ERASMUS SCHOOL OF ECONOMICS

Master Thesis

A Comparative Study on the Effects of Corruption on FDI

Master of Economics & Business, Economics of Management and Organization

MSc. Candidate, Svetlana Tokunova

Student number: 371868

Supervisor: Dr. Nalan Basturk

Co-reader: S. Pinar Ceyhan, MPhil

Abstract

One of the most vivid discussions during the last century has been the progress of countries in terms of economic growth and the policy changes required to foster economic growth. It is argued that Foreign Direct Investments (FDI) in a country has a positive effect on economic growth and hence FDI is used as one of the conventional determinants of the economic growth of countries. It is therefore important to assess factors affecting FDI, since countries can then base their economic policies to foster FDI and hence to foster economic growth. Particularly, there are some factors which may reduce investors' interest in one country, such as the level of corruption in the country. This study analyzes the relation between corruption and FDI based on the data in a comparative setting, highlighting the differences between a set of developed and developing countries in this context. The included developing countries are Brazil, Russia, India and China, also known as the BRIC countries. The included developed countries are The Netherlands, the USA, the United Kingdom and Japan. This thesis concerns two research topics. The first topic is the effect of corruption, measured by Corruption Perception Index (CPI), on the amount of FDI. The second topic is the possibly different effects of CPI index on developing and developed countries. The two research topics are analyzed using linear regression models and scenario analyses on the effects of corruption and other variables on FDI. The estimation results suggest that corruption does have an effect on FDI. This effect, however, is different between developing and developed countries.

Key words: FDI, corruption, Corruption Perception Index, BRIC countries

Contents

1. Introduction

FDI is a conventional measure to assess the level of direct investments in a country by foreign investors and is also used to measure the attractiveness of a country's economy for potential investors. The higher is the FDI index for a certain country, the more attractive this country is for foreign investments. Manual for the Production of Statistics on the Information Economy issued by United Nations Conference on Trade and Development of 2007 (UNCTAD Manual) determines FDI as 'an investment made by a resident of one economy in another economy, and it is of a long-term nature'. The UNCTAD Manual includes in the FDI index the investments into industries, companies, and businesses which would generate profit in the long-term. Foreign investments can be realized either by buying a company in the target country or by expanding operations of an existing business in that country.

The advantage of FDI for the receiver country is the following: when resources and domestic investments are limited, the economies develop faster by attracting foreign direct investments. Thus, there is a direct positive association between FDI and economic growth (Lipsey's, 2002). At the same time, advantages for foreign investors are: new market, new resources, new knowledge (Nachum and Zaheer, 2005). However, FDI depends on a number of factors in a country, such as economic growth, labor migration, size of the market, growth of population, gross domestic product (GDP) level, balance of trade, interest rate, exchange rate, national debt, consumer spending, inflation level and unemployment. Besides these commonly addressed factors, corruption levels in the receiving country are also considered as a determinant of FDI.

This thesis concentrates on one of the largely debated factors affecting FDI, the corruption in a country. The effects of corruption on FDI have been largely explored in the literature and different relationships have been indicated. For example, Wei (2000) found a negative relationship between FDI and corruption, while the study of Hines (1995) disclosed a negative effect of corruption on FDI. A non-significant effect of corruption on FDI was found by Freckleton et al. (2011).

Besides the contradicting empirical evidence on the effects of corruption on FDI, a further question of interest is whether countries have similar structures in terms of the effects of corruption on FDI. This study estimates the connection between corruption and FDI based on

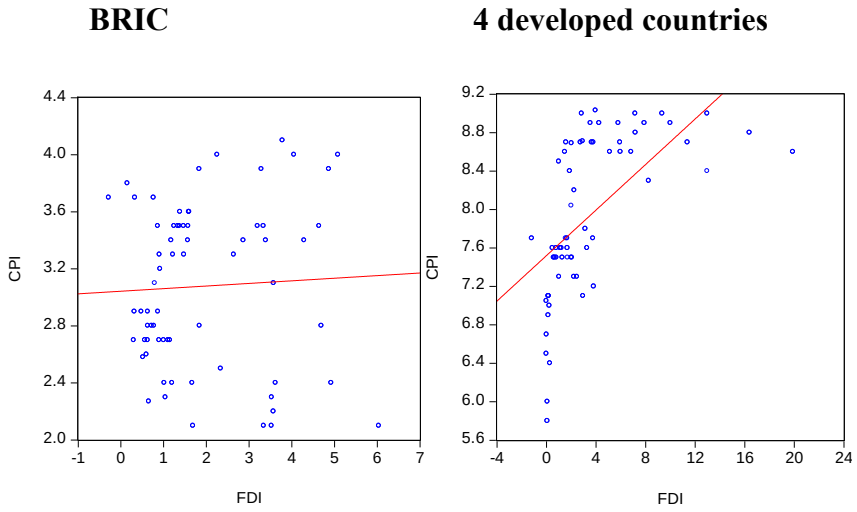
the data in a comparative setting, highlighting the differences between a set of developed and developing countries. The included developing countries are Brazil, Russia, India and China, also known as the BRIC countries. The included developed countries are The Netherlands, the USA, the United Kingdom and Japan. The developing countries in this thesis are limited to the BRIC countries since these countries have several common characteristics: relatively large population, large consumer market, low level of economic freedom[1], high level of corruption. Moreover, despite all their potential, the BRIC countries are typically well-performing developing countries and are on the way to become developed economies. It is also common to analyze the BRIC countries' growth gently in the literature (Hult,2009; Ranjan & Agrawal, 2011). The developed countries were also choosed by several common characteristics such as degree of economic development, GDP, per capita income, low level of corruption, general standard of living. Also, I choosed four developed countries to make the analysis more strict and comparable. Thus, I analyzed four developing countries versus four developed countries.

This thesis mentions the experience of developed countries, which have stable and balanced economies and aims to pinpoint policy adjustments that the BRIC countries can benefit from, in terms of increasing FDI levels. In order to balance the amount of information from the developing and developed countries in the data, four developed countries and four developing countries (the BRIC countries) are chosen for the analysis, without further criteria for sample selection2. Table 1 in Appendix A gives the CPI rankings of the included countries, provided by Transparency International.

An important decision regarding the abovementioned analysis is to measure corruption. In this thesis, the Corruption Perception Index[3] (CPI) is used as a corruption indicator. Specifically, the effect of this index on FDI will be used to identify the corruption effects on FDI in developing and developed countries in a cross-sectional and time series setting. The span of the time series in this thesis is determined by data availability.

[1] Index of economic freedom is set up by Wall Street Journal and Heritage Foundation.
[2] World Bank classifies countries as developed and developing, by looking at their income level, precisely on Gross National Income (GNI) per capita.
[3] CPI is taken as a proxy, in order to rank levels of corruption within the countries.

Figure 1: Relation between annual inward FDI stocks per capita and CPI during the period from 1995 to 2011



Source: Authors' illustration of data from The World Bank indicators and UNCTAD indicators.

The idea of using CPI as a determinant of FDI is motivated in two ways. First, CPI is constructed as a joint measure of different corruption channels and is recognized in terms of validity and reliability (Lancaster & Montinola, 2001). CPI introduces a composite index rate from 0 to 10 and provides a range of levels for the level of corruption in countries' economies. Second, as shown in Figure 1, there is a clear relationship between CPI and FDI for the countries included in this analysis[4]. More specifically, there is a positive relation between the inflows of FDI and CPI in both the BRIC countries and developed countries, although the relationship between CPI and FDI seems to be stronger for the developed countries compared to the BRIC countries. It is interesting to analyze possible differences in the CPI and FDI relationship between developed countries and the BRIC countries.

Based on this simple analysis of the FDI and CPI levels, this study precedes the analysis with the idea that CPI is indeed a driving force for FDI in these countries. Hence a country may find it beneficial to adopt policies to reduce corruption in order to attract foreign direct investment, since foreign investments will boost the economic development of the country rapidly. The remainder of this thesis is as follows: Section 2 provides a review of the existing

[4] Note that Figure 1 only illustrates the possible FDI-CPI relationship, without taking other factors into account.

literature which studies the impact of CPI on FDI in different countries. Section 3 presents the description of the data. Section 4 discusses the applied methodology: a linear regression model for FDI, application of this model to each country in the dataset, and a panel data model which highlights the differences and similarities between the developed countries and the BRIC countries. Section 5 presents the results and the discussion on policy implications. Section 6 provides Robustness checks. Section 7 provides a conclusion of this thesis and states areas of further research.

2. Literature Review

This section reviews some theoretical and empirical studies on the relationship between corruption and FDI. The theoretical studies reviewed in this section provide different approaches and definitions of corruption. The empirical studies, on the other hand, analyze the effect of corruption or, specifically CPI, on FDI. There is a large theoretical and empirical literature on the corruption effects on FDI. This literature review is presented in two parts: the first part describes the definition of corruption; the second part includes the review of previous studies about the relation between corruption and FDI.

2.1 Definition of Corruption

One unique aspect of the econometric literature on the subject of corruption is the focus on developing and/or developed countries. Despite this generality of the included countries, a study clearly indicating differences between developing and developed countries does not exist in the literature.

Besides the differences in econometric approaches, the theoretical literature on this relationship provides different definitions of corruption. The first group including Friedrich (1972) and Simon & Eitzen (1990) define corruption as a deviant behavior in which the primary aim is personal gain. The second view on corruption was presented in the studies of Abueva (1966), Bayley (1966), Leff (1964) and Leyes (1965). They show that theoretically corruption has a positive effect on integration, development and modernization of societies in the third world countries. Rose-Ackerman (1978), as a representative of the second group states that corruption is a form of social exchange and corruption payments are a part of

transaction costs. She also investigates the interrelation between public power and private gain.

This study is based on the definition of corruption provided by Macrae's (1982) who is a representative of the third group. He states that corruption is a private exchange between two parties -the 'demander' and the 'supplier'-, it has an influence on the allocation of the resources either immediately or in the future and involves the use of the abuse of public or collective responsibility for private ends.

According to the United States Federal Law named Foreign Corrupt Practices Act (FCPA) - (1977), corruption is defined as the 'illegal payments to foreign official representatives in order to obtain permission to create or retain business'. This FCPA definition applies to companies not only in the U.S., but also in case of U.S. companies all over the world. The fundamental requirements of FCPA can be divided into two groups: anti-corruption reporting and financial reporting. These kinds of reports prevent illegal benefits from private sector to public officials in order to reach personal gain.

2.2 Corruption Impact on FDI

Going further to the fundamental questions regarding corruption's impact on FDI is whether corruption is harmful or beneficial to a country. Different effects of CPI on FDI can be explained and supported by results in existing literature. According to Campos et al (2010), corruption can have both positive and negative effects on FDI. Other studies find negative (Hines, 1995; Al-Sadi, 2009; Egger and Winner, 2006; Habib & Zurawicki, 2002) or positive (Leff, 1964; Al-Sadi, 2009; Bardhan, 1997) links between CPI and FDI. The most influential empirical study about the interrelations between corruption and investments is presented is Mauro (1995).

Mauro (1995) investigates how corruption and other 55 factors suggested by Business International influences the economic growth of 68 countries chosen by Business International. The analysis quantifies the effect of such influence based on the survey, where respondents rated the risk factors including corruption on the scale of 1 to 10. Mauro (1995) identifies that corruption slows down the economic growth of a country and has an adverse effect on the investment level.

Freckleton et al. (2011) examine the association between FDI, economic growth of a country and corruption in developing and developed countries covering the period of 1998-2008. They suggest that there is a significant effect of corruption on FDI in the short and long runs. Moreover, they state that corruption is now recognized as a policy variable that affects almost all aspects of social and economic life, especially in developing countries. Egger and Winner (2006) investigate the association between FDI and corruption, using a panel data model in a sample of 59 countries with OECD and non-OECD[5] economies covering the period of 1983-1999. These authors conclude that corruption has a negative effect on FDI for any of the countries analyzed. That conclusion highlights that effect of corruption on the amount of FDI is outweighed and should be taken into account in both OECD and non-OECD countries. Another study which discloses a negative effect of corruption on FDI is Hines (1995). This study finds that after the year 1977 U.S. investors preferred to invest in less corrupted countries. Hines considers this result to be driven by the introduction of the Foreign Corrupt Practices Act (FCPA) in the United States. Al-Sadi (2009) discloses that additional factors such as institutional quality of a country may determine the effect of corruption on FDI using a panel data fixed effects model for 117 countries over the period of 1984-2004. He found that corruption scared away foreign investors that confirmed a negative impact of corruption on FDI. Habib & Zurawicki (2002) analyzes the impact of corruption on FDI in 89 countries. Using linear regression models, they found positive and significant effects of the log of population, log GDP/capita and economic ties on FDI level. However, the effect of corruption on FDI has a negative impact and foreign usually avoid to invest in countries with high level of corruption as they are afraid of operational inefficiencies.

Leff (1964) also provides another example of how corruption can be considered as a factor fostering FDI. The article states that bribers will invest in a more efficient way due to the fact that they obtain information or access to certain types of investments. Through this information, the investment becomes less risky and therefore corruption acts as a hedge. The empirical analysis in this thesis is hence motivated by the existing economic theories, suggesting a positive effect of corruption on FDI and introducing corruption as a policy variable using which government policies can foster FDI.

[5] OECD countries: Organization for Economic Co-operation and Development; is an economic organization of 31countries, mainly high income countries. See for the countries the website: http://www.oecd.org/general/listofoecdmembercountries-ratificationoftheconventionontheoecd.htm

It should be pointed out that corruption is not the only variable that possibly affects FDI inflows. There is a vast literature on the determinants of FDI. In this section, the most relevant ones of these studies are mentioned. For example, the positive effect of economic growth on the amount of FDI inflows was founded by Borensztein (1998) and Ram and Zhang (2002). Billington (1999) considers labor as another important determinant which affects FDI. He used countries unemployment rate[6] as a proxy for labor. This research shows that unemployment positively affects the resource-seeking FDI, meaning that the higher the workers value their job the more likely they would accept lower wages. Continuing the impact of labor on FDI, Javorcik et al. (2011) indicates a positive relationship between labor migration and FDI level by investigating the presence of the migrants in the USA and the USA FDI in migrants' countries of origin.

Despite this large literature on the determinants of FDI, and the existing studies on the corruption effects on FDI, it should be pointed out that most of the literature focuses solely on an equal effect of corruption on FDI for all included countries. This effect is not allowed to change between countries for the analyzed countries.

This thesis contributes to the existing literature on the relationship between CPI and FDI on the example of developing and developed countries during the period between 1995 and 2011. The focus of the analysis is to differentiate corruption effects in developing and developed countries, allowing the corruption effect to be different between those countries. The effects of other explanatory variables on FDI are also accounted for in the empirical analysis. These variables include GDP levels, unemployment rates, population and country's rank according to the World Bank rankings.

According to the data published in 2003 by UNCTAD, FDI inflows to developing countries increased from U.S.$ 24b in 1990 to US$ 178b in 2000. Moreover, according to the data of World Bank (2004), China attracts 39% of the total FDI to the developing countries. These facts contradict to our expectations of negative effect of high level of corruption on FDI inflows in the host country. As it can be found in Appendix A, Table 1, the BRIC countries have very high level of corruption and are on lowest positions in the rank of countries within CPI level. Thus, high inflows and high attractiveness of developing countries is quite surprising. However, this paper tries to 1) analyze whether CPI is a leading determinant of

[6] Unemployment data was taken from International Labor Organization (ILO,2001).

FDI in analyzed countries; 2) to analyze the possibility of different effects of CPI on FDI in developing and developed countries.

3. A Preliminary Inspection of the Data

This section introduces the data used for the empirical analysis of corruption effects on FDI, and summarizes the data properties.

Dependent Variable

Foreign direct investment (FDI), net inflows, as a percentage of GDP, is the main variable of interest in this study. Data on this variable is obtained from the World Bank. According to the World Bank, FDI is defined as follows: "net inflows of investment to acquire a lasting management interest in an enterprise operating in an economy". This definition implies that foreign investors have reasons to invest money in some enterprises. At the same time, additional investments are beneficial for businesses. Moreover, FDI includes investments in terms of equity capital, reinvested earnings and intra-company loans.

This paper is mainly interested in the possibility of fostering FDI through policies decreasing corruption. This focus is chosen since FDI is conventionally defined as a key element in international economic integration and as an indicator of countries' economic development level. Broadly speaking, FDI encourages development of new technologies and know-how products in order to attract new investments and create long-term relationship.

Main Explanatory Variable

The main explanatory variable in this study is CPI. CPI is used as a proxy for corruption, which focuses on corruption in the public sector and defines corruption as the abuse of public office for private gain. CPI is a composed index developed in Lambsdorf (1995) and determined for 52 countries on the annual basis by Transparency International, a global non-governmental organization that aims to monitor and publicize the rank of corruption within governance and companies all over the world. The CPI score relates to the perceptions of the degree of corruption as seen by business people, risk analysts and the general public and ranges between 10 (highly clean) and 0 (highly corrupt).

For this study, CPI was obtained from the Transparency International web-site, which publishes CPI index per country every year in separate files. The Transparency International do not compare results per years. Therefore, the combined data is a manually constructed data combining CPI index ranks per country within the last sixteen years with the data for other variables such as GDP growth, population growth, unemployment rate and net inflows of FDI.

The empirical part of this study is based on a panel data, which includes annual time-series data for the period between 1995 and 2011, and cross-sectional observations from the BRIC countries and four developed countries, precisely the USA, the United Kingdom, Japan and The Netherlands.

Other Explanatory Variables

The rest of the explanatory variables, namely GDP growth, population growth and unemployment rate, were collected from catalog sources of World Development Indicators.

GDP is an important macroeconomic variable which is used to indicate economic growth and standards of living in a country. Using GDP as one of the variables which can affect the amount of FDI is therefore intuitive. In other words, countries with high standards of living, as well as with high rank of GDP (high price of final goods and services produced in one year in a country) are expected to attract foreign investors for making further profits. This can be proved by GDP components (Patterson & Heravi, 1991), which include consumption, investment, government spending and net export.

Unemployment rate refers to the amount of labor force that does not work but is seeking for employment. As it was stated in the literature review part, unemployment can be a positive index for FDI (Habib & Zurawacki, 2002). Definitions of labor force and unemployment differ by country.

Population growth is the rate of growth of population, which is calculated as the percentage change in a country's population between the previous year and the current year. Population growth potential has an effect on FDI (Li, 2004) since an increase in population may increase the demand for different products in the country or a decrease in production costs via reduced wages. Thus, foreign investors may have an interest to invest in a country with a high rate of population.

These control variables have been chosen to support our theoretical analysis above and to reduce the omitted variable bias. The list of control variables is used in several studies that previously analyzed FDI levels in countries and were described in the literature review section.

Table 1: Descriptive Statistics of the Dependent and Control Variables in the BRIC countries Analysis

	FDI	CPI	GDP	UR	POP
mean	1.922552	3.078358	5.884622	7.263016	0.830607
median	1.378752	3.1	6.388094	7.597	0.937418
St. Dev.	1.49444	0.571255	4.221647	2.798915	0.724256
min	-0.28069	2.1	-7.82089	2.9	-0.51994
max	6.04176	4.1	14.2	13	1.895836

Table 2: Descriptive Statistics of the Dependent and Control Variables in Developed Countries Analysis

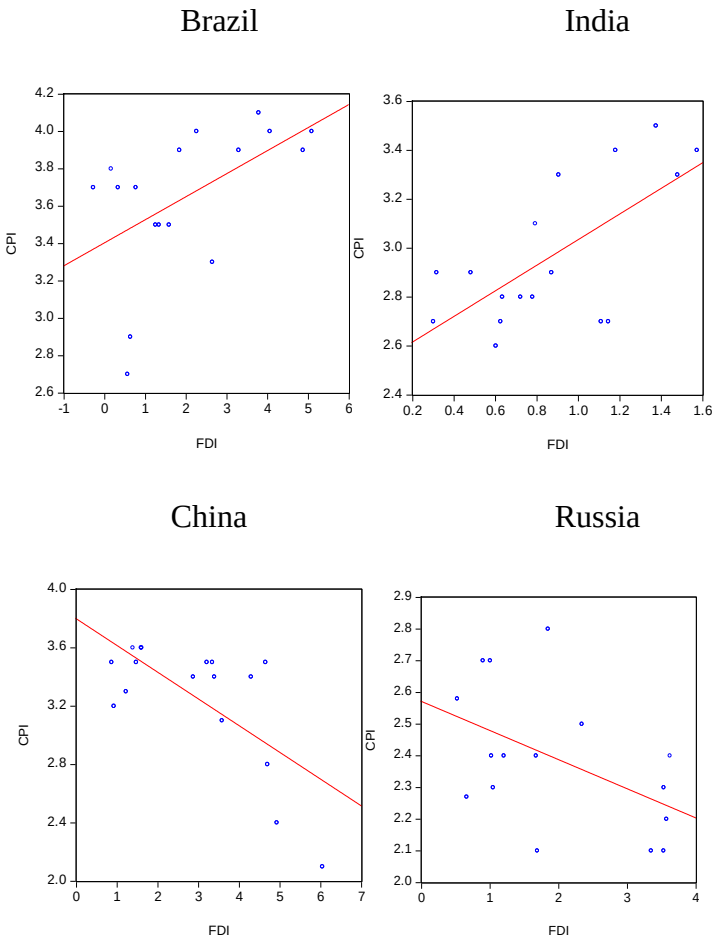
	FDI	CPI	GDP	UR	POP
mean	3.71415	7.95345	1.93849	5.25882	0.52109
median	2.23478	7.75	2.39682	4.95	0.48287
St. Dev.	4.202	0.82401	2.16172	1.61173	0.34822
min	-1.1906	5.8	-5.527	2.5	-0.1145
max	19.8847	9.03	4.8689	9.7	1.20396

Source: Authors' illustration of data from The World Bank indicators and Transparency International Corruption Perception Index.

Simple illustration of the relation between FDI and CPI, for all countries.

For a first inspection of the relationship between FDI and CPI, the scatter plots of the CPI and FDI for all 8 countries are considered separately. These scatters provide a rough indication of importance of CPI rank on FDI inflows of the chosen countries.

Figure 2: Relationship between annual inward FDI stocks per capita and CPI during the period from 1995 to 2011



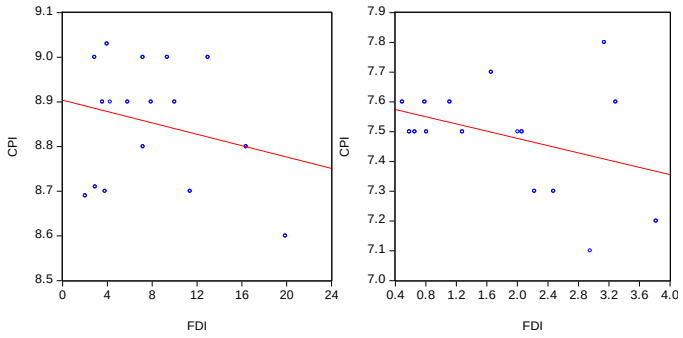
Source: Authors' illustration of data found in The World Bank indicators and UNCTAD indicators.

The first two plots indicate that there is a positive relationship between CPI and FDI net inflows (as a percentage of GDP) for Brazil and India. However, there is a large difference in the FDI and CPI relationship for China and Russia, signaling a negative relationship between CPI and FDI net inflows.

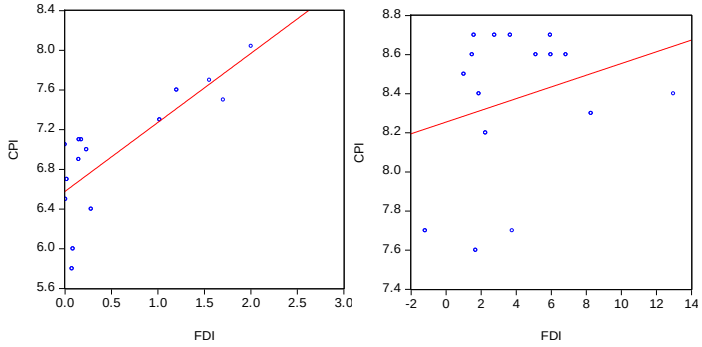
These differences can be explained by the fact that China attracts large investment inflows, despite their high level of corruption (Habib & Zurawicki, 2002). It is also possible that other factors affecting FDI are very different for China and Russia compared to Brazil and India. Hence a more detailed analysis is required for a proper analysis of the CPI effects on FDI for these countries.

Figure 3: Relationship between annual inward FDI stocks per capita and the CPI during the period from 1995 to 2011

The Netherlands **USA**



Japan **UK**



Source: Authors' illustration of data from The World Bank indicators and UNCTAD indicators.

Similar results can be seen for the CPI and FDI relationship for the developed countries, shown in Figure 4. The Netherlands and the USA demonstrate a positive relation between CPI and FDI net inflows (as a percentage of GDP). In contrast, Japan and the United Kingdom show negative relations between CPI and FDI net inflows (as a percentage of GDP).

4. Methodology

This section explains the empirical methodology that is used in this paper in detail.

One of the main contributions of this study to the literature is the distinction between developing and developed countries in terms of the corruption effect on FDI. I introduce a dummy variable in the analysis in order to make this distinction explicit. Based on this model, I test the hypothesis that corruption (CPI) has an effect on the attractiveness of FDI and test whether this effect is positive or negative. In a further model, which allows multiple effects of corruption, this dummy variable is also estimated in order to find the different effects of CPI on FDI in developing and developed countries.

The econometric model follows from previous studies (Habib & Zurawicki, 2001; Al-Sadi, 2009) that consider a linear model for explaining FDI levels. Several data factors need to be accounted for in this study. First, using such a linear model will be considered only after checking whether the dependent and explanatory variables are stationary. Second, high levels of correlation between the explanatory variables may be problematic particularly for small samples as in the case of this data. Hence, I also check whether the explanatory variables have high levels of correlation. In a case when correlation between explanatory variables is high it may be the best decision to remove some of the variables which represent the similar information about FDI. Finally, a standard linear regression model implicitly assumes a continuous dependent variable. Note that the last point is not a concern as the FDI variable, defined as a percentage of GDP, is a continuous variable.

There are several other properties which have to be taken into account when analyzing the data. One such example is the way to define the differences between developing and developed countries. These details are discussed below. The main plan of this thesis is to consider the most straightforward linear regression model, and then to refine the model according to the obtained results.

Under the straightforward model I examine the countries separately and analyze the effect of corruption on FDI in each country in order to find out for which countries the effect of corruption on FDI was higher or lower.

This model does not assume any relation between countries in terms of their FDI structures and is based on the literature documenting clear differences between countries in FDI levels.

Analyzing the countries separately is also motivated by the documented differences in the FDI trends of the included countries. According to the report of The United Nations on global investments, published for the first half of 2012, developing countries are more attractive to foreign investors than developed countries. Precisely, China becomes the biggest recipient of FDI inflows, especially in automobile production. However, the amount of FDI in Russian Federation dropped down by 7 percent at the beginning of 2012.

One of the main issues in the empirical analysis of this study, and studies analyzing annual FDI levels in countries in general, is the limited number of data points available for each country. The information from several countries can be used together if one assumes a similar structure of FDI for different countries. Following the issue of limited data availability, the second step of the analysis is to consider these countries' data jointly, precisely four developing and four developed countries and to assess whether the same FDI model can be used for both groups of countries. In addition, including a dummy variable for developing countries in the model, and taking all eight countries together in a sample, I will check whether mean FDI levels are different between developing and developed countries. Finally, including an interaction effect, formed by multiplying the dummy variable and CPI, I will check whether the effect of corruption is different between these countries.

The general model structure used is as follows:

$$Y_{it} = \beta_1 + \beta_n X_{it} + \varepsilon_{it}^{(1)}$$

where Y_{it} represents FDI net inflows (as a percentage of GDP).

I use CPI as a proxy for corruption. X_{it} is a vector of country level controls which include GDP growth, population growth and unemployment rate. In our second regression I add an additional variable 'developed':

$$Y_{it} = \beta_1 + \beta_n X_{it} + \beta_{n+1} developed + \varepsilon_{it} \quad \textbf{(2)}$$

In the third regression I add developed*CPI effect:

$$Y_{it} = \beta_1 + \beta_n X_{it} + \beta_{n+2} developed \times CPI + \varepsilon_{it} \quad \textbf{(3)}$$

In the fourth regression I combine regressions (2) and (3):

$$Y_{it} = \beta_1 + \beta_n X_{it} + \beta_{n+1} developed + \beta_{n+2} developed \times CPI + \varepsilon_{it} \quad \textbf{(4)}$$

By estimating (3) and (4), I first want to test if CPI effect differs according to the level of countries' economies measured by differentiating the developing and developed countries.

One important step in the methodology part is to control the variables for stationarity by using unit roots test. If the variables in the regression model are not stationary, then it can be proved that the standard assumptions for the analysis will not be valid. Specifically, estimating a model with no stationary dependent or independent variables may lead to a spurious regression and the obtained parameter estimates or the significance tests may be invalid. The results for this testing can be found in Appendix A, Table 2. According to this table, none of the variables used in the analysis, FDI as a percentage of GDP, CPI, GDP growth and population growth, are found to have unit roots for any of the included countries at the 1% significance level. Therefore, stationary assumption seems to be valid for these constructed variables.

5. Results

In this section I present the results of 6 different model estimations and report the estimated impact of CPI level on FDI growth according to different models. Moreover, the subject of interest is whether CPI levels exert different effect on FDI in developing and developed countries. The results of these analyses will be then compared to prior studies on the determinants of FDI. Furthermore, the analysis may shed the light on the required policy adjustments for improving the economy and investment climate in developing countries.

As outlined in section 4, I first consider single country analysis for each country in the dataset and then consider the joint country analysis. Table 3 and Table 4 below report the obtained coefficients, standard errors and adjusted R^2 from the equations described in the previous section.

Table 3: results of single country analysis
Dependent variable: FDI inflows (% GDP) for the period 1995-2011

	Reg.I							
	USA	**GRB**	**JPN**	**NLD**	**BRA**	**RUS**	**IND**	**CHN**
constant	14.75 (19.27)	15.04 (40.38)	-3.89* (1.69)	249.73* (81.82)	-12.35* (3.86)	9.10* (2.75)	-11.16 (6.13)	-2.42 (5.42)
CPI	-1.73 (2.38)	-1.32 (2.38)	0.78* (0.20)	-25.70* (9.13)	1.94 (0.94)	-1.53 (1.07)	1.79* (0.67)	-0.34 (0.64)
GDP	-0.09 (0.33)	1.05 (0.56)	-0.08 (0.06)	0.55 (0.50)	0.14 (0.15)	-0.01 (0.04)	-0.08 (0.05)	-0.23* (0.11)
POP	0.02 (0.42)	-0.95 (0.84)	-1.15 (0.95)	-3.53 (0.98)	3.90* (1.24)	-0.36 (0.10)	4.65 (2.48)	7.92* (2.18)
UR	0.14 (2.80)	7.23 (6.59)	-0.17 (0.18)	-0.59* (6.47)	0.24 (0.15)	1.26* (0.89)	0.04 (0.10)	0.86 (0.68)
R-squared	0.17	0.48	0.74	0.74	0.64	0.75	0.72	0.92
F	0.56	2.51	7.17	3.65	5.34	8.16	3.34	34.38
Prob	0.695	0.102	0.005	0.003	0.010	0.002	0.109	0.000
d.f.	13	13	11	13	13	13	6	13
AIC	3.36	5.22	1.39	5.82	3.38	2.33	0.51	1.80
BIC	3.60	5.46	1.63	6.06	3.62	2.58	0.66	2.04

Notes: the asterisk * denotes statistical significance at 5 per cent level. The table reports estimated effects of each explanatory variable together with the standard errors (in parentheses). Variations in degrees of freedom are due to missing data. * indicates $p<0.05$

Source: Authors' findings using the data from The World Bank Databases and UNCTAD databases

Table 4: results of the joint analyses
Dependent variable: FDI inflows (% GDP) for the period 1995-2011

	Reg. II		Reg. III	Reg. IV	Reg. V	Reg. VI	Reg. VII
	BRIC	**DEV**					
constant	4.55* (1.36)	-17.16* (4.51)	-1.46* (1.69)	-1.89 (2.28)	5.86* (2.39)	5.86* (2.81)	2.63 (1.60)
CPI	-0.25 (0.39)	2.98* (0.53)	2.10* (0.38)	1.86* (0.67)	-0.32 (0.69)	-0.32 (0.78)	-0.20 (0.48)
GDP	-0.05 (0.05)	-0.08 (0.22)	-0.06 (0.09)	0.009 (0.09)	-0.10 (0.08)	-0.10 (0.07)	0 (0.04)
POP	0.28* (0.34)	0.56* (1.31)	-0.29 (0.13)	-0.23 (0.13)	-0.33 (0.12)	0.33 (0.53)	0.20 (0.29)
UR	-0.21 (0.08)	-0.58 (0.28)	-0.60 (0.51)	-0.50 (0.59)	0.36 (0.54)	-0.36* (0.13)	-0.14 (0.07)
developed			-9.50*		-24.20* (4.05)	-24.19* (4.96)	-13.03* (3.99)
developed*CPI				-0.94* (0.43)	3.33* (0.81)	3.32* (0.94)	1.86* (0.67)
FDILAG							0.46* (0.09)
R-squared	0.13	0.40	0.28	0.18	0.37	0.37	0.52
F	2.07	10.00	9.66	5.57	11.93	11.93	17.53
Prob	0.096	0.000	0.000	0.000	0.000	0.000	0.000
d.f.	64	60	119	119	119	119	119
AIC	3.65	5.31	5.00	5.13	4.88	4.88	4.66
BIC	3.82	5.48	5.14	5.27	5.04	5.04	4.85

Notes: the asterisk * denotes statistical significance at 5 per cent level. The table reports estimated effects of each explanatory variable together with the standard errors (in parentheses). Variations in degrees of freedom are due to missing data. * indicates $p<0.05$

Source: Authors' findings from data from The World Bank Databases and UNCTAD databases

a) Single Country Analysis

The results of the basic regression model are shown in Table 3, where the FDI equation is estimated for each country separately. These estimations together are denoted by Regression 1 (Reg. I in the table). Regression 1 includes four control variables considered important for FDI, namely the main variable of interest CPI, GDP per capita growth, population growth and the unemployment rate.

Comparing the results for selected variables it can be concluded that, if CPI increases by 1 % then FDI decreases by 25.7% in the Netherlands and by 1.53% in Russia; by 1.73% and by 1.32% in the USA and the United Kingdom, respectively; by 0.34% in China holding all other explanatory variables constant (ceteris paribus). Moreover, if CPI increases by 1% then FDI increases by 0.78% in Japan, by 1.94% in Brazil and by 1.79% in India. Similar to the signs of estimated CPI coefficients, the significance of the effects of CPI on FDI also depends on the country analyzed. According to received results only in Japan, The Netherlands and India CPI have a significant effect on FDI; CPI has an insignificant effect on FDI for Russia, for the USA, for the United Kingdom, for Brazil and China. This finding goes in one line with research of Kaufman (1997). Kaufman (1997) reported surveys on Ukraine and Russia and suggested that in most situations in those countries corruption level is not a major deterrent for FDI. However, in International Financial Law Review (2013)[7], it was highlighted that Russia is not a primary country of interest for foreign investors, because of two major issues, namely the lack of rule of law and corruption.

A striking result on FDI determinants is that most explanatory variables have a significant effect on FDI only for a small subset of countries. For example, GDP growth is found to have a significant effect on FDI only for China. Population effect is significant in two developing countries, namely Brazil and China. Unemployment rate is significant only in Netherlands and Russia. Practically there is at least one country for every explanatory variable for which the effect on FDI is found to be insignificant. This result can be explained by too small data set per country (only 8 countries and 4 variables), which leads to high standard errors and hence high p-values in testing significance. Alternatively, the result may simply follow from too many differences between included countries, such as differences between developing and developed countries. For example, these countries are different in territory and

[7]International Financial Law Review, February 2013, http://search.proquest.com/docview/1291217686?accountid=13598

population; life level and Human Development Index; in industrial base and level of income. In order to improve results, I join countries by their level of development.

b) Separate Analyses for the BRIC Countries & Developed Countries

The results of the two regressions for developed and developing countries are given in the 2nd and 3rd columns of Table 4, and are denoted by Regression 2 (Reg. II).

In these regression results, it is clear that CPI in developed countries has a significant effect on FDI, however CPI in developing countries has an insignificant effect. Holding all other explanatory variables constant, countries with high level of CPI receive relatively higher amount of FDI inflows then countries with low level of CPI. In joint regressions, a significant effect of population growth on FDI is found for both the BRIC countries and developed countries. However, the effects of unemployment rate and even GDP growth are insignificant for both country sets. The results show that only CPI and population growth have a significant effect in joint country analysis. In other words, corruption level and amount of population positively affect FDI. Together, four variables for both set of countries explain around 13% and 40% of the variation in FDI inflows in the BRIC countries and developed countries.

I conclude that this joint analysis of developing and developed countries provides more light in explaining FDI compared to the analysis of each country one by one, especially considering the effect of population growth on FDI. The remaining variables are not found to have a significant effect. Since these variables are conventional explanatory variables in FDI analysis, I conclude that this result still follows from the lack of data. Findings of Habib & Zurawicki (2002) also support this reasoning. Habib & Zurawicki (2002) examined 89 countries and found positive and significant effects of GDP growth and population growth on FDI. Therefore, lack of data in the previous models is justifiable reason for finding insignificant effects.

In order to improve the obtained estimation results regarding the possible differences between CPI effects on FDI in different countries, I present the joint regression analysis with a dummy variable in the next section. The number of observations in this joint regression is higher than the two regressions considered in this section. Therefore, the results may improve in terms of the significance of the effects of explanatory variables.

c) *Joint Analysis for the BRIC Countries & Developed Countries Using the Dummy Variable Approach*

The results of the joint regressions with a dummy variable for both developed and developing countries are given in the 4th column of Table 4, and are denoted by Regression 3 (Reg. III). The dummy variable takes the value of 1 if a country is developed and the value of 0 otherwise. These estimation results indicate that one level of increase of CPI increases the amount of FDI inflows by approximately 2.1% and this effect is found to be significantly different from zero.

The coefficient of the dummy variable is negative and significant and equals to -9.5, supporting the idea that developed countries could receive lower level of FDI comparing with the developing countries. This conclusion is proved by UNCTAD Report 2013, stating that developing countries attract more FDI inflows than the developed countries.

The different results found for the BRIC countries are in line with an argument in trading economics web site[8], which reports the main indexes describing countries' economies and note that the BRIC countries have higher returns on bonds compared with developed countries. Higher returns imply higher financial instability in the country compared with other countries. Therefore, investors in these countries require a higher return for the risk they take investing in an unstable country.

d) *Joint Analysis for the BRIC Countries and Developed Countries Allowing for Interaction Effects*

Regression 4 (Reg. IV) in Table 4 shows the alternative model estimation results in which CPI effect depends on the development level of a country. Using this analysis, I check whether developed counties have a higher effect on the distribution of FDI taking into account CPI level. This analysis is based on the introduction of a developed*CPI variable, which identifies the level of corruption in developed countries and its influence on the amount of FDI. The effect of the developed*CPI variable is negative and significant at 5 per cent level. This means that the effect of CPI on FDI is higher for developed countries compared to developing ones.

The obtained R^2 in the 4-th regression (Reg. IV) equals to 0.18 which is lower than R^2 of regression 3 (Reg. III), 0.28. Hence, I conclude that introduced developed*CPI variable did

[8] www.tradingeconomics.com

not capture all the variation between developing and developed countries and did not answer the question in which set of countries the effect of corruption on FDI is higher. For this reason, the analysis in the next subsection combines two possible differences for the FDI model between developing and developed countries. Specifically, the different intercept, 'developed' variable and the variable 'developed*CPI', which identifies the level of corruption in developed countries and its influence on amount of FDI, will both be used as explanatory variables. This unification allows me to consider the difference between countries in average on FDI and the different effects of CPI on FDI in different countries.

*e) Joint Analysis with Developed and Developed*CPI*

The fifth regression, shown as Reg. V in Table 4, extends the previous models by including developed variable and developed*CPI variable jointly. The inclusion of the latter deals with the main research question and extends the models in the third and fourth regression. The coefficients of variables developed and developed*CPI are both significant, which suggests the following: higher level of CPI results in higher amount of FDI inflows in developed countries. Thus, for a country it is more profitable to keep the transparency of economy and invest in anticorruption policies. In other words, a lower score in corruption level increases countries' attractiveness for foreign investors. This finding for the developed countries is consistent with our hypotheses. I next compare the results of this regression with those of regression 3 (Reg. III) and regression 4 (Reg. IV) in detail. First, both 'developed' and 'developed*CPI' variables have a significant effect on FDI, hence these variables should be added to the model. Therefore, regression 5 (Reg. V) is preferred over regression 3 (Reg. III) and regression 4 (Reg. IV). The effect of CPI on FDI for developed countries is positive and significant, similar to previous models. The effect of CPI on FDI is lower for developed countries, as the coefficient of the developed variable shows. This lower FDI level is even more pronounced when the developed*CPI effect is included in the model as it is the case in regression 5 (Reg. V). The coefficient of developed*CPI in regression 5 (Reg. V) is positive. This result is different from regression 4 (Reg. IV). Hence, this larger model shows that the CPI effect is indeed different between countries but in the opposite direction. Developed countries benefit more from policies that eliminate corruption.

f) General Discussion of the Estimation Results and Their Relation to the Literature

In this section I discuss the obtained parameter estimates, particularly the signs of these parameter estimates of all estimated models and compare these with the existing literature. Due to data limitations, the standard errors of the estimated parameters are rather large in all

models; hence analyzing the significance of the obtained parameters is cumbersome. Using the panel data approach for 80 countries (OECD and non-OECD), Egger and Winner (2006) concluded that for both country sets there is a negative effect of corruption on the amount of FDI inflows. In most cases the results of the single country analysis are in line with this expectation. However, in Japan, Brazil and India I find an unexpected positive influence of CPI level on FDI inflows. The fact that the results are counterintuitive suggests that the joint models could be preferred over the separate country analysis. In the first joint country analysis, Regression 2 (Reg. II), it is clearly seen that CPI in developed countries positively affects FDI inflows, however CPI in developing countries affects FDI negatively. It suggests that holding everything else constant, countries with high levels of CPI receive relatively higher amount of FDI inflows compared to the countries with low level of CPI. Similar findings, a significant negative association between corruption and the investment rate was reported by Mauro (1995), who examined the effects of the corruption index on the investment rates. Using a linear model and OLS estimation method, like in this thesis, and instrumental variable estimation[9], his findings suggest that an increase in the investment rate is caused by an improvement in the corruption index.

In regression 4 (Reg. IV) developed*CPI variable is negatively related to FDI inflows. It can be argued that the corruption effect on FDI depends on other variables. For example, Borenztein et al. (1998) found that high quality human capital can positively effect the amount of FDI inflows; thus, low level of human capital would negatively influence amount of FDI inflows. The results of regression 4 (Reg. IV) are in line with this reasoning.

In all performed regressions, population has a small and insignificant effect on the amount of FDI. This result is in line with the findings by De Mello (1999), Borenztein et al. (1998) and others. These studies argue that general population growth may not have a significant effect in FDI since only the quantum of skilled labor influences FDI and as a result promotes economic growth. Therefore, the absence of a significant population effect on the amount of FDI inflows is not counterintuitive a measure of only sufficient human capital may have a significant effect on FDI inflows in the host country.

[9] I did not use the method of instrumental variables (IV) in this thesis as it requires the reverse causality between the dependent variable and one of the covariates and the instrument cannot be correlated with the error term in the explanatory equation, which is the situation which exist in that paper.

g) Estimation Results for the Best Model from Alternatives

As argued before, this study mostly aims to find different effects of CPI index level on FDI inflows across countries. Until now, the favorite model of interest is the fifth regression presented in Table 3. Therefore, this sub-section continues with the analysis of the effects of all included variables in this regression.

From the result it is seen that the coefficient of CPI is equal to -0.32. In other words, if CPI index increases by 1% then FDI inflows decreases by 0.32%, holding everything else constant (ceteris paribus). However, 0.32% is a very small proportion of increase in FDI, therefore, statisticians usually try to provide more clear answer saying e.g., a 10% increase in CPI index, ceteris paribus, would lead to a 3.2% decrease in FDI inflows. Note that this regression includes a 'developed*CPI' variable. Therefore, the effects of the CPI variable without the dummy variable gives the effect of CPI on FDI in developing countries only and this negative effect is insignificant as shown in Table 4. When the developed and the BRIC countries are analyzed together, as in regression 4 (Reg. IV), it is found that CPI for both countries has a significant effect on FDI inflows.

Potential problems in the presented analysis are possible heteroskedasticity and autocorrelation problems. There are advanced methods to deal with these problems, but such methods in general require a relatively large number of data points. Since this is not the case in this study, I used the Heteroskedasticity and Autocorrelation Corrected OLS results, denoted by HAC results, as a straightforward method to overcome autocorrelation and heteroskedasticity. These results are denoted by regression 6 (Reg. VI) in Table 4. Even in the absence of heteroskedasticity and autocorrelation, the HAC results are reliable. Re-estimating the model using HAC standard errors I can notice the difference between standard errors and t-statistics with the previous estimation. So, previously I had for CPI*developed t-statistic = 4.10 and Std. error = 0.81, prob. =0.00 for CPI*developed and with HAC option I have t-statistics = 3.53; std .error = 0.94 and prob. =0.00 respectively[10]. This difference is due to improvement of the ordinary least square regression when the variables have heteroskedasticity or autocorrelation.

Therefore, in the rest of this study, the analysis of FDI is based on the HAC results.

[10] Appendix A, Table 6

If I would have a look at the CPI* Developed variable, it also has a significant effect on FDI inflows both using standard OLS (Reg. V) and using HAC standard errors (Reg. VI). The results with HAC standard errors are in line with the general conclusion of this thesis: a lower corruption level or a higher CPI index particularly in developed countries effect the amount of FDI inflows and attractiveness of its economy as a whole. Furthermore, FDI is significantly lower in developed countries, as the coefficient of the 'developed' variable is negative and significant in both regressions 5 (Reg. V) and regression 7 (Reg. VII).

Scenario Analysis 1

Apart from the regression results so far, an important consideration is to explicitly report the potential FDI levels for countries if they take measures to decrease corruption. The chosen econometric model presented in regression 6 (Reg. VI) in Table 4 has several FDI determinants and the particular effect of CPI depends on whether the country is a developed country or a developing one. I therefore, consider a "scenario analysis" where I can quantify the FDI level for a country with certain population growth, GDP growth and unemployment levels. The CPI level is allowed to change and I perform this analysis for a developing and developed country separately.

The reason to choose regression 6 (Reg. VI) for this analysis is based on the explanations provided earlier. It is important to state again that this regression uses HAC standard errors to account for possible heteroskedasticity and autocorrelation in the error terms in the model. Using the scenarios this section aims to examine whether different levels of CPI across 16 years in the BRIC countries and developed countries would have a different effect on FDI, if all other variables would stay stationary on average level. Three different levels of CPI are considered to quantify this effect. I consider three scenarios where a country hypothetically has the minimum, average or maximum CPI level in the sample. This analysis answers the question: "What is the expected FDI level if a country has the minimum/average/maximum corruption index?". The minimum, average or maximum CPI level can naturally be calculated for all countries in the analysis. Alternatively, these values can be based on the developing countries, since it is more feasible for a developing country to aim to obtain the best CPI level within the group of developing countries.

Firstly, in order to keep other factors fixed in the scenario analysis, I calculate average numbers of GDP, POP, and UR. Then I consider the minimum, average and maximum levels of CPI in two separate groups: the BRIC countries and developed countries. Next, I calculate

the CPI levels for the BRIC countries and developed countries, indicated by the developed variable taking the value of 0 and 1 respectively.

Following that minimum level CPI in the BRIC countries is 2.1, FDI is equal to 6.82 given average population, GDP and unemployment rates. In other words, if other explanatory variables are on "average", the minimum possible level of CPI in the BRIC countries leads to an FDI level which is equal to 6.82% of GDP. On the contrary, if a BRIC country obtains the maximum level of CPI in the BRIC countries, i.e. CPI equals to 4.1, then the amount of FDI would be equal to 6.16, which is lower than in case of minimum CPI. The total effect of CPI for developing countries seem to be negative, at the same time the variation between FDI inflows in relation to CPI is very small. Note that that the closer is the CPI value to 10, the better is the situation in the country. Therefore, it can be pointed out that minimum, average and maximum level of CPI in all the BRIC countries are not too big and do not exceed 4.1, which means that in the BRIC countries the level of corruption is quiet high in general.

In order to get the full picture of CPI effect on FDI, this section next continues with FDI inflows in developed countries. Starting with calculating different levels of CPI for developed countries (minimum of 5.8 and maximum of 9.03) I can already expect higher variations in FDI inflows in developed countries.

Comparing the results of FDI inflows, I can point out that whether a country takes the minimum CPI of the BRIC countries or the minimum CPI of developed countries over the sample period, 2.1 and 5.8, respectively, I receive the same amount of FDI inflows equal to 6.82 for developed and developing countries. That means that minimum corruption does not have an effect on investors' decisions about choosing the target country to invest. Thus, within minimum level of CPI in two groups of countries investors are indifferent where to invest, as both countries show good indexes of corruption.

The scenario analysis leads to different results when the maximum level of CPI, 9.03 is taken as the CPI level. The corresponding amount of FDI inflows is 4.55, which is smaller than the FDI inflows with minimum level of CPI in all countries. If I compare the amount of FDI in the BRIC countries with the amount of FDI in developed countries with maximum CPI, I can see the difference of 2.27 point which is relatively small. Moreover, the investments in developing countries even with maximum level of CPI are bigger than in developed countries. This rather counterintuitive finding is in line with the OECD Report (2002). In this report, it is argued that investors can prefer developing countries rather than developed

because developing countries are the source of development and modernization. It is also worth mentioning that developing countries absorbed an unprecedented US$130 billion in FDI inflows than developed countries (UNCTAD, 2013)[11].

Scenario Analysis 2

The idea and the steps of second scenario analysis are approximately the same as in the first analysis. The only distinction is that minimum, maximum and average levels of CPI in this scenario analysis are calculated by taking all eight countries together.

The minimum level CPI in both countries is 2.1, and this leads to an FDI level equal to 6.82 for the BRIC countries. On the contrary, with a maximum level of CPI, which is equal to 9.03, the amount of FDI inflows in the BRIC countries would be 4.55. That means that with maximum level of corruption the amount of FDI increases, and with minimum level of corruption the amount of FDI inflows decrease. This contradiction can be only explained by insignificant and negative effect of CPI on FDI in our 5-th Regression (Reg. V) indicating that the corruption level in developing countries does not affect the amount of FDI inflows significantly. Moreover, as noted earlier, the small sample size and other variables which are not included in the analysis may also effect the amount of FDI.

The scenario analysis is rather different for developed countries. If a developed country obtains the maximum CPI, 9.03, then amount of FDI would be equal to 10.29. This finding supports the idea that the higher is the CPI the higher is the FDI inflows in the country. Moreover, developed countries have a significant and positive effect of CPI on FDI inflows in 5-th regression (Reg. V).

6. Robustness Checks

An important part of econometric analysis is the robustness check of the results to possibly different model specifications and the dataset. The importance of robustness checks is based on the idea that the results should be stable even though the model is changed in different aspects. For this reason, in this section the robustness of the results is analyzed.

First of all, it is worth mentioning that the limited number of observations in this study may have adverse consequences in the analysis. Especially in small samples, outliers may have

[11] UNCTAD, Global Investment Trends Monitor, 2013.

influential effects on the results. I therefore, check whether this is indeed the case in the analysis outlined so far.

The robustness check with respect to outlier observations is performed as follows. For the best model selected in section 5, outlier observations are defined as the observations which correspond to the observations with the most extreme errors. The results would be called robust for outliers only if performing the same estimation under the condition that outlier observations were removed from the data leads to similar results in terms of the CPI effects on FDI.

The residuals from the best regression, Regression 6 (Reg. VI), are given in Figure 4. This figure shows that most residual are between values -4 and 4, while 4 observations are clearly outside this interval. I therefore, consider these observations as outliers. Estimation results of regression 6 (Reg. VI) for the whole data points and those for the data points without outliers are shown in Table 5. According to Table 5, the differences in parameter estimates between the two estimation result are small. Hence, outlier observations do not seem to affect the main results of the study. I therefore, conclude that the performed analysis is appropriate according to this criterion.

The remaining robustness checks are more standard. Specifically, I use standard tests to check the appropriateness of the model assumptions of no autocorrelation in error terms, homoscedasticity in the error terms, and normality of the error terms.

First, I note that the HAC standard errors used in the analysis provide a straightforward method to deal with possible autocorrelation and heteroskedasticity problems. Therefore, the regression results (especially the estimated standard errors) are not expected to be affected from possible autocorrelation or heteroskedasticity. To show that HAC standard errors are needed, I consider the best regression 6 (Reg. VI) and report the autocorrelation and heteroskedasticity tests for the residuals for this regression.

The first test which I consider is the Breusch-Godfrey serial correlation LM test for testing for autocorrelation in the error terms. Intuitively, this test checks whether the residuals of the regression show serial correlation. I perform this test to see whether the residuals are correlated with the last two residuals. In this test I only include 2 lags since the number of observation s is small. If the p-value obtained from this test statistic is below the critical level, e.g. 0.05, I reject the null hypothesis of “no autocorrelation”. The results of the test are given

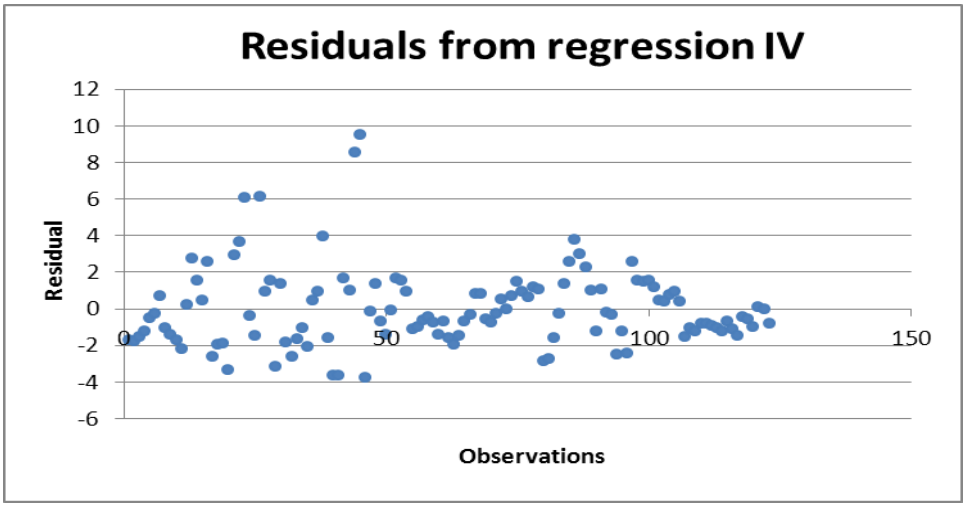
in Appendix A, Table 4.The obtained p-value of the test is very small and leads to the rejection of "no autocorrelation". Hence autocorrelation is a problem in this analysis and I account for this problem using the HAC estimator.

An alternative method to account for autocorrelation is to add a lagged dependent variable in the model. This extended model is shown in Regression 7(Reg. VII) in Table 4, where the FDI level in the last year is denoted by 'FDILAG'. It can be seen that the past FDI variable has a positive effect on current FDI. The signs of the parameter estimates of this regression are similar to the main regressions, regression 5 (Reg. V) and regression 6 (Reg. VI). I therefore, conclude that the general results explained so far also hold when we consider a model dealing with autocorrelation.

The second test I consider is the White heteroskedasticity test for the residuals. This test is used to see if the variances of the residuals are the same across observations. Similar to the Breusch-Godfrey test, the p-value obtained from this test statistic is below the critical level, for example, 0.05. Therefore, I reject the null hypothesis of homoscedasticity, equality of residual variances. The result for this test is provided in Appendix A, Table 3, where obtained p-value is much higher than standard critical values. I therefore, conclude that heteroskedasticity does not seem to be a problem in analysis. Nevertheless, HAC standard errors are expected to overcome this issue, even in the case of heteroskedasticity.

Finally, I consider the normality assumption for the residuals in Figure 4. The descriptive statistics and the results for the Jarque-Bera test for normality are provided in Appendix B, Figure 1. According to Figure 1, the associated p-value for this test is close to 0, which means that the normality assumption is violated for these residuals. This result was expected as the dataset is particularly small and there are outlier observations, as it was discussed at the beginning of that section. However, the analysis removing the outliers in the data shows that the violation of normality assumption does not change the results obtained so far and the estimation results seem to be robust to the violation of the normality assumption in this case.

Figure 4: Residuals for developed and the BRIC countries during the period from 1995 to 2011



Source: Authors' illustration of data from The World Bank indicators and UNCTAD indicators.

Table 5: Differences between the regression with HAC and the regression with outliers removed

Robustness check - outliers for regression 6

	Reg. VI for the full sample	Reg. VI for the sample without outliers
C	5.86 (2.81)	5.31 (1.94)
CPI	-0.32 (0.78)	-0.33 (0.56)
GDP	-0.1 (0.07)	-0.08 (0.06)
POP	0.36 (0.53)	0.38 (0.43)
UR	-0.33 (0.13)	-0.27 (0.09)
developed	-24.19 (4.96)	-20.6 (3.32)
developed*CPI	3.32 (0.94)	2.85 (0.66)

Notes: The numbers in parenthesis are standard errors.

Source: Authors' findings from data from The World Bank Databases and UNCTAD databases

7. Conclusion and Future Research

Motivated by a vivid discussion about the importance of Foreign Direct Investments on countries' economies, this paper examines the interrelation between CPI level and amount of FDI inflows from 1995 to 2011 in developing and developed countries. This paper has argued that it is important to differentiate the development level of the country and the level of CPI influencing FDI inflows.

The first objective of this study was to investigate if CPI has a negative effect on FDI inflows in a country's economy. Specifically, it is expected that the lower was the CPI coefficient (from 1 to 10 levels) the more attractive is the country for FDI inflows and vice versa. The main argument for that conclusion is that due to the low level of corruption, a country may have a more attractive investment climate. It was found that CPI in developed countries positively affects FDI inflows, while CPI in developing countries is negatively related to FDI and this negative effect is not significant. The results suggest that holding everything else constant, countries with high level of CPI receive relatively higher amounts of FDI inflows compared to the countries with low levels of CPI. Thus, if developing and developed countries are analyzed together, it is more profitable for country to keep transparency of its economy and invest in anticorruption policies.

The second objective of this study was to differentiate the corruption effects in developing and developed countries, allowing the corruption effect to be different between those countries. After adding a dummy variable for the developed countries in the joint analysis, it was found out that developing countries are more attractive for foreign investors than developed countries. It was also found that higher level of CPI results in higher amount of FDI inflows in developed countries. This finding is consistent with my initial hypothesis that corruption (CPI) has an effect on the attractiveness of FDI.

Moreover it is worth mentioning that this study finds insignificant results for all other control variables but unemployment rate. This result may be because of the small amount of observations. However, as highlighted by De Mello (1999), only the quantum of skilled labor influences FDI.

The general results of this thesis suggest that countries should pay attention to the level of corruption but this effect also depends on whether a country is classified as a developing country or a developed country.

Regarding the limitations of this study, it should be mentioned that small data set results from the exclusion of a large number of observations because of multicollinearity issues or a large number of missing observations. Furthermore, CPI index which I used as a measure of corruption may not be ideal. Transparency international group, which collect the data about CPI based it on surveys and questionnaires, which are subjective and do not always include all the activities which can be corrupt. Therefore, it is almost impossible to accumulate data on every corrupt activity. Thus, further research for obtaining accurate corruption indexes, especially for developing countries, would be useful for a more in-depth analysis.

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Appendices

Appendix A: Tables

Table 1: Rank of countries, analyzed in the paper, by Transparency International for year 2012 with CPI levels for each country

Rank of country	Country	CPI
9	Netherlands	8.4
17	Japan	7.4
17	United Kingdom	7.4
19	United States	7.3
69	Brazil	4.3
80	China	3.9
94	India	3.6
133	Russian Federation	2.8

Source: Authors' illustration of data from the Transparency International indicators.

Table 2: Results of unit root test per country

Country	Variables	t-stat	Prob
United States	CPI	-2.090441	0.2504
United States	FDI	-3.128024	0.0460
United States	GDP	-2.313451	0.1797
United States	UR	-1.37095	0.5677
United States	Pop	-0.063167	0.9382
Netherlands	CPI	-2.090441	0.2504
Netherlands	FDI	-3.128024	0.0460
Netherlands	GDP	-2.313451	0.1797
Netherlands	UR	-1.37095	0.5677
Netherlands	Pop	-0.063167	0.9382
United Kingdom	CPI	-1.192715	0.6458
United Kingdom	FDI	-2.731083	0.0906
United Kingdom	GDP	0.952037	0.9928
United Kingdom	UR	-0.11091	0.9288
United Kingdom	Pop	0.229801	0.9641
Japan	CPI	-0.546233	0.8371
Japan	FDI	-2.260471	0.1969
Japan	GDP	-4.425554	0.0038
Japan	UR	-4.321935	0.0051
Japan	Pop	-3.046485	0.0532

Russian Federation	CPI	-2.313544	0.1804
Russian Federation	FDI	-0.709305	0.8171
Russian Federation	GDP	-2.950526	0.0615
Russian Federation	UR	-0.952556	0.7432
Russian Federation	Pop	-0.268568	0.9100
Brazil	CPI	-3.193219	0.0396
Brazil	FDI	-1.400557	0.5556
Brazil	GDP	-4.712657	0.0022
Brazil	UR	-1.523578	0.4964
Brazil	Pop	-1.517801	0.4934
China	CPI	-3.441772	0.0249
China	FDI	-1.867369	0.3376
China	GDP	-1.871931	0.3357
China	UR	-1.538644	0.4875
China	Pop	-3.066678	0.0499
India	CPI	-1.172361	0.6589
India	FDI	-2.648983	0.1043
India	GDP	-3.335599	0.0304
India	UR	-2.046205	0.2653
India	Pop	-3.210782	0.0429

Source: Authors' illustration of data from The World Bank indicators and UNCTAD indicators.

Table 3: Heteroskedasticity White Test

F-statistic	0.625670	Prob. F(23,101)	0.9013
Obs*R-squared	15.58883	Prob. Chi-Square(23)	0.8723
Scaled explained SS	67.58613	Prob. Chi-Square(23)	0.0000

Source: Authors' findings from data from The World Bank Databases and UNCTAD databases

Table 4: Breusch-Godfrey Serial Correlation LM Test

F-statistic	10.59972	Prob. F(2,116)	0.0001
Obs*R-squared	19.31444	Prob. Chi-Square(2)	0.0001

Source: Authors' findings from data from The World Bank Databases and UNCTAD databases

Table 5:

Dependent Variable: FDI
Method: Least Squares
Sample: 1 136
Included observations: 125
HAC standard errors & covariance (Bartlett kernel, Newey-West fixed
bandwidth = 5.0000)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	5.868471	2.810655	2.087937	0.0390
CPI	-0.328244	0.784353	-0.418490	0.6763
GDP	-0.102871	0.073705	-1.395725	0.1654
POP	0.366096	0.532812	0.687102	0.4934
UR	-0.330227	0.133787	-2.468295	0.0150
DEVELOPED	-24.19770	4.969566	-4.869178	0.0000
CPI*DEVELOPED	3.326671	0.941617	3.532936	0.0006

R-squared	0.377636	Mean dependent var	2.977761
Adjusted R-squared	0.345990	S.D. dependent var	3.353320
S.E. of regression	2.711860	Akaike info criterion	4.887517
Sum squared resid	867.7936	Schwarz criterion	5.045903
Log likelihood	-298.4698	Hannan-Quinn criter.	4.951861
F-statistic	11.93326	Durbin-Watson stat	1.300349
Prob(F-statistic)	0.000000		

Source: Authors' findings from data from The World Bank Databases and UNCTAD databases

Table 6:

Dependent Variable: CONNEW
Method: Least Squares
Sample (adjusted): 1948Q2 1996Q4
Included observations: 195 after adjustments
HAC standard errors & covariance (Bartlett kernel, Newey-West fixed
bandwidth = 5.0000)

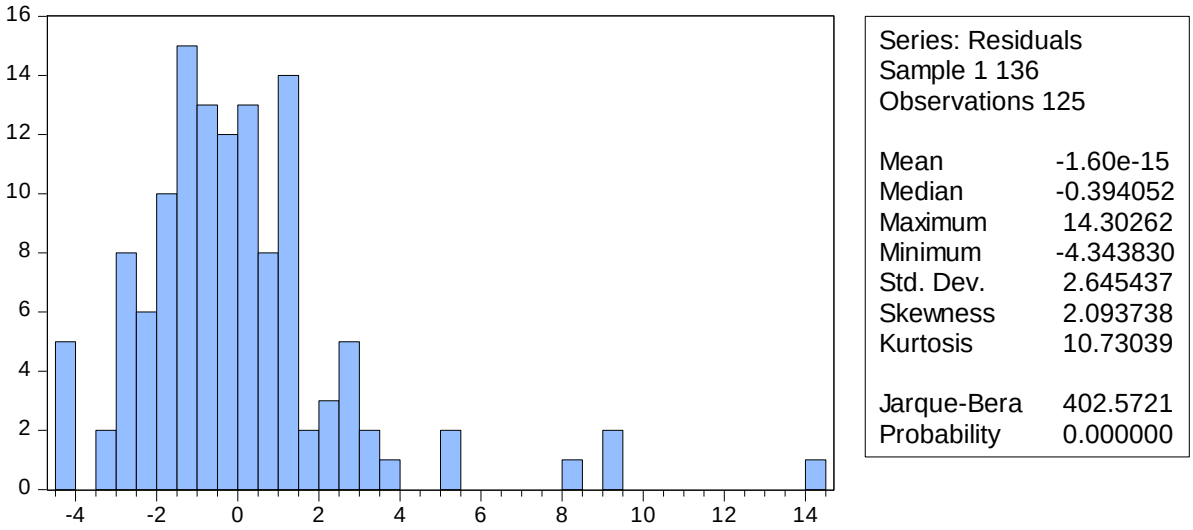
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.006358	0.001084	5.864232	0.0000
YNEW	0.365098	0.068457	5.333253	0.0000

R-squared	0.143681	Mean dependent var	0.009840
Adjusted R-squared	0.139244	S.D. dependent var	0.013463
S.E. of regression	0.012490	Akaike info criterion	-5.917508
Sum squared resid	0.030110	Schwarz criterion	-5.883939
Log likelihood	578.9570	Hannan-Quinn criter.	-5.903916
F-statistic	32.38335	Durbin-Watson stat	2.524128
Prob(F-statistic)	0.000000		

Source: Authors' findings from data from The World Bank Databases and UNCTAD databases

Appendix B: Figures

Figure 1: Jarque-Bera test for normality



Source: Authors' findings from data from The World Bank Databases and UNCTAD databases