# Business Environment and Foreign Direct Investments in Visegrad Countries

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***Abstract:*** *This paper investigates the effect of selected business environment indicators on FDI inflows in case of Visegrad countries for the period of 2005-2014. Based on correlation and regression analysis, it is concluded that the business environment matters significantly for FDI inflows, however the direction and strength of dependence differs according to analysed factors. On one hand we found that the better global competitiveness of the country the higher volume of inward FDI the country receives. On the other hand, economically more free country; with better rating and easier conditions for doing business does not attract more FDI inflows, but rather the opposite. In case of Visegrad countries, the availability of free working forces (higher unemployment rate) is more likely, what leads to higher FDI inflows.*

***Key words:*** *Business environment, foreign direct investments, ease of doing business, global competitiveness, economic freedom*

*JEL codes: O24, O33*

## 1. Introduction

Foreign direct investments (hereinafter also „FDI“) are widely discussed topic from different points of view. Generally, countries at a similar level of economic development, attracting more FDI are considered more competitive. Important role in this respect is attributed to a quality of business environment of a particular country. Besides partial factors describing level of business environment development, also more complex indicators of business environment are used within empirical studies. Specifically, Doing Business data (The World Bank) and their relation to FDI flows were examined in the recent work of Corcoran and Gillanders (2015), which is built on previous less complex studies. The authors showed that Doing Business rank is highly significant when included in a standard empirical foreign direct investment model, however, the significance of the overall Doing Business is driven by Ease of Trading Across Borders component. According to them, the relationship is significant for middle income countries, but not for the world´s poorest regions, where better business environments are not associated with greater levels of FDI.

Another recent study using composite indicator for evaluation the nation’s environment is a study performed by Sambharya and Rasheed (2015) where, besides the others, the relation between Index of Economic Freedom (The Heritage Foundation) and FDI inflows was investigated. Their results indicate that better economic management (monetary policy, fiscal burden and banking and finance), less government participation in the economy, less state

intervention (strong property rights, less regulation, low prevalence of informal markets and less corruption), absence of wage and price controls, and higher levels of political freedom lead to higher FDI inflows.

However, similar studies conducted specifically in the conditions of Central European countries are rather rare. Witkowska (2007) in her work dealt with foreign direct investments in the changing business environment of the European Union´s new member states, and without deeper quantitative analysis she generally concluded that business environment can be treated as an important location factor as far as FDI is concerned. Another similar study performed by Šimelyté and Liučvaitiené (2012), although focusing primarily on the FDI policy, showed that Baltic states, as well as Visegrad countries attempt to create a friendly business environment by means of similar methods. The results of attracting FDI are better in Visegrad countries, which implement financial incentives toward inward FDI along with fiscal incentives. According to empirical analysis, it is noticed that a higher intervention level and a higher support level guarantee the volume of inward FDI.

Our ambition is to contribute to existing literature by analysing the relation between a level of business environment measured by various indicators capturing different aspects of business environment and a level of inward FDI in Visegrad countries (Slovakia, Czech Republic, Hungary, Poland). The aim of the paper is to identify, whether the quality of business environment is associated with more FDI inflows.

## 2. Methodology

The dependent variable that we worked with in this paper is FDI inflows as reported by the FDI/TNC database of UNCTAD. As independent variables we used following complex of indicators to capture various aspects of business environment: *Ease of Doing Business* (The World Bank), *Global Competitiveness Index* (The World Economic Forum), where ranking of countries was used, which means that lower values indicate better position. In case of *Index of Economic Freedom* (The Heritage Foundation) and *Fragile State Index* (The Fund for Peace) the index values were used and higher values are associated with higher quality of business environment. The country credit *Rating* was evaluated according to Fitch and the letter rating was transformed into numbers. As additional indicators we used values of selected macroeconomic indicators such as *Unemployment rate, Real GDP growth, Inflation rate* derived from Eurostat.

We investigated the effect of the business environment on FDI inflows using pooled annual data for the period of 2005-2014 for four Visegrad countries. In this paper, the following regression model is used to assess the impact of all independent variables on FDI inflow (*FDI*):

$$FDI_{i,t} = \alpha_{i,t} + \boldsymbol{\beta} \boldsymbol{X}_{i,t-1} + \varepsilon_{i,t} \quad (1)$$

In equation, *i* and *t* denote a country and time subscripts, respectively. $\alpha_{i,t}$ is a constant, and $\varepsilon_{i,t}$ is the error term. The dependent variable $FDI_{i,t}$ refers to the FDI inflow in time *t*, which is expected to be influenced by the vector of the independent variables $\boldsymbol{X}_{i,t-1}$ observed in the previous period *t-1*. $\boldsymbol{\beta}$ is the vector of parameter coefficients to be estimated. Before conducting the regression analysis, the correlations between all pairs of variables is performed.

Table 1 introduces the Pearson correlation coefficients between pairs of all variables. We did not find high correlation between pairs of independent variables, what leads to no suspicion of multicollinearity problem in a regression model. However, we use the VIF (Variance Inflation Factors) to test a possible collinearity problem in the model. Based on correlation coefficients, the positive effect of the variables *Ease of Doing Business*, *Unemployment rate*, *and Real GDP growth,* while the negative effect of the variables *Index of Economic Freedom, Global Competitiveness Index, Fragile State Index, Rating,* and *Inflation rate* on FDI inflow are expected in the regression model.

**Table 1** *Pearson correlation matrix*

| | Ease of Doing Business | Index of Economic Freedom | Global Competitiveness Index | Fragile State Index |
|---|---|---|---|---|
| FDI Inflow | 0.431***<br>(0.009) | -0.700***<br>(0.000) | -0.216<br>(0.205) | -0.263<br>(0.122) |
| Ease of Doing Business | 1.000 | -0.391**<br>(0.019) | -0.205<br>(0.230) | 0.270<br>(0.111) |
| Index of Economic Freedom | | 1.000 | -0.006<br>(0.971) | 0.366**<br>(0.028) |
| Global Competitiveness Index | | | 1.000 | 0.173<br>(0.314) |
| Fragile State Index | | | | 1.000 |
| | Rating | Unemployment rate | Real GDP growth | Inflation rate |
| FDI Inflow | -0.255<br>(0.133) | 0.111<br>(0.518) | 0.267<br>(0.116) | -0.201<br>(0.239) |
| Ease of Doing Business | 0.042<br>(0.806) | -0.458***<br>(0.005) | -0.151<br>(0.379) | -0.061<br>(0.724) |
| Index of Economic Freedom | 0.404**<br>(0.015) | -0.100<br>(0.563) | -0.247<br>(0.147) | -0.115<br>(0.505) |
| Global Competitiveness Index | -0.247<br>(0.146) | 0.475***<br>(0.003) | -0.253<br>(0.136) | 0.112<br>(0.514) |
| Fragile State Index | 0.225<br>(0.186) | -0.383**<br>(0.021) | -0.465***<br>(0.004) | -0.029<br>(0.867) |
| Rating | 1.000 | -0.076<br>(0.658) | 0.145<br>(0.400) | -0.372**<br>(0.026) |
| Unemployment rate | | 1.000 | 0.139<br>(0.419) | -0.223<br>(0.192) |
| Real GDP growth | | | 1.000 | -0.067<br>(0.697) |
| Inflation rate | | | | 1.000 |

*Notes: The values in parentheses are the p-values for the Pearson correlation coefficient. According to p-values, *, **, *** and denotes a statistical significance at the level of .10, .05, and .01, respectively.*

Source: Authors´ calculations.

## 3. Empirical results and discussion

Table 2 shows the empirical results of pooled OLS parameter estimation of the model (1). The reported numbers for each variable are coefficients and their standard errors, t-ratios, p-values, and asterisks denoting levels of statistical significance, based on p-values. The variable *Index of Economic Freedom*, and constant are statistically significant at the level of .01, *Global Competitiveness Index* is statistically significant at the level of .05, and the variables *Ease of Doing Business*, *Unemployment rate*, and *Rating* are statistically significant at the level of .10. The variables *Fragile State Index*, *Real GDP growth*, and *Inflation rate* are not statistically significant determinants of FDI inflow in the model (1).

The value of the coefficient of determination indicates that the model can explain 69 % of the variation in the dependent variable. The low p-value of F-statistic confirms the significance of the regression model. Reported Durbin–Watson statistic does not indicate serial autocorrelation problem in the model. The White's test for heteroskedasticity with a high p-value does not lead to rejection of the null hypothesis that there is no heteroskedasticity problem in the model. The test for normality of residuals with a low p-value does not lead to rejection of null hypothesis that error is normally distributed. The high p-values of F-test of joint significance of differing group means, and Breusch-Pagan LM statistic does not lead to rejection of the null hypothesis that the pooled OLS model is adequate. These test results suggest that the application of fixed or random effects are not suitable in the model.

**Table 2** Pooled OLS estimation of coefficients

| ***FDI Inflow*** | *Coefficient* | *Std. Error* | *t-ratio* | *p-value* |
|---|---|---|---|---|
| Constant | 56819.7*** | 19094.2 | 2.9758 | 0.00610 |
| Ease of Doing Business | 129.8* | 67.2122 | 1.9313 | 0.06401 |
| Index of Economic Freedom | −761.6*** | 262.022 | -2.9065 | 0.00722 |
| Global Competitiveness Index | −158.6** | 70.0983 | -2.2631 | 0.03188 |
| Fragile State Index | 57.3 | 64.8083 | 0.8839 | 0.38455 |
| Unemployment rate | 582.8* | 300.969 | 1.9365 | 0.06334 |
| Real GDP growth | 227.1 | 199.585 | 1.1379 | 0.26517 |
| Inflation rate | −673.0 | 406.341 | -1.6563 | 0.10923 |
| Rating | −809.9* | 427.801 | -1.8932 | 0.06909 |
| Sum of squared residuals | $3.31x10^8$ | | S.E. | 3499.962 |
| $R^2$ | 0.692622 | | Adjusted $R^2$ | 0.601547 |
| F(8, 27) | 7.604972 | | with p-value | 0.000027 |
| Durbin-Watson | 2.165573 | | with p-value | 0.541789 |
| White's test | 18.9395 | | with p-value | 0.271811 |
| Test for normality | 4.41798 | | with p-value | 0.109812 |
| F-test | 0.371927 | | with p-value | 0.773968 |
| Breusch-Pagan test | 1.92821 | | with p-value | 0.164954 |

*Notes: The model tested for a collinearity problem with use of VIF (Variance Inflation Factors) test pass the test at cut-off value equal to 3. Since only values higher than 10.0 may indicate a collinearity problem, we do not need to correct for multicollinearity in the model.*

*According to p-values, *, **, *** and denotes a statistical significance at the level of .10, .05, and .01, respectively.*

**Source:** Authors´ calculations.

The variable with the highest statistical significance in the model is *Index of Economic Freedom,* which has high negative impact on FDI inflow as expected. Higher values of the index indicating economically free society are associated with lower values of inward FDI a-vice-versa. This finding is rather in contrast with the results of Sambharya and Rasheed (2015).

The second highest statistical significance has *Global Competitiveness Index*, also with high negative impact on the dependent variable. However, in case of this index, the ranking of countries was used, so better position in the ranking of global competitiveness leads to higher FDI inflows. This finding is partially in line with conclusions of Prime, Subrahmanyam and Lin (2012) who explained receiving of substantially more FDI in China in comparison to India by China´s sustainable competitive advantage.

Negative, high, and statistically significant impact has also been found for the variable *Rating*. The higher values of country credit rating indicating less risky investment environment are surprisingly associated with lower FDI inflows that may be caused by expectations of the foreign investors that better country credit rating is associated with higher level of economic development and higher costs. Positive, and statistically significant impact is found for the variable *Ease of Doing Business,* where ranking of countries was used and similarly, as in case of country credit rating, better position from the ease of doing business point of view indicate lower FDI inflows. Another positive, and statistically significant relation is detected in case of *Unemployment rate*, thus countries with higher unemployment rate are attracting more foreign investments. The availability of free working forces seems to be important FDI determining factor as it was already notice e.g. by Wei and Zhu (2007).

Similarly, as Gani and Al-Abri (2013) for Gulf Cooperation Council countries we can also conclude that the business environment matters significantly for FDI inflows in Visegrad countries, however, the direction and strength of dependence differs according to analysed factors.

## 4. Conclusion

Our ambition within this empirical study was to verify the primary hypothesis, whether better quality of business environment, measured by different composite indicators, leads to higher inward FDI in conditions of Visegrad countries. Our results are rather controversial. On one hand we found that the better global competitiveness of the country the higher volume of inward FDI the country receives. On the other hand, economically more free country, with better rating and easier conditions for doing business, does not attract more FDI inflows, but rather the opposite. In case of Visegrad countries, the higher unemployment rate is more likely, what leads to higher FDI inflows. From the possible further areas of study point of view it would be interesting to study potential differences among studied countries as well as to analyse in more details partial aspects of studied indicators and their relation to FDI inflows.

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