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Foreign Direct Investments and Institutional Quality: a Panel Analysis of Non-OECD Countries

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Abstract

Foreign Direct Investments (FDI) have been increasing as a share of world GDP during the last decades and constitutes 40 percent of the external development finance to developing and transition economies. This study aims to contribute to the understanding of the allocation of FDI across countries; why some countries see high levels of inflow and others see less. A panel of non-OECD countries from 1996 to 2014 is studied in order to investigate the relationship between FDI levels and several aspects of institutional quality. Previous literature and theory suggests that low institutional quality could be a impediment for FDI inflow. The results in this study support this view and find a positive association between FDI inflow per capita and institutional quality. Furthermore, institutional quality seems to have a persistent effect on the FDI inflows. In support of recent literature on the *Lucas Paradox*, investors seems to take more aspects of institutional quality into account when investing in poor countries.

Keywords: Foreign Direct Investments, Institutional Quality, non-OECD countries, panel data

Contents

1 Introduction

After several debt crises during the 1980s, several developing countries underwent policy adjustments and eased restrictions on capital flows. Together with an intensified globalization, foreign direct investments (FDI), as a component of international capital flows, has increased significantly (World Bank, 1997; Carkovic and Levine, 2005). While the role of FDI in economic development is still controversial, FDI accounts for more than 40 percent of external development finance to developing and transition economies (UNCTAD, 2015). Consequently, the importance of FDI in economic development was a central topic during the *Third International Conference on Financing for Development* in Addis Ababa, Ethiopia, in July 2015.

Globally, FDI levels in the year of 2014 are six times higher compared to 1990 as illustrated in Figure 1 below. Even if the FDI levels have decreased since the burst of the financial crisis, recovery is expected in the upcoming years (UNCTAD, 2015). Over time, FDI has also been increasingly important as a component of world GDP. In the beginning of 1990s FDI constituted well below one percent, yet increased to over two percent in the last ten years. This progress is illustrated in comparison to the global remittances and global aid in Figure 2 below. The composition of global FDI in terms of world GDP has been indeed volatile and sensitive to financial crises, but it has still increased in largest terms compared to the other financial flows.

Not surprisingly, the FDI flows are far from equally distributed among the world economies. In fact, there is a huge dispersion in the sources of foreign capital from country to country. For example, in the poorest countries of the world, aid is still the largest source of foreign capital. To get a sense of how important these capital sources are in different income groups of countries, Appendix I pictures graphs on the sources of foreign capital for *Low Income*, *Lower Middle Income* and *Upper Middle Income* groups, respectively. However, the importance of FDI in terms of GDP has increased in all three of these income groups during the last 25 years, also pictured in Appendix I.

Because FDI has increased its share of GDP in all income groups internationally, yet varied in its degree across countries, it is important to study the potential determinants of variation. Additionally, some countries attract more FDI inflows than others, which motivates further investigation. In this study, the aim is to look into determinants associated with variations in FDI levels, focusing on the factors related to institutional quality in the different countries. Closely related, Globerman and Shapiro (2002) and Buchanan et al (2012) use aggregated measures of the

Worldwide Governance Indicators. The former focuses the late 1990s and the latter the period of 1996-2006. Busse and Hefeker (2007) and Goswami and Haider (2014) defines several aspects of institutional quality and other risk factors and evaluate their importance from 1984-2003 and 1984-2009. All of them find the institutional factors significant when explaining FDI.

In this study, a standardized average of the *Worldwide Governance Indicators* (WGI) and the *Quality of Government* from the *International Country Risk Guide* (ICRG) are used to explain the variation in FDI levels across countries. In order to find what aspects of institutional quality that could be associated with these variations, an evaluation of the WGIs will be performed, inspired by Daude and Stein (2007b). Furthermore, Buchanan et al (2012) explicitly demand a study covering the financial crisis in 2008 and its aftermath. This paper will cover the critical periods of the burst of the IT-bubble in the early 2000s and the financial crisis of 2008 as the panel in this study considers data from 1996 to 2014. As can be seen in Figure 1, both of these events have been critical to the development of global FDI levels.

Moreover, inspired by Alfaro et al (2008) and Papaioannou (2009), this study will contribute to the literature on the *Lucas Paradox* – why capital flows do not follow neoclassical economic theory and flow to poorer countries to a larger extent. In order to explore the relevance of the *Lucas Paradox*, the sample will be constituted by non-OECD countries. Hence, "rich" countries are excluded. In this context, low institutional quality will be regarded as a risk factor when studying the allocation of international capital across countries. My contribution is also to divide the data into sub-samples constituted by the group of income level in order to see if institutional factors may explain FDI levels, unconditional on the level of income.

The main result in this paper is that FDI inflows per capita is positively associated with institutional quality, which is supported by previous literature. More specifically, *Regulatory Quality* seems to be the most important variable for the full sample. The lagged effect of institutional quality is also significant, which indicates support for a hypothesis of causality. When analyzing the sub-samples conditional on income levels, the results support recent explanations to the *Lucas Paradox* of why less capital is directed to poor countries. This follows from the findings that institutional quality factors in the *Low Income* group are highly significant, while the higher groups are less so. In the *High Income* group, all institutional quality factors are insignificant.

This paper is structured as follows; a literature review is presented in section 2 and the theoretical background in section 3. Based on these two sections, the

hypothesis follows in section 4. In section 5, the data, definitions and descriptive statistics are described. Section 6 presents the empirical strategy and some further considerations. The results are presented in section 7 and section 8 provides the conclusion.

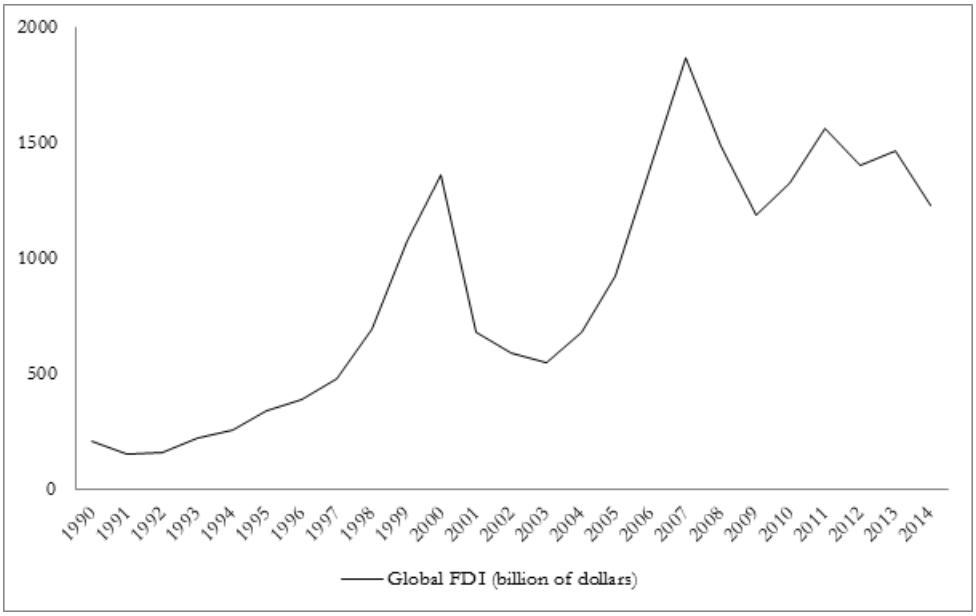

Figure 1: Global FDI 1990-2014. Billion of dollars (World Bank, 2016a).

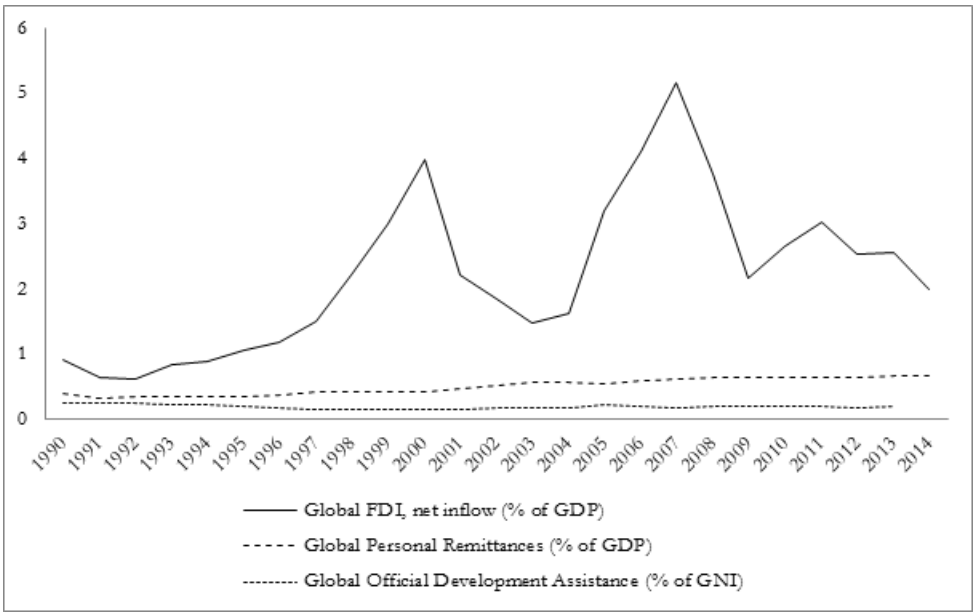

Figure 2: Global financial flows as share of GDP 1990-2014 (World Bank, 2016a).

2 Literature Review

A large share of the previous research on FDI focuses on its relationship to economic growth. The results in the existing literature are quite conflicting, as the research on causal channels for economic growth in general. Much of the literature in the FDI-Growth nexus springs from studies on effects on the productivity in an economy. Caves (1974) found positive externalities of FDI, in the form of spillovers, from multinational enterprises to workers in the domestic firms within the same sector. Later, Findlay (1978) modeled the "contagion" effect of FDI on the rate of technological progress in the host country; driven by improvements in technology, management practices, etc. used by foreign firms.

By this reasoning can FDI can be viewed as a bundle of capital stocks, knowledge, and technology, but the relationship between FDI and growth is highly sensitive to country-specific factors. FDI can affect growth endogenously via spillover effects, but these are absorbed with varying efficiency by the host economies (de Mello, 1997). While FDI seems to be an important vehicle for international transfer of technology, an improvement in productivity of FDI only holds when the host country has a minimum threshold stock of, for example, human capital (Borensztein et al, 1998). Other evaluated country-specific factors that could be relevant are institutional (de Mello, 1999; Alguacil et al, 2012), the local financial market (Alfaro et al, 2004), the capital intensity and level of technology in the local sector (Cipollina et al, 2012).

After all, the positive relationship between FDI and growth seems to be supported in the literature, while the channels of causation seem to be hard to address. The evidence of differences in absorptive capacities between countries, due to country-specific characteristics, are vital in order to understand how the spillover effects from FDI can differ in their intensity when affecting the host country. Likewise, it is possible that sound economic policies may spur both growth and FDI (Carkovic and Levine, 2005).

2.1 Economic determinants of FDI

There are a number of variables that are commonly used in the literature when trying to identify the potential determinants of FDI inflows. Generally, when describing FDI flows, there is a core set of economic variables that has been identified to be decisive. The most commonly used, either as an explanation or as a control is the

Market Size of the economy of interest. The *Market Size* is in this context commonly proxied by the GDP (Globerman and Shapiro, 2002). In a large market, it is possible to utilize resources more efficiently and exploit economies of scale to a larger extent. In the literature, *Market Size* is widely accepted as a significant determinant of FDI flows (Wheeler and Mody, 1992; Chakrabarti, 2001; Globerman and Shapiro, 2002; Li and Resnick, 2003; Bevan and Estrin, 2004; Asiedu, 2006; Bénassy-Quéré et al, 2007; Busse and Hefeker, 2007; Goswami and Haider, 2014).

However, out of the remaining economic variables commonly used in the literature, it has been harder to find a consensus on the effects on FDI. The effects of these variables on FDI have been widely discussed with different hypotheses for each and every variable. Their effects seem to be highly dependent of the context. The direction and magnitude of their impact are of wide variation due to differences in theoretical perspectives, methodologies, sample-selection, type of data and analytical tools (Chakrabarti, 2001). Commonly used variables to explain flows of FDI are *Growth Rate* (Gastanaga et al, 1998; Li and Resnick, 2003; Busse and Hefeker, 2007; Goswami and Haider, 2014), *Openness to Trade* (Asiedu, 2002; Busse and Hefeker, 2007; Buchanan et al, 2012; Goswami and Haider, 2014), *Macroeconomic Stability* in the form of *Inflation* (Asiedu, 2002; Busse and Hefeker, 2007) or of the *Exchange Rate* (Bénassy-Quéré et al, 2001; Li and Resnick, 2003).

More controversial are variables like *Labor Cost* (Wheeler and Mody, 1992; Ranjan and Agrawal, 2011), *Human Capital* (Globerman and Shapiro, 2002; Asiedu, 2006; Goswami and Haider, 2014) and *Tax Rate* (Gastanaga et al, 1998; Wei, 2000).

In the context of the developing world there are also significant findings of importance of effects from the channels of *Infrastructure* (Asiedu, 2002; Goswami and Haider, 2014) and *Natural Resources* (Gastanaga et al, 1998; Asiedu, 2006). Some additional variables are borrowed from the theory of international trade, such as *Time zone differences* (Daude and Stein, 2007a), *Membership of International Organizations* (Dreher et al, 2015) and *Gravity factors* (Bevan and Estrin, 2004; Bénassy-Quéré et al, 2007).

2.2 FDI and the role of institutional factors

Recent literature has begun to consider institutional factors as potential determinants of FDI. De Mello (1997) points out the policy regime and institutional features of the host economy as potential determinants of FDI. Institutional features include the degree of political stability, government intervention, the bureaucratic proce-

dures and the existence of property rights legislation (de Mello, 1997). There are several reasons to why institutional quality could affect FDI inflows. One broadly accepted view is that ineffective institutions bring additional costs to the investment projects, for example in the form of corruption (Wei, 2000). Another broadly accepted view is to the fear of sunk costs as investment decisions are vulnerable to uncertainty. In the context of institutional quality, there are uncertainties due to government inefficiency and weak enforcement of property rights and laws (Bénassy-Quéré et al, 2007).

In recent literature, the role of the recipient country's institutional quality has been explored in order to explain FDI flows. Institutional quality is measured in different ways along with the different studies performed on the topic. The most commonly used measures of institutional quality related to FDI flows are defined in an aggregated way, like *Institutional Quality* (Bénassy-Quéré et al, 2007; Daude and Stein, 2007b; Alfaro et al, 2008) or *Governance* (Globerman and Shapiro, 2002; Buchanan et al, 2012). These two measures do, loosely speaking, illustrate the same institutional features. Both Daude and Stein (2007b) and Buchanan et al (2012) evaluate the same institutional setup of variables; the *Worldwide Governance Indicators* (WGI) including *Voice and Accountability*, *Political Stability and Absence of Violence*, *Government Effectiveness*, *Regulatory Quality*, *Rule of Law* and *Control of Corruption*. Nonetheless, Daude and Stein (2007b) aggregately define them as the *Quality of Institutions*, while Buchanan et al (2012) address them as *Governance* – a proxy for institutional quality. However, when Globerman and Shapiro (2002) use the measure of *Governance*, they, on a disaggregated level, include the variables of *Political Instability*, *Rule of Law*, *Graft Regulatory Burden*, *Voice and Political Freedom* and *Government Effectiveness*. This ambiguity is an indication and somewhat an illustration on the lack of consensus of how institutional quality should be correctly defined and measured. Nevertheless, there is a consensus that such variables are indeed central to explain FDI variation. The quality of institutions is positively associated to FDI levels (Globerman and Shapiro, 2002; Bénassy-Quéré et al, 2007; Daude and Stein, 2007b; Buchanan et al, 2012).

Daude and Stein (2007b) and Globerman and Shapiro (2002) evaluate the disaggregated quality indicators to find out which are significant. Daude and Stein (2007b) conclude that *Government Effectiveness*, *Regulatory Quality* and *Rule of Law* are the most important in this context. These results are in line with Globerman and Shapiro (2002) who also find that legal and regulatory variables, as well as effective delivery of Government services are most important to attract FDI. In the

context of sub-Saharan African countries, Asiedu (2002) find *Degree of Corruption* and *Rule of Law* as significant. Interestingly, there are some works on other types of institutional variables that explain FDI, for example *Human Rights* (Blanton and Blanton, 2007) and *Level of Democracy* (Li and Resnick, 2003; Doces, 2010).

More recently, Goswami and Haider (2014) have performed a study on several risk factors including both OECD and non-OECD countries between 1984 and 2009. In their study, they use the concept of *Political Risk* divided into three disaggregated measures; risk of *Governance failure*, *Cultural conflict* and *Partners' attitude*. In their analysis, they find support for significant impact of all three aspects. In another panel study, performed by Busse and Hefeker (2007) on developing countries between 1984 and 2003, FDI flows are explained by both institutional factors and political risk factors. They find *Government stability*, factors of internal and external *Conflict*, *Law and order* and *Quality of Bureaucracy* as significant when explaining FDI.

Furthermore, Papaioannou (2009) have found that both institutional quality and other risk factors are important when describing international bank flows (including FDI) between investing and host countries. After evaluating aggregated measures of *Institutional Quality*, *Political Risk*, *Economic Risk* and *Financial Risk*, he finds that poorly performing institutions, such as weak protection of property rights, legal inefficiency and a high risk of expropriation are major impediments when attracting foreign capital.

3 Theoretical Background

3.1 Capital flows and the *Lucas Paradox*

In the neoclassical economic models of Solow (1956) and Swan (1956) type, capital flows follow from the standard assumptions of technology in the economy. Lucas (1990) gives a simple illustrative example that can be summarized as follows; two countries produce the same good (Y) with the same production function

$$Y = AF(K, L); \quad \frac{\partial Y}{\partial K} > 0, \frac{\partial Y}{\partial L} > 0; \quad \frac{\partial^2 Y}{\partial K^2} < 0, \frac{\partial^2 Y}{\partial L^2} < 0 \tag{1}$$

where (A) is a constant and capital (K) and labor (L) are homogenous inputs. The production per worker only differs if they have different capital per worker. By the *Law of Diminishing Returns*, marginal product of capital is higher in the less productive economy. This means that the returns in the less productive economy

(r_L) are assumed to be higher than in the high productive economy (r_H), or more formally:

$$\frac{\partial Y_L}{\partial K}(= r_L) > \frac{\partial Y_H}{\partial K}(= r_H). \tag{2}$$

If trade in the capital good is free and competitive, new investment will occur only in the less productive economy, since it is greater unexploited investment opportunities there. This behavior will continue until the returns are equalized between the two countries (Lucas, 1990).

As the marginal product of capital should be higher in less developed countries in the world, they should attract more capital. This should at least be true under the assumption that world capital markets are somewhere close to being free and complete. Hence, as it is not the case, Lucas (1990) concludes that the neoclassical models do not explain capital flows in the real world. This contradiction has later been known as the *Lucas Paradox*. Lucas (1990) himself draws up three explanations of why this is the case.

The first two explanations are related to human capital and they are indeed relevant and interesting, but not in the scope of this paper. In the third explanation, he explores the possibility of imperfections in the capital market as a limiting force on capital flows between countries. This market failure may be due to problems of asymmetric information which are inherent in the international capital markets. He identifies mistrust, uncertainty, fear of losing invested capital and lack of political arrangements between countries as possible channels of what he call "political risk". This can be illustrated as structural differences in the constant (A) between the high productive and low productive economies, and more formally:

$$A_L < A_H. \tag{3}$$

In order to get less developed countries more attractive for foreign investors, he concludes that they need to be more open "to foreign investment on competitive terms". The structural differences between economies, in terms of "political risk", must be equalized in order to be attractive to investors.

The variety of structural problems that can be found in these countries decreases the risk-adjusted returns of the investment and could therefore explain why capital does not flow to these countries in the quantities one would expect, when looking at the neoclassical economic theory. The risk-adjusted returns that foreign investors get from investing in the developing countries may be lower than the rate of returns that are predicted by neoclassical economic theory (Prasad et al, 2007). The risk-adjusted

returns are higher in the high productive economy (r_H^*) than the less productive economy (r_L^*), more formally:

$$r_L^* < r_H^*. \tag{4}$$

Using this reasoning, there are some theoretical explanations to the paradox of capital flows and why these flows cannot be explained by the neoclassical economic theory. The "political risk" deters investors and they change their expectations after a risk-adjusted prediction of returns of their investments.

3.2 Institutions

Theoretically, the role of institutions in the economy can be illustrated by the definition used by North (1991), who defines institutions as "humanly devised constraints that structure political, economic and social interaction". Institutions consist of formal constraints, like constitutions, laws and property rights. They also consist of informal constraints such as sanctions, taboos, customs, traditions and codes of conduct. Moreover, these institutions have been devised to create societal order and to reduce uncertainty in the society. Therefore, effective institutions reduce transaction costs and raise the benefits of economic activity (North 1991).

In general, the institutional theories are mainly explored in relation to economic performance and development over time. North (1991) argues that institutions provide the incentive structure of an economy that over time shapes economic change towards growth, stagnation or decline. In support of this institutional hypothesis, Acemoglu, Johnson and Robinson (2005) find institutional factors outperforming other common explanations of economic development, such as the hypotheses of geography (Diamond, 1997) or culture/religion (Weber, 1905).

As an example, North and South Korea shared the same history, cultural roots and geography before the separation in the aftermath of the Second World War. Since then, the institutional setups of North and South Korea have drifted apart and created two different nations with totally different economic development (Acemoglu and Robinson, 2012). Other illustrative examples with supporting evidence for the institutional theory is the case of Nogales - a city on the border of the U.S. and Mexico (Acemoglu and Robinson, 2012), the "colonial experience" (Acemoglu, Johnson and Robinson, 2001) and the effects of the "*Mita*" in today's Peru and Bolivia (Dell, 2010). In all of these cases, the institutional differences have been found to be a significant determinant for differences in economic outcome.

When having a look at non-case studies, as above, Rodrik et al (2004) and Hall

and Jones (1999) show that institutional quality influences income levels and output per worker. More recently, Alfaro et al (2008) and Papaioannou (2009) have shown that low institutional quality in the host countries was the leading explanation to the *Lucas Paradox* and the allocation of foreign capital during the period of 1970 to 2000 and 1984 to 2002. This motivates the role of institutions when foreign investors are attracted to the different economies around the world.

Following the findings of Alfaro et al (2008) and Papaioannou (2009) and the existing literature on determinants of FDI flows, the function of FDI inflow can be described as

$$FDI_i = f(\boldsymbol{X}_i, \boldsymbol{Inst}_i) \tag{5}$$

where FDI_i, the FDI inflow in country i, is a function of $\boldsymbol{X}_i$, a vector of conventional economic variables and $\boldsymbol{Inst}_i$, a vector of institutional quality factors in country i. The vector of institutional quality is of main interest in this study.

4 Hypothesis

Theoretically, the reasoning from Lucas (1990) and Prasad et al (2007) helps to understand why capital flows do not follow the patterns assumed by neoclassical economic models. The focus here will be on Lucas's (1990) explanation on "political risk" which is assumed to be a deterring factor when FDI is allocated across the world economies. Following the findings of Alfaro et al (2008) and Papaioannou (2009), the institutional quality in the host countries will be in focus in order to understand the risk factors that international investors are facing when making their risk-adjusted investment decisions.

The hypothesis relies on the reasoning from the previous sections in which the factors that may determine the location of FDI across countries were reviewed. However, there is no consensus on how to measure institutional quality. Therefore the set of *Worldwide Governance Indicators* (WGI), together with the *Quality of Governance* from *International Country Risk Guide* will be used as measures of institutional quality. Furthermore, the six dimensions of the WGIs will be evaluated in order to find evidence of a positive association between institutional quality and FDI variations across countries.

Hence, the hypothesis in this paper is that the effect of better institutional quality is associated with higher levels of FDI inflow. The logic of this hypothesis can be found in the above reasoning of Alfaro et al (2008) and Papaioannou (2009)

– higher institutional quality is associated with less risk, on average, and therefore better investment possibilities. In order to test the hypothesis, an econometric model is formulated, in its basic form

$$\ln\left(\frac{FDI_{it}}{capita_{it}}\right) = Inst_{it}\beta + \boldsymbol{X}_{it}\boldsymbol{\delta} + u_{it}, \tag{6}$$

where FDI_{it} is the net inflow of foreign direct investments in country i in time t which is divided by the size if the population in country i at time t. The logarithm of this term is used in the purpose of simplifying interpretations as percentage changes, and to reduce problems of outliers and eventual skewnesses in the distribution. $Inst_{it}$ is a factor of institutional quality and $\boldsymbol{X}_{it}$ is a vector of controls for country i at time t. u_{it} is the error term. The main parameter of interest is β which illustrates the effect of institutional quality on the investment levels. If significant, this parameter is expected to be positive following the reasoning above.

The model is inspired by studies covered in the literature review. Using FDI in levels is not unusual, but previous studies have partly been interested in FDI as a share of GDP (or % of GDP). My interest is to look on FDI levels to get a sense of the magnitudes.

5 Data, definitions and Descriptive Statistics

The data used in this study is mainly obtained from the *World Development Indicators* (WDI) database which is compiled from officially-recognized international sources and presents the most current and accurate global development data available (World Bank, 2016a). The data on institutional quality has been obtained from the Quality of Government Standard Dataset (2016). The final dataset in this study cover 127 countries over the period 1996-2014 and the total number of country-year observations is 2413. OECD countries affiliated before 1994, including South Korea and smaller western economies like Andorra and Monaco are excluded from the study. Unfortunately, some countries lack data for important series; Pakistan, Syria, Ethiopia, among others, are excluded for this reason. A list of included countries, respective defined income group and data availability can be found in Appendix II.

5.1 Dependent Variable

The dependent variable of FDI per capita is constructed by two separate series from the WDI database. The data on FDI is obtained from the *Foreign direct investment,*

net inflows (BoP, current US$) and accounts for the net inflow in current US dollars of foreign investment to acquire a lasting management interest (10 percent or more of voting stock) in a domestic enterprise. To get the final data serie of FDI inflow per capita as dependent variable, the FDI series is divided by the WDI series of *Population, total* (World Bank, 2016). Some countries in the dataset do face a negative FDI value. This is probably due to disinvestment, i.e. more foreign capital has left the country than entered during a specific time period t. As the natural logarithm of FDI inflow per capita is used, the negative FDI values of disinvestment will go lost in the analysis. Luckily, disinvestment is a very rare phenomenon. Out of the 2413 country-year observations on the FDI, only 77 are negative.

5.2 Variables on Institutional Quality

In the evaluation of institutional quality factors, main focus will be on the *Worldwide Governance Indicators* (WGI) defined with support from the World Bank. When interest in *Governance* was growing during the 1990s, the six dimensions of *Governance* was defined and data on these six dimensions stretches back to 1996 (World Bank, 2015). As they are widely used as indicators of institutional quality in previous literature and most of the included variables in this study are extracted from the World Bank, it is reasonable to pick also these variables from their source.

In the WGI project, *Governance* is defined as "the traditions and institutions by which authority in a country is exercised" and this includes (World Bank, 2015):

- the process by which governments are selected, monitored and replaced,
- the capacity of the government to effectively formulate and implement sound policies,
- and the respect of citizens and the state for the institutions that govern economic and social interactions among them.

The indicators are based on several hundred individual variables measuring perceptions of governance from over 30 data sources constructed by 25 different organizations. Below, each definition of these six dimensions is presented (World Bank, 2015):

1. *Voice and Accountability* captures perceptions of the extent to which a country's citizens are able to participate in selecting their government. Also freedom of expression, freedom of association, and freedom of media is included.

2. *Political stability and Absence of Violence* is a measure of the perceptions of the likelihood of political instability and/or politically motivated violence, including terrorism.

3. *Government Effectiveness* captures the perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies.

4. *Regulatory Quality* captures perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development.

5. *Rule of Law* captures perceptions of the extent to which agents have confidence in and abide by the rules of society, and particular the quality of contract enforcement, property rights, the police, and the courts, and likelihood of crime and violence.

6. *Control of Corruption* captures perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, and "capture" of the state by elites and private interests.

The six indicators vary between roughly -2.5 and 2.5 with a mean of zero and standard deviation of one in each year of observation. In order to get a scale from 0 to 10, they are standardized by adding each observation by 2.5 and then multiplying each by 2. The higher a value on an indicator is the better is the relative institutional quality. Moreover, an average WGI-index will be used as *Average Institutional Quality* in this study. This series is constructed as a mean of the sum of all six governance dimensions for each i at each t. No weighting of the aspects is done.

Despite that the WGIs are widely accepted as reliable indicators of institutional quality, some criticism that has been raised against them is worthy to mention. First of all, the indicators are based on expert's and organization's perceptions; hence, not on realities. This is important to remember as there has been findings of differences between, for example, perceptions of corruption and corruption in reality (Olken, 2009). In this sense, there might be lack of construct validity, i.e. it is questionable if the WGIs measure what they intend to. For example, if an indicator value changes from one year to another; is it actually a real change or a perceived change of the indicator that is observed? Following the construction of WGIs, with a

mean of zero and a standard deviation of one; global governance will never improve on average (Thomas, 2010). Consequently, a decrease in a value of an indicator from one year to another for country i do not imply that the country is worse off in reality. Rather, it might be the case that other countries have increased in their relative position. These measurement problems are of course serious, but as long as one is aware of the fact that these indicators are *constructed* measures, these problems do not constitute a threat to the purpose and reliability of this study. In this case, a relative and perceived measure might be appropriate as investors are determining investment opportunities by comparing relative expected returns across countries before making decisions.

The robustness check on institutional quality will be done on the basis of the PRS Group's (2016) series *Quality of Government* from the *International Country Risk Guide* (ICRG). Their measure on *Quality of Government* ranges between 0 and 1 and is constructed by a weighted mean of the IRCG-variables of *Corruption*, *Law and Order* and *Bureaucracy Quality*. The higher value, the better is the *Quality of Government*. In order to compare IRCG's *Quality of Government* with the *Average Institutional Quality* contructed by WGIs, this series is multiplied by 10 so it ranges from 0 to 10 as well. This series is used as robustness as it contains data from 31 countries less than the series from the WGI. Moreover, the WGIs are more suitable as in the purpose of evaluating the aspects of institutional quality and to be consistent by using World Bank data. Along with the list of countries in Appendix II, the data series available for each country may be found. In general can the critique against the WGIs, discussed above, be valid also in the context of the variable from ICRG.

5.3 Control Variables

For the inclusion of control variables in this study, the most common hypotheses and findings from previous literature is used to investigate the variations in FDI levels. All variables that are used as controls can be found as indicators at the WDI webpage (World Bank, 2016a). The control variables included are *Market Size*, *Growth Rate*, *Openness to Trade*, *Macroeconomic Stability*, *Infrastructure* and *Natural Resources*. Due to delimitations and lack of data, some potential controls are not included in the model. *Labor Cost*, *Human Capital* and *Tax Rate* are not included and these delimitations may of course cause a problem for my model. However, it is reasonable that e.g. factors that are correlated with *Labor Cost*, such as poor labor regulations, might be correlated with some of the institutional factors

and will therefore be included in the analysis anyway. The same argument could be valid for factors associated to *Human Capital*, such as low literacy levels and poor education, and eventual uncertainties in *Tax Rate*.

All in all, the most commonly used variables in previous literature are included in the model in order to describe FDI variations across countries. The definitions and the using of proxy variables do also follow previous reasoning.

Market Size is proxied by the natural logarithm of GDP and the series originates from the WDI of "*GDP PPP (current international US$)*". It has been established that a larger market attracts FDI (Wheeler and Mody, 1992; Globerman and Shapiro, 2002). The logarithm transformation of this variable is used as it is heavily skewed to the left, but also to get more intuitive interpretations. After the transformation, it is almost normal distributed.

Growth Rate is the annual GDP growth and originates from the WDI of "*GDP growth (annual %)*". Higher levels of *Growth Rate* are expected to attract higher levels of FDI as the return of capital may be higher in a growing economy (Gastanaga et al, 1998; Busse and Hefeker, 2007).

Openness to Trade is proxied from the WDI series of "*Trade (% of GDP)*", which is the share of GDP that is constituted by the sum of exports and imports of goods and services. If an economy is more open to the world in terms of less trade barriers, restrictions, etc, it is reasonable to assume that it will attract more FDI (Asiedu, 2002; Buchanan et al, 2012).

Macroeconomic stability is proxied by the annual inflation rate (Asiedu, 2006) and this series originates from the WDI of "*Inflation, consumer prices (annual %)*". *Inflation* is expected to be negatively associated with FDI as it may constitute a source of uncertainty for the investors.

Infrastructure is proxied by the natural logarithm of the WDI series of "*Fixed telephone subscriptions (per 100 people)*" as commonly done (Asiedu, 2002). It has been significantly proved that low levels of infrastructure deter foreign investors (Goswami and Haider, 2014). Therefore, it is reasonable to assume a positive relationship between *Infrastructure* and FDI inflow. The logarithm transformation of this variable is used as it is very skewed to the left, but also to get more intuitive interpretations. After the transformation, it is closer to normal distributed.

Natural Resources originate from the WDI series of "*Total natural resources rents (% of GDP)*". In previous literature, it has been evidence of a positive relationship between the existence of natural resources and FDI levels (Asiedu, 2006).

5.4 Descriptive Statistics

The basic descriptive statistics are presented in Table 1 below. In total there are 2413 country-year observations. All the included variables suffer from some missing values due to seemingly random causes. Hence, there is no need to worry about attrition. It is worthy to mention that there are no observations for the WGI-variables at the years of 1997, 1999 and 2001. Moreover, for the *Quality of Government* series from ICRG, 31 of the included countries are completely missing data for this series. Nevertheless, when running regressions, the panel is "strongly balanced".

Table 1: Descriptive Statistics

Variables	Observations	Mean	Std. Dev.	Min	Max
ln(*FDI per capita*)	2311	4.119	2.002	-4.494	9.421
Avg Intitutional Quality	2032	4.463	1.307	1.521	8.185
Quality of Government	1793	4.848	1.353	1.389	9.167
Voice and Accountability	2032	4.358	1.594	0.556	7.946
Political Stability	2032	4.562	1.618	0.220	7.799
Government Effectiveness	2032	4.504	1.548	0.938	9.859
Regulatory Quality	2032	4.611	1.520	0.480	9.495
Rule of Law	2032	4.349	1.455	0.856	8.789
Control of Corruption	2032	4.393	1.432	1.327	9.833
ln(*Market Size)*	2356	24.389	1.941	19.788	30.522
Growth Rate	2378	4.567	6.463	-62.076	149.973
Openness to Trade	2373	89.120	48.502	15.580	531.737
Macroeconomic Stability	2101	10.183	94.310	-18.109	4145.108
ln(*Infrastructure)*	2403	1.792	1.532	-2.487	3.969
Natural Resources	2192	12.210	16.123	0.002	89.329

Mean natural log of FDI per capita during the period is slightly above 4 with a standard deviation of 2; varying between almost negative 4.5 and slightly above 9.4. The mean of the standardized *Average Institutional Quality* is 4.46, the mean of the disaggregated WGIs, respectively, are close to this value; ranging between 4.35 and 4.61. The standard deviation is also quite similar across the WGIs, with *Control of Corruption* as varying the least and *Political Stability* varying the most. Nonetheless, *Political Stability* has the lowest minimum value and it also has the lowest maximum value. *Control of Corruption* has the highest minimum value and *Government Effectiveness* has the highest maximum value among the WGIs. For the *Quality of Government* from ICRG, there is a slightly higher mean and variation.

Among the control variables, it is easy to find examples of events illustrating variations and heterogeneities. There are economies with yearly observations of *Growth Rate* higher than 100 percent in a year; Equatorial Guinea in 1997 after oil findings in 1995, and Libya in 2012 after the civil war in 2011. The negative *Growth Rate* of 62 percent is accounted by Libya in 2011. However, these events are extreme. The heterogeneity among the included countries can also be illustrated by

the variation in *Market Size*; very large economies like China and Brazil are included, but also very small economies like the Comoros and Guinea-Bissau. Highest values in *Openness to Trade* are accounted by expected economies, like Singapore and Malaysia, but again, also Equatorial Guinea the years after the oil findings. At the *Macroeconomic Stability*, the inflation rate has varied considerably across countries over the period; deflation rates as low as at 18 percent and an inflation rate as high as 4145 percent in Angola in 1996. However, when looking at the mean of the control variables, there are not many unexpected values or other surprises. The pairwise correlations of the institutional quality variables and control variables are presented in Appendix III, respectively.

To get a sense of the relationship between the key variables, graphics are useful tools. Figure 3 illustrates a scatterplot between the average of natural logarithm of FDI per capita and *Average Institutional Quality*, over the period of interest.

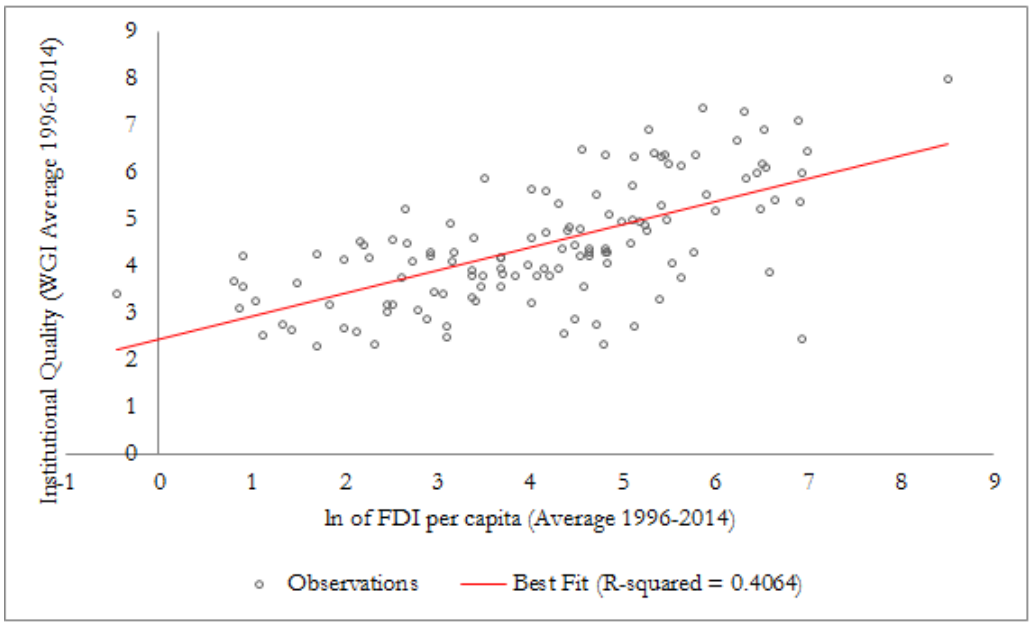

Figure 3: Average relationship between *Average Institutional Quality* and *ln of FDI per capita* over the period 1996-2014.

In Figure 3, the positive relationship between the two variables is quite obvious. On average during this period, higher institutional quality is associated with higher inflow of FDI per capita. The "Best Fit"-line is positively sloped with an R-squared just above 0.40, while the correlation is almost 0.64. In the plot, there are some extremes; Singapore up to the right, Equatorial Guinea down to the right and Nepal far to the left. In Appendix IV, you may find the graphics of each dimension of the

WGIs and their average relationship with natural logarithm of FDI per capita during 1996-2014. All relationships are positive.

In Figure 4 below, the average relationship between natural logarithm of FDI per capita and *Quality of Government* from the ICRG is presented. Also in Figure 4 there is a clear positive relationship between institutional quality and FDI per capita. The R-squared is just below 0.40 and the correlation is approximately 0.62, almost identical to above.

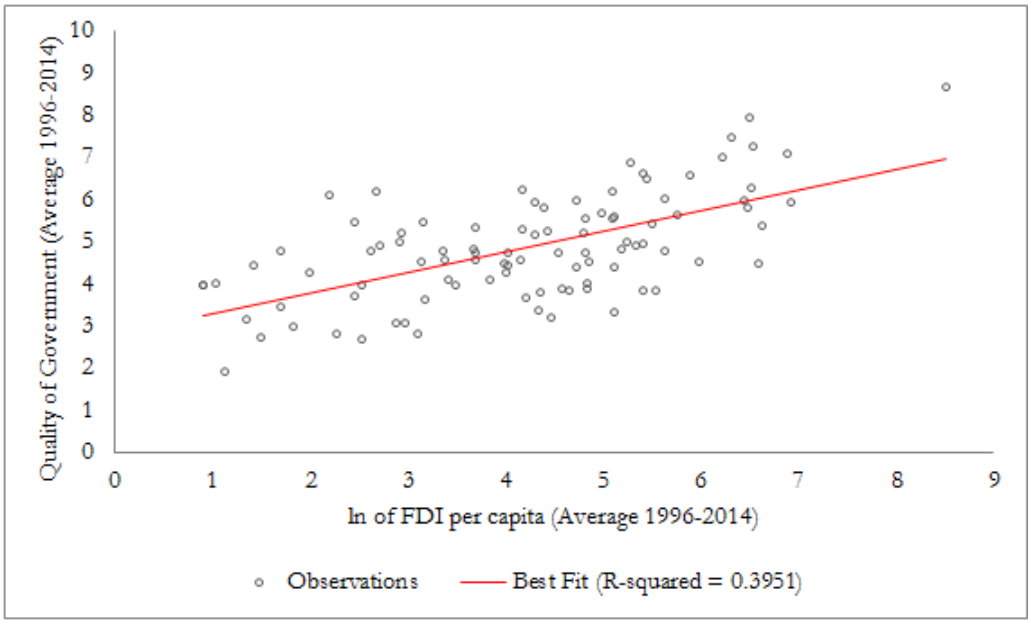

Figure 4: Average relationship between *Quality of Government* and *ln of FDI per capita* over the period 1996-2014.

6 Empirical Strategy

The data used in this study is of panel form, i.e. it is measured over two dimensions. The included countries constitute the cross-section dimension and the yearly observations of these countries add the time dimension. Error terms of such models are likely to display certain types of dependence which should be taken into account in the analysis. Consider the following linear regression model:

$$y_{it} = \boldsymbol{X}_{it}\boldsymbol{\beta} + u_{it}, \qquad i = 1, ..., m, \qquad t = 1, ..., T, \tag{7}$$

where $\boldsymbol{X}_{it}$ is a $1 \times k$ vector of observations on the explanatory variables and u_{it} is the error term. There are m cross-sectional units and T time periods, for a total of

$N = m \times T$ observations. The assumption of u_{it} being independent and identically distributed is, however, not likely to hold in the panel data framework. Therefore, the most common panel data models are so called *error-components models*. In such setups, the error term u_{it} is modeled as two or three separate shocks that are independent from each other:

$$u_{it} = e_t + \upsilon_i + \varepsilon_{it} \tag{8}$$

where e_t is a shock that is unique over the observations at time period t, υ_i is a shock that is affecting all observations for the cross-sectional unit i and ε_{it} only affect observation it (Davidson and MacKinnon, 2004). Theoretically, this model is identical to the model that was presented in the hypothesis section above and this type of model will be used in this study.

Panel data sets have several advantages over conventional cross-section data sets or time series data sets. The estimates in panel data analysis are more efficient as there are more observations, which in turn increase the degrees of freedom and reduce the collinearity among the explanatory variables. Moreover, some economic questions that cannot be addressed using cross-sectional or time series data sets can be analyzed with panel data analysis. Using panel data models, it is possible to resolve or at least reduce the magnitude of biases from time invariant omitted variables, either if measured wrongly or unobserved. Instead of a "snapshot" from a particular moment in time that would be more or less accurate as in cross-section studies; it is possible to explore the dynamics in panel data in order to control for omitted factors that may bias the model (Hsiao, 2014). In this way, as omitted factors are controlled for, identification problems might be reduced (Verbeek, 2012).

In *error-components models*, the shocks of e_t are the same over the cross-section at time period t, but different across the periods in time. The e_t can be modeled as a trend factor or as *T-1* time dummies (Stock and Watson, 2012). As shown in Figure 1 above, the FDI levels are not sloped linearly positive, and therefore it is favorable to use *T-1* dummies to control for the time effects of e_t.

6.1 Estimation of fixed effects and random effects

When it comes to the time invariant and individual specific factors modeled as υ_i above, two main estimation techniques can be used in order to treat these effects. Basically, the choice of model relies on the assumption of the relationship between the time invariant unobserved heterogeneity υ_i and the explanatory variables x_{it}

that are included in the model (Verbeek, 2012).

If correlation between υ_i and x_{it} is allowed, the fixed effects model is suitable to use. In the fixed effects model, the υ_i effects are eliminated by the so called *within transformation* (Verbeek, 2012). The time invariant unobserved heterogeneity of υ_i is controlled for by using the time variation in the dependent and indenpendent variables *within* each cross-sectional unit (Wooldridge, 2014). See Verbeek (2012) or Wooldridge (2014) for formal illustrations of the *within transformation*.

Phenomenon that can be controlled for by this transformation is, for example, firm fixed effects like the management quality (e.g. in Veerbek, 2012), state fixed effects like cultural attitudes (e.g. in Stock and Watson, 2012) and country fixed effects like technical efficiency (e.g. in Hsiao, 2014). In the context of this study, the unobserved heterogeneity could be present in the form of country-specific characteristics that are constant over the time period in country i but still affecting the model. In case of this study, it could be cultural or religious attitudes, deep institutional and historical factors, geography, among others.

However, in theory, a more efficient estimator may exist than the *within* estimator. This is obtained by using the random effects model. In this model, a crucial restriction is imposed. The time invariant unobserved heterogeneity in country i is required to be independent from the explanatory variables. More formally, υ_i and x_{it} must be uncorrelated in order for the random effects model to be consistent. The estimator from this model is often referred to as the feasible GLS estimator which is a matrix-weighted average combination of the within estimator from the fixed effects model and the between-groups estimator, which reflects the changes between the cross sectional subjects (Davidson and MacKinnon, 2004).

To summarize, if it is possible that the assumption of independence between υ_i and x_{it} is likely to hold, then the estimator from the random effects model is consistent and more efficient than the estimator from the fixed effects model and the former should preferably be used (Wooldridge, 2014).

6.2 The Hausman test - to choose model of estimation

To treat the time invariant unobserved heterogeneity υ_i as fixed or random is not easy to tell without formal investigation. The differences in the parameter estimates between the fixed effects model and the random effects model might be large, especially if T is small and m is large. Generally, the fixed effects model is favorable if the individuals are like countries, firms or industries, i.e. an explicit "one of a

kind" character. In any case, choosing between the models is not a straightforward process (Verbeek, 2012).

However, it exist a formal test to choose between them (Hausman, 1978). The idea is to compare the two estimators in order to discover the relationship between υ_i and x_{it} – and if the estimators are significantly different. Under the null hypothesis in this test, υ_i and x_{it} are uncorrelated. If one fails to reject the null hypothesis, the random effects model is preferred. If one can reject the null hypothesis, then the fixed effects model is preferred by the reasoning above. The fixed effects model is consistent in both cases, but the estimator from the random effects model is more efficient if the assumption holds. If the null hypothesis can be rejected, the random effects model is both inconsistent and inefficient, due to the problems discussed. In other words, the Hausman test is not only a test to choose between the models, it also determines the trade-off between efficiency and consistency in the estimation process (Verbeek, 2012).

In order to model the time invariant unobserved heterogeneity accurately, as random or fixed effects; the Hausman test is performed. In all the different estimations in this study, the indication is clear; the null hypothesis of orthogonality between υ_i and x_{it} is not likely to hold and is therefore rejected in all the different specifications. Therefore the fixed effects model will be used in this study.

6.3 Further considerations

In the econometric estimations performed in this study, robust standard errors will be used in order to handle eventual heteroskedasticity. In the estimations of the fixed effects model, cluster effects on country level will be allowed. This means that the assumption of independence between the observations within the cluster is relaxed. This is possible to do without serious problems of potential autocorrelation as the T is accounted yearly, hence fairly long periods, and as the dummies for each year are included and accounts for the yearly effects. The strength of including the cluster effects is that correlation between clusters is not allowed. Furthermore, compared to time series data with few cross sectional m and a large number of time periods T – also with shorter periods (monthly, daily, etc), this panel have a large m and a relatively small T. The regular problems that make time series models suffer from serial correlation are not considered to be a serious problem in this study due to the advantageous structure of the data (Verbeek, 2012).

In the model specified in this paper, there are reasons to suspect some multi-

collinearity between the explanatory variables – as in many cases in country level analysis. For example, it is reasonable that to suspect that the institutional environment in a country is somewhat correlated with the *Market Size*, but also factors related to macroeconomic stability or infrastructural features. In order to get a sense of the extent of the multi-collinearity in the model, the *Variance Inflation Factor* (VIF) is inspected. The VIF is an index over the severity of the multi-collnearity for each explanatory variable, respectively. However, a high VIF or signs of high multi-collinearity do not necessarily imply the exclusion of any of the explanatory variables. Rather, the results should be interpreted with caution. Luckily the standard errors are biased in a way that the estimation results are less significant, i.e. bias the significance downwards. Hence, the significance of the results will eventually be more conservative than the results from a model without multi-collinearity. An exclusion of an important explanatory variable on the other hand, might bias the estimates – a bigger problem. High VIFs do not by themselves discount the results of the analysis (O'Brien, 2007). When inspecting the multi-collinearity by the corresponding VIFs in the specifications below, both *Market Size* and the institutional quality variables have high VIF values throughout the analysis. This is not surprising as discussed above, but it is important to note that the standard errors for these variables are somewhat inflated. The other variables are not suffering from "too high" VIFs.

Another very interesting and severe issue related to analyses on cross-country level is the simultaneity problem in disentangling the cause and effect. This issue has been deeply discussed in studies related to economic growth (e.g. Mankiw et al, 1995), but it is also relevant in the context of this study. Interpreting the semi-elasticities between natural logarithm of FDI inflow per capita and the institutional quality variables as causal effects should not be done without caution. The variables of institutional quality are *constructed* measures of experts' perceptions; while the true institutional quality is unknown. Therefore, it is not reasonable to seek causal effects *in the data*. However, the channels in which the institutional quality might attract FDI could be causal. But with a cynical read, one could imagine that the government in country i at time t could change institutions in order to attract foreign capital. Hence, the causality could go both ways. Therefore, the focus in this study will lie on the institutional quality and its association with variations in FDI levels.

In general, the most effective way to establish causality is by using an *Instrumental Variable* (IV) strategy. In lack of potential IVs, a possible way to explore the

causality is to use lags. Therefore, lagged institutional quality will be used in this purpose and to check robustness of the results. When lagging institutional quality, the eventual problems of reverse causality at time t might be reduced. At time t, causality could arguably go both ways. It is, however, less likely that institutional quality at time *t-1* is affected by FDI at time t. Furthermore, it is reasonable that some investment decisions are exposed to some rigidity. Even if investors are assumed to collect information efficiently and to be sensitive to changes considering risks, the investment decisions might be determined on past data (last month or even last year). Therefore, it is not unrealistic to consider the lagged information on institutional quality.

7 Results

7.1 Baseline Results

The baseline results are presented in Table 2 below in which the *Average Insitutional Quality* is used as a factor of institutional quality.

Table 2: Baseline Results.

Variables	Coefficients				
$\ln(FDI\ per\ capita)_t$	(1)	(2)	(3)	(4)	(5)
Avg Institutional Quality$_t$	0.438***	0.207*	0.197	0.187	
	(0.032)	(0.124)	(0.131)	(0.129)	
Avg Institutional Quality$_{t-1}$					0.299**
					(0.132)
$\ln(Market\ Size)_t$	-0.022	1.381***	1.377***	0.999**	1.046**
	(0.018)	(0.286)	(0.374)	(0.386)	(0.485)
Growth Rate$_t$	0.0160**	0.0251***	0.0192**	0.0169**	0.0214**
	(0.0075)	(0.0064)	(0.0076)	(0.0072)	(0.0097)
Openness to Trade$_t$	0.0092***	0.0055***	0.0063***	0.0053**	0.0060**
	(0.0009)	(0.0017)	(0.0020)	(0.0021)	(0.0024)
Macroeconomic Stability$_t$	-0.0024		-0.0002	-0.0042	-0.0001
	(0.0031)		(0.0041)	(0.0039)	(0.0003)
$\ln(Infrastructure)_t$	0.535***		0.126	0.131	0.147
	(0.0269)		(0.117)	(0.115)	(0.113)
Natural Resources$_t$	0.0281***		0.0159**	0.0091	0.0087
	(0.0023)		(0.0080)	(0.0083)	(0.0092)
Constant	-210.6***	-85.22**	-85.44*	-22.44**	-24.04**
	(13.27)	(34.86)	(46.25)	(9.195)	(11.42)
Fixed Effects	No	Yes	Yes	Yes	Yes
Time Trend	Yes	Yes	Yes	No	No
Time Dummies	No	No	No	Yes	Yes
Cluster Effects	No	Yes	Yes	Yes	Yes
Observations	1 512	1 891	1 512	1 512	1 416
R-Squared	0.643	0.384	0.413	0.445	0.453
Nr of Countries	-	125	114	114	114

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

The regression in column (1) is a Pooled OLS estimation using robust standard errors, including the standardized average of the WGIs as the institutional quality variable, the control variables and a time trend, but without allowing for time invariant unobserved heterogeneity. Therefore, the results in column (1) can be considered as biased and column (2) to (5) more interesting. Moving from column (1) to column (2) to (5) shows the importance of modeling the time invariant unobserved heterogeneity, in this case as fixed effects. An estimation using fixed effects, clusters, robust standard errors and including the three most commonly used controls in previous literature is presented in column (2). When adding the remaining three controls in column (3), the magnitudes and significance levels of the controls are quite similar – a good sign of robustness. The variable of institutional quality, is however, insignificant.

When expanding the precision in the model even further and modeling the time effects as time dummies, the magnitudes and significance levels keeps somewhat consistent also in column (4). When moving from column (4) to (5), the *Average Institutional Quality* is modeled with a lag. In column (2) to (5), the controls of *Market Size*, *Growth Rate* and *Openness to Trade* are consistently significant with expected signs and small variation in magnitude and level of significance. This indicates robustness of the baseline results.

Column (4) and (5) is of main focus as the yearly effects are modeled in the most accurate way, for this case - as dummies. This implies, for example, that a ceteris paribus increase in *Market Size* by 1 percent is associated with an on average increase of FDI inflow per capita by approximately 1 percent. An increase in *Growth Rate* by 1 percent is on average associated with an increase in FDI inflows per capita by 1.7 to 2.1 percent. Also *Openness to Trade* is posetively associated with FDI inflows per capita.

The *Average Institutional Quality*, is insignificant in column (3) and (4), but the magnitude of the estimate is slightly the same in column (2) to (4), varying in the interval of approximately 0.19 to 0.21. Important to remember is that the high VIFs may indicate inflated standard errors making these results a bit conservative in the level of significance. In order to explore the persistent effect of the variable of interest, *Average Institutional Quality* is lagged in column (5). When lagged, the magnitude increases and get significant at the 5 percent level. Hence, a ceteris paribus increase by 1 rank (scale from 0 to 10) in the lagged value of *Average Institutional Quality* is on average associated with an increase in FDI inflows per capita by approximately 23 percent.

7.2 Robustness of the Baseline Results

In order to explore the robustness of the results in Table 2, the institutional quality indicator is changed to the *Quality of Government* from the ICRG in Table 3 below.

Table 3: Robustness of the Baseline Results

Variables	Coefficients				
$\ln(FDI\ per\ capita)_t$	(1)	(2)	(3)	(4)	(5)
Quality of Government$_t$	0.228***	0.185*	0.187*	0.167*	
	(0.0304)	(0.0953)	(0.0993)	(0.0993)	
Quality of Government$_{t-1}$					0.230**
					(0.090)
$\ln(Market\ Size)_t$	-0.106***	1.582***	1.840***	1.429***	1.464***
	(0.0206)	(0.385)	(0.456)	(0.475)	(0.509)
Growth Rate$_t$	0.0260**	0.0277***	0.0179**	0.0171**	0.0180**
	(0.0123)	(0.0083)	(0.0083)	(0.0079)	(0.0082)
Openness to Trade$_t$	0.0074***	0.0042	0.0066*	0.0059*	0.0053*
	(0.0011)	(0.0028)	(0.0034)	(0.0031)	(0.0031)
Macroeconomic Stability$_t$	-0.0009		-0.0006**	-0.0009**	-0.0008**
	(0.0007)		(0.0003)	(0.00035)	(0.0003)
$\ln(Infrastructure)_t$	0.682***		0.238	0.212	0.234
	(0.027)		(0.155)	(0.160)	(0.164)
Natural Resources$_t$	0.0190***		0.0150	0.0073	0.0078
	(0.002)		(0.010)	(0.0112)	(0.0113)
Constant	-232.4***	-78.15*	-45.06	-33.72***	-34.70***
	(13.03)	(45.86)	(52.14)	(11.51)	(12.34)
Fixed Effects	No	Yes	Yes	Yes	Yes
Time Trend	Yes	Yes	Yes	No	No
Time Dummies	No	No	No	Yes	Yes
Cluster Effects	No	Yes	Yes	Yes	Yes
Observations	1 409	1 668	1 409	1 409	1 337
R-Squared	0.630	0.394	0.435	0.463	0.457
Nr of Countries	-	94	90	90	90

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

After changing the model specification, the signs, magnitudes and significance levels are generally consistent across the controls, respectively. The magnitude of *Market Size* increases to about 1.5, while *Growth Rate* and *Openness to Trade* not change much compared to Table 2. The only critical change from the previous model is that *Macroeconomic Stability* turns significantly negative.

More interesting for the purpose of this paper, *Quality of Government* is consistently significant throughout the columns. This supports the hypothesis of a positive association between institutional quality and FDI. The magnitude of the coefficient estimate varies between approximately 0.17 and 0.23 in column (2) to (5). Hence, a ceteris paribus increase by 1 rank (scale from 0 to 10) in *Quality of Government* is on average associated by an increase in FDI inflows per capita of around 20 percent. Again, when lagging the effect of institutional quality factor, the magnitude increases a little. This confirms the indication of a persistent effect of institutional

quality on FDI, which is supporting a hypothesis of eventual causality.

As the *Average Institutional Quality* in Table 2 was standardized by myself, it is not surprising that those results are more inconsistent than the counterparts in Table 3. The *Quality of Government* measure from the ICRG on the other hand, was constructed by experts who have weighted the different aspects in a more careful way. The *Quality of Government* from the ICRG could therefore be regarded as a more reliable measure of institutional quality in practice. In the estimations using either the *Average Institutional Quality* or the *Quality of Government*, it is notable that the magnitude of the coefficient estimate – or the economic significance – is quite the same. However, the standard errors of the *Average Institutional Quality* are consistently larger.

Overall, the analysis above gives us support in the hypothesis of inclusion of institutional quality factors when analyzing the variation of FDI levels across countries. Furthermore, as the lagged effects of the institutional quality are consistently significant in Table 2 and Table 3, there is support of a persistent effect of institutional quality on FDI, and hence, some support for the hypothesis of causality.

When it comes to the question of making a choice in accuracy between the models, there are reasons to believe that the models from column (4) and (5) are preferable, as argued above regarding the modeling of the time effects.

7.3 Evaluation of the WGIs

In Table 4, the results from the separate regressions of the WGIs are presented. The significance levels and coefficients of the control variables are generally stable. Even if this is the case, some of omitted variable bias might be present in all six columns as it is reasonable that some factors are omitted due to the strategy of including the WGIs one by one.

Looking at the results in Table 4, the controls are somewhat consistent in their magnitude, sign and significance - a sign of robustness. Interesting for the sake of robustness is also that the controls behave very close to how they do in Table 2; the magnitudes are increasing just a little.

When it comes to the variables of interest, the WGIs, it is important to remember that the VIFs are consistently high and the standard errors are somewhat inflated. Therefore, as previously mentioned, the significance levels are conservatively estimated, but the magnitudes of the estimates are assumed to be correct.

Table 4: Evaluation of WGIs

Variables	Coefficients					
$\ln(FDI\ per\ capita)_t$	(1)	(2)	(3)	(4)	(5)	(6)
Voice and Accountability$_t$	-0.0091					
	(0.0961)					
Political Stability$_t$		0.0304				
		(0.0584)				
Government Effectiveness$_t$			0.0972			
			(0.0859)			
Regulatory Quality$_t$				0.277***		
				(0.0987)		
Rule of Law$_t$					0.129	
					(0.0974)	
Control of Corruption$_t$						0.0533
						(0.102)
$\ln(Market\ Size)_t$	1.121***	1.090***	1.075***	0.852**	1.025***	1.091***
	(0.384)	(0.381)	(0.383)	(0.392)	(0.387)	(0.386)
Growth Rate$_t$	0.0174**	0.0174**	0.0171**	0.0172**	0.0171**	0.0172**
	(0.0073)	(0.0072)	(0.0072)	(0.0072)	(0.0074)	(0.0073)
Openness to Trade$_t$	0.0057***	0.0056***	0.0055***	0.0051**	0.0054**	0.0055***
	(0.0021)	(0.0020)	(0.0021)	(0.0021)	(0.0021)	(0.0021)
Macroeconomic Stability$_t$	-0.0054	-0.0050	-0.0049	-0.0041	-0.0046	-0.0049
	(0.0039)	(0.0040)	(0.0039)	(0.0039)	(0.0039)	(0.0039)
$\ln(Infrastructure)_t$	0.115	0.121	0.122	0.123	0.121	0.121
	(0.113)	(0.112)	(0.115)	(0.116)	(0.115)	(0.117)
Natural Resources$_t$	0.0067	0.0071	0.0082	0.0089	0.0091	0.0076
	(0.0085)	(0.0084)	(0.0083)	(0.0080)	(0.0081)	(0.0086)
Constant	-24.45***	-23.89**	-23.84**	-19.39**	-22.77**	-24.00**
	(9.176)	(9.131)	(9.174)	(9.336)	(9.223)	(9.200)
Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Time Trend	No	No	No	No	No	No
Time Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Cluster Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1 512	1 512	1 512	1 512	1 512	1 512
R-Squared	0.443	0.443	0.444	0.452	0.444	0.443
Nr of Countries	114	114	114	114	114	114

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

The results from Table 4 indicate which of the dimensions of the WGIs that matter for foreign investors. As it seems, *Regulatory Quality* is the only significant one, on the 1 percent level. Hence, a ceteris paribus increase in the rank by 1 (scale from 0 to 10) of *Regulatory Quality* is on average associated with an increase in FDI inflows per capita by almost 28 percent. *Regulatory Quality* is also the WGI with highest magnitude on its coefficient estimate.

In Appendix V, the persistent effects of the WGIs may be found in Table 5. When lagging the WGIs, two more variables are significant – *Rule of Law* on the 5 percent level and *Government Effectiveness* on the 10 percent level. When lagged, *Regulatory Quality* is decreasing in both magnitude and significance level. Hence, a ceteris paribus increase in the rank by 1 of the lagged values of *Rule of Law* or *Regulatory Quality* is on average associated with an increase in FDI inflows per capita by around 21 percent. These results are significant on the 5 percent level.

A ceteris paribus increase in the rank by 1 of the lagged value of *Government Effectiveness* is on average associated with an increase in FDI inflows per capita by almost 15 percent.

The results above are quite striking. For the full sample of non-OECD countries in this study, only *Regulatory Quality* is significant at time *t*. As it is significant also when lagged, it seems like the most important institutional factor for foreign investment decisions are aspects related to ease of doing business, regulatory burden and tax inconsistencies, among others. This variable can, loosely speaking, be regarded as including factors related to business and investment climate. By the same reasoning, market unfriendly policies, like price controls or uncertainties in regulations seem to deter investors. As *Government Effectiveness* and *Rule of Law* are significant when lagged, there are indications of their importance for FDI. These results are supporting the main points from previous literature (Globerman and Shapiro, 2002; Daude and Stein, 2007b). However, the support for *Regulatory Quality* is more robust than the support of *Government Effectiveness* and *Rule of Law*. As the lagged values are significant, it gives some additional support for the hypothesis of causality. Factors related to political aspects and corruption do not seem significant in its association with variation in FDI levels for the full sample, which is indeed an interesting finding as well.

7.4 Further analysis and robustness

In order to explore the validity of the theoy related to the *Lucas Paradox* and to check robustness of the results, the sample will now be divided into four sub-samples depending on the income level. The classification of the income groups are taken from the World Bank Atlas method for *Low Income*, *Lower Middle Income*, *Upper Middle Income* and *High Income* countries from the calender year 2013 (World Bank, 2016b). This definition can be found together with the list of countries in Appendix II. Descriptive statistics on the institutional quality factors for each income group can be found in Table 6 in Appendix VI. In the following analysis, the regression tables associated to Table 7, 8, 9 and 10 can be found in Appendix VII, respectively.

In the robustness analysis below, the institutional quality factors will be analyzed at time *t* and no lagged variables will be used. Firstly, as the sub-samples below are smaller and the strategy of lagging is consuming observations, it is reasonable to keep as many observations as possible. Second, as investors are assumed to be rational, forward looking and sensitive to real time changes, it is not unreasonable

to analyze models without lags. Hence, the focus in this section will be on the how institutional quality factors are associated with variations in FDI levels in each income group.

In Table 7 in Appendix VII, the results from the sample of countries in the *Low Income* group are presented. When looking at only low income countries, it is clear that the institutional quality indeed is important when analyzing the variation of FDI levels in these countries. The institutional factors of *Average Institutional Quality*, *Quality of Government*, *Government Effectiveness*, *Regulatory Quality*, *Rule of Law* and *Control of Corruption* are all significant, respectively. If any of these factors are ceteris paribus increased by 1 rank (scale 0 to 10), it is on average associated with an increase in FDI inflows per capita by almost 36 to almost 49 percent. Hence, in low income countries, the institutional factors are highly associated to the variation in FDI levels. The only control variable that is significant throughout this analysis is *Openness to Trade*. Moreover, it is interesting to note that the R-squared of approximately 0.60 in the analysis of the *Low Income* countries is substantially higher than in the analyses of the other income groups below. To summarize, for low income countries at time t, more aspects of institutional quality are important than in the full sample as both of the aggregated measures are significant and not only *Regulatory Quality* among the WGIs. These results are in line with previous literature (Asiedu, 2002; Daude and Stein, 2007b) and supporting recent literature on the *Lucas Paradox* (Alfaro et al, 2008; Papaioannou, 2009).

In Table 8 in Appendix VII, the results from the sample of countries in the *Lower Middle Income* group are presented. In the results from this sample, only *Quality of Government* is significant among the institutional quality factors, and only *Market Size* among the controls. A ceteris paribus increase in *Quality of Government* is associated with an on average increase in FDI inflows per capita by approximately 21 percent at the 10 percent significance level. Furthermore, an increase in *Market Size* by 1 percent is associated with an increase in FDI inflows per capita by approximately 1.5 to 1.9 percent. The institutional factors seem to be somewhat important in this income group, but not as important as in the low income group. Again, it is important to remember that the high VIFs inflate the standard errors, and making the significance levels more conservative than they may be in reality.

In Table 9 in Appendix VII, the results from the sample of countries in the *Upper Middle Income* group are presented. The results from this sample also have only one significant institutional factor; *Regulatory Quality* - which has almost the same magnitude as in the analysis of the low income countries. A ceteris paribus increase

in *Regulatory Quality* by 1 percent is associated with an on average increase in FDI inflows per capita by almost 50 percent. Hence, in the group of higher middle income countries, the business and investment climate seems to be the most important institutional factor when explaining the variation of FDI levels across countries. Among the controls, *Market Size* is almost consistently significant and *Openness to Trade* is somewhat (3 out of 8 regressions) significant at the 10 percent level. The consistency in the different specifications of the institutional quality factors are not as stable as in results from the other income groups presented in this section.

In Table 10 in Appendix VII, the results from the sample of countries from the *High Income* group are presented. The significant factors in this income group are *Growth Rate* and *Infrastructure*; no institutional factors are significant. If *Growth Rate* is ceteris paribus increased by 1 percent, it is on average associated with an increase in FDI inflows per capita by at least 6 percent. If *Infrastructure* is ceteris paribus increased by 1 percent it is on average associated with an increase in FDI inflows per capita by 1.3 to 1.4 percent. A reasonable explanation to these results is that high income countries generally have higher institutional quality, larger size of the market, etc. However, the growth rates and infrastructure might vary across countries in this income group. These results indicate that when countries reach a threshold of a certain income level, the factors that attract foreign investors are related to the growth level and the level of the infrastructure and not to the institutional quality. While growth influencing investment choices is somewhat intuitive, infrastructure is less so. Plausible explanations could be that investors are attracted by high-tech countries, or when there are high infrastructural levels, then transactional costs associated with investments might be lower.

The results from the robustness checks above, focusing on different income segments, give some indications of a non-linearity in the relationship between institutional quality and FDI levels. As it seems, institutional factors matter for investment decision from abroad up to a certain threshold of the income level. For very poor countries, different aspects of the institutional quality are significantly important when explaining FDI levels. These results supports the previous literature (Asiedu, 2002; Daude and Stein 2007b). For middle income countries, some aspects of institutional quality are still significant, but less so. Finally, for high income countries, institutional factors are insignificant. Instead, more investment-rational aspects, such as the growth rate, become significant with a high magnitude.

To understand why a threshold of the income level in the economy might exist in the context of FDI levels and institutional quality, and where to find this threshold

is difficult to pinpoint. But the above results indicate that the higher the income levels in an economy, the less the aspects of the institutional quality influences the investment decisions. Some aspects, like *Regulatory Quality*, seem to be relevant for investors even at higher income-levels and therefore the thresholds seem vary for different aspects of institutional quality. As *Regulatory Quality* is significant also for the upper middle income group, it seems that the factors related to the business and investment climate have a higher threshold than the other WGI aspects. Nonetheless, the institutional quality does not seem to influence the FDI levels in high income countries. A possible explanation to this, may be that higher income levels in turn are associated with higher levels of institutional quality and after some degree of institutional quality, it is "safe" to invest in the country, even if the institutional quality is not the highest observed.

The findings that have been discussed here supports the explanation of *Lucas Paradox* that is related to uncertainty and risks. When investors have risk-adjusted their expectations of returns; risks and uncertainties related to institutional quality factors make countries with low institutional attributes less attractive to invest in. In poor countries or countries in lower income groups below the critical thresholds, low institutional quality may deter investors. This, in turn, might be a reason to why these countries do not see high inflows of capital from abroad and why FDI levels are lower than capital flows of for example, remittances and aid. Hence, the findings from Alfaro et al (2008) and Papaioannou (2009) are highly supported for the low income countries. However, when the income level is above the thresholds of income level, the institutional quality is not associated with the variations in FDI levels. Hence, the relationship between institutional quality and FDI levels is related to the income level in a country. This might be due to the explanation given above; when the income level is high in an economy, it is on average associated to higher levels of institutional quality.

8 Conclusion

Foreign Direct Investments (FDI), as a share of world GDP, has increased rapidly during the last decades. FDI levels in 2014 are six times higher than in 1990 and constitute more than 40 percent of the external development finance to developing and transition economies. Moreover, some countries do not see much of the inflow of FDI. As FDI levels are predicted to be continually increasing globally over time and the variation in levels of FDI is high, the purpose of this paper was to investigate

the determinants of FDI. More specifically, previous literature and the *Lucas Paradox* stimulated interest in the role of risk factors and institutional quality and its association with variations in levels of FDI. Furthermore, measures from the *Worldwide Governance Indicators* are used as proxies for institutional quality in the main specifications and a measure from the *International Country Risk Guide* is used to check robustness.

Using a sample of non-OECD countries, the baseline results in section 7.1 and 7.2 supports previous literature on the importance of including institutional quality when describing FDI levels. As measures of institutional quality, *Average Institutional Quality* is significant at time *t-1* and *Quality of Government* at time *t* and time *t-1*, for the full sample in this study. While *Quality of Government* is a weighted measure and *Average Institutional Quality* is a non-weighted average; the significance of *Quality of Government* gives more credible results as an aggregated measure. These results support the main hypothesis in this paper, FDI levels are positively associated with institutional quality.

In order to evaluate the different aspects of institutional quality, the *Worldwide Governance Indicators* were included one by one in section 7.3. At time *t*, *Regulatory Quality* is the only significant aspect. While at time *t-1*, *Government Effectiveness* and *Rule of Law* are also significant. There are two things to conclude from this.

First, when studying the association between institutional quality and FDI levels for the full sample of non-OECD countries over the period of 1996 to 2014, the most important aspect seems to be *Regulatory Quality*. A ceteris paribus increase in *Regulatory Quality* of 1 rank (scale from 0 to 10) is associated with an increase in FDI per capita by almost 30 percent. This result gives an indication of the importance of a good business and investment climate in a country in order to attract foreign investors. The indications of the importance of *Government Effectiveness* and *Rule of Law* gives further support for previous literature (Globerman and Shapiro, 2002; Daude and Stein, 2007b). In the future it might be possible to find even better measures of the aspects of institutional quality in order to explore the true channels. Another idea for future research possibilities could be to investigate FDI from the investors perspective using similar variables; what is determining e.g. U.S. or Chinese FDI allocations and explore eventual differences.

Second, the persistent effect of institutional quality is significant in sections 7.1, 7.2 and 7.3 indicates some support of the hypothesis of causality. The strategy of lagging the institutional quality should reduce the bias of reverse causality. However, it is not reasonable to draw a conclusion of causality from the data, as the measures

of institutional quality are constructed from perceptions. The results rather give support to the hypothesis of causality within the underlying channels of *some* aspects of institutional quality on FDI levels. In order to address the causality in a more proper way, future researchers could try to find an IV-strategy or use relevant case studies to disentangle cause and effect. Furthermore, as the lagged institutional quality factors are significant at time *t-1*, future researchers could investigate the dynamics of international investment decisions as the results from this study may indicates some rigidity.

In order to investigate the validity of the *Lucas Paradox* and in the purpose of robustness, the sample was divided into four separate sub-samples by their income group in section 7.4. The results give an indication of non-linearity in the relationship between institutional quality and FDI inflows per capita, conditional on the income level. Almost all aspects of institutional quality are significant for *Low Income* countries while just a few are significant for the higher income groups. These results supports previous literature (Alfaro et al, 2008; Papaioannou, 2009) on the *Lucas Paradox*; low institutional quality is associated with lower levels of FDI inflows, and this might be a sign of a deterring factor for investors. As this result is especially evident in poorer countries, it gives further support for the explanation of the *Lucas Paradox*, i.e. why poorer countries see lower inflows of capital. In the *High Income* group on the other hand, institutional quality is not significant at all – while the factor of e.g. *Growth Rate* is important. As the results in this study indicates non-linearity in the relationship between institutional quality and FDI inflows per capita, future researchers could investigate the thresholds of income level where institutional quality factors not affect the investment decisions.

The results in this paper have shown the importance of taking factors of institutional quality into account when analyzing variations in FDI levels across countries. These findings are interesting for policymakers in global development institutions and in developing countries as FDI have been increasing in levels and in its share of world GDP during the last decades, as well as constituting a large part of the external development finance. Improving institutional quality in developing countries is indeed a win-win strategy as it is associated with higher levels of FDI inflows and proved to determine a better economic outcome (e.g. Acemoglu and Robinson, 2012). As discussed in the literature review, higher institutional quality does also increase host countries absorptive capacity in order to take advantage of the practices and spillovers of foreign firms. In turn, this emphasizes the importance of sustainable investment strategies in developing countries by multinational enterprises.

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Appendix I

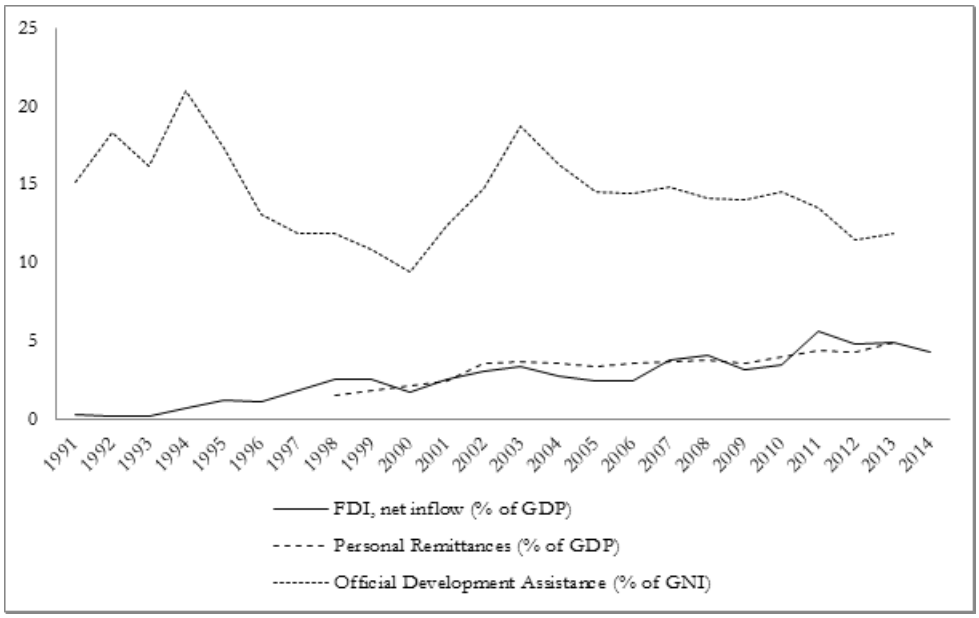

Figure 5: Financial flows as share of GDP 1990-2014 (World Bank, 2016a). *Low Income Countries.*

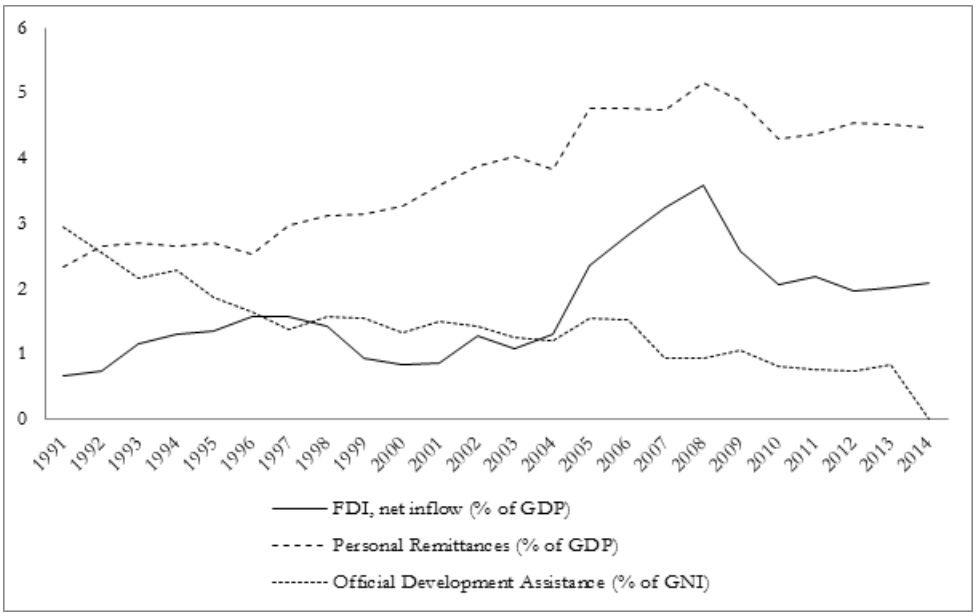

Figure 6: Financial flows as share of GDP 1990-2014 (World Bank, 2016a). *Lower Middle Income Countries.*

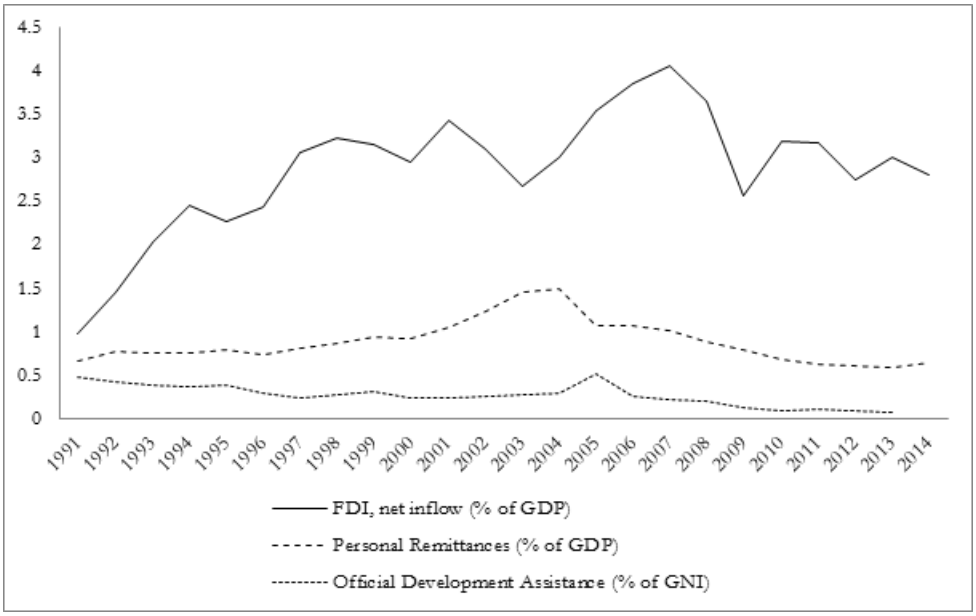

Figure 7: Financial flows as share of GDP 1990-2014 (World Bank, 2016a). *Upper Middle Income Countries.*

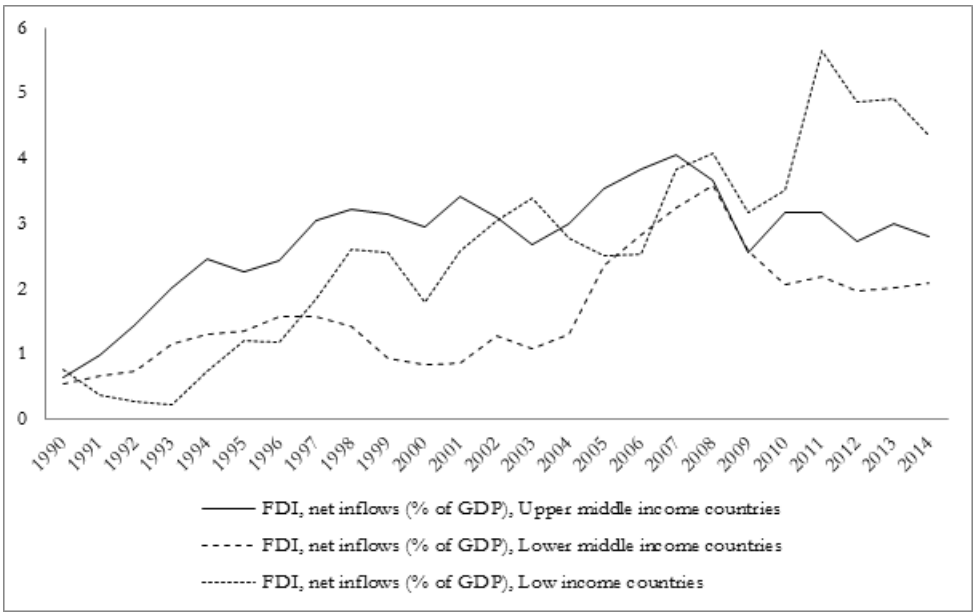

Figure 8: FDI inflow as a share of GDP 1990-2014 (World Bank, 2016a). Comparison between income groups.

Appendix II

Atlas Method Classification for calender year 2013 (World Bank, 2016b):

Income Group	Definition
Low Income	<= 1 045 GNI per capita (US$)
Lower Middle Income	1 046 to 4 125 GNI per capita (US$)
Upper Middle Income	4 126 to 12 745 GNI per capita (US$)
High Income	> 12 746 GNI per capita (US$)

List of Countries:

Nr	Country Name	Income Segment	WGI data	ICRG data
1	Albania	Upper Middle	Yes	Yes
2	Algeria	Upper Middle	Yes	Yes
3	Angola	Upper Middle	Yes	Yes
4	Antigua and Barbuda	High	Yes	-
5	Argentina	High	Yes	Yes
6	Armenia	Lower Middle	Yes	Yes
7	Azerbaijan	Upper Middle	Yes	Yes
8	Bahamas	High	Yes	Yes
9	Bahrain	High	Yes	Yes
10	Bangladesh	Low	Yes	Yes
11	Barbados	High	Yes	-
12	Bhutan	Lower Middle	Yes	-
13	Belarus	Upper Middle	Yes	Yes
14	Belize	Upper Middle	Yes	-
15	Benin	Low	Yes	-
16	Bolivia	Lower Middle	Yes	Yes
17	Bosnia and Herzegovina	Upper Middle	Yes	-
18	Botswana	Upper Middle	Yes	Yes
19	Brazil	Upper Middle	Yes	Yes
20	Brunei	High	Yes	Yes
21	Bulgaria	Upper Middle	Yes	Yes
22	Burkina Faso	Low	Yes	Yes
23	Cambodia	Low	Yes	-
24	Cameroon	Lower Middle	Yes	Yes
25	Chad	Low	Yes	-
26	Chile	High	Yes	Yes
27	China	Upper Middle	Yes	Yes
28	Colombia	Upper Middle	Yes	Yes
29	Comoros	Low	Yes	-
30	Congo	Lower Middle	Yes	Yes
31	Cote d'Ivoire	Lower Middle	Yes	Yes
32	Costa Rica	Upper Middle	Yes	Yes
33	Croatia	High	Yes	Yes
34	Czech Republic	High	Yes	Yes
35	Djibouti	Lower Middle	Yes	-
36	Dominica	Upper Middle	Yes	-
37	Dominican Republic	Upper Middle	Yes	Yes
38	Ecuador	Upper Middle	Yes	Yes
39	Egypt	Lower Middle	Yes	Yes
40	El Salvador	Lower Middle	Yes	Yes

41	Equatorial Guinea	Upper Middle	Yes	-
42	Eritrea	Low	Yes	-
43	Estonia	High	Yes	Yes
44	Fiji	Upper Middle	Yes	-
45	Gabon	Upper Middle	Yes	Yes
46	Gambia	Low	Yes	Yes
47	Georgia	Lower Middle	Yes	-
48	Ghana	Lower Middle	Yes	Yes
49	Grenada	Upper Middle	Yes	-
50	Guatemala	Lower Middle	Yes	Yes
51	Guinea	Low	Yes	Yes
52	Guinea-Bissau	Low	Yes	Yes
53	Guyana	Lower Middle	Yes	Yes
54	Haiti	Low	Yes	Yes
55	Honduras	Lower Middle	Yes	Yes
56	India	Lower Middle	Yes	Yes
57	Indonesia	Lower Middle	Yes	Yes
58	Iran	Upper Middle	Yes	Yes
59	Israel	High	Yes	Yes
60	Jamaica	Upper Middle	Yes	Yes
61	Kazakhstan	Upper Middle	Yes	Yes
62	Jordan	Upper Middle	Yes	Yes
63	Kenya	Lower Middle	Yes	Yes
64	Kuwait	High	Yes	Yes
65	Kyrgyzstan	Lower Middle	Yes	-
66	Laos	Lower Middle	Yes	-
67	Latvia	High	Yes	Yes
68	Lebanon	Upper Middle	Yes	Yes
69	Lesotho	Lower Middle	Yes	-
70	Libya	Upper Middle	Yes	Yes
71	Lithuania	High	Yes	Yes
72	Macedonia	Upper Middle	Yes	-
73	Madagascar	Low	Yes	Yes
74	Malawi	Low	Yes	Yes
75	Malaysia	Upper Middle	Yes	Yes
76	Maldives	Upper Middle	Yes	-
77	Mali	Low	Yes	Yes
78	Mauritania	Lower Middle	Yes	-
79	Mauritius	Upper Middle	Yes	-
80	Mexico	Upper Middle	Yes	Yes
81	Mongolia	Upper Middle	Yes	Yes
82	Moldova	Lower Middle	Yes	Yes
83	Morocco	Lower Middle	Yes	Yes
84	Mozambique	Low	Yes	Yes
85	Namibia	Upper Middle	Yes	Yes
86	Nepal	Low	Yes	-
87	Nicaragua	Lower Middle	Yes	Yes
88	Niger	Low	Yes	Yes
89	Nigeria	Low	Yes	Yes
90	Oman	High	Yes	Yes
91	Panama	Upper Middle	Yes	Yes
92	Paraguay	Upper Middle	Yes	Yes
93	Peru	Upper Middle	Yes	Yes
94	Philippines	Lower Middle	Yes	Yes

95	Poland	High	Yes	Yes
96	Qatar	High	Yes	Yes
97	Romania	Upper Middle	Yes	Yes
98	Russia	High	Yes	Yes
99	Rwanda	Low	Yes	-
100	Saudi Arabia	High	Yes	Yes
101	Samoa	Lower Middle	Yes	-
102	Senegal	Low	Yes	Yes
103	Seychelles	High	Yes	-
104	Sierra Leone	Low	Yes	Yes
105	Singapore	High	Yes	Yes
106	Slovakia	High	Yes	Yes
107	Slovenia	High	Yes	Yes
108	South Africa	Upper Middle	Yes	Yes
109	Sri Lanka	Lower Middle	Yes	Yes
110	Swaziland	Lower Middle	Yes	-
111	Tajikistan	Low	Yes	-
112	Tanzania	Low	Yes	Yes
113	Thailand	Upper Middle	Yes	Yes
114	Togo	Low	Yes	Yes
115	Trinidad and Tobago	High	Yes	Yes
116	Tunisia	Upper Middle	Yes	Yes
117	Turkey	Upper Middle	Yes	Yes
118	Turkmenistan	Upper Middle	Yes	-
119	Uganda	Low	Yes	Yes
120	Ukraine	Lower Middle	Yes	Yes
121	United Arab Emirates	High	Yes	Yes
122	Uruguay	High	Yes	Yes
123	Uzbekistan	Lower Middle	Yes	-
124	Venezuela	Upper Middle	Yes	Yes
125	Vietnam	Lower Middle	Yes	Yes
126	Zambia	Lower Middle	Yes	Yes
127	Zimbabwe	Low	Yes	Yes

Appendix III

Table 1: Pairwise correlations of the Institutional Quality aspects.

	AQI	QOG	VA	PS	GE	RQ	RL	CC
AQI	1.0000							
QOG	0.7627	1.0000						
VA	0.7778	0.3992	1.0000					
PS	0.7462	0.5061	0.4588	1.0000				
GE	0.9285	0.8122	0.6351	0.5754	1.0000			
RQ	0.8975	0.6838	0.6938	0.5124	0.8727	1.0000		
RL	0.9507	0.7976	0.6482	0.6747	0.9047	0.8401	1.0000	
CC	0.9099	0.7648	0.5903	0.6346	0.8711	0.7665	0.9001	1.0000

AQI = Average Institutional Quality (Average of the WGI aspects)
QOG = Quality of Government
VA = Voice and Accountability
PS = Political Stability
GE = Government Effectiveness
RQ = Regulatory Quality
RL = Rule of Law
CC = Control of Corruption

Table 2: Pairwise correlations of the control variables.

	AQI	QOG	MSE	GR	OT	MSY	INF	NR
AQI	1.0000							
QOG	0.7627	1.0000						
MSE	0.0054	0.1881	1.0000					
GR	-0.0701	-0.0025	0.0183	1.0000				
OT	0.2814	0.3604	-0.1670	0.1758	1.0000			
MSY	-0.0726	-0.0014	0.0355	0.0143	0.0202	1.0000		
INF	0.5728	0.5266	0.2722	-0954	0.2424	-0.0458	1.0000	
NR	-0.2819	-0.0929	0.1795	0.1400	0.1009	0.0676	-0.0983	1.0000

AQI = Average Institutional Quality (Average of the WGI aspects)
QOG = Quality of Government
MSE = ln(*Market Size*)
GR = Growth Rate
OT = Openness to Trade
MSY = Macroeconomic Stability
INF = ln(*Infrastructure*)
NR = Natural Resources

Appendix IV

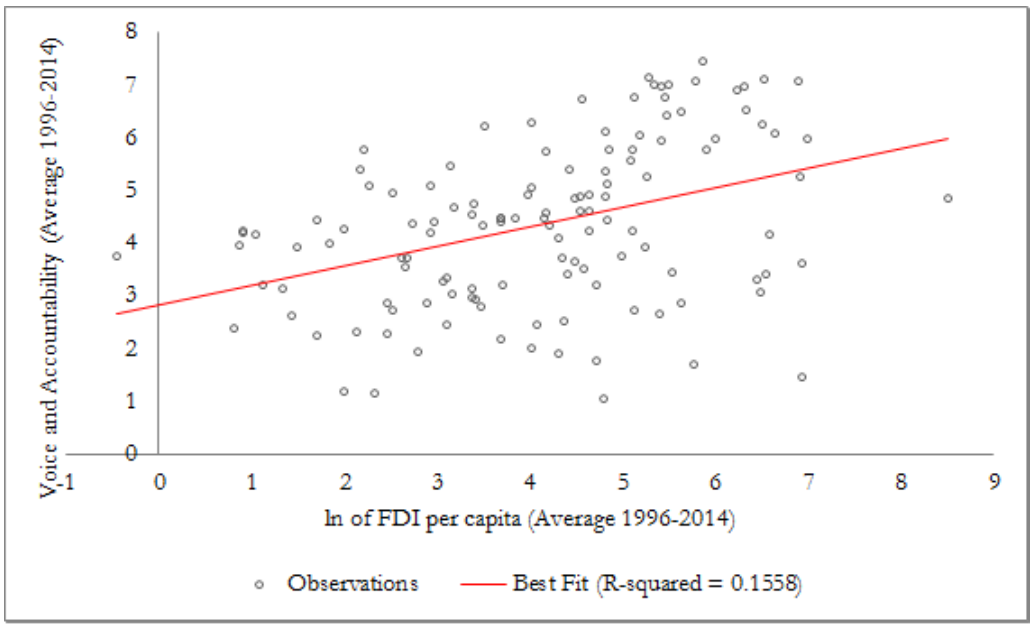

Figure 9: Average relationship between *Voice and Accountability* and *ln of FDI per capita* over the period 1996-2014. Correlation = 0.39.

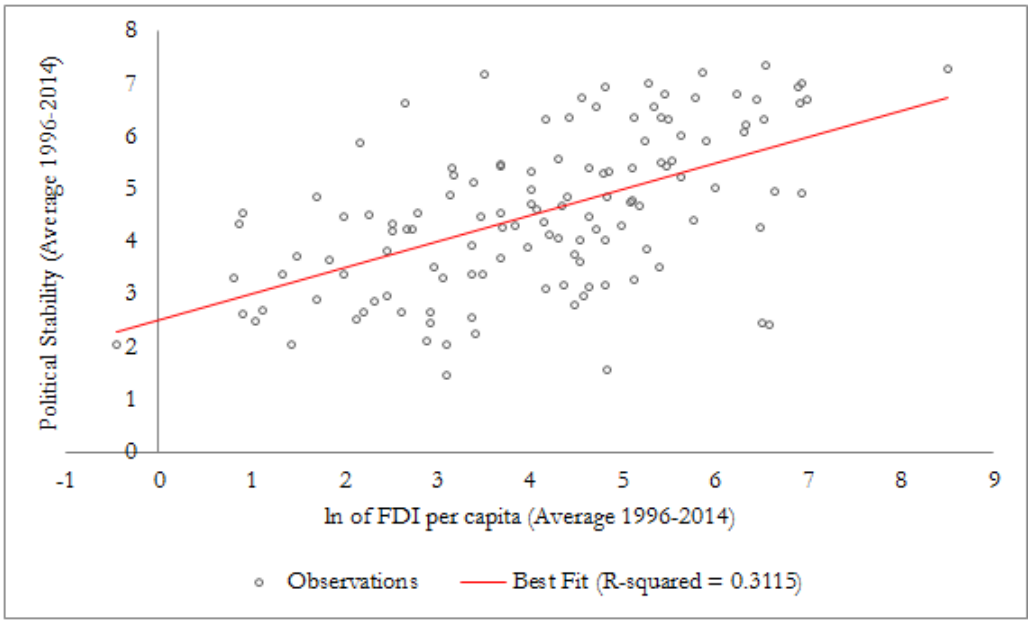

Figure 10: Average relationship between *Political Stability* and *ln of FDI per capita* over the period 1996-2014. Correlation = 0.56.

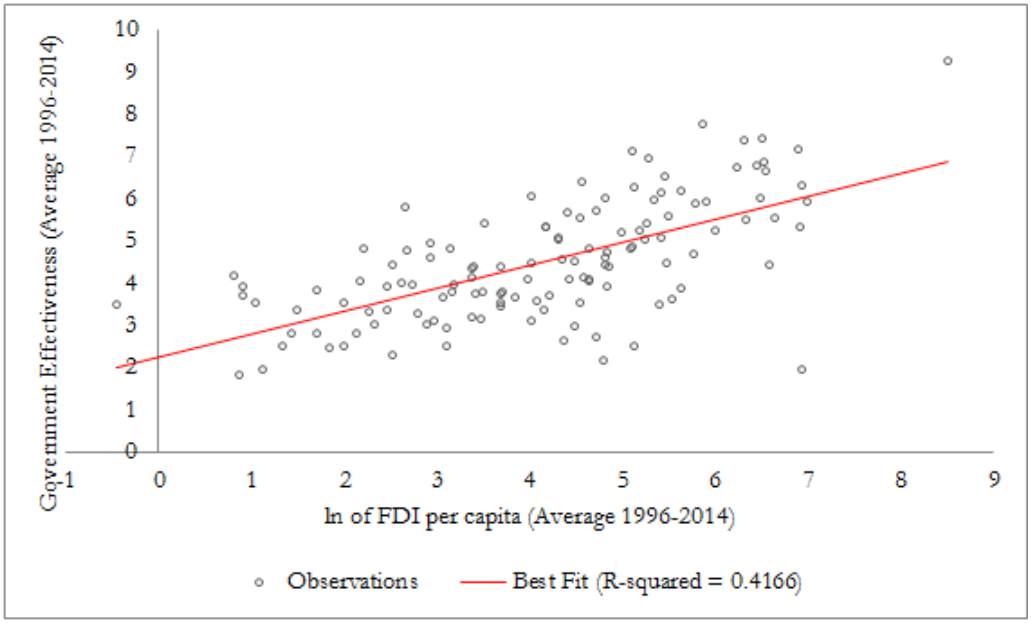

Figure 11: Average relationship between *Government Effectiveness* and *ln of FDI per capita* over the period 1996-2014. Correlation = 0.65.

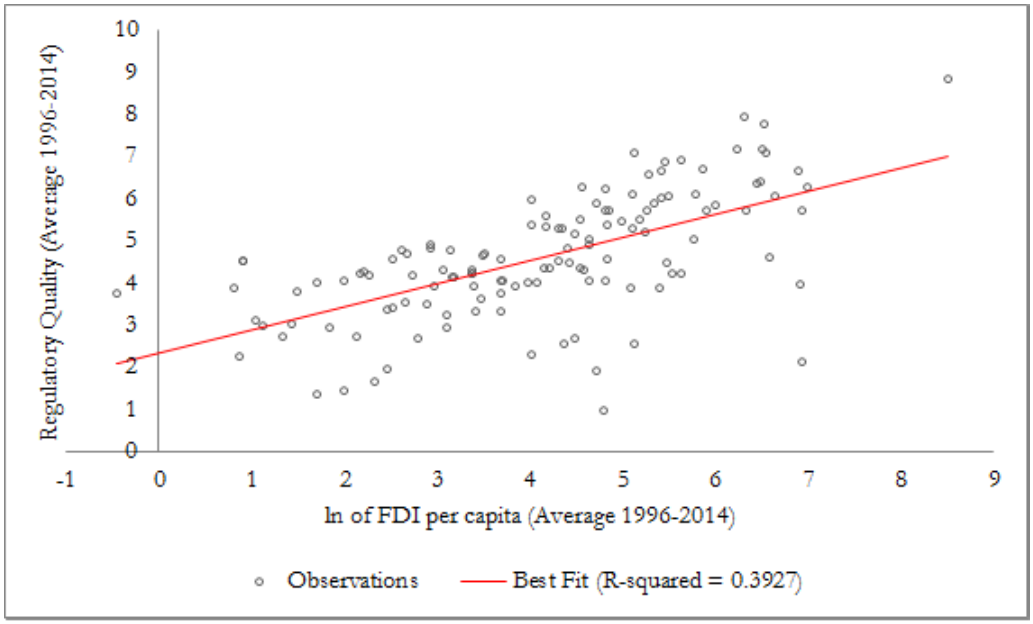

Figure 12: Average relationship between *Regulatory Quality* and *ln of FDI per capita* over the period 1996-2014. Correlation = 0.63.

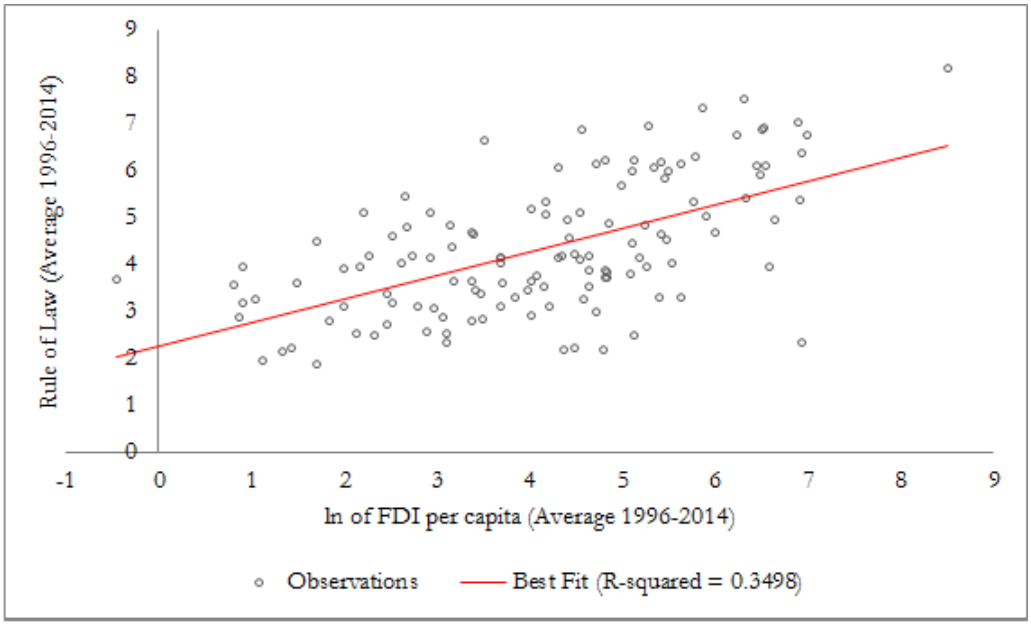

Figure 13: Average relationship between *Rule of Law* and *ln of FDI per capita* over the period 1996-2014. Correlation = 0.59.

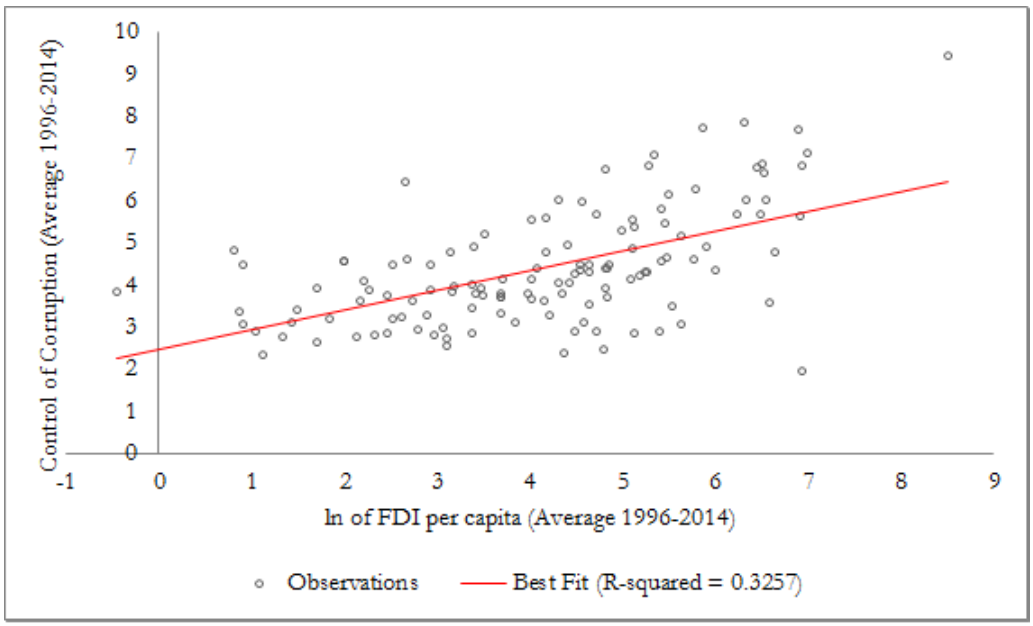

Figure 14: Average relationship between *Control of Corruption* and *ln of FDI per capita* over the period 1996-2014. Correlation = 0.57.

Appendix V

Table 5: Evaluation of lagged WGIs

Variables	Coefficients					
$\ln(FDI\ per\ capita)_t$	(1)	(2)	(3)	(4)	(5)	(6)
Voice and Accountability$_{t-1}$	0.145					
	(0.0945)					
Political Stability$_{t-1}$		0.0666				
		(0.0544)				
Government Effectiveness$_{t-1}$			0.147*			
			(0.0886)			
Regulatory Quality$_{t-1}$				0.206**		
				(0.0955)		
Rule of Law$_{t-1}$					0.214**	
					(0.102)	
Control of Corruption$_{t-1}$						0.108
						(0.0985)
$\ln(Market\ Size)_t$	1.258***	1.207**	1.184**	1.072**	1.113**	1.206**
	(0.474)	(0.476)	(0.486)	(0.493)	(0.488)	(0.484)
Growth Rate$_t$	0.0203**	0.0216**	0.0209**	0.0215**	0.0218**	0.0208**
	(0.0099)	(0.0097)	(0.0099)	(0.0101)	(0.0100)	(0.0099)
Openness to Trade$_t$	0.0059**	0.0062***	0.0063***	0.0062**	0.0060**	0.0061**
	(0.0024)	(0.0024)	(0.0024)	(0.0024)	(0.0023)	(0.0023)
Macroeconomic Stability$_t$	-0.0003	-0.0003	-0.0002	-0.00006	-0.0002	-0.0002
	(0.00035)	(0.00035)	(0.00036)	(0.00038)	(0.00036)	(0.00034)
$\ln(Infrastructure)_t$	0.138	0.130	0.129	0.127	0.128	0.132
	(0.114)	(0.112)	(0.113)	(0.111)	(0.111)	(0.113)
Natural Resources$_t$	0.0064	0.0058	0.0073	0.0067	0.0086	0.0070
	(0.0097)	(0.0094)	(0.0094)	(0.0093)	(0.0093)	(0.0095)
Constant	-28.36**	-26.80**	-26.63**	-24.25**	-25.21**	-26.98**
	(11.25)	(11.33)	(11.50)	(11.67)	(11.53)	(11.50)
Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Time Trend	No	No	No	No	No	No
Time Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Cluster Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1 416	1 416	1 416	1 416	1 416	1 416
R-Squared	0.450	0.448	0.449	0.452	0.452	0.448
Nr of Countries	114	114	114	114	114	114

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Appendix VI

Table 6: Descriptive Statistics of Institutional Quality for each income group.

Variables	Mean	Std. Dev.	Min	Max
Low Income				
Avg Institutional Quality	3.485	0.793	1.682	5.057
Quality of Government	3.772	1.068	1.389	6.574
Voice and Accountability	3.581	1.126	0.648	5.750
Political Stability	3.722	1.368	0.251	6.920
Government Effectiveness	3.249	0.829	0.938	5.149
Regulatory Quality	3.497	0.998	0.480	5.499
Rule of Law	3.340	0.930	0.856	5.327
Control of Corruption	3.520	0.837	1.368	6.703
Lower Middle Income				
Avg Institutional Quality	3.956	0.790	1.887	6.158
Quality of Government	4.436	1.024	2.222	6.944
Voice and Accountability	3.928	1.220	0.803	6.531
Political Stability	3.992	1.411	0.395	7.615
Government Effectiveness	4.040	0.843	2.321	6.555
Regulatory Quality	4.101	0.886	0.702	6.851
Rule of Law	3.825	1.018	1.585	7.167
Control of Corruption	3.851	0.886	2.222	7.550
Upper Middle Income				
Avg Institutional Quality	4.456	1.184	1.521	6.735
Quality of Government	4.740	1.011	1.944	8.750
Voice and Accountability	4.415	1.677	0.556	7.335
Political Stability	4.595	1.533	0.220	7.419
Government Effectiveness	4.560	1.258	1.556	7.495
Regulatory Quality	4.590	1.446	0.619	7.004
Rule of Law	4.289	1.260	1.221	7.113
Control of Corruption	4.289	1.240	1.327	7.499
High Income				
Avg Institutional Quality	6.063	1.012	3.273	8.185
Quality of Government	6.304	1.103	3.056	9.167
Voice and Accountability	5.482	1.670	1.276	7.946
Political Stability	6.004	1.335	1.754	7.799
Government Effectiveness	6.308	1.103	3.468	9.859
Regulatory Quality	6.326	1.227	2.842	9.495
Rule of Law	6.139	1.122	2.747	8.789
Control of Corruption	6.122	1.402	2.825	9.833

Appendix VII

Table 7: Robustness on *Low Income* countries.

Variables	Coefficients							
$\ln(FDI\ per\ capita)_t$	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Avg Institutional Quality$_t$	0.450*							
	(0.244)							
Quality of Government$_t$		0.463**						
		(0.203)						
Voice and Accountability$_t$			0.0522					
			(0.188)					
Political Stability$_t$				-0.0275				
				(0.133)				
Government Effectiveness$_t$					0.453**			
					(0.187)			
Regulatory Quality$_t$						0.488**		
						(0.180)		
Rule of Law$_t$							0.460**	
							(0.177)	
Control of Corruption$_t$								0.356**
								(0.159)
$\ln(Market\ Size)_t$	-1.316	-0.428	-1.172	-1.091	-0.680	-1.276	-1.015	-0.803
	(0.835)	(0.796)	(0.796)	(0.766)	(0.843)	(0.789)	(0.729)	(0.956)
Growth Rate$_t$	-0.0076	0.0061	-0.0038	-0.0059	-0.0005	-0.0050	-0.0047	-0.0023
	(0.0078)	(0.0140)	(0.0070)	(0.0069)	(0.0098)	(0.0088)	(0.0089)	(0.0090)
Openness to Trade$_t$	0.0307***	0.0308***	0.0306***	0.0312***	0.0303***	0.0286***	0.0314***	0.0304**
	(0.0101)	(0.0084)	(0.0100)	(0.0100)	(0.0105)	(0.0099)	(0.0092)	(0.0107)
Macroeconomic Stability$_t$	-0.0043	-0.0065	-0.0054	-0.0068	-0.0072	-0.0013	-0.0073	-0.0067
	(0.0083)	(0.0100)	(0.0079)	(0.0083)	(0.0083)	(0.0084)	(0.0072)	(0.0071)
$\ln(Infrastructure)_t$	0.171	0.330	0.155	0.139	0.069	0.118	0.129	0.093
	(0.161)	(0.259)	(0.159)	(0.157)	(0.136)	(0.165)	(0.156)	(0.165)
Natural Resources$_t$	0.0254	0.0418	0.0214	0.0225	0.0067	0.0261	0.0094	0.0103
	(0.0183)	(0.0311)	(0.0158)	(0.0151)	(0.0196)	(0.0167)	(0.0137)	(0.0187)
Constant	27.64	6.813	24.66	22.59	14.97	26.77	20.71	17.47
	(18.76)	(17.83)	(17.88)	(17.26)	(19.15)	(17.76)	(16.25)	(21.65)
Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time Trend	No	No	No	No	No	No	No	No
Time Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cluster Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	279	253	279	279	279	279	279	279
R-Squared	0.609	0.628	0.612	0.6146	0.596	0.618	0.615	0.596
Nr of Countries	21	16	21	21	21	21	21	21

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 8: Robustness on *Lower Middle Income* countries.

Variables	Coefficients							
$\ln(FDI\ per\ capita)_t$	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Avg Institutional Quality$_t$	0.112							
	(0.240)							
Quality of Government$_t$		0.213*						
		(0.123)						
Voice and Accountability$_t$			-0.0788					
			(0.186)					
Political Stability$_t$				0.0664				
				(0.0823)				
Government Effectiveness$_t$					0.0664			
					(0.142)			
Regulatory Quality$_t$						0.251		
						(0.186)		
Rule of Law$_t$							0.0677	
							(0.201)	
Control of Corruption$_t$								-0.109
								(0.192)
$\ln(Market\ Size)_t$	1.731***	1.756**	1.917***	1.762***	1.765***	1.779***	1.552**	1.878***
	(0.631)	(0.665)	(0.653)	(0.608)	(0.589)	(0.591)	(0.667)	(0.590)
Growth Rate$_t$	0.0170	0.0078	0.0171	0.0170	0.0162	0.0173	0.0198	0.0175
	(0.0136)	(0.0116)	(0.0131)	(0.0136)	(0.0136)	(0.0136)	(0.0134)	(0.0129)
Openness to Trade$_t$	0.0075	0.0016	0.0073	0.0076	0.0075	0.0075	0.0076	0.0075
	(0.0047)	(0.0054)	(0.0046)	(0.0047)	(0.0047)	(0.0046)	(0.0048)	(0.0046)
Macroeconomic Stability$_t$	-0.0037	-0.0106	-0.0041	-0.0042	-0.0033	-0.0038	-0.0030	-0.0041
	(0.0040)	(0.0066)	(0.0046)	(0.0042)	(0.0042)	(0.0039)	(0.0043)	(0.00434)
$\ln(Infrastructure)_t$	-0.060	-0.042	-0.058	-0.063	-0.058	-0.063	-0.084	-0.068
	(0.155)	(0.179)	(0.159)	(0.158)	(0.154)	(0.156)	(0.154)	(0.160)
Natural Resources$_t$	0.0061	-0.0124	0.0031	0.0055	0.0055	0.0055	0.0099	0.0042
	(0.0132)	(0.0241)	(0.0136)	(0.0132)	(0.0130)	(0.0129)	(0.0115)	(0.0132)
Constant	-39.80**	-41.39**	-43.28***	-40.34***	-40.42***	-40.73***	-36.17**	-42.49***
	(14.61)	(15.92)	(15.12)	(14.26)	(13.90)	(13.93)	(15.49)	(13.94)
Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time Trend	No	No	No	No	No	No	No	No
Time Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cluster Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	435	385	435	435	435	435	435	435
R-Squared	0.476	0.522	0.477	0.476	0.477	0.476	0.484	0.476
Nr of Countries	32	23	32	32	32	32	32	32

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 9: Robustness on *Upper Middle Income* countries.

Variables	Coefficients							
$\ln(FDI\ per\ capita)_t$	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Avg Institutional Quality$_t$	0.242							
	(0.222)							
Quality of Government$_t$		-0.0291						
		(0.165)						
Voice and Accountability$_t$			-0.0596					
			(0.136)					
Political Stability$_t$				0.0415				
				(0.0745)				
Government Effectiveness$_t$					0.0201			
					(0.147)			
Regulatory Quality$_t$						0.495***		
						(0.169)		
Rule of Law$_t$							0.0510	
							(0.206)	
Control of Corruption$_t$								0.113
								(0.183)
$\ln(Market\ Size)_t$	1.245*	3.290***	1.309*	1.373*	1.366*	1.350*	0.869	1.400*
	(0.709)	(0.699)	(0.687)	(0.720)	(0.726)	(0.697)	(0.740)	(0.700)
Growth Rate$_t$	0.0145	0.0104*	0.0147	0.0145	0.0150*	0.0143	0.0136	0.0150
	(0.0089)	(0.0053)	(0.0091)	(0.0091)	(0.0089)	(0.0091)	(0.0083)	(0.0092)
Openness to Trade$_t$	0.0047	0.0063*	0.0048*	0.0052	0.0054	0.0052	0.0038	0.00548*
	(0.0031)	(0.0031)	(0.0027)	(0.0032)	(0.0032)	(0.0031)	(0.0034)	(0.0032)
Macroeconomic Stability$_t$	-0.0034	-0.0007**	-0.0042	-0.0053	-0.0050	-0.0052	-0.0025	-0.0059
	(0.0066)	(0.0003)	(0.0062)	(0.0067)	(0.0066)	(0.0069)	(0.0066)	(0.0066)
$\ln(Infrastructure)_t$	0.441	0.288	0.463	0.442	0.451	0.441	0.371	0.447
	(0.363)	(0.437)	(0.350)	(0.355)	(0.347)	(0.358)	(0.342)	(0.339)
Natural Resources$_t$	0.0112	0.0213*	0.0113	0.0105	0.0094	0.0107	0.0122	0.0095
	(0.0146)	(0.0121)	(0.0144)	(0.0139)	(0.0147)	(0.0139)	(0.0145)	(0.0140)
Constant	-29.54	-80.24***	-30.50*	-31.62*	-31.57*	-31.20*	-21.47	-31.90*
	(17.55)	(17.52)	(16.95)	(17.48)	(17.58)	(17.10)	(17.93)	(17.06)
Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time Trend	No	No	No	No	No	No	No	No
Time Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cluster Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	499	467	499	499	499	499	499	499
R-Squared	0.479	0.530	0.477	0.476	0.476	0.476	0.505	0.476
Nr of Countries	38	30	38	38	38	38	38	38

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 10: Robustness on *High Income* countries.

Variables	Coefficients							
$\ln(FDI\ per\ capita)_t$	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Avg Institutional Quality$_t$	-0.171							
	(0.340)							
Quality of Government$_t$		0.233						
		(0.171)						
Voice and Accountability$_t$			0.0427					
			(0.273)					
Political Stability$_t$				0.0785				
				(0.134)				
Government Effectiveness$_t$					-0.00432			
					(0.198)			
Regulatory Quality$_t$						-0.275		
						(0.228)		
Rule of Law$_t$							0.0253	
							(0.117)	
Control of Corruption$_t$								-0.187
								(0.248)
$\ln(Market\ Size)_t$	-0.314	-0.0253	-0.328	-0.381	-0.391	-0.405	-0.0443	-0.356
	(0.797)	(0.787)	(0.756)	(0.808)	(0.755)	(0.817)	(0.794)	(0.802)
Growth Rate$_t$	0.0623***	0.0606***	0.0654***	0.0615***	0.0610***	0.0616***	0.0627***	0.0615***
	(0.0204)	(0.0183)	(0.0204)	(0.0206)	(0.0207)	(0.0204)	(0.0202)	(0.0205)
Openness to Trade$_t$	-0.0002	0.006	-0.0004	-0.0003	-0.0003	-0.0003	0.0003	-0.0004
	(0.0065)	(0.0077)	(0.0065)	(0.0064)	(0.0061)	(0.0064)	(0.00630	) (0.0062)
Macroeconomic Stability$_t$	0.0046	-0.0033	0.0044	0.0059	0.0072	0.0060	0.0048	0.0061
	(0.014)	(0.0096)	(0.0149)	(0.0141)	(0.0142)	(0.0145)	(0.0144)	(0.0146)
$\ln(Infrastructure)_t$	1.318*	1.235*	1.380**	1.381**	1.425**	1.395**	1.229*	1.400**
	(0.667)	(0.676)	(0.563)	(0.630)	(0.648)	(0.641)	(0.614)	(0.635)
Natural Resources$_t$	-0.0166	-0.0089	-0.0191	-0.0145	-0.0140	-0.0139	-0.0157	-0.0143
	(0.0156)	(0.0178)	(0.0137)	(0.0169)	(0.0169)	(0.0169)	(0.0168)	(0.0166)
Constant	9.426	-0.396	9.709	9.816	9.430	10.190	3.816	8.885
	(18.58)	(19.09)	(17.80)	(18.89)	(18.37)	(19.19)	(18.55)	(20.05)
Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time Trend	No	No	No	No	No	No	No	No
Time Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cluster Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	299	304	299	299	299	299	299	299
R-Squared	0.459	0.456	0.464	0.458	0.459	0.458	0.465	0.458
Nr of Countries	23	21	23	23	23	23	23	23

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1