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Corruption effect on foreign direct investments in European Union countries

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Abstract

The authors of the article analyze the effect of corruption on foreign direct investments in most corrupt European Union countries. Corruption in the context of the analysis is understood as an act where government officials enter into an agreement with a foreign investors against the interest of society. It takes place when illegal payments for government are made. Such payments acts as an additional tax on investments in foreign country, thus decreasing attractiveness of investment for foreign investors. There are various types of corruption, but most common classification include *grand* corruption, *petty* corruption and public sector corruption. However, this article focuses on the effect of *grand* corruption, because it directly affects FDI inflows in particular country. Results of the research made by the authors shows that corruption has adverse effect on FDI inflows, however particular corrupt actions may postively effect FDI inflows. In order to determine corruption effect on FDI in corrupt EU countries statistical analysis of 2000–2014 period has been implemented and conceptual model of effect on FDI created.

Santrauka

Straipsnyje autoriai nagrinėja korupcijos įtaką tiesioginėms užsienio investicijoms labiausiai korumpuotose Europos Sąjungos šalyse. Šio tyrimo kontekste korupcija apibrėžiama kaip įvykis, kai valdininkas pasiekia susitarimą su užsienio investuotoju prioritetą suteikdamas savo asmeniniams, bet ne visuomenės interesams. Korupcija vyksta, kai atliekami nelegalūs mokėjimai valdininkui už paslaugą. Jie užsienio investuotojams reiškia papildomus kaštus ir tai mažina šalies patrauklumą užsienio investicijoms. Mokslinėje literatūroje korupcija skaidoma į įvairius tipus, tačiau dažniausiai tiriama didžioji korupcija, smulkioji korupcija bei viešojo sektoriaus korupcija. Šiame straipsnyje analizuojamas didžiosios korupcijos daromas poveikis, nes ji tiesiogiai veikia tiesiogines užsienio investicijas. Autorių atliktas tyrimas parodė, kad korupcija daro neigiamą poveikį TUI lygiui šalyje, tačiau tam tikri korupciniai veiksniai gali ir paskatinti TUI. Siekiant įvertinti kokį poveikį korupcija daro tiesioginėms užsienio investicijoms Europos Sąjungos šalyse buvo atlikta 2000–2014 metų periodo statistinė analizė ir sukurtas korupcijos poveikio TUI konceptualus modelis.

Introduction

In the 1990s new European Union member states signed bilateral agreements, which liberalized 85% of trade between the two blocks and therefore since the mid-1990s, the number of foreign firms and the stock of foreign direct investment (FDI) have risen sharply in the new Member States (European Union Communication from the Commission to the Council 2006). Multiple researches have been conducted by scholars and scientists, as this growth led to analysis of foreign direct investment determinants. It is seen that multiple indicators can cause fluctuations of foreign direct investments. However, only recently corruption has been introduced as one of the focal determi-

nants of FDI inflows. It may not only directly influence changes of FDI, but may also affect economic growth, unemployment (Vojtovic and Krajňakova 2013) or other economic variables, which subsequently may lower the inflows of FDI. Though, in the context of this article, direct effect of corruption on FDI is being analysed, rather than corruption effect on multiple economic indicators.

The problem and novelty of the study. From the beginning of political economy science, corruption has been seen as a major issue and multiple scientists have analysed it in their researches. Multiple articles exist about corruption effect on economic growth, distortion of free market or other economic factors. Nevertheless, there is still too little attention on how corruption distorts foreign direct investments in European Union. Moreover, very little statistical analysis of corruption effect in most corrupt EU countries has been conducted, so the real impact of corruption in multiple countries has yet to be determined in particular countries and supported by statistical data. After thorough implementation of scientific literature analysis and determining main possible determinants of foreign direct investment, authors have created a statistical model, which determines the effect of corruption in particular EU countries on the volume of inflows of FDI. Worth mentioning, that multiple scholars have analysed corruption influence on foreign direct investment in the last decades, but more often than not, their work covers theoretical part of corruption effect. Therefore this article only briefly analyses theoretical part of the corruption effect on FDI and focuses on sophisticated statistical analysis.

The object of the study. The effect of corruption towards distortion of free market of foreign direct investments.

The aim of the study: to conduct statistical analysis and create a statistical model, which determines corruption effect on foreign direct investments in corrupt European Union countries.

The tasks of the study are:

1. To present the concept of corruption in economics;
2. To analyse the relationship of FDI with corruption;
3. To formulate statistical model for corruption effect on FDI.

The methods of the study: systematic, logical, comparative analysis of scientific literature, synthesis and statistical modelling.

1. Literature review

1.1. The concept of corruption in economics

In theory corruption is defined as a violation of trust between two parties, when one of the parties enters into an agreement with a third party against the interest of another (Gambetta 2002). In economic analysis, these parties usually are society and government officials. Even though, it is hard to identify the interests of the society,

but in a context of foreign direct investments it can be seen as acquisition of as many investors as possible. And if government official or other stakeholder enters into an agreement with third party, such as foreign investor, who is willing to bribe, it can be seen as an act of corruption. Multiple other definitions of corruption have been commonly used in economic analysis: some see corruption as the abuse of public office for private gain (Martinez-Vazquez et al. 2007; Brasoveanu and Brasoveanu 2009), whereas others as the misuse or the abuse of public office for private gain (World Bank 1997) or likeliness to demand special and illegal payments in high and low levels of government (Sarkar and Hasan 2001). Therefore, illegal payments for government can be seen as an additional tax on investments in foreign country. Multiple studies confirmed this view by stating that corruption in a form of a tax makes an investment in corrupt country less profitable for foreign investors, therefore leading to lower levels of FDI (Wei 2000). Unfortunately, corruption is not unusual in international business and as history shows, it can be a routine practice for investors, especially in developing countries (World Bank 1999; Transparency International 2010) and therefore its actual relation to FDI inflows should be defined. Transparency International (2011) offers the following classification of most common corruption types:

*   Grand corruption;
*   Petty corruption;
*   Public sector corruption.

Grand corruption takes place, when high level politicians engage in corrupt activities that may distort policies or the central functioning of the state and enables public officials to benefit at the expense of public good (Transparency International 2010). In the context of FDI, the most common grand corruption type is "regulation for sale", when government creates certain regulations that prevent some institutions from possibilities to invest and opens opportunity for other investors that might be related to government officials. Other typical grand corruption type is "kickbacks" also known as bribes. There are various examples of grand corruption when attracting FDI, but one of the recent major scandals has been provoked by "Siemens" corporation, as their actions undertaking projects in foreign countries included such deals as paying $5 million to the son of the Prime Minister to win a mobile phone contract in Bangladesh or paying $12.7 million to various officials to win government telecommunications contracts (Hill 2011).

Petty corruption is everyday abuse of their work position by low and mid-level public officials in their interactions with ordinary citizens (Transparency International 2010). Multiple examples include small sums of bribes varying from healthcare to education, but such type of corruption has no direct relation to FDI inflows.

Public sector corruption takes place, when decentralized government units, such as police, courts, healthcare

or other institutions uses public funds to satisfy their, rather than public, needs. However, this type of corruption does not make direct effect to FDI, so is not being analysed in more detail.

Due to the reasons mentioned above, the following parts of the article focus on the effect of grand corruption, as it directly affects FDI inflows in particular country.

1.2. Corruption in European Union

Corruption is usually associated with third world countries, but levels of corruption in European Union are still high and may cost EU economy around 120 billion euro a year (European Commission 2014), whereas an average freedom from corruption index in EU in 2014 was 61. The higher it is – the less corrupt country is. Even though, it may be difficult to interpret this number, world average in 2014 was around 42, therefore EU average is well above world average. However, levels of corruption in European Union countries remain high and affect their economy growth, competitiveness in global market or ability to attract foreign direct investments. Worth mentioning that it is expected that freedom from corruption index average in EU will rise by nearly 2 units, meaning corruption is levels are dropping. Following Figure 1 provides statistical data of corruption levels in European Union in 2014. Greece had highest corruption level in 2014 in European Union, as its freedom from corruption rate was only 33, which ranks only 90th in the world, below such countries as Colombia or Marocco. As expected, Scandinavian countries are amongst the least corrupt in EU, whereas Baltic states Latvia and Lithuania fall below the average and Estonia above it.
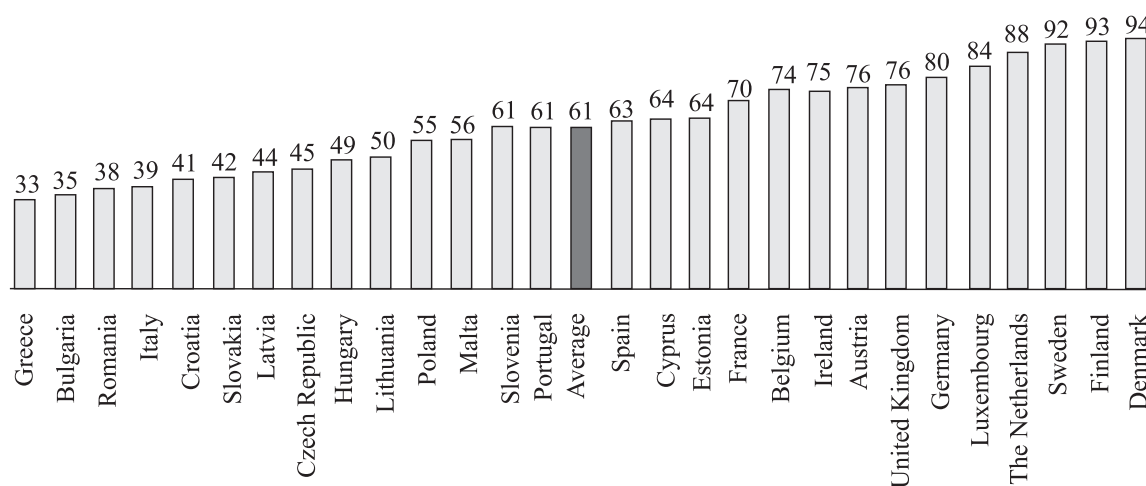

Figure 1. Freedom from corruption index in EU member states in 2014 (source: Heritage International 2015).

1.3. Effects of corruption

Multiple scientists and scholars indicate that corruption has adverse effects on economic performance (Al-Sadig 2009). It may negatively affect economic growth or levels of investment (Mauro 1995) and particularly, foreign investments (Castro and Nunes 2013), increase income inequality (Jong-sung and Khagram 2005), impact healthcare and education systems (Gupta et al. 2000) or negatively influence multiple other economic indicators. In the context of FDI, corruption may be seen as a potential extra cost or, as discussed before, a tax for the investor, which is a direct increase of cost of doing business in a particular country. Furthermore, other previously mentioned factors are also influenced by corruption may undirectly effect FDI levels by harming business environment for foreign investors, thus leading to lower levels of FDI. Moreover, there are other indirect costs, and as Kolstad and Wiig (2013) states, corrupt countries typically also have lower quality public investments, for instance in infrastructure, which makes business operations more costly. Authors also believe that public officials have improved bargaining position once investment by foreign investor has been made and corrupt officials may be less credible not to exploit this possition and therefore it makes investments in corrupt countries less likely in the first place. Analyzing all these mentioned arguments scholars usually agree to the hypothesis that increasing corruption levels in a particular country will typically lead to reduction of FDI. On the other hand, some scientists believe that corruption may not be costly for foreign investors, but rather beneficial.

Some countries have strict regulation and inefficient bureaucracy, which may lead that it takes a lot of time for investor to undergo bureaucratic procedures. In such case corruption may increase bureaucratic efficiency by speeding up the process of decision making (Bardhan

1997). However, this view has been rejected empirically (Al-Sadig 2009). Other positive of effects corruption include securing contracts or licenses, access to information or other sources of economic rents (Kolstad and Wiig 2013). Hence, considering these factors it is possible that foreign investors may want to undertake projects in corrupt countries as bribe value is lower than value of time undertaking bureaucratic procedures. In such case increase of corruption would lead to increase of FDI and as Kolstad and Wiig (2013) states, this is a particularly relevant in the extractive industries, such as mining and petroleum, where the rents to be gained from securing access to resources is potentially huge. However, such potential effect is questionable and multiple scholars have rejected empirical relationship that increase of corruption will lead to increase of FDI, but following parts of this article will empirically test such possibility.

1.4. The concept of FDI inflows in economics

There are various definitions of foreign direct investment, but since further analysis focuses on European Union countries, definition provided by IMF is chosen, due to the fact that EU countries often use such definition: "*Direct investment is the category of international investment that reflects the objective of a resident entity in one economy obtaining a lasting interest in an enterprise resident in another economy. The lasting interest implies the existence of a long-term relationship between the direct investor and the enterprise and a significant degree of influence by the investor on the management of the enterprise. Direct investment comprises not only the initial transaction establishing the relationship between the investor and the enterprise but also all subsequent transactions between them and among affiliated enterprises, both incorporated and unincorporated*" (International Monetary Fund 2013). It seems reasonable that every country wants to attract FDI, since it may be potential source of economic growth. Direct positive effect is countries ability to accumulate capital, whereas indirect effects include promotion of productivity growth through technology transfer and allows avoiding or accumulating lower levels of debt (Okada and Samreth 2010). So, as every country wants to attract FDI, it is worth analysing what are the motives for investors to invest in particular countries in order to compensate for the costs of operating abroad, a firm must incur significant advantages of going multinational (Carstensen and Toubal 2003). One of the first scholars, who analysed FDI inflows, stated that there are four motives for investing in a particular host country: market-seeking motives (getting access to consumer markets), efficiency-seeking motives (exploiting factor price differences between countries), resource-seeking motives (accessing resources), and strategic motives (increasing

market power) (Dunning 1977, 1981). However, FDI inflows can also be affected by economic indicators. It is widely believed that increase in FDI is closely related to size of host country's economy, its growth rate, but scientists identify other determinants, such as business facilitation and institutional framework (Castro and Nunes 2013); tax system, simplicity to establish business in a country, property rights (Habib and Zurawicki 2002) and other factors. All these factors are seen to be important determinants of FDI levels in a country. Therefore, foreign investors would tend to avoid investing in countries with high levels of corruption (Al-Sadig 2009). However, this article intends to analyze the relationship of corruption for inflows of FDI, but previously mentioned institutional determinants must be included in the statistical models as a control variables.

So this article in the following parts intends to answer a question whether a country receives more or less FDI when corruption increases and measure by how much FDI in a country would increase/decrease if corruption grows, while holding other FDI determinants constant.

2. Methodology and data

Analysis of scientific literature determined that FDI inflows are subject to diverse restraints, rather than only corruption and varies from legal and taxation system to economic indicators. In order to analyse complex view of the effect of corruption on FDI, multiple independent variables are being used in statistical analysis, taking into account limitations of the data.

Dependent variable: FDI inflows in a particular country at a given year. Variable is measured in US dollars at current prices and exchange rates in millions, due to availability of FDI inflows data, measured in Euro.

Independent variable: Freedom from corruption is measured in a 100-point scale, where 0 indicates very high corruption and 100 – no corruption in a given country.

Control variables: property rights; fiscal freedom; government spending; business freedom; labour freedom; monetary freedom; trade freedom; investment freedom; financial freedom. Worth mentioning that these control variables include in the previous sections described financial and economic indicators in a country. For example: fiscal freedom includes taxation on new businesses; monetary freedom includes measure of inflation, etc. More about each control variable and its measurement could be found in http://www.heritage.org.

Benchmark FDI equation, chosen for statistical analysis is provided in Figure 2, where βs are unknown parameters to be estimated and ε is the usual random disturbance.

$$FDI\ inflows = \beta_0 + \beta_1 freedom\ from\ corruption + \beta_2 Property\ rights + \beta_3 Fiscal\ freedom +$$
$$\beta_4 Government\ spending + \beta_5 Business\ freedom + \beta_6 Labour\ freedom +$$
$$\beta_7 Monetary\ freedom + \beta_8 Trade\ freedom + \beta_9 Investment\ freedom +$$
$$\beta_{10} Financial\ freedom + \varepsilon$$

Figure 2. FDI inflows equation (source: created by the authors).

Model includes analysis of panel data: FDI inflows data has been collected from UNCTAD, whereas other statistics from Heritage International. Analysis covers 15 years span: from 2000 to 2014, as data for 2015 is still not available.

Panel data analysis approach has apparent advantages as Baltagi (2005), Al Sadig (2009) states, using panel data much larger sample size could be employed than in time-series or cross-sectional data and the estimates of the regression coefficients are more reliable.

Description of model method: In this article, statistical analysis is conducted using three modelling methods: pooled OLS, fixed effects, random effects that are widely used by other scientists analysing the subject. However, before determining the most appropriate method for results interpretation three statistical tests have been implemented: joint significance of differing group means testing; Breusch-Pagan and Hausman tests.

3. Results and discussion

As mentioned in the previous section, analysis covers 15 years span: from 2000 to 2014. For analysis 15 EU countries has been selected: Bulgaria, Croatia, Czech Republic, Greece, Hungary, Italy, Latvia, Lithuania, Malta, Poland, Portugal, Romania, Slovakia, Slovenia and Spain. The only criteria for selecting these countries for the analysis are their corruption level in a country in year 2014, as according to data of "Heritage International" these 15 countries has been the most corrupt European Union countries in 2014. Hypothesis behind such choice: corrupt EU countries may have lower FDI levels than less corrupt countries due to the reason that investors shy away from investing into corrupt countries, as it brings extra costs. Empirical study has been implemented using statistical analysis software "Gretl" and modelled on the bases of previously provided FDI inflows equation. Table 1 provides results of all three commonly used statistical analysis methods: pooled OLS, fixed effects, random effects. However, statistical tests results show that the most appropriate statistical analysis method for the interpretation of the results is pooled OLS, or as further addressed – OLS.

Table 1 presents regression results of freedom from corruption effect on FDI inflows, eliminating other control

Table 1. Corruption effect on FDI inflows (source: created by the authors).

Dependent variable: FDI inflows (mln. USD)			
	OLS	Fixed effects	Random effects
Constant	–8745.09***	–8724.47***	–8724.47***
Freedom from corruption	330.58***	330.14**	330.14**
n	225	225	225
Adj. R^2	**0.109**	0.103	0.103

* Significance at 90% level, ** at 95% level and *** at 99% level.

variables, therefore meaning they remained constant in the analysed countries during 2000–2014 year span. Results in the table show that freedom from corruption effect on FDI inflows is significant at 99% level and indicate that increase of freedom from corruption index by 1 unit (meaning the corruption in the country has decreased) will lead to an average increase of 330.58 mln. USD *ceteris paribus*. Such number seems to be extremely high, but worth mentioning that corruption index is rising by lower yearly rate than 1 unit in observed countries during selected period of time, so actual increase of FDI inflows if corruption level decreases typically would be lower. However, opposite relationship might suggest that increased FDI inflows lead to decrease of corruption, but in the context of this article the opposite relationship is not examined and should be determined in further studies. OLS model results show that freedom from corruption variable only explains 10.9% spread of FDI inflows, as $R^2 = 0.109$, meaning up to 89% of FDI inflows can be explained by analysis of other variables. Furthermore, elimination of control variables in the analysis leaving them constant over the years is not feasible or statistically correct. Thus, Table 2 below presents regression analysis results of freedom from corruption effect on FDI inflows, including control variables, which according to scientific literature analysis might determine the inflows of foreign direct investments and explain larger amount of FDI inflows.

Regression analysis, presented in Table 2 includes multiple variables, which might be significant determining the size of FDI inflows and acts as control variables when measuring the effect of corruption on the level of

Table 2. Corruption and control variables effect on FDI inflows (source: created by the authors).

Dependent variable: FDI inflows (mln. USD)			
	OLS	Fixed effects	Random effects
Constant	–5841.27	–6040.33	–6040.33
Freedom from corruption	211.17**	210.38**	210.38**
Property rights	–213.59***	–213.82***	–213.82***
Fiscal freedom	–634.72***	–636.39***	–636.39***
Government spending	160.19**	161.37**	161.37***
Business freedom	–64.68	–64.76	–64.76
Labour freedom	99.99	100.04	100.04**
Monetary freedom	8.80	8.68	8.68
Trade freedom	278.06**	281.60**	281.60***
Investment freedom	115.94	115.75	115.75*
Financial freedom	302.44***	303.20***	303.20***
n	225	225	225
Adj. R^2	**0.338**	0.332	0.332

* Significance at 90% level, ** at 95% level and *** at 99% level.

foreign direct investments. Freedom from corruption index, as expected, remains significant at 95% level for determining FDI inflows, whereas not all control variables appeared to by significant: property rights, fiscal freedom and financial freedom indexes are significant at 99% level, while trade freedom at 95%. Other variables proved to be insignificant. While analysing the results of expanded regression analysis, it could be stated that increase of freedom from corruption index by 1 unit (meaning the corruption in the country has decreased) will lead to an average increase of 211.17 mln. USD of foreign direct investments in particular country at a given year. For example: if Lithuanian freedom from corruption index in 2014 was 50 and it increases to 51 in 2015, theoretically Lithuania on average should attract additional 211,17 mln. USD FDI inflows, comparing to 2014.

The analysis shows that results in some cases could be ambiguous: increase of property rights by one unit, meaning private property guarantees by the government increases, court system enforces contracts quicker and more efficiently will lead to decrease of FDI inflows, even though it seems that increase in property rights index means positive impact on business environment for foreign investors. However, ambiguous results could mean foreign investors might not trust governments, court systems or other governmental institutions. These issues fall out of the context of this paper and therefore should be examined in further studies by authors. Other results reveal that increase of fiscal freedom, meaning taxes in a country are increasing will lead to decrease of

FDI; increase of government spending, trade freedom and financial freedom will lead to increase of FDI. After including multiple control variables into regression analysis, adjusted R^2 equals to 33.8%, therefore meaning not only corruption effect on FDI inflows is low, but also other factors, traditionally seen as determinants of the size of foreign direct investments.

In order to further analyse the relationship between FDI inflows and corruption effect, correlation matrix between these two variables has been implemented, using previously described data for 15 selected countries from year 2000 to 2014. Null hypothesis states that these two variables correlate between each other, whereas alternate hypotheses do not see a relation between them.

H0: Freedom from corruption index and FDI inflows are not correlated

Ha: Freedom from corruption index and FDI inflows are correlated [P-value: 0.00]

When, P-value is lower than 0.05, then *H0* cannot be accepted and therefore *Ha* is not rejected, which states that freedom from corruption index and FDI inflows are correlated. Correlation between these two variables in observed countries during 2000 and 2014 years span is 33.62%, meaning correlation is positive and both variables move in the same direction – as one goes up, the other goes up, or vice versa. Such relation is also presented in a XY scatter plot, provided below (Fig. 3).
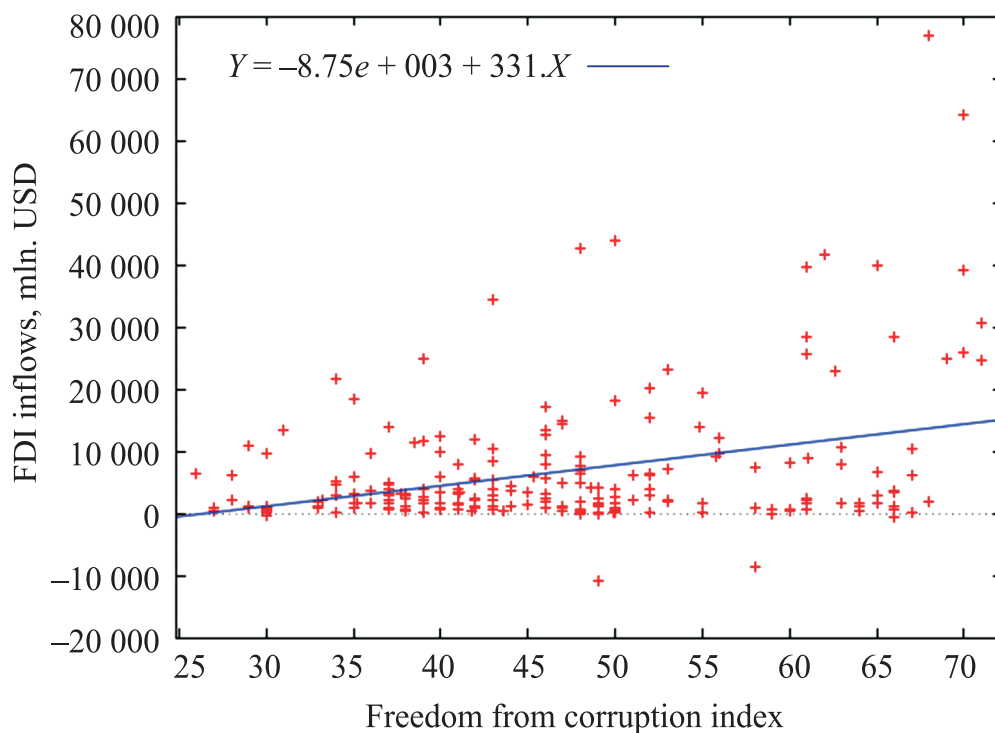
$$Y = -8.75e + 003 + 331.X$$

Figure 3. FDI inflows and freedom from corruption scatterplot (source: created by the authors).

Conclusions

In economics multiple corruption definitions are used, but typically corruption is defined as an act where one of the parties enters into an agreement with a third party against the interest of another. In the context of this analysis, these parties usually are society and government officials. While obtaining FDI, corruption takes place when illegal payments for government are made. This may be seen as an additional tax on investments in foreign country, thus decreasing the levels of FDI.

Scientific literature analysis have shown that corruption has adverse effect on FDI inflows. Multiple scientists not only have acknowledged that corruption decreases FDI directly, as investors do not want to pay additional costs for doing business in a country, but it may also undirectly effect FDI levels by harming business environment for foreign investors. It may happen by increasing income inequality, negatively impacting healthcare and education systems or through other indirect channels, such as lower quality of public investments and improved public officials bargaining positions. However, corruption may postively effect FDI inflows by speeding up the process of decision making, securing contracts, licenses and access to information or other sources of economic rents.

After formulating statistical models for corruption effect on FDI, it has been determined that corruption negatively affects foreign direct investments inflows. According to the results of the research decrease in corruption by one index unit (meaning freedom from corruption index rises by 1) on average will amount to 211.17 mln. USD rise in FDI in particular country at a given year. For example: if Lithuanian freedom from corruption index in 2014 was 50 and it increases to 51 in 2015, theoretically Lithuania on average should attract additional 211.17 mln. USD FDI inflows, comparing to 2014. However, freedom corruption index on average is rising by lower yearly rate than 1 unit, thus meaning decrease of corruption typically leads to lower rise in FDI inflows than 211 mln. USD a year. Regression analysis results show that corruption and its control variables only amount to 33.8% of explained spread, meaning there are other variables that may affect corruption. As authors analysis suggests these determinants could be indirect or "soft", such as quality of public investments, public officials bargaining positions or other factors. In order to determine and statistically test these hypotheses, continuous analysis of surveys and questionnaires results are needed and thus must be examined by authors and other scholars in further researches.

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