pmatrix} 1 \\ LGDP80 \\ Inv \\ Lsch \\ Latin \\ Afric \\ Ethin \\ BCLaw \\ Prots \\ Geog \\ LGDPpc \\ Tarif \\ Tele \\ Ltax \end{pmatrix}=\begin{pmatrix} \varepsilon \\ \nu \\ \upsilon \end{pmatrix}$$

or

$$\mathrm{B}y+\Gamma x=U \qquad (4)$$

Where B is the matrix of the parameters of the endogenous variables, y is the vector of the endogenous variables, Γ is the matrix of the parameters of the exogenous variables, x is the vector of the exogenous variables, and U is the vector of the disturbance terms. The reduced form of the model can be obtained by solving the structural form for the values of the endogenous variables. The reduced form can be expressed in matrix notation as

$$y=\Pi x+\upsilon \qquad (5)$$

Where $\Pi=-B^{-1}\Gamma$; $\upsilon=B^{-1}U$

The reduced form equations express the endogenous variables as functions of the exogenous variables only, and therefore solve the endogeneity problem. This means that OLS can be used to consistently estimate the matrix of reduced form parameters Π. The identification problem refers to whether we can derive estimates for B and Γ from Π. There are three possibilities in this regard:

(1) It is not possible to derive estimates for B and Γ from Π; this case is called under-identification.

(2) It is possible to derive estimates for B and Γ from Π in a unique way; this case is called exact identification.

(3) It is possible to derive estimates for B and Γ from Π in more than one way; this case is called over-identification.

For a given structural equation to be identified, two conditions have to be met. The first condition is called the order condition, which states that the number of the exogenous variables that are excluded from the equation has to be greater than or equal to the number of the endogenous variables included in the equation, minus one. Put another way, the order condition requires that:

$$K^{**} \geq G^{\Delta} - 1$$

where K^{**} is the number of the exogenous variables that are excluded from the equation under consideration, and G^{Δ} is the number of the endogenous variables included in the equation. The order condition is a necessary but not sufficient condition for identification, i.e. if this condition is not met, then the equation under consideration is not identified, however, satisfying this condition does not make it certain that the equation is identified.

The second condition is called the rank condition, which is a necessary and sufficient condition. This condition states that for a given equation to be identified, the rank of the matrix with parameters formed by the restrictions in the equation under consideration, must have a rank equal to the number of the endogenous variables included in the equation, less one. In other words, the rank condition states that

$$Rank\ A = G^{\Delta} - 1$$

where A is the matrix with columns that represent the restrictions in the equation.

Applying these conditions to our model shows that the three structural equations satisfy the order and the rank conditions[20].

As discussed above, using OLS to estimate the parameters of the structural equations will result in inconsistent estimates when some of the explanatory variables are endogenous. Thus, we need to apply a method that can deal with the endogeneity problem in order to get consistent estimates for the structural parameters. In general, there are two main approaches for methods that can consistently estimate the structural parameters. The first one is the limited information approach. The methods in this approach estimate each equation separately, i.e. these methods estimate the equations of the structural system equation by equation, and without reference to the information contained in the other equations in the system. That is why methods in this approach are labelled as limited information methods or single equation methods. This approach includes methods like the Instrumental Variable Method (IV), Two-Stage Least Square (2SLS), and Limited Information Maximum Likelihood (LIML). The other approach is the full information approach. Methods in this approach estimate the equations of the structural system simultaneously, and take into account prior restrictions and all information contained in other equations in the system. In particular, methods in this approach take into account the correlation between the disturbances of different structural equations, and use all the available information about each equation to estimate the whole system. That is why methods in this approach are labelled as full information methods or system methods. The full information approach includes methods like Three-Stage Least Square (3SLS), Full-Information Maximum Likelihood (FIML), and Generalized Method of Moment (GMM).

Both of the approaches provide consistent estimates for the parameters of the structural equations. However, the system methods are asymptotically more efficient than single equation methods. This is because single equation methods ignore the information that

[20] Appendix V provides the details.

contemporaneous correlation exists between the disturbance terms of the complete system, while full information methods take this information into account. Therefore, system methods are asymptotically better than single equation methods[21]. Among system methods, the 3SLS method is easier to compute and is therefore preferred. This makes 3SLS a popular method to estimate simultaneous equation models, therefore, 3SLS will be used to estimate our model.

5.4.3. Estimation results

Table 24 reports the estimation results of the simultaneous equation model using the 3SLS method for the period 1980-2005. The first column presents the estimation results of the growth equation. In this equation, all the explanatory variables have the expected sign and are statistically significant, expect investment - GDP ratio and the Latin American dummy variable. In particular, the equation shows that countries with low levels of initial GDP per capita grow faster, as shown by the negative sign of the log of GDP per capita in 1980; a higher level of education attainment is associated with a faster economic growth rate; African countries tend, *ceteris paribus*, to grow more slowly than other countries. As regards the impact of institutions and FDI on economic growth rate, the equation shows that both of the variables have positive and statistically significant impacts on growth.

[21] However, this is not without cost. System methods have some limitations, e.g. errors in specifying any structural equation in the model will affect the estimation of other equations, which is not the case in single equation methods where errors in one structural equation will not transmit to the rest of the system.

Table 24: Simultaneous equation estimation of growth, institutions, and FDI (3SLS)

	Growth	*Inst*	*FDI*
LGDP80	-1.213***	-	-
	(-3.58)	-	-
Inv	-0.006	-	-
	(-0.12)	-	-
LSch	0.747**	-	-
	(2.41)	-	-
Growth	-	0.370**	0.634**
	-	(2.51)	(2.23)
Inst	0.814**	-	1.174
	(2.49)	-	(1.36)
FDI	0.178**	0.224***	-
	(2.12)	(2.91)	-
Ethn	-	-0.096	-
	-	(-0.16)	-
BCLaw	-	-0.707	-
	-	(-1.48)	-
Prots	-	0.037***	-
	-	(2.69)	-
Geog	-	-0.722***	-
	-	(-3.64)	-
LGDPpc	-	-	0.257
	-	-	(0.48)
Tarif	-	-	-0.065**
	-	-	(-2.31)
Tele	-	-	-0.077
	-	-	(-1.09)
LTax	-	-	-3.072***
	-	-	(-2.83)
Latin	-0.229	-	
	(-0.40)	-	
Africa	-1.328***	-	
	(-2.68)	-	
Cons	4.934***	8.404***	5.721
	(2.80)	(8.65)	(1.00)
N	42	42	42
F (p-value)	(0.000)	(0.000)	(0.000)
R2	0.665	0.582	0.443

Note: Values in parentheses are t-values. *, **, and *** denote significance at 10%, 5%, and 1%, respectively. F is F-statistics.

The estimated coefficient on institutions shows that improving institutional quality by one standard deviation will increase the economic growth rate by 1.389 % points; the estimated

coefficient on FDI shows that increasing FDI inflows by one standard deviation will increase the economic growth rate by 0.526 % points[22].

The second column in Table 24 presents the estimation results of the institutions equation. The overall significance of the set of the explanatory variables included in the equation is confirmed by F statistics, which shows that the probability that the set of the explanatory variables does not explain any variation on institutions, is equal to zero. Moreover, the results show that cultural factors, as captured by the percentage of Protestants in the total population, play a significant role in determining institutional quality. The coefficient on economic growth is positive and statistically significant as expected; the coefficient on geographical factors, captured by the log of settler mortality rates, indicates that geography plays a significant role in determining institutional quality, where lower settler mortality rates are associated with better institutions as expected. However, the results show that political factors, captured by the ethno-linguistic fractionalization index and British Common Law dummy, are not statistically different from zero. More related to the main argument of this chapter is that the coefficient on FDI is positive and statistically significant. Furthermore, the results indicate that a one standard deviation increase in FDI ratio will cause institutional quality to improve by 0.662 point[23] which is more than one third of institutions standard deviation.

The third column in Table 24 shows the estimation result of the FDI equation. As expected, the results indicate that FDI is affected positively and significantly by economic growth rate, and negatively and significantly by tariff rates and the log of income tax rates.

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[22] The impact of *Inst* and *FDI* on *Growth* is computed as follows: $\Delta(Growth) = \delta_4 \Delta(Inst).$ Table 24 shows that δ_4 = 0.814; Table 22 shows that the S.D of *Inst* = 1.706. Thus, $\Delta(Growth) = 0.814 \times 1.706 = 1.389$; for FDI $\Delta(Growth) = \delta_5 \Delta(FDI)$. Table 24 shows that δ_5 =0.178; Table 22 shows that the S.D of FDI= 2.955. Thus, $\Delta(Growth) = 0.178 \times 2.955 = 0.526$.

[23] The impact of FDI on institutions is calculated as follows: $\Delta(Inst) = \gamma_6 \Delta(FDI)$. Table shows 24 that γ_6 =0.224; Table 22 shows that the S.D of FDI=2.955. Thus, $\Delta(Inst) = 0.224 \times 2.955 = 0.662$.

However, the results show that institutions, infrastructural quality, as captured by telephone line per 1000 people, and the log of GDP per capita, do not play significant roles in determining FDI.

5.4.4. The impact of FDI on economic growth

As stated in the introduction section, the main aim of this chapter is to test whether FDI can affect economic growth by positively influencing institutions, and to evaluate the significance of any such effect. Thus, the parameters of interest in Table 24 are: (1) The coefficient that describes the effect of FDI on economic growth, δ_5. (2) The coefficient that describes the effect of institutions on economic growth, δ_4. (3) The coefficient that describes the effect of FDI on institutions, γ_6. Table 25 summarizes the results regarding the impact of FDI on economic growth. As reported in the Table, the second column shows the direct impact of FDI on economic growth where an increase in FDI by one standard deviation increases economic growth by 0.526% point. The third column shows the impact of FDI on institutions. The estimated coefficient on FDI in institutions equation, γ_6 , shows that an increase in FDI by one standard deviation increases the institutional quality index by 0.662point. However, as shown in Table 24, the coefficient on institutions in growth equation, δ_4 , indicates that an increase in the institutional quality index by one point leads to an increase in economic growth rate by 0.814 % point[24]. Thus, the combined effects suggest that FDI can foster economic growth by positively influencing institutions. This indirect impact of FDI on economic growth can by computed by the product of the coefficient of institutions in the growth equation, δ_4 , and the coefficient of FDI in the institutions equation, γ_6. The fourth column in Table 25 shows the results of the multiplication of δ_4 and γ_6 which indicates that a one standard deviation increase in FDI

[24]Table 24 shows that the estimated value of δ_4 equal to 0.814.

can indirectly increase economic growth rate by 0.539%, an amount slightly higher than the direct impact. The fifth column computes the total impact of FDI in economic growth as the sum of the direct and indirect impacts. The numbers in the column indicate that a one standard deviation increase in FDI increases economic growth by 1.065% points.

Table 25: The impact of FDI on economic growth

	The direct impact on growth	The impact on institutions	The indirect impact on growth	The total impact on growth
The coefficient	δ_5	γ_6	$(\delta_4 \times \gamma_6)$	$\delta_5 + (\delta_4 \times \gamma_6)$
The estimated coefficient	0.178***	0.224***	0.183*	0.360**
The impact of one S.D	0.526% points	0.662points	0.539 % points	1.065 % points

Note: *, **, and *** denote significance at 10%, 5%, and 1%, respectively. One standard deviation of FDI equals 2.955; δ_4 = 0.814.

Overall, the results presented in Table 25 make it very clear that FDI has a significant[25] impact on economic growth beyond its direct impact; an impact that works via improving the institutional quality in the host countries. The results also show that this indirect impact is of considerable volume and is comparable to the direct or traditional impact. More importantly, the results indicate that the total impact of FDI on economic growth is far greater than, or more than the double that of the direct impact of FDI on growth considered by FDI literature so far.

5.4.5. Sensitivity analysis

The empirical results presented above are based on a sample of 42 countries, which is quite small number. The reason for using this small sample is that the geographically related variable, the log of settler mortality rates, is only available for a small number of countries.

[25] Appendix V shows the method used to test the significance of the combined coefficient.

As a consequence, the results might be sensitive to the sample choice. Moreover, the results might be sensitive to model specification and the choice of the controlling variables. Thus, in this subsection, the robustness of the results is tested: first, by using a larger country sample, and second, by controlling for more growth determinants.

To enlarge the sample size, the log of settler mortality rates is replaced by another geographically related variable, the absolute value of latitude, which is available for a larger number of countries. This change increases the sample size from 42 to 74 countries.

Table 26 reports the correlation matrix of *Growth*, *FDI*, and *inst* for the large sample. The correlation coefficient between *Growth* and *FDI* becomes smaller but is still significant. The same applies to the coefficients between *Growth* and *Inst*, and between *FDI* and *Inst*. This might indicate that changing the sample may not affect the findings of this chapter. The correlations between *Growth*, *FDI*, and *Inst* are further illustrated in Figure 13.

Table 26: Correlation matrix of dependent variables (large sample)

	Growth	*FDI*	*Inst*
Growth	1		
FDI	0.27*	1	
Inst	0.42*	0.28*	1

* indicates significance at the 0.05 level or better.

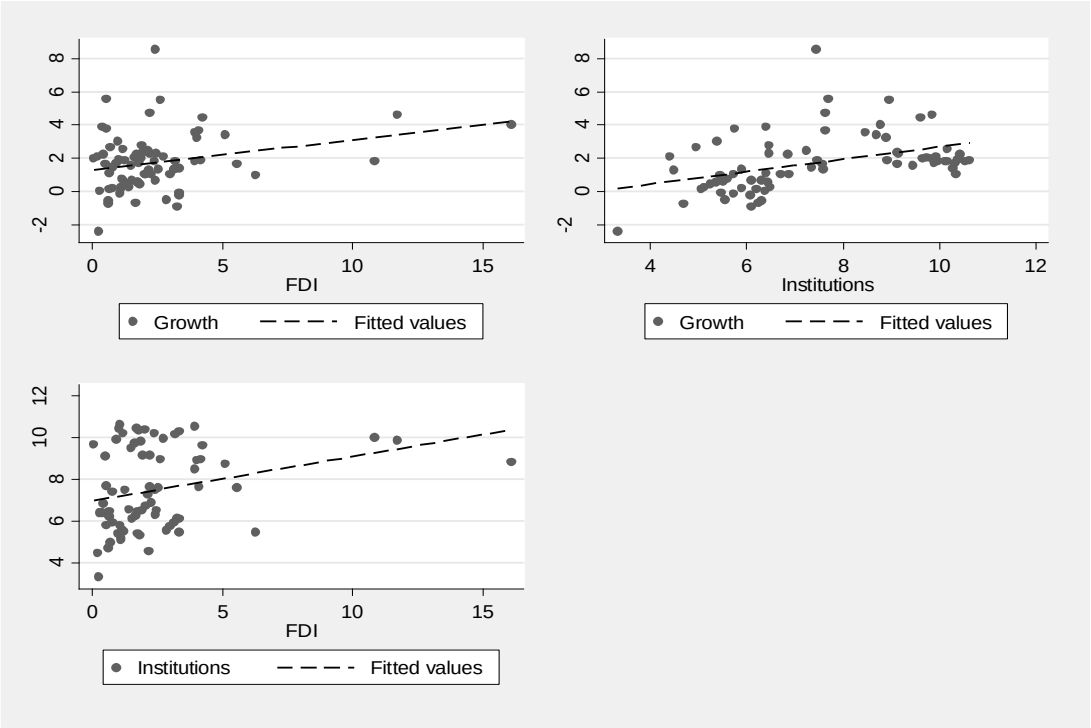

Figure 12: Association between growth, institutions, and FDI (large sample).

Table 27 presents the results based on the large sample. As can be seen from the Table, changing the geographical variable and the sample size does not essentially affect the main results of this chapter, as FDI still exerts a positive and statistically significant influence on institutions; the coefficient on institutions in growth equation is also positive and significant. Thus, the results of the large sample confirm that FDI exerts a positive indirect impact on economic growth by improving institutional quality in host countries. Moreover, the results show that this impact becomes larger in volume and more significant, as shown in Table 28.

Table 27: Simultaneous equation estimation of growth, institutions, and FDI. (large sample)

	Growth	*Inst*	*FDI*
LGDP80	-1.391***	-	-
	(-3.85)	-	-
Inv	0.108**	-	-
	(2.29)	-	-
LSch	0.430	-	-
	(1.28)	-	-
Growth	-	0.167	0.504**
	-	(1.64)	(2.43)
Inst	1.163***	-	-0.539
	(3.72)	-	(-0.93)
FDI	0.109	0.560***	-
	(0.94)	(5.35)	-
Ethn	-	0.464	-
	-	(0.76)	-
BCLaw	-	0.158	-
	-	(0.51)	-
Prots	-	0.006	-
	-	(0.95)	-
Geog	-	6.048***	-
	-	(6.40)	-
LGDPpc	-	-	0.931**
	-	-	(2.23)
Tarif	-	-	-0.054**
	-	-	(-2.06)
Tele	-	-	-0.001
	-	-	(-0.03)
LTax	-	-	-1.141
	-	-	(-1.29)
Latin	0.456	-	-
	(0.83)	-	-
Africa	-0.954*	-	-
	(-1.76)	-	-
Cons	1.267	3.674***	3.255
	(0.66)	(7.84)	(0.69)
N	74	74	74
F (p-value)	0.000	0.000	0.000
R2	0.554	0.456	0.189

Note: Values in parentheses are t-values. *, **, and *** denote significance at 10%, 5%, and 1%, respectively. F is F-statistics.

However, one essential difference between the results based on the small sample and those based on the large one is that the coefficient on FDI in the growth equation loses its significance, which means that the direct impact of FDI on economic growth is not robust. Nevertheless, this does not seriously affect the main result of this chapter, as the sensitivity of the direct impact of FDI on economic growth to sample and/or model specification is

well documented in the literature. In fact, the relevant literature emphasizes that the direct impact of FDI on economic growth is ambiguous and depends crucially on various aspects of the absorptive capacity of the host countries[26].

Table 28: The impact of FDI on economic growth (large sample).

	The direct impact on growth	*The impact on institutions*	*The indirect impact on growth*	*The total impact on growth*
The coefficient	δ_5	γ_6	$(\delta_4 \times \gamma_6)$	$\delta_5 + (\delta_4 \times \gamma_6)$
The estimated coefficient	0.109	0.560***	0.651***	0.760**
The impact of one S.D	0. 281 % points	1.441	1.676 % points	1.957 % points

Note: *, **, and *** denote significance at 10%, 5%, and 1%, respectively. One standard deviation of FDI equals 2.955; δ_4 = 1.163.

The robustness of the results of this chapter is also tested by controlling for more growth determinants. As is well documented in growth literature, a large number of variables have been found to be significantly associated with economic growth. Thus, providing a decisive list of the candidate variables is difficult. However, some variables seem to appear constantly on the empirical growth studies, which gives them some robustness as candidates. While deciding what these variables are is certainly controversial, one can argue that the model specification used in this chapter contained most of these variables, given that the main focus of this chapter is not in finding variables that are most related to growth, but rather to test whether FDI exerts an indirect impact on growth. Nevertheless, other variables can be added to the model specification presented in the above subsection. These variables include: inflation, *Infl* , to capture the impact of macroeconomic stability in growth; a dummy variable to capture the impact of trade openness, *Open*; the log of the ratio of demotic credit to private sector, *LCredit* , to proxy the impact of the development

[26] Chapter 4 provides evidence that the impact of FDI on growth depends on the institutional quality on host countries. When the interaction term between FDI and Inst is added to the model the results show that FDI can have direct positive impact on growth if a minimum threshold of institutional quality is achieved. These results are shown in Appendix V.

of financial development on economic growth, and the ratio of government spending to GDP, *Gov* , to capture the impact of government size.

Table 29 shows that adding these variables to the model does not affect the main result of this chapter. As can be seen from the Table, FDI still has a positive and significant impact on institutions, and institutions still have a positive and significant impact on economic growth. Thus, FDI still exerts an indirect impact on economic growth via institutions channel. However, FDI has no significant direct impact on economic growth, a result that is in accordance with the existing literature on FDI and growth. The Table also shows that all the added variables are not significantly associated with economic growth. The exception is the indicator of government size, which has a negative and significant impact on economic growth, where higher government spending to GDP ratio leads to lower economic growth.

Table 29: Simultaneous equation estimation of growth, institutions, and FDI (sensitivity check)

	Growth	*Inst*	*FDI*
LGDP80	-1.388***	-	
	(-3.73)	-	
Inv	0.105**	-	
	(2.14)	-	
LSch	0.367	-	
	(0.98)	-	
Growth	-	0.173*	0.396*
	-	(1.68)	(1.97)
Inst	1.318***	-	-0.241
	(3.69)	-	(-0.46)
FDI	0.062	0.548***	
	(0.48)	(5.15)	
Ethn	-	0.300	
	-	(0.49)	
BCLaw	-	0.193	
	-	(0.61)	
Prots	-	0.007	
	-	(1.09)	
Geog	-	5.700***	
	-	(5.97)	
LGDPpc	-	-	0.779*
	-	-	(1.83)
Tarif	-	-	-0.054**
	-	-	(-2.09)
Tele	-	-	-0.009
	-	-	(-0.22)
LTax	-	-	-1.243
	-	-	(-1.40)
Latin	0.320	-	
	(0.58)	-	
Africa	-0.814	-	
	(-1.38)	-	
Gov	-0.061*	-	
	(-1.90)	-	
Inf	0.001	-	
	(0.81)	-	
Openness	-0.395	-	
	(-0.69)	-	
Lcredit	0.195	-	
	(0.62)	-	
Cons	0.629	3.806***	3.039
N	70	70	70
F (P-value)	(0.000)	(0.000)	(0.000)

Note: Values in parentheses are t-values. *, **, and *** denote significance at 10%, 5%, and 1%, respectively.

So far, the results presented in this chapter are based on Three Stage Least Square; 3SLS. However, as shown in section 5.4.2, there are other system methods, namely, Full Information Maximum Likelihood (FIML) and Generalised Method of Moment (GMM), which can be used to estimate the complete model simultaneously. The argument for preferring 3SLS to other methods is related to its computational simplicity, however, this advantage may be reduced by the availability of econometrics software (Greene, 2003). Thus, one might wonder whether the results presented in this chapter are sensitive to the choice of the estimation method. Moreover, other estimation methods have some advantages over 3SLS, given certain assumptions. For example, Full Information Maximum Likelihood (FIML) is efficient among all estimators under the assumption of normally distributed disturbances, while Generalised Method of Moment (GMM) brings efficiency gains in the presence of heteroscedasticity (Greene, 2003).

Table 30 reports the results of estimating the complete model using the Full Information Maximum Likelihood method (FIML), and Table 31 reports the results of estimating the complete model using the Generalised Method of Moment (GMM). The results in each Table indicate that changing the estimation method does not affect the main finding of this chapter; that FDI contributes positively and significantly to economic growth by positively influencing institutions in host countries.

Table 30: Simultaneous equation estimation of growth, institutions and FDI (FIML estimates)

	Growth	*Inst*	*FDI*
LGDP80	-2.409**	-	-
	(-2.28)	-	-
Inv	0.009	-	-
	(0.895)	-	-
LSch	0.128	-	-
	(1.571)	-	-
Growth	-	-0.013	0.617
	-	(-0.03)	(1.59)
Inst	1.880**	-	-1.939*
	(2.53)	-	(-1.82)
FDI	0.925**	0.965*	-
	(2.25)	(1.87)	-
Ethn	-	1.858	-
	-	(1.02)	-
BCLaw	-	0.111	-
	-	(0.14)	-
Prots	-	0.011	-
	-	(0.51)	-
Geog	-	8.176***	-
	-	(2.94)	-
LGDPpc	-	-	2.585**
	-	-	(2.17)
Tarif	-	-	0.005
	-	-	(0.99)
Tele	-	-	-0.008
	-	-	(-1.23)
LTax	-	-	0.043
	-	-	(0.34)
Latin	0.093	-	-
	(0.83)	-	-
Africa	-0.066	-	-
	(-0.57)	-	-
Cons	4.351	1.888	-5.308
	(1.17)	(0.94)	(-1.45)
N	74	74	74
F(P-value)	0.000	0.000	0.000

Note: Values in parentheses are t-values. *, **, and *** denote significance at 10%, 5%, and 1%, respectively.

Table 31: Simultaneous equation estimation of growth, institutions and FDI (GMM estimates)

	Growth	*Inst*	*FDI*
LGDP80	-1.504***	-	-
	(-5.212)	-	-
Inv	0.126***	-	-
	(3.25)	-	-
LSch	0.274	-	-
	(1.04)	-	-
Growth	-	0.134*	0.444***
	-	(1.84)	(2.63)
Inst	1.243***	-	-0.462
	(5.24)	-	(-1.27)
FDI	0.074	0.597***	-
	(0.90)	(6.01)	-
Ethn	-	0.286	-
	-	(0.58)	-
BCLaw	-	-0.09	-
	-	(-0.36)	-
Prots	-	0.006	-
	-	(1.28)	-
Geog	-	6.658***	-
	-	(10.54)	-
LGDPpc	-	-	0.479*
	-	-	(1.83)
Tarif	-	-	-0.053***
	-	-	(-2.63)
Tele	-	-	0.016
	-	-	(0.69)
LTax	-	-	-2.655***
	-	-	(-3.07)
Latin	0.912**	-	-
	(2.09)	-	-
Africa	-0.786*	-	-
	(-1.80)	-	-
Constant	1.252	3.69***	11.756***
	(0.83)	(11.33)	(2.94)
N	74	74	74
F(P-value)	0.000	0.000	0.000

Note: Values in parentheses are t-values. *, **, and *** denote significance at 10%, 5%, and 1%, respectively.

5.5. Conclusion

Much of the economic literature on growth effects of FDI has considered the direct impact of FDI, while the possibility that FDI may affect economic growth via other channels has received little or no attention, despite the recent emergent evidence that FDI can affect policy environment and institutional variables of host countries. This chapter contributes to the literature on growth effects of FDI by exploring whether FDI has a positive impact on economic growth that works by positively influencing institutional quality.

In order to investigate this question, a simultaneous equation model has been developed in a way that endogenizes institutions and allows FDI to affect institutional quality. Applying the Three-Stage Least Square method to this model shows that FDI has a positive indirect impact on economic growth that works via institutions. Moreover, the estimated indirect growth effect of FDI is greater than the direct one. Furthermore, the results show that while the direct effect of FDI on growth is not robust and ambiguous, the indirect effect on growth, through the channel of institutions, is robust to changes in samples and controlling variables and estimation methods.

These findings suggest some important implications: first, they enhance our understanding of the contribution of FDI to economic growth, and show that the impact of FDI on growth is not limited to its role in improving technology, but rather goes further beyond that, and includes a positive influence on institutional quality. Second, these findings indicate that the favourable development effects of FDI are in actuality greater than what is usually thought, and therefore these additional benefits must be taken into account when evaluating the merits of the programs aiming to attract FDI.

Appendix V

1- The following shows how the order and the rank conditions are satisfied for all the equations.

equation	K^{**}	$G^{\Delta}-1$	$Rank(A)$
(1) *Growth*	8	2	2
(2) *Inst*	9	2	2
(3) *FDI*	9	2	2

Where K^{**} is the number of the exogenous variables that are excluded from the equation under consideration; G^{Δ} is the number of the endogenous variables included in the equation; A is the matrix with columns that represent the restrictions in the equation.

The matrix (A) for growth equation

$$A_1=\begin{pmatrix} -\gamma_1 & -\gamma_2 & -\gamma_3 & -\gamma_4 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & -\psi_1 & -\psi_2 & -\psi_3 & -\psi_4 \end{pmatrix}$$

A_1 can be transformed into $(I_2\ 0)$, which means that it has a rank of 2.

The matrix (A) for institutions equation is

$$A_2=\begin{pmatrix} -\delta_1 & -\delta_2 & -\delta_3 & -\delta_6 & -\delta_7 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\psi_1 & -\psi_2 & -\psi_3 & -\psi_4 \end{pmatrix}$$

A_2 can be transformed into $(I_2\ 0)$.

The matrix (A) for FDI equation is

$$A_3=\begin{pmatrix} -\delta_1 & -\delta_2 & -\delta_3 & -\delta_6 & -\delta_7 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\gamma_1 & -\gamma_2 & -\gamma_3 & -\gamma_4 \end{pmatrix}$$

A_3 can be transformed into $(I_2\ 0)$.

2- Greene (2003) provides a formula that can be used to test the significance of the nonlinear restriction that $\delta_4 \times \gamma_6 \neq 0$.

Following this formula, we first put $\delta_4 \times \gamma_6 = d$. Testing the significance of d requires calculating the standard deviation of d, $S.D(d)$.

The estimated asymptotic variance of d is given by

$$Var(d) = g_\delta^2 . Var(\delta) + g_\gamma^2 Var(\gamma) + 2 g_\delta g_\gamma Cov(\delta, \gamma)$$

Where $g_\delta = \frac{\partial d}{\partial \delta}$; $g_\gamma = \frac{\partial d}{\partial \gamma}$.

The $S.D(d)$ equals the square root of $Var(d)$.

To test the hypothesis $H_0 : d = 0$

We use $Z = \frac{d}{S.D(d)}$.

List of countries included in the empirical analysis (the small sample)

Asia	*Latin America and Caribbean*	*Middle East and North Africa*	*Sub-Saharan Africa*	*Others*
Bangladesh	Argentina	Egypt, Arab Rep.	Cameroon	Canada
Hong Kong	Bolivia	Tunisia	Ghana	Malta
India	Brazil		Kenya	New Zealand
Indonesia	Chile		Senegal	United States
Malaysia	Colombia		South Africa	Canada
Pakistan	Costa Rica			
Papua New Guinea	Dominican Republic			
Singapore	Ecuador			
Sri Lanka	El Salvador			
	Guatemala			
	Guyana			
	Haiti			
	Honduras			
	Jamaica			
	Mexico			
	Nicaragua			
	Panama			
	Paraguay			
	Peru			
	Trinidad and Tobago			
	Venezuela, RB			

List of countries included in the empirical analysis (the large sample)

Asia	Latin America and Caribbean	Sub-Saharan Africa	Middle East and North Africa	others
Bangladesh	Argentina	Botswana	Egypt, Arab Rep.	Australia
China	Bolivia	Cameroon	Syrian Arab Republic	Austria
Hong Kong, China	Brazil	Ghana	Tunisia	Belgium
India	Chile	Kenya		Canada
Indonesia	Colombia	Malawi		Cyprus
Jordan	Costa Rica	Senegal		Denmark
Korea, Rep.	Dominican Republic	South Africa		Finland
Malaysia	Ecuador	Zambia		France
Pakistan	El Salvador	Zimbabwe		Germany
Papua New Guinea	Guatemala			Greece
Philippines	Guyana			Hungary
Singapore	Haiti			Iceland
Sri Lanka	Honduras			Ireland
Thailand	Jamaica			Israel
Turkey	Mexico			Italy
	Nicaragua			Japan
	Panama			Malta
	Paraguay			Netherlands
	Peru			New Zealand
	Trinidad and Tobago			Norway
	Venezuela, RB			Portugal
				Spain
				Sweden
				Switzerland
				United Kingdom
				United States

Simultaneous Equation estimation of growth, institutions and FDI (3SLS estimates).

	Growth	*Inst*	*FDI*
LGDP80	-1.158***	-	-
	(-3.02)	-	-
Inv	0.234***	-	-
	(4.28)	-	-
LSch	0.915**	-	-
	(2.22)	-	-
Growth	-	0.214**	0.075
	-	(2.57)	(0.34)
Inst	0.497	-	1.196*
	(1.17)	-	(1.90)
FDI	-3.168***	0.300***	-
	(-2.90)	(6.06)	-
(FDI×Inst)	0.334***		
	(2.77)		
Ethn	-	-0.162	-
	-	(-0.29)	-
BCLaw	-	0.308	-
	-	(1.12)	-
Prots	-	0.008	-
	-	(1.46)	-
Geog	-	5.888***	-
	-	(7.11)	-
LGDPpc	-	-	-0.0428
	-	-	(-0.09)
Tarif	-	-	-0.057*
	-	-	(-1.90)
Tele	-	-	-0.059
	-	-	(-1.27)
LTax	-	-	-3.693***
	-	-	(-3.67)
Latin	1.747**	-	-
	(2.32)	-	-
Africa	-0.460	-	-
	(-0.73)	-	-
Cons	2.372	4.351***	9.940*
	(1.09)	(11.98)	(1.87)
N	74	74	74
F (p-value)	0.000	0.000	0.000
R2	0.324	0.672	0.205

Note: Values in parentheses are t-values. *, **, and *** denote significance at 10%, 5%, and 1%, respectively. F is F-statistics.

6. Conclusion

Economic growth literature has recently shown a greater interest in studying the deeper determinants of economic growth, and within this body of literature, the role played by integration into the world economy and institutions in determining economic growth has received a great deal of attention by scholars. A growing number of papers have explored various aspects of the relationship between integration into the world economy and institutions on the one hand, and economic growth on the other. The main conclusion of this literature is that integration into the world economy and institutions are among the most important determinants of economic growth, leading to a belief that openness to trade and foreign investment, and reforming institutions, are the best ways forward to achieve sustained economic growth and improve living standards in developing countries. This belief has spread from academic economists to policy makers and development practitioners, and in consequence, openness to trade and investment, and building institutions that support market economy and protect property rights, have became the main development policies recommended by international development organizations like The World Bank and World Trade Organization, etc.

Despite the growing interest in studying the role of integration into the world economy and institutions in fostering economic growth, the interplay between various aspects of integration into the world economy and institutions, and their implications to economic growth, has received little attention in economic literature. This thesis has tried to fill this gap by exploring various phases of the interplay between one aspect of the integration into the world economy; foreign direct investment, and one aspect of institutions; property rights, and their implications for economic growth. In particular, the aim of this thesis was to empirically examine the implication of the interrelationship and the complementarity between FDI and institutions to the contribution of FDI to economic growth. The main argument of this thesis was that a better understanding of the contribution of FDI to

economic growth can be achieved if the interrelationship and the complementarity between FDI and institutions are taken into account.

To achieve this aim and to verify this argument, the thesis was designed to include four empirical chapters in addition to two chapters: one for the introduction and the other for the conclusion. The first two empirical chapters studied the interrelationship between FDI and institutions. And the other two empirical chapters studied the implications of the interrelationship and the complementarity between FDI and institutions to economic growth. Chapter two explored the role of institutional environment in determining FDI inflows. Chapter three explored the impact of FDI on institutions in host countries. Chapter four studied the role of the complementarity between FDI and institutions in determining the contribution of FDI to economic growth. Chapter five tested whether the interrelationship between FDI and institutions leads to an indirect effect of FDI on economic growth that works via institutions.

6.1. Summary of the findings

The main results of this thesis can be summarised as follows:

1- Chapter two showed that institutional quality in host countries is one of the most important determinants of FDI inflows. In particular, institutional quality in host countries appeared more important for foreign investors than many other characteristics of host countries, such as market size, quality of infrastructure, tax levels, etc. Another important finding in this chapter is that the security of property rights appeared to be the most important institutions attribute for foreign investors, i.e. property rights protection is more important than democracy, corruption, political stability, and social tension. However, the results of chapter two also showed that the importance of institutions varies across FDI sectors. In particular, it appeared that institutions do not play a significant role in

determining primary FDI. Moreover, the results showed that there is tentative evidence that services FDI is more sensitive to institutions than manufacturing FDI.

2- The main finding of chapter three is that FDI appeared to play an important role in explaining variations in institutional quality on host countries. More specifically, FDI appeared to have a positive impact on the security of property rights in host countries. In other words, this chapter proved that the positive externalities of FDI are not limited to those attributes related to physical and production technology, but extend to include institutional quality in host countries.

3- The major finding of chapter four is that the contribution of FDI to economic growth depends critically on the institutional quality in a host country. In particular, a host country needs to achieve a minimum threshold of institutional quality before it can positively benefit from FDI inflows. The most significant result of this chapter is that primary FDI can make a positive contribution to economic growth in host countries once a minimum level of institutional quality is achieved, a result that contradicts recent evidence which suggests that primary FDI has a negative impact on economic growth.

4- Chapter five proved that FDI has an indirect positive impact on economic growth that works through improving institutional quality in host countries. The results also showed that this indirect impact is greater in volume and more robust than the direct impact related to influencing technology progress and productivity improvements.

6.2. Academic contributions

Some of the findings of this thesis can be viewed as significant academic contributions to the debate about FDI, institutions, and economic growth. The main contributions of the thesis can be summarized as follows:

1- The findings of chapter two help reduce the inconclusiveness of the empirical evidence regarding the role of institutions in determining FDI inflows, and explain why some previous studies failed to report significant correlation between institutions and FDI. The chapter showed that using indictors that only partially capture the security of property rights is one of the likely reasons, as the security of property rights is what matters most for foreign investors when it comes to the role of institutions. Another possible reason for the failure of some of the previous studies to find a significant role for institutions in determining FDI inflows, is that the role of institutions in determining FDI varies across sectors. In particular, institutions do not play a significant role in determining primary FDI, and as such, institutions may not appear significantly related to FDI if primary FDI accounts for a large share of aggregate FDI in the country sample or time period under consideration. Another important contribution of chapter two is that it provides empirical evidence that helps to evaluate the relative importance of institutional quality in attracting FDI compared with other determinants of FDI.

2- One important result of chapter three is that it suggests FDI inflows as a factor that explains variations in institutional quality not only across countries, but also over time. This result can be viewed as a significant contribution to our understanding of the process of institutional change, as the available literature provides explanations based on geographic, cultural, and historical factors. The only variable factor proposed by available empirical literature to explain variations in institutional quality, is economic growth and economic development level. However, we need an explanation that can help us understand the process of economic growth and economic development, rather than an explanation that refers us again to economic growth and development to understand institutional change. The results of chapter three provide such explanation.

Another important contribution of this chapter is that it showed that the scope of the positive externalities of FDI expand beyond the positive externalities related to production technology, and include new dimensions related to the institutional quality of the host countries, or in another words, a dimension related to the social technology.

3- The main contribution of chapter four is that it provided evidence to help reduce the inconclusiveness of the empirical evidence regarding the contribution of FDI to economic growth. In particular, chapter four reinforced and improved upon the suggestion in the empirical literature that institutional quality in host countries is one attribute of the absorptive capacity upon which the contribution of FDI to economic growth depends.

The most significant contribution of chapter four is that it corrects the recently emerging claim that primary FDI has a negative impact on economic growth. In particular, the empirical results presented in chapter four made it clear that primary FDI can contribute positively to economic growth if a host country achieves a minimum threshold of institutional quality.

4 – The main contribution of chapter five is that it provided empirical evidence showing that the contribution of FDI to economic growth is of larger scope than what has been considered in economic literature so far. In particular, the results of chapter five expanded the ways in which FDI can affect economic growth, to include its impact on institutions. Moreover, the results made it clear that the impact of FDI on economic growth that works via institutions, is not only a significant one, but is also greater in volume and more robust than the direct impact documented by economic literature so far. In general, the evidence reported in chapter five has gone some way towards enhancing our understanding of the contribution of FDI to economic growth.

Overall, the major contribution of this thesis is that it showed that a better understanding of the contribution of FDI to economic growth requires taking into account the interrelationship and the complementarity between FDI and institutions.

6.3. Policy implications

Besides the academic contributions, a number of policy implications can be drawn from the analysis and the findings of this thesis.

1- The results reported in chapter two suggest several policy implications for attracting FDI. The result that the impact of institutional quality on FDI is greater in volume and more robust than the impact of tax levels and the indicator of economic stability and infrastructure, can help policy makers to realize the significance of institutions to foreign investors, and therefore give institutional reform a higher priority when formulating their policy options for attracting FDI. The result that the security of property rights is the most important of institutional aspects for foreign investors, implies that reforming institutions in order to attract FDI is relatively easy, as increasing the security of property rights is easier than reforming efforts related to increasing democratization and reducing the degree of political instability and social tension. Moreover, the result that the impact of institutions on FDI varies across sectors, implies that institutional reform may not be an effective policy option for countries trying to attract primary FDI.

2- The results of chapter three suggest that increasing openness to FDI inflows can be considered as a policy option to improve institutional quality. Moreover, the results indicate that there is no conflict between the policy of increasing the degree of openness to FDI, and policies of institutional reform, but rather, that there is some sort of harmony between the two policies, as efforts spent on one policy reinforce the other.

3- The results shown in chapter four suggest that policy makers need to direct their efforts to improve and reform institutions related to property rights in order to fully reap the positive externalities of FDI, including the positive externalities of primary FDI. As far as primary FDI is concerned, the results of chapter four imply a major change in the policy recommendations made by pervious studies; i.e. a shift from recommending the discouragement of primary FDI to avoid its negative effects on economic growth (Alfaro, 2003) to recommending improving institutional quality to be able to reap its positive externalities.

4- The results of chapter five suggest that the growth effects of FDI are in actuality higher than the economic literature recognises so far, which provides a solid foundation to support and justify various sorts of incentives given to foreign investors. Recognizing the new growth effects of FDI that work via institutions, helps to shift policy recommendation from questioning the merits of the incentives given to foreign investors (Carkovic and Levine, 2005) because the direct impact of FDI on growth is not robust to emphasising the importance of such incentives as FDI has positive to robust indirect impact on economic growth.

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