

FDI, Economic Freedom and Growth. Are they related?

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Abstract

The purpose of this thesis work is to clarify relationship between foreign direct investments, economic freedom and growth. I conducted my research on the panel sample of 52 developing countries for the period from 1995 till 2009 using both Fixed Effects and first-difference GMM estimation. The method of FE was found to be unreliable due to the endogeneity of some of the variables included in the study. The GMM estimation of dynamic model showed that both of the variables of my interest (FDI and EF) positively influence the economic growth. However, when employing the decomposed index of economic freedom published by the Heritage Foundation in the growth model I found that only two out of ten components of the index have impact on the growth. These components are: Business Freedom and Monetary Freedom.

Keywords: Economic Freedom, FDI, first-difference GMM, growth.

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1. Introduction

There are many empirical studies that have attempted to shed light on the fact that some countries have achieved high growth rates while others are still being in the phase of stagnation. Among the factors which are considered to be determinants of growth are FDI and economic freedom.

Nowadays economists emphasize the crucial role of institutions of the countries and therefore the concept of “Economic Freedom” has been widely discussed in recent economic literature. Reconsidering the theory of the growth, we can say that not only labor or technology could be viewed as determinants of the prosperity, but also a degree of Economic Freedom (from now on EF).

EF simply reflects institutional environment inside a country. To evaluate a degree of EF for each and every country, different indices of EF were constructed. Gwartney, Lawson and Block (1996) designed an EF index which by their definition was “the measurement of the degree to which countries approach the notation of free markets”. There have been more attempts to construct an index of EF, but there are only two that are widely used by economists in their studies: the index of EF that constructed by Fraser Institute and the index build by the Heritage foundation and the Wall Street Journal. In my thesis work I am going to use the latter one.

According to the Heritage foundation, EF can be defined as “the absence of government coercion or constraint on the production, distribution, or consumption of goods and services beyond the extent necessary for citizens to protect and maintain liberty itself” (2006 index of Economic Freedom). The overall index contains 10 variables (these will be defined in the Glossary section of this paper).

The nature of relationship between FDI and growth has been a widely discussed issue of excessive amount of economic literature. Although, one would think that the positive correlation between FDI and growth variables is trivial, there are still debates on this topic. In my thesis work I aim to analyze if the variation in the economic growth could be explained by the differences in the levels of both EF and FDI. I particularly focus on developing countries.

One more interesting point to be studied is that despite of the fact that importance of developing economies in international trade is increasing rapidly and these countries are getting access to foreign capital, still their growth rates are not high. Following Azman-Saini et al.(2010), I test if the effect of FDI on growth depends on the level of EF.

Applying first-difference GMM estimator on the dynamic growth model, I established that both EF and FDI variables have positive and significant coefficients and therefore can be considered as engines of economic growth. When using disaggregated index of EF I obtained interesting results that suggest the importance of only two out of ten components of the index: Business Freedom and Monetary Freedom. The robustness check of the model shows the credibility of the method and findings of the work.

The rest of this work is structured in the following way: in the next section I provide the review of the previous studies on the topic. The third section introduces the variables involved in the estimation and descriptive statistics. In the section four, I explain the estimation procedure and the methodology. The fifth section discusses the results. I finish my thesis work with conclusive remarks about the work done.

2. Literature review

The nature of the relationship between FDI and economic growth has been questioned by many policymakers and researchers. Although, the majority of the studies support the idea that FDI boosts economic growth, there is also evidence of negative correlation between these two variables.

In general, over recent years the role of FDI has been emphasized more and more. There is a strong belief that FDI provides positive externalities for the host countries. As an example, we may consider all the advantages due to the existence of multinational companies (MNCs). These are the creation of new working places, attraction of the leading technology and improvement of the quality of human capital. Also, the existence of MNCs stimulates competition: local firms will try to catch up and to improve their products/services by doing more R&D and involving modern technologies. According to Aleksynska, Gaisford and Kerr (2003) there is a positive relation between FDI and domestic investment. As the authors suggest, it can be due to competition: as it was already mentioned, domestic firms, in order to survive on the market, have to use technological innovations in the production process. These findings are similar to the results of Borensztein et al. (1998) and Alfaro et al. (2009) according to whom FDI and domestic investment could be considered as complementarities. Borensztein et al., analyzing the effect of FDI transfers from industrial countries to developing economies, concluded that in general the effect of FDI flows on the economic growth very much depends on the level of human capital in the recipient countries.

As it was already mentioned, the nature of the relationship between FDI and growth is not so decisive. Empirical evidence on the topic is twofold. On the one hand, there are economists like Alfaro and Borensztein who argue that there is positive link between FDI inflows and country growth. And opposed to these researchers, there are also economists

who argue that FDI inflows could actually even hamper the macroeconomic growth of the host countries. Alfaro (2003) found that the effect differs across different sectors of the economy. The author shows that FDI inflows are beneficial for the manufacturing sector but negatively influences the primary sector of the economy. There are also works that did not find any evidence of positive influence of FDI on growth (Carkovic and Levine, 2003, Aitken and Harrison, 1999). Schmidt (2008) in his study of the linkage between FDI and growth found that there is a threshold of the amount of FDI country should receive before its economic growth positively responds. The empirical evidence of the study suggests that effect is larger for countries with lower income.

A priori one expects that foreign investments to developed and undeveloped economies have different impact on the countries' growth rates. There is a vast amount of economic literature that makes a comparison of FDI inflows to both of the groups of the countries. Goodspeed, Martinez-Vazquez and Zhang (2009) perform such an analysis by examining the host countries' (both for developed and developing economies) governance level, taxation policy and infrastructure conditions. Taxation policy has been found to be an important factor for investment decisions to developed countries but at the same moment does not seem to play a great role for developing ones. As for what goes for connection between governance of the host country and infrastructure conditions, both of them positively related with the levels of FDI: the better the governance and infrastructure, the greater are the amounts of capital inflows to the country. These results are applicable for both groups of countries.

There is also new flow of economic literature that attempts to explain conflicting results of the FDI-growth linkages across the countries with the differences in the level of economic freedom. There are number of studies that attempt to show from where comes the difference and what factors become crucial for investors while making the decision to invest

money abroad. The general argument of this new literature is that investors' decision to invest in a foreign country is very much connected with the economic situation inside the country and the state of the institutional environment. Thus including the various measurements of EF could help to estimate the real effects of FDI on growth rates. Usually such kinds of studies use already constructed special indices which represent the combination of different components defining the various qualities of countries institutions.

The study of Bengoa and Sanchez-Robles (2002) shows connection between economic freedom, FDI and growth. The authors performed the panel estimation on the sample using the index of EF provided by Fraser Institute. The econometric estimation included some other variables-determinants of FDI, such as market size of the investments recipient country, the extent of openness, external debt conditions. After performing the Hausman test, the authors decided on the use of the fixed effects method of estimation for their research. The result of econometric analysis shows that countries with higher index of EF have more inflows of FDI and thus have greater growth rates. Another research on the topic was conducted by Gwartney, Lawson and Holcombe (1999) who constructed their own index of EF, which serves as the base of the index reported by Fraser's Institute. The index consists of 4 components which are the following: money and inflation, structure of the economy, discriminatory taxes and international trade. Assuming that changes in economic freedom would not immediately exert changes in growth rates; the authors estimated the index for four five-year intervals. The results of the estimation showed the significance of all the intervals. The overall result of this study suggests that the amount of FDI inflows to the country changes positively in accordance with the level of EF. Gwartney, Lawson and Holcombe also tested the direction of causality between growth and economic freedom variables. The result of the test shows that there is only one-way causality which is the one mentioned above.

The index of EF provided by the Fraser Institute was used in a large number of studies. J.de Haan and J.-E. Starm (2000) used the index in growth-economic freedom regression to check the character of relationship between variables. To check for endogeneity the authors ran the regressions with two EF indices: the level of EF for the beginning of the study period and the changes in the levels of EF in-between the whole estimation period. The possibility of an endogeneity problem was tested with the test first performed by Maddala (1992) and the null hypothesis of the test was rejected. The main result of the authors' estimation is that there exists a positive linkage between Economic freedom and growth, but at the same time the level of one variable does not affect the level of the other one.

One more study with the use of Fraser Institute's index of EF was made by Azman-Saini, Baharumshah and Law (2010). Applying two-step Generalized Method of Moments Estimation on the panel sample of both developing and developed countries, the authors attempted to evaluate how the level of the freedom inside the countries affects the presence of MNCs and if the latter one contributes to the growth of the countries. The validity of the GMM estimator was tested with the use of Hansen's J-test. The null hypothesis of the test was not rejected and therefore the model specification is correct. According to the outcome of estimation the coefficient on FDI does not have enough explanatory power which implies that FDI variable by itself has no effect on the growth. On the other side, the coefficient on the interaction term $FDI \times EF$ was found to be positive and statistically significant which leads to conclusion that growth rates increase with the increasing levels of FDI and economic freedom. One specific fact about the described study is that the authors used disaggregated index in the estimation in order to identify which particular components of EF have effect on the both FDI and growth variables. Three out of four components of the Fraser's index found to be significant factors for investments decisions: market regulations, freedom to trade with foreigners and security of property rights. The general result of the research by Azman-Saini

et al. shows that the presence of MNCs supported by high levels of freedom has positive impact on the growth. Giving the same arguments as previous authors, Carlsson et al. (2002) also used decomposed index of EF in growth-EF regressions. But unlike Azman-Saini et al., they got significant coefficients only on two components of the index: legal structure and private ownership, and freedom to use alternative currency.

Contrary to the previous authors, Herzer D. (2010) argues that FDI inflows can actually negatively contribute to economic growth. As the author found that there was quite a big variation in the effects of FDI, he tried also to identify which particular factors might be responsible for these differences. Examining the sample of developing countries using the index of EF introduced by the Heritage Foundation, he also found that FDI inflows to these countries grow simultaneously with the increasing freedom from government intervention. Another interesting finding of the paper is that high dependence on natural resources could constrain the growth of developing countries.

Caetano and Caleiro (2009) made a comparative study to define the difference in FDI-economic freedom relations in EU and Middle East North Africa region (MENA). They used EF index constructed by the Heritage Foundation. The choice of MENA was due to the fact that the countries in the region were involved in the active process of privatization which leads to changes in institutional systems and it makes those countries attractive for foreign investors. The most interesting idea of the paper was comparison of MENA region and EU using the fuzzy logic approach. Caetano and Caleiro divided FDI-Economic freedom space in various clusters to identify the relationship between variables and then to see how different are the two samples of the countries. The results suggest that FDI inflows depend on the level of freedom and therefore it would be beneficial for countries to improve the situation with corruption and level of transparency. Regardless the common opinions about the differences

between countries from the samples, some MENA countries actually represent the same cluster as the EU countries.

3. Data and descriptive statistics

For the analysis of the connection between EF, FDI and growth data for 52 developing countries covering period between 1995 till 2009 was collected. The main source of the data is the World Bank's open dataset. For the index of EF, I use the product of the Heritage Foundation and the Wall Street Journal. The period of estimation was chosen according to the availability of the EF index. Since the index has been published from 1995 I take it as the beginning of my estimation period. As I aim to study the long run effects FDI and EF on the growth, I consider the longest possible period, 15 years (1995-2009). One of the peculiarities of the current study is the fact that it was undertaken for quite recent period. In my regressions I also employ the index provided by the Heritage Foundation and the Wall Street Journal, while usually similar studies use the index published by Fraser Institute.

There are several reasons behind the choice of the sample. First, the effect of FDI inflows on growth is expected to be different for developed and developing economies. Of course for the later group of countries there is higher dependence on the access to foreign capital. Second, as another aspect of this work is to exploit the impact of EF on economic growth, it would make more sense to consider the economies which are still in process of integration into the global market and on their way of improving the state institutions and investment environment. Therefore I assume that by taking a homogeneous sample consisting of only developing economies would make the effect of the EF on the economic growth clearer (if there is any).

The index of EF provided by the Heritage Foundation and the Wall Street Journal consists of 10 components representing measures of different freedoms of the countries. Each of the index components was assigned a score using the numbers between 0 and 100. The total score of the EF is the average of the freedoms grades. The higher the score, the

more freedom the country has. The meaning of each of the freedoms is explained in Glossary section of the work, using the definitions provided in the report “2009 Index of Economic Freedom”

Another main variable of my estimation is FDI inflows as percentage of GDP. I denote it as *FDI*. As the dependent variable I take the per capita GDP growth in one of the models. In all the other models the explained variable is natural logarithm of countries’ GDP per capita ($\log(GDP)$).

As suggested by broad economic literature, human capital can be considered as one of the important determinants of the growth (Qadri et al., 2009). Thus I include in my regressions life expectancy data as a proxy for human capital. I control as well for labor force participation and inflation rates. To account for the size of the countries the labor force was divided by the total population. Due to the fact that the index of EF consists of components that theoretically should explain the major part of the cross country variations in economic growth, I do not include the variables that are usually presented in FDI-growth studies. All the data for this study, except the index of EF were collected from the World Bank’s open dataset.

Table 1 represents the descriptive statistics of the variables exploited in the study. The maximum level of the index of EF, 78, was scored by Estonia in year 2007. Thus Estonia belongs to the group of “mostly free countries” (as defined by the Heritage Foundation). The country that has the minimum score in the sample (33) is Moldova and according to these statistics it represents the group of “repressed countries”. So although the sample is homogeneous in a way that all the countries belong to the developing economies group, there is still a big difference in the scores of the EF index within the sample.

Table 1 Descriptive Statistics of the variables employed in the study.

	<i>Log(GDP)</i>	<i>EF_TOTAL</i>	<i>FDI</i>	<i>INFL</i>	<i>Log(LABOR)</i>	<i>Log(LIFE_EXP)</i>	<i>GDP_GROWTH</i>
Mean	7.60	59.01	3.61	14.49	3.73	4.20	4.07
Median	7.60	58.95	2.67	6.79	3.76	4.24	4.60
Max	10.34	78	51.06	1058.37	4.05	4.38	13.30
Min	5.44	33	-5.14	-3.10	3.13	3.72	-15.10
Std. Dev.	1.08	7.75	4.25	51.59	0.16	0.13	3.82

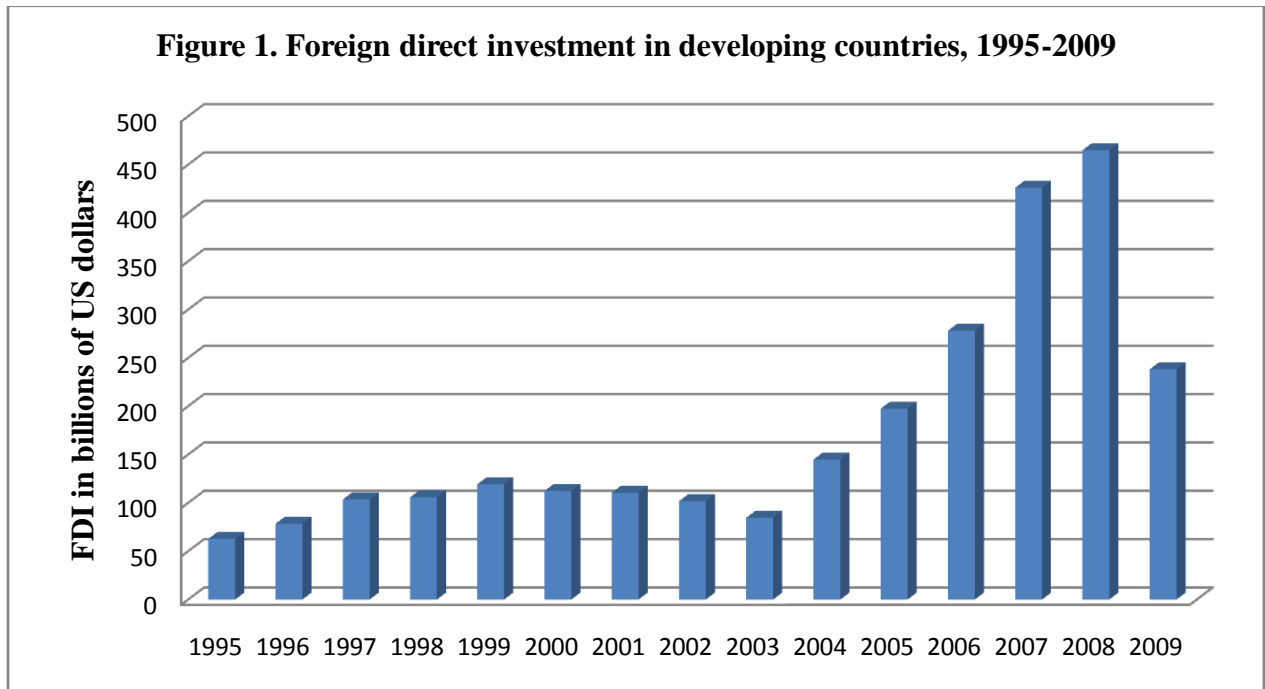
In Table 2 I provide the EF index statistics of the whole sample for the end of the estimation period (2009) following the categories created by the Heritage Foundation and the Wall Street Journal. The full list of the countries can be found in the Appendix.

Table 2 The categories of the countries involved in the study

SCORES	CATEGORY	NUMBER OF COUNTRIES
80-100	<i>Free</i>	0
70-79.9	<i>Mostly free</i>	2
60-69.9	<i>Moderately free</i>	22
50-59.9	<i>Mostly unfree</i>	25
0-49.9	<i>Repressed</i>	3

The sample is represented with almost all the categories except for the category of the “free” countries. Therefore it makes it relevant to explore the variations in the cross country growth rates taking into consideration the differences in the freedom scores. There is also quite a big difference between the minimum and maximum value of the *FDI* variable, which as well might affect the countries’ growth.

As it was mentioned, in recent years the role of the FDI has been growing rapidly. Learning the lesson from the crises in Latin America and Asia, developing economies try to attract more of the long term investments mainly by improving the business environment. And as it has been shown in Figure 1, for the sample of the countries involved in this study, there is an obvious positive trend in FDI amounts received throughout the study period.



The total net flow of FDI to the countries grew from 60 billions of US dollars in 1995 to 450 billions in 2008. When observing statistics for the two last years of the study period, one could see a significant drop in FDI of about 220 billions. The most probable explanation of this extreme change is the Global Financial Crisis (2007-2009). Indeed, as reported in “UNCTAD Financial Brief” (2009) the total change in global FDI measured at the end of the year 2008 shows 20 % decline. It was also truly predicted by the authors of the report that for developing economies it was just the beginning. And the following figure could be considered as the support of these predictions.

Before proceeding to the next chapter, I provide some expectations concerning the results of this study. First, as followed from the previous studies on the topic, I expect that both FDI and the index of EF have significant positive effect on the growth rates. But on another hand, I also expect that it might be that not all of the components of the index contribute to the economic growth. Thus using the decomposed index, I will investigate which particular freedoms matter for the growth.

4. Empirical Methodology

To identify what kind of relationship exists between FDI, EF and growth, I will first perform estimation on the panel sample using the Fixed Effects method. I will check if differences in FDI inflows and level of EF explain the variations in the growth rates across the countries of the sample. Taking into account that Fixed Effects might not be the perfect methodology in this case because of the possible endogeneity of some of the RHS variables, I will also estimate the relation between growth, EF and FDI using the generalized method of moments (GMM).

I start the estimation procedure by testing the following model:

$$\begin{aligned} GDP_GROWTH_{it} = & \alpha_t + \beta_1 EF_TOTAL_{it} + \beta_2 FDI_{it} + \beta_3 \log(LABOR)_{it} + \\ & + \beta_4 \log(LIFE_EXP)_{it} + \beta_5 INFL_{it} + \gamma_t + U_{it} \end{aligned} \quad (1),$$

The model (1) was analyzed applying the Fixed Effects method. Controlling for life expectancy (human capital proxy)¹, labor force and inflation, I will check if there is expected positive relation between FDI inflows and growth as well as the positive impact of EF on the growth. Fixing the period of the study (γ_t) helps to take care of time specific macroeconomic events.

The next step would be performing estimation using generalized method of moments. The GMM estimation would solve the problem of possible endogeneity. Since in the next step I use dynamic model, I apply the Arellano and Bond (1991) first-difference GMM estimator, which is considered to be the most efficient way of estimation in this case.²

¹See Azman-Saini et al. (2010)

²See Wooldridge J.(2001)

The following model was broadly used in the similar literature on the topic of connection between FDI, EF and growth.

$$\log(GDP)_{i,t} = \alpha \log(GDP)_{i,t-1} + \beta_1 EF_TOTAL_{it} + \beta_2 FDI_{it} + \beta_3 \log(LABOR)_{it} + \beta_4 \log(LIFE_EXP)_{it} + \beta_5 INFL_{it} + \eta_i + U_{it} \quad (2),$$

where η_i denotes country-specific effects. All the other variables are the same as in the model (1) and they were thoroughly defined in the Data and Descriptive Statistics section.

The specification of the model above is very similar to the one used by Azman-Saini et al. (2010). Unlike those authors I also include in the list of control variables inflation. The difference GMM estimator transforms the equation (2) into first-differences as following:

$$dif_log(GDP)_{it} = \alpha dif_log(GDP)_{i,t-1} + \beta_1 dif_EF_TOTAL_{it} + \beta_2 dif_FDI_{it} + \beta_3 dif_log(LABOR)_{it} + \beta_4 dif_log(LIFE_EXP)_{it} + \beta_5 dif_INFL_{it} + dif_U_{it} \quad (3)$$

The prefix *dif* is used here to denote the first differences. The modification of the equation (2) to the first differences eliminated the country-specific effects.³

As the instruments in the estimation of (3) I take the lags of the variables that are suspected to be endogeneous (Arellano and Bond, 1991). Thus I put in the list of instruments lags of the following variables: *FDI*, *log(GDP)*, *EF_TOTAL*. The left control variables *dif_log(LABOR)*, *dif_log(LIFE_EXP)*, *dif_INFL* are instruments for themselves. Also I include as the instrument *FDI* variable in levels. I expect that the level of EF does not change very frequently, and therefore I take as instrument the fifth lag of this variable. Also one should expect that effect of FDI is also not immediate: if the multinational company was established this year it can possibly have an impact on the market only in few years or so.

³For more information see Arellano and Bond(1991)

The instruments should satisfy the moment conditions: each of them should not be correlated with the error term. I will also test for validity of this model and all the other models estimated with GMM, using the Sargan's test of over identifying restrictions (J-test). The null hypothesis of the test is implies that all the instrumental variables are valid. All the specifications used in the study were found to be correct and the results of the testing are shown in the Empirical results section of the work.

After obtaining the results from the differences GMM estimation of equation (2) as the next step I will perform the GMM estimation of the same model with added interaction term $EF_TOTAL_{it} * FDI_{it}$ (this term is also included in the list of instrumental variables). This step was done in order to test if there is indirect effect of EF on the growth. According to my expectations there should be a positive relation between economic freedom in the host countries (in this case in developing economies) and foreign capital flows. Positiveness of the term would mean that with both increasing FDI and EF increases the economic growth.

$$\begin{aligned}
 dif_log(GDP)_{it} = & \alpha dif_log(GDP)_{i,t-1} + \beta_1 dif_EF_TOTAL_{it} + \beta_2 dif_FDI_{it} + \\
 & \beta_3 dif_log(LABOR)_{it} + \beta_4 dif_log(LIFE_EXP)_{it} + \beta_5 dif_INFL_{it} + \beta_6 dif_FDI_{it} * \\
 & dif_EF_TOTAL_{it} + dif_U_{it} \quad (8)
 \end{aligned}$$

The equation (8) is the transformation of model (2) with the included in it above mention term. Again, Arellano-Bond estimator calculates first-differences and excludes country specific effects.

The last step of this study is testing the impact of each of the 10 components of the index of EF on the growth rate. It was concluded by number of authors, only some of the freedoms matter for the countries development (Azman-Saini et al, 2010). Since different authors found different components of the index to be significant, I include all of them in my

estimation. In this way I can test again the importance of particular freedom for growth.

Using again the GMM approach, I will perform the estimation of the following model⁴:

$$\begin{aligned} \log(GDP)_{it} = & \alpha \log(GDP)_{i,t-1} + \beta_1 BUS_F_{it} + \beta_2 FIN_F_{it} + \beta_3 FI_F_{it} + \beta_4 COR_F_{it} + \\ & \beta_5 GOV_SP_{it} + \beta_6 INV_F_{it} + \beta_7 LAB_F_{it} + \beta_8 MON_F_{it} + \beta_9 PR_{it} + \beta_{10} TR_F_{it} + \beta_{11} FDI_{it} + \\ & \beta_{12} INFL_{it} + \beta_{13} \log(LABOR)_{it} + \beta_{14} \log(LIFE_EXP)_{it} + \eta_i + U_{it} \end{aligned} \quad (9)$$

The lags of the all components of the index of EF were included in the list of instrumental variables. DIF_INFL , $DIF_log(LABOR)$ and $dif_log(LIFE_EXP)$ are instruments for themselves. While performing the GMM estimation of the model (9) as well as two previous models I fix the period and use White Period standard errors.

One more factor, which makes the current research different, is that unlike Azman-Saini et al. I employ the index provided by the Heritage Foundation. Both of the indices are very similar, but there is one major difference: the index of EF used by the previous authors consists of 5 components which in sum represent about 40 variables. The index used in this study divided into 10 components. Therefore when comparing the findings of both of the studies, I should take into consideration that the difference in the results (if there is any difference) may come from the fact that components of the Fraser's index are more aggregated. I provide the discussion of the results obtained with after estimating all of the above described models in the following chapter.

⁴ Note: the equation was again transformed into first differences by GMM. The notation of all the variables explained in Glossary section.

5. Empirical Results

This chapter introduces the empirical results of the estimation. I will provide the explanation of all the findings of this thesis work and will make comparison of my results with the results of the previous literature on the topic.

Table 3 depicts the results of the econometric estimation of equation (1) using the Fixed Effects method for panel data analyses.⁵

As it was mentioned before, this model has many flaws, especially because of potential endogeneity of the number of variables included in the study (*FDI*, *EF_TOTAL*). Contrary to my expectations *EF_TOTAL* variable has negative coefficient significant at 1% significance level. This would mean that economic freedom actually negatively influences the growth rates of developing countries. In the meanwhile negativity of the index might also imply that such components of the index as for example, Freedom from corruption, Investment freedom or Business freedom can possibly decrease the growth levels of the country. This contradicts any logical expectations and would be hard to explain.

While coefficient on *EF_TOTAL* has unexpected sign, the coefficient on *FDI* is not significant at all. The only result that is supported by economic literature is negative impact of inflation on the countries' GDP growth.

I initially assumed that applying the Fixed Effects methodology could be irrelevant for the current study, and that the model most probably would not reflect the real effects of economic freedom and foreign capital flows on growth rates variations. Therefore I decided on the use of GMM as it takes care of endogeneity that is assumed to be the main problem in the previous methodology.

⁵ In all the tables provided in the end of this section, ***, **, * are used to denote 1%, 5% and 10% significance level, respectively. In parenthesis are shown standard errors.

The results of the model specification (3) obtained after applying first-difference two-step GMM estimator described in Table 4.

The estimation of dynamic model with two-step GMM estimator suggests the results very different from the ones obtained earlier. Both *EF_TOTAL* and *FDI* variables are significant on 1% significance level and have positive coefficients. Thus according to this methodology, the economic freedom and foreign direct investments are catalysts of economic growth. One more variable that turned out to be significant and has logically expected sign, is *dif_INFL*.

These findings vary from the results obtained by Azman-Saini et al., although, they applied the same methodology. The previous authors argue that growing levels of economic freedom positively influence economic growth but the same cannot be said about FDI as it was found to be insignificant. The difference in the results of the current study and the research by Azman-Saini et al. might come from the fact that I took the sample consisting out of only developing countries while they performed the estimation for the both developed and developing economies. And therefore the results of this study obtained by using homogeneous sample can be also considered as support of the statement that foreign direct investments play greater role for developing countries. Another reason could be the difference in the indices used in the studies and period of the study.

Proceeding with my estimation, I added in the specification of the model (3) the interaction term *EF_TOTAL * FDI*, expecting to find it to be positive and significant, which would imply that there is also indirect effect of EF on the growth through FDI.

I again used differences GMM to estimate the equation (8). The results can be found in Table 5. As previously, the coefficients on *FDI* and *EF_TOTAL* are positive and

significant on 1% significance level. Contrary to my expectations, the interaction term turned out to be insignificant, which contradicts the assumption mentioned above.

The last, but maybe the most important issue of the current study was to clarify which parts of the index could be considered as the essential factors for economies' growth. Performing the estimation of the equation that contains decomposed index of EF, I obtained the results which are shown in Table 6.

One could see that only two out of ten freedoms are found to be significant. Those are Monetary Freedom and Business Freedom. The coefficients on the variables are significant on 1% and 5% significance levels respectively. Therefore we can say that for developing countries is very important to have price stability and good business environment. It is quite logical that for the country with the bad business environment there is no way to develop the market and it can only negatively affect the economic development. Concerning the Monetary Freedom: a stable currency ensures the stability of the market prices and also influences the decision of the foreign investors about the starting the business in the country. Also local businessmen instead of investing in some other country, would stay in the domestic market instead of the moving the capital abroad. And of course, this would help the developing of the country and its economic growth.

On the other hand, although the results suggest that the remaining 8 components are not crucial for the growth, it does not mean that they are not important in general. As the findings from the estimation of two previous models show that EF significantly affects growth, we can conclude that the overall index, or to be precise the level of it, is important for the growth. Another way to interpret the insignificance of most of the components would be saying that only all of the index's components together matter for economic growth. Thus,

if there is low level of corruption in the country, but at the same time low level of Investment Freedom, most probably the country would not have high growth patterns.

The above mentioned results differ from those obtained by Azman-Saini et al. (2010) who showed the importance of three out of four components of the index of EF by the Fraser's Institute: market regulations, freedom to trade with foreigners and security of property rights. Carlsson et al. (2001) argue about the significance of two components of the Fraser's index: legal structure and private ownership, and freedom to use alternative currency. The difference between the findings of my estimation and the mentioned studies could be due to various factors. First, I used the different index by the Heritage Foundation, which contains more components, and therefore is less aggregated when comparing with the index of the Fraser's Institute. It means that in my case, it can happen that the change in the level of one of the freedoms would not affect the growth rate so much. While considering the previous studies, the change in one of the four components (all together they represent about 40 variables), could make significant impact on the level of the growth. Second, the difference also might come from the sample and period used.

Table 3. The results of Fixed Effects Estimation

<i>Dependent Variable: GDP_GROWTH</i>	
<i>Variable</i>	<i>Coefficient</i>
<i>EF_TOTAL</i>	-0.082*** (0.035)
<i>FDI</i>	0.061 (0.059)
<i>INFL</i>	-0.017** (0.006)
<i>Log(LABOR)</i>	-1.266 (0.854)
<i>Log(LIFE_EXP)</i>	0.880 (1.038)
<i>C</i>	9.929** (4.399)
<i>R² 0.25</i>	
<i>Number of observations 776</i>	

Table 4 GMM estimation of dynamic model (3)

<i>Dependent Variable: log(GDP)</i>	
<i>Variable</i>	<i>Coefficient</i>
<i>logGDP(-1)</i>	0.325*** (0.044)
<i>EF_TOTAL</i>	0.025*** (0.002)
<i>FDI</i>	0.004*** (0.001)
<i>INFL</i>	-0.005*** (0.001)
<i>log(LABOR)</i>	-0.381 (0.244)
<i>log(LIFE_EXP)</i>	0.669 (0.623)
<i>Number of observations 465</i>	
<i>J-test (p-value) 0.33</i>	

Table 5 GMM estimation of model specification with interaction term

<i>Dependent Variable: log(GDP)</i>	
<i>Variable</i>	<i>Coefficient</i>
<i>logGDP(-1)</i>	0.293*** (0.097)
<i>EF_TOTAL</i>	0.040*** (0.007)
<i>FDI</i>	0.080* (0.046)
<i>INFL</i>	-0.005*** (0.001)
<i>log(LABOR)</i>	-0.500 (0.317)
<i>log(LIFE_EXP)</i>	0.602 (0.907)
<i>EF_TOTAL*FDI</i>	-0.001 (0.001)
<i>Number of observations 463</i>	
<i>J-test (p-value) 0.29</i>	

Table 6 The effect of the components of the EF index on growth

<i>Dependent Variable: log(GDP)</i>	
<i>Variable</i>	<i>Coefficient</i>
<i>logGDP(-1)</i>	0.431 (0.469)
<i>FDI</i>	0.005** (0.002)
<i>INFL</i>	-0.003** (0.001)
<i>log(LABOR)</i>	-0.368 (0.782)
<i>log(LIFE_EXP)</i>	-0.697 (1.153)
<i>BUS_F</i>	0.009** (0.004)
<i>FI_F</i>	-0.002 (0.006)
<i>FIN_F</i>	0.001 (0.003)
<i>INV_F</i>	-0.007 (0.005)
<i>LAB_F</i>	-0.001 (0.005)
<i>GOV_SP</i>	-0.002 (0.003)
<i>MON_F</i>	0.006*** (0.002)
<i>TR_F</i>	0.004 (0.009)
<i>PR</i>	0.002 (0.005)
<i>COR_F</i>	0.001 (0.008)
<i>Number of observations 517</i>	
<i>J-test (p-value) 0.36</i>	

6. Conclusions

The two main questions of my research were to examine if and how foreign capital inflows contribute to the economic growth of developing countries, and also to study the effect of institutional environment on growth.

In my examination of the effect of FDI on growth of developing countries, I used both dynamic and static models. As the baseline of my study, I take the results obtained by estimation of dynamic growth model with first-difference two-step GMM. The results show a positive correlation between growth and FDI. This supports my initial expectations about the importance of this kind of capital flows.

While testing the impact of EF on growth, I established that institutional environment indeed matters for growth. I also examined if there is as well indirect effect of EF on growth through FDI: if effect of foreign capital inflows depends on the level of EF inside the country. Contrary to my expectations and to the results of the previous study on the topic done by Azman-Saini et al., there was no evidence of the indirect effect of EF mentioned above. However, one should understand that this does not mean that there is no effect of EF on the level of foreign investments. As it was mentioned in the Literature review section of this work, the impact of EF on the FDI was established by many researchers (Caetano et al., 2009, Bengoa et al., 2002).

Among the surprising findings of the current work are the results of the estimation of the regression with included in it disaggregated index of EF. Although, it was found in the previous steps of the research that EF plays a big role in countries' development, the results suggest that only two out of ten components of the index (Business Freedom and Monetary Freedom) are significant.

The result obtained by estimating the model with all the components of the index can also be explained by the fact that in general, the overall index of EF is important for growth, and the one should expect high growth in economies, where all the freedoms are represented on the high enough levels.

As the suggestion for the further research I would propose testing the model with included in it separately interaction terms between each of the components of the index and FDI. This would help to define if there is already mentioned indirect effect on growth through any of the ten freedoms.

7. Appendix

<i>List of the countries included in the study</i>	
<i>Albania</i>	<i>Jordan</i>
<i>Argentina</i>	<i>Kenya</i>
<i>Bahrain</i>	<i>Malaysia</i>
<i>Bangladesh</i>	<i>Mali</i>
<i>Belarus</i>	<i>Mexico</i>
<i>Bolivia</i>	<i>Moldova</i>
<i>Brazil</i>	<i>Mongolia</i>
<i>Bulgaria</i>	<i>Morocco</i>
<i>Cameroon</i>	<i>Nigeria</i>
<i>Colombia</i>	<i>Pakistan</i>
<i>Costa Rica</i>	<i>Panama</i>
<i>Cote d'Ivoire</i>	<i>Peru</i>
<i>Czech Republic</i>	<i>Poland</i>
<i>Dominican Republic</i>	<i>Romania</i>
<i>Ecuador</i>	<i>Russia</i>
<i>Egypt</i>	<i>Slovakia</i>
<i>El Salvador</i>	<i>South Africa</i>
<i>Estonia</i>	<i>Sri Lanka</i>
<i>Ghana</i>	<i>Thailand</i>
<i>Greece</i>	<i>The Philippines</i>
<i>Guatemala</i>	<i>Turkey</i>
<i>Honduras</i>	<i>Ukraine</i>
<i>Hungary</i>	<i>Uruguay</i>
<i>India</i>	<i>Vietnam</i>
<i>Indonesia</i>	<i>Yemen</i>
<i>Jamaica</i>	<i>Zambia</i>

8. Glossary

All the following definitions were obtained from the report “2009 Index of Economic Freedom” by the Heritage Foundation and the Wall Street Journal.

“**Business Freedom**(*BUS_F*) a quantitative measure of the ability to start, operate, and close a business that represents the overall burden of regulation as well as the efficiency of government in the regulator”

“**Financial Freedom**(*FIN_F*) is a measure of banking efficiency as well as a measure of independence from government control and interference in the financial sector”

“**Fiscal Freedom** (*FI_F*) is a measure of the tax burden imposed by government”

“**Freedom from corruption**(*COR_F*) is based on quantitative data that assess the perception of corruption in the business environment, including the levels of governmental legal, judicial, and administrative corruption”

“**Government Spending**(*GOV_SP*) considers the level of government expenditures as a percentage of GDP”

“**Investment Freedom**(*INV_F*) is an assessment of the free flow of capital, especially foreign capital”

“**Labor Freedom** (*LAB_F*) a quantitative measure that looks into various aspects of the legal and regulatory framework of a country’s labor market”

“**Monetary Freedom**(*MON_F*) combines the measure of price stability with an assessment of price controls”

“**Property Rights (PR)** component measures the degree to which a country’s laws protect private property rights and the degree to which its government enforces those laws”

‘**Trade Freedom (TR_F)** is a composite measure of the absence of tariff and non-tariff barriers that affect imports and exports of goods and services”

9. References

- Aitken, Brian J. and Ann E. Harrison.** 1999. "Do Domestic Firms Benefit from Direct Foreign Investment? Evidence from Venezuela." *American Economic Review*, Vol. 89, pp. 605-618.
- Aleksynska, M., J. Gaisford and W. Kerr.** 2003. "Foreign Direct Investment and Growth in Transition Economies." Paper presented at Colloquium on Ukraine's Nation Building: Opportunities for Collaboration, University of Saskatchewan, Saskatoon, October 17–18.
- Alfaro, L., A. Chanda, S. Kalemli-Ozcan and S. Sayek.** 2009. "Does Foreign Direct Investment Promote Growth? Exploring the Role of Financial Markets on Linkages." *Journal of Development Economics* 91(2), p.242-56.
- Alfaro L.** 2003. "Foreign Direct Investment and Growth: Does the Sector Matter?"
- Arellano, M. and S. Bond.** 1991. "Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations." *The Review of Economic Studies*, 58. pp. 277 – 297.
- Azman-Saini, Ahmad Zubaidi Baharumshah, Siong Hook Law.** 2010. "Foreign direct investment, economic freedom and economic growth: international evidence." Faculty of Economics and Management, Universiti Putra Malaysia.
- Bengoa M, Sanchez-Robles B.** 2003. "Foreign direct investment, economic freedom and growth: new evidence from Latin America". *European Journal of Political Economy* 19: 529-45.
- Borensztein, E. De Gregorio, J. Lee, J-W.** 1998. 'How does foreign direct investment affect economic growth?' *Journal of International Economics*.

Carkovic, M., Levine, R., 2003. “Does Foreign Direct Investment Accelerate Economic Growth?” University of Minnesota, Working Paper.

Carlsson, F., Lundstrom, S. 2002.”Economic freedom and growth: decomposing the effects”. Public Choice 112, 335 – 344.

Goodspeed, Timothy J., Jorge Martinez-Vazquez, and Li Zhang. 2009. “Public Policies and FDI Location: Differences between Developing and Developed Countries.”

Gwartney, J.; Lawson, R.; and Block, W. 1996. “Economic Freedom in the World: 1975–1995.” Vancouver, B.C.: Fraser Institute.

Gwartney, J.D., Lawson, R.A., Holcombe, R.G., 1999.“Economic freedom and the environment for economic Growth”. Journal of Institutional and Theoretical Economics 155, 643 – 663.

Haan, J. de, Sturm, J.E., 2000. “On the Relationship between Economic Freedom and Economic Growth”. European Journal of Political Economy 16, 215-241.

Herzer, D., 2010. “How does foreign direct investment really affect developing countries` growth?Economic Modelling, Discussion paper 207. Ibero-America Institute for Economic Research.

Index of Economic Freedom by the Heritage Foundation. 2011. Available at (<http://www.heritage.org/Index/explore>)

José Caetani, António Caleiro, 2009.“Economic Freedom and Foreign Direct Investment: How Different are the MENA Countries from the EU.”

Maddala, G.S. 1992. “Introduction to econometrics.” Prentice Hall.

Qadri et al. 2009. “Human Capital and Economic Growth: Time Series Evidence from Pakistan.” Published in: Pakistan Business Review, Vol. 1, No. Jan 2011 (2011): pp. 815-833.

Schmidt R., 2008. “Enough Foreign Direct Investment Quickens Economic Growth Everywhere”, the North-South Institute, Canada, pp. 1-31.

“**UNCTAD Financial Brief**” .2009. Available at (http://www.unctad.org/en/docs/webdiaeia20095_en.pdf)

Wooldridge J. 2001. “Applications of Generalized Method of Moments Estimation.” Journal of Economic Perspectives—Volume 15, Number 4, Pages 87–100

World Bank Open Data. 2011. Available at (<http://data.worldbank.org/>)