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Scientific review

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The Importance of Corporate Taxation for FDI Attractiveness of Southeast European Countries

Summary: The aim of this paper is to research the determinants of FDI inflows in the SEE region with a special emphasis on corporate tax rates. The panel data analysis (GMM methodology) was conducted on six countries in the period 2000-2011 in two versions: as gravity model based on bilateral FDI inflows and on the total FDI inflows (and inward stock). The results pointed the most important determinants for attracting FDI in SEE countries are market size (population), growth rates, GDP per capita, and wages. Institutional variables and corporate tax rates were not significant in the analysis of flows, but they become significant in the analysis of FDI inward stock.

Key words: FDI, SEE, Corporate tax rates.

JEL: F21, F23, H25.

The European transition countries are competing with each other in attracting foreign direct investment (FDI) because of the positive effects that host (receiving) countries have expected. The countries of Southeast Europe (SEE), (Albania, Bosnia and Herzegovina, Croatia, the former Yugoslav Republic of Macedonia, Montenegro and Serbia) have gone through a process of transition, accompanied by liberalization and privatization, where foreign capital has played a very important role. Not all SEE countries have been equally successful in attracting foreign capital, and their position depends on the specific location and institutional characteristics of each country.

The aim of this paper is to explore the determinants of FDI inflows in SEE with special emphasis on corporate taxation. The fact is that countries of the region have applied different corporate tax rates: Croatia has the highest rate of 20%, Montenegro is applying a rate of 9%; thus, big difference can be an important information for foreign investors (International Bureau of Fiscal Documentation (IBFD) 2013[1]).

The research is conducted by applying the econometric dynamic panel data analysis on the six SEE countries and refers to the period 2000-2011. Two types of models (analysis) have been constructed: one that is made on the basis of bilateral FDI flows (and includes the difference between corporate tax rates in home and host countries) and the second one that refers to the total FDI inflows (and FDI inward

[1] **International Bureau of Fiscal Documentation (IBFD).** 2013. IBFD Tax Research Platform. http://www.ibfd.org./IBFD-Tax-Portal (accessed July 29, 2013).

stock) in SEE countries (and includes the nominal corporate tax rates of host countries).

As we know, there has been no quantitative (econometric) analysis of FDI determinants with complex aspect on corporate tax rates on the group of SEE countries. These countries are putting much effort in encouraging FDI inflows through various regional tax benefits, and results of the paper may indicate the importance of tax policy in encouraging foreign capital inflows.

The rest of the paper is organized as follows: the literature review is given in the first chapter, the research is discussed in the second chapter where the characteristic of FDI inflows in the SEE region and the econometric analysis are performed and the third chapter provides the conclusion.

1. Literature Review

1.1 Taxes in the FDI Literature

In the literature, there is a lot of research on the determinants of FDI inflows (John H. Dunning 1992; James R. Markusen and Anthony J. Venables 1998; Bruce A. Blonigen 2005). Location determinants are a very broad concept and include traditional factors such as the availability of natural resources (prices and infrastructure), market size (living standards, wages, and production costs), the macroeconomic environment (inflation, unemployment, interest rates, and GDP growth rates); however, we must not forget institutional factors (property rights, FDI incentives, bilateral trade/investment agreements, taxes, etc.) (Steven Globerman and Daniel Shapiro 2002).

In the case of developing countries, the most important factors are market size, production costs, availability of production factors, and institutional framework regarding market functioning (i.e. property rights, administration, establishment of new commercial enterprises, stimulation measures etc.). During the 1990s, privatization was also a strong factor in receiving foreign capital (Alan A. Bevan and Saul Estrin 2004). The question may arise with respect to the SEE region, which includes small countries (about 23 million people compared with 100 million people as involving Central and Eastern Europe - CEE), whether also in these countries the main elements of attractiveness are market size or explanation for FDI inflows has to be found in other economic factors such as macroeconomic stability, the level of wages, but also institutional reasons such as the level of corruption, rule of law activities, entrepreneurial environment. It is important to add that different tax rates and fiscal policy (burden) may be a determinant of the attractiveness to attract FDI as evidenced by the trend of increasing tax competition and lowering corporate tax rates, which is especially important for small countries (Michael P. Devereux, Rachel Griffith, and Alexander Klemm 2002; Simon Loretz 2008).

Overall tax policies used to attract FDI, include corporate income tax reductions, tax holidays, accelerated depreciation (including investment allowances), investment tax credits, and preferential treatment of income such as low taxes on earnings from exports. Despite the whole range of tax incentives, whose effects are difficult to measure, the literature is mainly focused on the level of corporate tax rates.

Is there any tax competition among the SEE countries in the region? How is it important in attracting FDI compared with other determinants?

There are many papers on the topic of tax competition as a determinant of attracting FDI, among which were those of David G. Hartman (1982), Andreas Haufler and Ian Wooton (1999), and Haufler (2001), which created a simple two-country model using two potential host countries with asymmetric market sizes competing with each other to attract a foreign-owned monopolist. These studies concluded that the foreign monopolist prefers to be located in a host country with a larger market, even if the government of that country imposes a positive tax rate when the market size is significantly large. The United Nations Conference on Trade and Development (UNCTAD 2012) also pointed that, regarding the relevance of FDI attraction, fiscal environment is secondary, whereas the fundamental determinants are market size, access to raw materials, and availability of skilled labor. Yasuo Sanjo (2012) analyzes the significance of the size of countries, country risk, and the corporate tax rate in attracting FDI; creates theoretical tax competition model with two countries that differ in their risk and concludes that the higher risk investments can be overcome by the size of the country (the market), assuming the same risk investment market size is a stronger determinant in relation to the tax benefits that may be offered by the smaller country.

Christian Bellak, Markus Leibrecht, and Jože P. Damijan (2009) confronts the importance of infrastructure endowment and corporate taxes in FDI attractiveness and finds out that countries can increase the corporate tax rate, which will not negatively influence the FDI inflow if the country can compensate for it with an above-average infrastructure endowment. It means that countries with an above-average infrastructure endowment can have higher corporate tax rates (and so finance their infrastructure by taxing corporations). However, countries with an inferior infrastructure endowment most likely have to cut corporate income taxes to receive FDI in the short-run.

On the other side, there are studies that confirm that lowering corporate rate influence on FDI attractiveness (Kevin A. Hassett and Robert G. Hubbard 1996; James R. Hines Jr. 1996; Assaf Razin, Yona Rubinstein, and Efraim Sadka 2005). Jack M. Mintz (2006) shows that tax regime is a very important factor in making some destination attractive for FDI inflows. He found that many developing countries with high levels of FDI inflows have attractive tax regimes with low rates, especially for finance or trading operations.

Agnés Bénassy-Quéré, Lionel Fontagné, and Amina Lahréche-Révil (2005) made analysis based on a panel of bilateral FDI flows among 11 Organisation for Economic Co-operation and Development (OECD) countries and found that tax differentials play a significant role in understanding foreign location decision (toghether with agglomeration-related factors as determinants of FDI inflows). The semi-elasticity of the statutory tax differential is -4.22, which means that a 1-point rise in the host corporate statutory rate relative to the investor reduces the FDI inflows by 4.22%. Ruud A. de Mooij and Sjef Ederveen (2003) and Lars P. Feld and Jost H. Heckemeyer (2011) suggest, using meta-analysis, that the elasticity of FDI with respect to the host country tax rate is 3.3 or 2.49, respectively. Joeri Gorter and Ashok

Parikh (2003) found that investors are sensitive on the level of corporate taxation and that decreasing of the effective corporate tax by 1 percentage point relative to the European mean will result in increasing foreign investors from the other EU countries by approximately 4%.

Devereux, Griffith, and Klemm (2002) found that the EU and G7 countries reformed their tax system in a way of lowering the corporate income taxes and to broadening tax bases, that is, there is a process of competition among them to attract more profitable and mobile firms. They gave two explanations for mentioned reforms; by lowering tax rates, governments want to collect more revenues, and reforms are consistent with competition for more profitable projects by multinational firms. The share of profit tax in the total tax revenues is decreasing, but it is stable as % of GDP.

Åsa Hansson and Karin Olofsdotter (2010) made an empirical analysis on the determinants of FDI inflows in the EU member states with special emphasis on tax policies and agglomeration economies, on the basis of bilateral flows. They found that the determinants differ between old and new member states: tax differentials mainly seem to influence FDI flows among new members, whereas agglomeration economies play a somewhat more important role for the amount of investment made within the EU15. Ronald B. Davies, Hartmut Egger, and Peter Egger (2010) made a theoretical model and determine that tax harmonization may lower welfare relative to tax competition because even in the case of harmonized taxes in different countries, there will be transport cost that has an influence on the price of export, and international firms may choose FDI, although this has welfare costs from a global point of view.

Michael Overesch and Georg Wamser (2009) find that cost-driven vertical FDI is more tax sensitive than horizontal cross-border investments. Guntram B. Wolff (2007) concluded that different subcomponents of FDI react differently to taxes: reinvested earnings are more sensitive on the level of profit tax rate, the sensitivity of new equity is not clear, and there is a negative influence on tax rates to the category of "other" (credit finance FDI). Empirical analysis shows that the top statutory corporate tax rate of both, source and host country, become insignificant for total FDI and investment into equity.

Dimitri G. Demekas et al. (2007) analyzed the role of policies in CEE countries for attracting nonprivatized FDI. They confirmed the predominance of gravity factors for FDI inflows in CEE, SEE, and Baltic countries (with no explanatory factors specific to Southeastern Europe at work). Regarding taxes, they found that tax holidays do not have statistically significant influence on FDI inflows. Kelly Edmiston, Shannon Mudd, and Neven Valev (2003) found that the complexity and uncertainty in tax laws (multiple tax rates, indeterminate language in the tax law, and inconsistent changes in the tax laws) negatively affect the flow of foreign direct investments in CEE countries during the transition period. The Western Balkan countries were examined by Hrvoje Šimović and Maja Mihelja Žaja (2010) where they gave the reivew of corporate income tax incentives (reduced corporate income tax rates, tax holidays, and other investment incentives that imply incentives such as accelerated depreciation, tax allowances, and tax credits).

The results of existing studies are different; some authors argue that corporate tax rates are an important determinant of FDI inflows, whereas other authors through their analysis reinforces the opposite. Which of these two opposite directions is prevalent in the region of SEE? Whether the attractiveness of FDI inflows in that region is mainly determined by traditional market-related factors or its influence has tax policy (in terms of profit taxation), we will try to find out through the analysis that follows.

2. Research

2.1 Data and Variables

Analysis will include six SEE countries: Albania, Bosnia and Herzegovina, Croatia, the former Yugoslav Republic of Macedonia, Montenegro and Serbia, and the period 2000-2011 (Romania and Bulgaria would also geographically belong in this group of countries, but they joined the EU in 2007; therefore, they usually belong to the group of CEE countries. Also, because of their size, they could significantly affect the results of the analysis). Although the countries in the region share some common features, there are some differences between them in terms of success and their attractiveness to foreign investors. Croatia is the most developed country in the region, and it has collected the largest amount of inward FDI stock until 2011 whereas Montenegro has the highest level of FDI stock *per capita* (which is a better measure than absolute terms) and the highest degree of FDI intensity (128% of GDP).

The SEE countries have been lagging behind CEE countries in terms of the amount of FDI. For example, in the period between 1993 and 2011, among the CEE countries, the Czech Republic and Hungary have received EUR 7,418 and EUR 5,962 per inhabitant, respectively, whereas in the region of the SEE countries, Montenegro (EUR 6,500) and Croatia (EUR 5,787) received the largest amount of FDI per inhabitant (Vienna Institute for International Economic Studies (WIIW) 2012[2]) because of the following reasons: a later start of the process of privatization of state enterprises, the higher level of corruption and less developed institutional system, and small market compared with the countries of CEE. Many Balkan countries have been unable to implement or sustain cohesive reform strategy, a shortfall in macroeconomic stability, but the most important reasons for these countries are associated with political instability in the other countries of the region and also within them, which was followed by conflicts (Josef C. Brada, Ali M. Kutan, and Taner M. Yigit 2004).

It is interesting that Croatia had the highest FDI stock *per capita* until 2010, when Montenegro took over this position. These numbers were the result of the policy of opening the Montenegrin economy to foreign investment and other incentive policies (mostly in terms of tax reliefs - Montenegro has the lowest profit tax rate of only 9%). In the last decade, Montenegro has recorded a high rate of GDP growth of 4.7%, whereas Croatia has a rate of 2.7%. Albania, Bosnia and Herzegovina, and the

[2] **Vienna Institute for International Economic Studies (WIIW).** 2012. Database on Foreign Direct Investments. http://wiiw.ac.at/wiiw-database-on-foreign-direct-investment-2012-p-2574.html (accessed July 3, 2013).

former Yugoslav Republic of Macedonia have lagged behind in attracting foreign capital.

It is also interesting to point out the difference in tax rates on profits - Croatia has the highest rate, which is twice as high as the rate in most SEE countries (where most have a rate of 10%). Therefore, there is tax competition in the SEE region, and some of these countries followed the trend of reducing corporate tax rates (Albania has reduced corporate tax rates from 20% to 10% and Macedonia from 15% to 10% in just a five-year period from 2006-2011).

How to measure the impact of taxes on FDI attractiveness? Should we consider the total FDI flows or bilateral flows?

In the literature, there are different approaches toward its measurement. On the one side, there are studies that comprise the total FDI flows (Razin, Rubinstein, and Sadka 2005; Johannes Becker, Clemens Fuest, and Nadine Riedel 2012) and include corporate tax rates in host countries and also those relating to bilateral FDI flows; these studies then take into account the difference in the corporate tax rates (Bellak, Leibrecht, and Damijan 2009; Hansson and Olofsdotter 2010; etc.). Bénassy-Quéré, Fontagné, and Lahréche-Révil (2005) and W. Steven Clark (2008) discuss the different tax rates: effective, marginal, average tax rates where all measures have advantages and disadvantages. Devereux, Griffith, and Klemm (2002), Devereux and Griffith (2003), and Devereux, Ben Lockwood, and Michela Redoano (2008) advocate for rather complex measures of forward-looking effective tax rates and distinguish between average and marginal concepts. The most widely used measure is the statutory tax rate, which is given by law. It has the advantage of being straightforward and easily accessible. However, these tax rates are problematic because they disregard the size of the tax base and neglect depreciation rules, government tax compensations, and so on. Razin and Sadka (2006) warn that effective tax rates are associated with an endogeneity problem as they are affected by the amount of investment and argue in favor of using statutory tax rates as they are the best available instrument for effective taxes.

Probably, the result would be qualitatively better if the analysis will include all these rates, but the problem is that these measures are not available for SEE countries. Data on effective marginal and average taxes are provided by Devereux, Lockwood, and Redoano (2008) from 1998, but there are no data for the SEE countries.

The analysis will include the corporate tax rates. The research is done on two ways. The first is using the gravity model, where the models include the following: bilateral FDI flows, GDP *per capita* of home and host countries, population of home and host countries, distance between the countries, and tax differentials. The second is using aggregate FDI data for every six SEE countries where the dependent variable is FDI inflows and the independent ones are GDP *per capita*, population, GDP growth rate, and wages in host countries. Then, we combined the different institutional indicators such as large-scale privatization, competition policy, trade and forex system, and enterprise restructuring. The models also include the tax indicators: corporate tax rates or the index of fiscal freedom.

We are mainly concerned with variables that can affect the decision of multinational companies (MNCs) to invest in a country. Beside the market size and pro-

duction costs, these include an effective system of property rights, infrastructure reform, and noncorrupt public officials (because corruption might significantly delay the start of business operations and result in a withdrawal from investments, both foreign and domestic). Government policies encouraging a free and open market are also an important FDI determinant.

The data on GDP, GDP *per capita*, and population come from the International Monetary Fund World Economic Outlook Database (International Monetary Fund (IMF) 2013[3]); FDI's data are from the WIIW Database on Foreign Direct Investments (WIIW 2012) and SEE's central banks. GDP *per capita* is a measure of a country's purchasing power and is expected to have a positive effect on FDI. This variable is important for market-seeking FDI, which is replacing export-driven FDI, and is oriented toward supplying domestic markets. Wages reflect the cost of labor and also, indirectly, productivity differences among the countries. Low wages are also an important location determinant because they can influence the reduction of production costs and increase profitability.

Data on institutional development, such as large scale privatization, competition policy, forex and trade system, enterprise restructuring, and infrastructure reform come from the European Bank for Reconstruction and Development (EBRD) Transition Report. The scores are from 1 to 4+, and they measure the transition gap (deviation from efficient market structure; higher scores mean this gap is negligible). The expected influence of the EBRD indicators on FDI inflows is positive (EBRD 2013[4]).

The data on corporate tax rates are derived from the IBFD Tax Portal, IBFD Research Platform, and KPMG (2013)[5]. The data on fiscal freedom, investment freedom, and property rights freedom derived from the Heritage Foundation (2013)[6]. Fiscal freedom is a measure of the tax burden imposed by the government and includes both the direct tax burden in terms of the top tax rates on individual and corporate incomes and the overall amount of tax revenue as a percentage of GDP.

Transparency International (2013)[7] measures levels of corruption in the public sector and assesses the corruption perception index (CPI). A scale of 0-10 is applied to measure the perception of corruption, where 0 means that a country is perceived as highly corrupt and 10 means that a country is perceived as not corrupt. The expected impact of the CPI on FDI inflows is positive (a higher score means less corruption).

The effect of agglomeration should be emphasized. This means that countries that have so far attracted more investments are more attractive for new investments.

[3] **International Monetary Fund (IMF).** 2013. World Economic and Financial Surveys - World Economic Outlook Database. http://www.imf.org/external/pubs/ft/weo/2013/01/weodata/index.aspx (accessed July 10, 2013).
[4] **European Bank for Reconstruction and Development (EBRD).** 2013. Forecasts, Macro Data, Transition Indicators. http://www.ebrd.com/what-we-do/economic-research-and-data/data/forecasts-macro-data-transition-indicators.html (accessed May 30, 2013).
[5] **KPMG.** 2013. Corporate Tax Rates Table. http://www.kpmg.com/Global/en/services/Tax/tax-tools-and-resources/Pages/corporate-tax-rates-table.aspx (accessed July 10, 2013).
[6] **Heritage Foundation.** 2013. Index of Economic Freedom. http://www.heritage.org/index/download (accessed July 1, 2013).
[7] **Transparency International.** 2013. Corruption Perceptions Index 2012. http://www.transparency.org/cpi2012/results (accessed April 23, 2013).

Thus, some of the models will include lagged variables of FDI inflows; however, the influence of FDI inward stock will also be observed.

Table 1 Definition of Variables that Are Used in the Empirical Analysis and Expected Impact

	Definition	Expected impact
Dependent variable		
FDI inflows	FDI inflows (annual basis) in USD	
Independent variables		
GDP per capita	Gross domestic product per capita in USD	+
GDP growth rate	Annual growth rate in %	+
Population	Number on inhabitant in 000	+
Wages	Gross monthly wages in USD	-
Distance	Road distance between capital cities in km	-
Corporate tax rates	Tax rate on profit regulated by law in %	-
Corporate tax rate differences	Difference between corporate tax rate in home and host countries in %	+
Investment freedom	Scores from 1 to 100 where 100 represents the maximum freedom	+
Property rights freedom	Scores from 1 to 100 where 100 represents the maximum freedom	+
Large scale privatization	Scores are from 1 to 4+, and they measure the transition gap (deviation from efficient market structure); a higher score means a lower gap	+
Fiscal freedom	Scores from 1 to 100 where 100 represents the maximum freedom	+
Competition policy	Scores are from 1 to 4+, and they measure the transition gap (deviation from efficient market structure); a higher score means a lower gap	+
Trade reform	Scores are from 1 to 4+, and they measure the transition gap (deviation from efficient market structure); a higher score means a lower gap	+
Enterprise restructuring	Scores are from 1 to 4+, and they measure the transition gap (deviation from efficient market structure); a higher score means a lower gap	+
CPI	Corruption perception index; scores from 0 to 10; 0 indicates that a country is highly corrupt	+
Overall infrastructure reform	Scores are from 1 to 4+, and they measure the transition gap (deviation from efficient market structure); a higher score means a lower gap	+

Source: Author.

2.2 Methodology

Considering that the sample has a cross-sectional dimension, represented by countries ($i=1,...,N$), and a longitudinal dimension, represented by a time series ($t=1,...,T$ periods), the panel data method will be used (Cheng Hsiao 2003). The sample comprises unbalanced panel data, that is, there are some periods missing from some units in the population of interest. Panel data analysis can be static (fixed and random effects) and dynamic (Hsiao 2003; Marno Verbeek 2008; Jeffrey M. Wooldridge 2010). In this paper, we choose to perform the dynamic panel data to overcome the limitations of static panel analysis. The application of dynamic models is driven by the nature of the relation that we investigate and dynamic aspects of their adjustment. Estimation with the dynamic model allows the dynamics of the underlying processes, which can be crucial in obtaining consistent estimates of the remaining parameters

(Stephen R. Bond 2002). Turning the lagged dependent variable, except that which alleviates rigidity in the adjustment, also reduces the problem of omitted variables. The dynamic model is defined in the following form:

$$\begin{aligned} Y_{it} &= \delta Y_{it-1} + \lambda X_{it} + \varepsilon_{it} \\ \varepsilon_{it} &= \eta_i + \gamma_t + u_{it}. \end{aligned} \tag{1}$$

Y_{it} refers to the dependent variable (that is also included with time lags), X_{it} is the vector of independent variables (presented in Table 1) for country i at time t, and ε_{it} is the error term that includes country- and time-specific attributes.

The basic dynamic panel data model that is used in this research relies on the linear dynamic panel data estimation of Manuel Arellano and Olympia Bover (1995) and Richard Blundell and Bond (1998). The endogeneity problem that can appear in the static analysis can be overcome by applying the generalized method of moments (GMM) estimation using instrumental variables. Considering other characteristics and advantages of the GMM estimators, the Blundell and Bond (1998) system GMM estimator is used in this research. To check the validity of the set of instruments used in the GMM estimation, we applied the Arellano and Bond autocorrelation test (Arellano and Bond 1991). Another specification test is the overidentification that may be caused by the number of instruments that exceeds the number of parameters to be estimated. The John D. Sargan (1958) test of restrictions can be applied to check the validity of the set of instruments.

First, the analysis on the bilateral FDI flows, which is the gravity model that is often used in economics in research of bilateral trade and investments, will be performed (Bevan and Estrin 2004). The analysis included six SEE countries and FDI inflows from home countries (according to available data).

The relation between FDI inflows and its determinants is as follows:

$$\begin{gathered} FDI\ inflows_{ijt} = \alpha + \beta_1 FDI\ inflows_{ijt-1} + \beta_2 GDP\ per\ capita_{it} + \\ \beta_3 GDP\ per\ capita_{jt} + \beta_4 POP_{it} + \beta_5 POP_{jt} + \beta_6 DIST_{ijt} + \beta_7 CT_{ijt} + \varepsilon_{it}, \\ i=1,...,N;\ j=1,...,N;\ t=1...T. \end{gathered} \tag{2}$$

The dependent variable is the FDI inflows, and the independent variables are as follows: GDP *per capita* of home and host countries, population of home and host countries (POP), distance between the countries (DIST), and tax differentials (CT). Tax differential is calculated as the difference of corporate tax rate of home and host countries for every particular pair of countries and year. In this model specification, FDI is treated as an endogenous variable. We control the endogeneity of this variable in its lagged form as a regressor using internal instruments such as lagged levels and lagged differences.

Second, an analysis on the total FDI inflows and their determinants in the group of SEE countries will be made. The relation is as follows:

$$\begin{gathered} FDI\ inflows_{it} = \alpha + \beta_1 FDI\ inflows_{it-1} + \beta_2 GDP\ per\ capita_{it} + \beta_3 POP_{it} + \\ \beta_4 GDP\ growth\ rate_{it} + \beta_5 wages_{it} + \beta_6 CTR_{it} + \beta_7 INST_{it} + \beta_8 INFR + \varepsilon_{it}, \\ i=1,...,N;\ t=1,...,T. \end{gathered} \tag{3}$$

The dependent variable is the FDI inflows, and the independent variables that refer to host countries are as follows: GDP *per capita*, population (POP), GDP growth rate, wages, corporate tax rates (CTR) and institutional determinants, such as investment freedom, property rights freedom, large scale privatization, fiscal freedom, competiton policy, trade reform, enterprise restructuring (INST), and infrastructure reform (INFR).

$$FDI\ inward\ stock_{ij} = \alpha + \beta_1 FDI\ inward\ stock_{it-1} + \beta_2 GDP\ per\ capita_{it} + \beta_3 POP_{it} + \beta_4 GDP\ growth\ rate_{it} + \beta_5 wages_{it} + \beta_6 CTR_{it} + \beta_7 INST_{it} + \beta_8 INFR + \varepsilon_{it}, \quad i=1,...,N;\ t=1,...,T. \tag{4}$$

The model is estimated using the system GMM and implements the *xtabond2* user written command in STATA 12 (David Roodman 2009). The estimated model is for the period 2000-2011 on the sample of six SEE countries. Descriptive statistics are available upon request.

2.3 Interpretation of Results

Results of gravity models are reported in Table 2. We included one lag for the predetermined variable and two lags for the endogenous variables. The diagnostic test of the models reported at the end of the table was in favor of the hypothesis of proper identification: *m1* statistics, which measures the first-order autocorrelation, is negative and significant, and *m2* statistics, which measures the second-order autocorrelation, is not significant. Moreover, the null hypothesis of the Sargan test could not be rejected. This means that the instruments used are not correlated with the errors and can be used in the model.

Eight models with different combination of variables to see the determinants of bilateral FDI flows and examine the influences of corporate tax rate differences on FDI flows have been made. In all models, the lagged dependent variable is highly significant and positive, indicating that the effect of history (past investments between two countries) on current FDI flows is important. This is in line with the strong economic arguments for the relevance of dynamics in investment relations. Traditional variables in gravity models, such as GDP *per capita* of host and home country, are not both significant; it is interesting that the GDP *per capita* of home country and the population of host countries, which is in line with expectation, have a positive and significant influence. The distance between countries negatively affects the FDI inflow from country *j* to country *i* (in Models 2, 5 and 7). The key variable - corporate tax rate difference is not significant in any model regardless of whether it is considered as an absolute difference (Models 1, 4 and 5) or in log form (Models 2 and 3).

Then, we proceed with the analysis of the determinants of the total FDI inflows in SEE countries with special emphasis on the level of corporate tax rates (Table 3).

The diagnostic tests (autoregressive - AR and Sargan test) reports are satisfactory; thus, we can conclude that the estimated model is correctly specified. Again, the lagged dependent variable is highly significant and has a positive impact on FDI in flows. Other significant variables are as follows: GDP *per capita*, population, GDP

growth rate, and wages. It is interesting that the level of corporate tax is not a significant variable in any model (Models 1, 2, 8 and 9). Fiscal burden is also assessed through variable fiscal freedom (Models 6 and 7), but it is not significant. Also, other institutional variables are not significant (CPI, property rights freedom, large scale privatization, competition policy, and trade reform). The small number of observations is an analysis constraint because of the small group of countries and relatively short period taken in the analysis (defined by availability of data).

Table 2 GMM - Dynamic Panel Data, One-Step System GMM
(Gravity Models - Dependent Variable: FDI $inflows_{ij}$)

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Log FDI inflows	0.1678799 (0.0695792)***	0.251781 (0.0745584)***	0.2404008 (0.0761749)***	0.2324464 (0.0698114)***	0.1682026 (0.0651381)***	0.1595611 (0.0722035)***	0.1751767 (0.0715662)***	0.2225124 (0.0720236)***
Log GDP per capita host	0.4571199 (0.4656871)	0.3629906 (0.563595)			-0.3286644 (0.4292413)	0.2466277 (0.4229977)	0.3535976 (0.4101033)	
Log GDP per capita home	0.8185068 (0.3212575)***	0.4713424 (0.3806238)			0.8344222 (0.2430087)***	1.028938 (0.2511289)***	1.127677 (0.2488587)***	
Log POP host	0.2060537 (0.0833661)***		0.419227 (0.1155648)***	0.2607656 (0.997785)***	0.1662774 (0.084736)**	0.1880422 (0.0989764)**		0.3073965 (0.109259)***
Log POP home	-0.0987884 (0.0823337)		-0.0969151 (0.1278995)	0.0651973 (0.1588002)	-0.0126797 (0.1216974)	-0.0431006 (0.1002299)		0.0075256 (0.1383696)
Log distance		-0.7483673 (0.2416849)***	0.220472 (0.2396797)					
Log CT differences		0.1137073 (0.2361417)	-0.1130011 (0.1927131)					
Distance	-0.0002388 (0.0000999)***			-0.0000974 (0.0000946)	-0.0002472 (0.0000903)***	-0.0003238 (0.0002492)	-0.0005055 (0.0001286)***	0.0001159 (0.001859)
CT differences	0.0158973 (0.0264838)			0.0045261 (0.0162381)	0.0181057 (0.0234025)			
Number of observation	287	243	243	287	287	287	287	287
Number of instruments	71	71	70	71	96	57	57	57
AR(1) (*p*-value)	-6.56 (0.000)	-7.25 (0.000)	-6.03 (0.000)	-5.77 (0.000)	-7.24 (0.000)	-5.81 (0.000)	-5.93 (0.000)	-5.30 (0.000)
AR(2) (*p*-value)	2.41 (0.016)	2.42 (0.016)	2.43 (0.015)	2.27 (0.023)	2.43 (0.015)	2.28 (0.023)	2.33 (0.020)	2.21 (0.027)
Sargan test	98.97 (0.003)	95.49 (0.008)	97.08 (0.005)	106.63 (0.001)	120.07 (0.013)	95.60 (0.000)	96.99 (0.000)	99.68 (0.000)
Wald chi2 test (*p*-value)	74.30 (0.000)	43.55 (0.000)	42.03 (0.000)	29.20 (0.000)	71.23 (0.000)	63.38 (0.000)	62.72 (0.000)	24.51 (0.000)

Notes: All models include constant variable. Standard errors are in parenthesis.
*** *p* statistically significant at 1%; ** *p* statistically significant at 5%; * *p* statistically significant at 10%.

Source: Author's calculations.

The third group of models has been created with FDI inward stock as the dependent variable, and results are shown in Table 4.

Table 3 GMM - Dynamic Panel Data, One-Step GMM
(Log FDI inflows Dependent Variable, Total FDI Flows)

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10
Log FDI inflows	0.3882479 (0.1355711)***	0.5390017 (0.1010718)***	0.5036254 (0.1202197)***	0.6719751 (0.0937388)***	0.642182 (0.0952431)***	0.6944135 (0.0932601)***	0.4198204 (0.1142465)***	0.4578333 (0.105375)***	0.7283254 (0.1001387)***	0.4889392 (0.116041)***
Log GDP per capita	0.9458015 (0.5740915)***						0.662225 (0.2688368)***	1.143779 (0.4710057)***	1.084694 (0.6254051)**	0.5507945 (0.429785)
Growth rate		0.0726942 (0.0234049)***	0.0931059 (0.0249187)***	0.0866747 (0.0250167)***	0.0599542 (0.0232774)***	0.0824035 (0.0249417)***				
Log POP	0.4649778 (0.1784105)***	0.5316874 (0.1526155)***	0.5462843 (0.171256)***	0.3807193 (0.1451691)***	0.4034157 (0.1446482)***	0.3845783 (0.1462611)***	0.5894691 (0.1433786)***	0.4969754 (0.1548221)***		0.5430051 (0.172203)***
Log wages	-0.4126522 (0.3003897)	0.3328469 (0.1669359)**	0.1781345 (0.222777)					-0.2078715 (0.2473047)	-0.4641866 (0.2987137)*	
Corporate tax rate	0.0112688 (0.0208762)	0.0053746 (0.0179)						0.0058764 (0.0194505)	-0.0135246 (0.0275983)	0.0035333 (0.0176213)
CPI	0.2922169 (0.3081701)		0.3510341 (0.2583088)						0.0371992 (0.3907003)	
Investment freedom	-0.157509 (0.0074637)									
Property rights freedom				0.0112136 (0.0092263)						
Large scale privatisation					0.0547737 (0.1794502)					
Fiscal freedom						0.0032473 (0.0088915)	-0.0020777 (0.0083974)			
Competition policy								-0.2543392 (0.1722744)		
Trade freedom									-0.0104795 (0.0167953)	
Overall infrastructure reform										-0.0650859 (0.3420163)
Number of observation	71	72	72	72	72	72	72	72	71	72
Number of instruments	53	66	59	59	66	59	59	66	55	60
AR(1) (*p*-value)	-3.08 (0.002)	-4.08 (0.000)	-7.40 (0.000)	-4.60 (0.000)	-1.89 (0.059)	-4.18 (0.000)	-0.39 (0.694)	-3.29 (0.001)	-2.71 (0.007)	-3.52 (0.000)
AR(2) (*p*-value)	0.65 (0.516)	-0.10 (0.922)	0.76 (0.444)	0.93 (0.353)	-0.07 (0.947)	0.92 (0.356)	0.10 (0.917)	-0.37 (0.712)	0.54 (0.586)	0.38 (0.706)
Sargan test	37.95 (0.563)	43.87 (0.643)	41.84 (0.434)	42.07 (0.637)	44.10 (0.708)	41.90 (0.519)	52.42 (0.208)	59.0 (0.18)	46.32 (0.337)	67.76 (0.099)
Wald chi2 test (*p*-value)	171.49 (0.000)	208.22 (0.000)	194.06 (0.000)	195.41 (0.000)	189.32 (0.000)	191.94 (0.000)	207.57 (0.000)	208.42 (0.000)	131.02 (0.000)	228.33 (0.000)

Notes: CPI = Corruption perception index. All models include constant variable. Standard errors are in parenthesis.
*** *p* statistically significant at 1%; ** *p* statistically significant at 5%; * *p* statistically significant at 10%.

Source: Author's calculations.

Table 4 GMM - Dynamic Panel Data, One-Step GMM
(Log FDI Inward Stock - Dependent Variable, Total FDI)

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10
Log FDI instock	0.7792057 (0.0701176)***	0.9785307 (0.030096)***	0.96109 (0.024776)***	0.86596187 (0.0344797)***	0.8621721 (0.0456782)***	0.7682286 (0.0450701)***	0.8250824 (0.0570006)***	0.7622852 (0.0451447)***	0.8377205 (0.0426198)***	0.5589593 (0.0475074)***
Log GDP per capita	0.2695422 (0.1926123)	-0.0495017 (0.1010807)								
Growth rate			0.0119749 (0.0067864)**	0.0136845 (0.0062491)**	0.0138192 (0.0064547)**	0.087202 (0.0061443)	0.0099947 (0.0064475)	0.0090464 (0.0063687)		
Log POP	0.203803 (0.0671025)***		0.0372127 (0.0380561)	0.1777405 (0.0486503)***	0.175704 (0.0542488)***	0.2801644 (0.0577237)***	0.2374584 (0.0648837)***	0.2881409 (0.0547547)***	0.2844547 (0.0630093)***	0.5364578 (0.0641877)***
Log wages	0.0867686 (0.0715924)			0.1640529 (0.0598349)***	0.1616147 (0.0663818)***	0.1475347 (0.0568395)***	0.1253673 (0.0605876)**	0.1594318 (0.0717842)**		0.4710746 (0.0812916)***
Corporate tax rate	0.0083842 (0.0049018)*	0.0109248 (0.0050208)**	0.0083968 (0.0050648)*					-0.0000313 (0.0054103)	-0.0004095 (0.0048021)	
CPI	-0.0085867 (0.0659287)								-0.0669772 (0.0734884)	
Investment freedom	-0.0045097 (0.0017649)***	-0.0068746 (0.0013998)***	-0.0062277 (0.0014709)***							
Property rights freedom								0.0002087 (0.0035886)		
Large scale privatisation					-0.0055414 (0.0648825)					
Fiscal freedom				-0.0010914 (0.0023696)	-0.0010816 (0.0023762)	-0.000704 (0.0022438)	-0.0004491 (0.0023442)			
Competition policy							-0.0918469 (0.0521098)**			
Trade fredom										0.1109545 (0.0683679)
Enterprise restructuring						0.2697361 (0.0918775)***	0.2638809 (0.958604)***	0.2682192 (0.1259785)**		
Overall infrastructure reform									0.3556684 (0.1008161)***	
Number of observation	69	70	71	71	71	71	71	71	69	71
Number of instruments	49	53	53	54	54	54	54	54	49	61
AR(1) (*p*-value)	-3.60 (0.001)	-2.29 (0.022)	-2.84 (0.005)	-1.98 (0.048)	-2.03 (0.042)	-1.89 (0.059)	-2.25 (0.024)	-2.15 (0.031)	-1.96 (0.050)	-1.58 (0.002)
AR(2) (*p*-value)	1.15 (0.251)	-1.44 (0.149)	-1.66 (0.097)	-1.58 (0.114)	-1.59 (0.112)	-1.83 (0.067)	-1.75 (0.081)	-2.23 (0.026)	-1.08 (0.282)	0.09 (0.927)
Sargan test	38.17 (0.371)	43.18 (0.378)	40.61 (0.399)	47.85 (0.156)	48.22 (0.124)	48.92 (0.11)	44.63 (0.182)	48.7 (0.114)	56.40 (0.083)	96.12 (0.001)
Wald chi2 test (*p*-value)	421.48 (0.000)	426.81 (0.000)	434.90 (0.000)	467.09 (0.000)	466.31 (0.000)	524.83 (0.000)	482.19 (0.000)	521.83 (0.000)	343.46 (0.000)	222.09 (0.000)

Notes: CPI = Corruption perception index. All models include constant variable. Standard errors are in parenthesis.
*** *p* statistically significant at 1%; ** *p* statistically significant at 5%; * *p* statistically significant at 10%.

Source: Author's calculation.

Lagged dependent variable has again positive and highly significant impact. If we considered the traditional variables, such as GDP *per capita*, growth rates, population, and wages, the results are similar to those in Table 3. It should be pointed out that in these models, corporate tax rates become a significant variable (Models 1, 2 and 3) but with an unexpected positive sign, which means that the country with a higher corporate tax rate has higher FDI stock. It is inconsistent with the theory but is in compliance with the facts in this region, where the largest FDI inward stock is found in Croatia, which has the highest corporate tax rate. In the first three models, a variable investment freedom also becomes significant but with unexpected sign. Variable enterprise restructuring is also significant in Models 6, 7 and 8 and covers the information about privatization revenues, private sector size (in GDP and employment), budgetary subsidies and current transfers, industry size, labor productivity in industry, and investment. In Model 9, we include the variable infrastructure reform that has significant and positive influence on FDI stock (as in Bellak, Leibrecht, and Damijan 2009).

3. Conclusion

Investors, when deciding on the location of investments, have the aim of achieving the greatest possible profits, but also, especially in longer-term investments (such as FDI) are also important to ensure the stability and continuity of activity in a particular specific local context. In addition to the determinants, which are prevalent in researches such as market size (GDP, population) and production costs (wages) that characterize market-seeking investments, in this paper, we specifically wanted to investigate the importance of corporate tax rate level on FDI inflows.

Both analyses (based on bilateral flows and total FDI flows) yielded similar results that can be summarized as follows. The most important determinants for attracting FDI in SEE countries are market size (population), growth rates, GDP *per capita*, and wages. Institutional variables were not significant in the analysis of flows, but only individual variables (investment freedom and enterprise restructuring) become significant in the analysis of FDI inward stock. Also, the level of corporate tax rate has not been significant in the study of bilateral and total FDI flows but becomes significant when we consider the FDI stock, but with an unexpected positive sign indicating that other variables provide better explanation of FDI flows and its level is not an important determinant in realization of FDI inflows. The country with the highest FDI stock is Croatia, which also has the highest corporate tax rate.

Results of the analysis are consistent with the findings of Hartman (1982), Haufler and Wooton (1999), Haufler (2001), and UNCTAD (2012) who found out that the corporate tax rate is not as important as the other market-related determinants for FDI attractiveness. Also, we found that infrastructure reform has positive and significant influence, which is in accordance with Bellak, Leibrecht, and Damijan (2009). The low level of taxes is not sufficient by itself to attract foreign capital from abroad, and they can be understood as a cheap attempt by the government to obtain foreign capital, and behind these low rates, the numerous internal problems relating to the regulation of property rights, slow administration, rule of law, inefficiency, corruption, and other are hidden.

Low tax burden can be an important indicator only when there is a stable macroeconomic and institutional framework, but with a tendency of lowering corporate tax rates (also in developed countries), its growing importance in the future cannot be expected either. Constraints of the analysis were as follows: availability of data, short time series and inability to use other tax (such as effective, marginal, and average); however, regardless of this, the analysis points out the key determinants for attracting FDI in SEE countries and indicates that tax rates are not an important factor in the attractiveness of this region during the analyzed period.

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