Mazol, Aleh; Mazol, Sergey

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Competition of jurisdictions for FDI: Does developing and developed countries respond differently to economic challenges?

Aleh Mazol[+‡], Sergey Mazol 2021

[+] *BEROC*

[‡] Corresponding author. E-mail: mazol@beroc.by, tel: +375447859899

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ABSTRACT: The main aim of the paper is to assess the existence and the influence of competition of jurisdictions (considers institutions and tax policy) for the FDI inflow in CEE countries and their differences with EU countries. The methodology used in the study is spatial panel Durbin error model. The main results indicate a positive and significant relationship between rule of law and political stability and foreign investment, and a negative and significant relationship between quality of corporate governance and tax policy and foreign investment in developing CEE countries. The outcomes of the spatial model suggest the presence of competition effects of tax policies on FDI and reinforcement effects of quality of corporate governance on FDI in developing CEE countries.

Keywords: corporate governance, rule of law, political stability, taxes, foreign direct investment, competition of jurisdictions, spatial analysis.

JEL classification: O43, P26, P49.

1. Introduction

The paper studies the existence of the "competition of jurisdictions" (considers institutions and tax policy) for the FDI inflow in the context of improving national business environment comparing neighboring developing Central and East European (CEE) countries with emerging institutions and developed European Union (EU) countries with advanced institutions. Previous studies show that at the micro-level, if we take into account firm size, its operating efficiency and human capital, there is a significant influence of firm's characteristics on the flow of FDI, but there is no evidence explaining the spatial relationship between an economies' quality of institutions and the inward flow of FDI into developing countries and their differences with developed countries.

We suppose that countries with higher quality of corporate governance, stronger rule of law, higher political stability and lower taxes are more likely to become a host of foreign investment due to the lower level of uncertainty offered to investors. Therefore, we consider that at the regional level countries should not only make constant improvements of the institutional environment, but also take into account efforts of the neighboring countries in the same fields. Moreover, FDI is associated with the inflow of capital technology and know-how, i.e., factors that are crucial for economic growth (Spar, 1999). Therefore, it may generate a positive socio-political benefit (Blanton & Blanton, 2007) for neighboring countries such as the improvements in factors that define competition of jurisdictions, which may lead to cooperation of jurisdictions.

The research is also motivated by an evidence showing that investors are not only discouraged by bad institutions in host countries but are also deterred by an institutional "distance" between origin and destination countries as they prefer to invest in countries with a similar institutional environment (Bénassy-Quéré *et al.*, 2007; Habib & Zurawicki, 2002). However, the implicit implication of the research is that investors are not always seeking for a recipient country with the best institutions. Investors from one developing country may prefer to invest in other developing country than in developed one (Claessens & Van Horen, 2008). Indeed, they may be eager and more able to operate in institutionally weaker environment due to previous experience of interacting with poorer institutions (Cuervo-Cazurra & Genc, 2008; Darby *et al.*, 2009), as well as awareness of business conduct in similar markets (World Bank, 2006a).

Therefore, in this paper, we use macro-level data to investigate: (1) the existence of competition or cooperation in terms of jurisdictions among neighboring CEE and EU countries for FDI inflow; (2) the significance of factors that constitute competition of jurisdictions, namely quality of corporate governance, rule of law, political stability and tax policy, on redirecting the regional FDI inflow for CEE and EU countries; (3) the relative influences of improvements of factors that constitute competition of jurisdictions on redirecting the regional FDI inflow among neighboring CEE and EU countries.

The results show, first, that a reduction in quality of corporate governance, an enhancement in rule of law and political stability, and adjustment of tax policy in developing CEE countries with emerging institutions have significant positive impact on the FDI inflow stock in these countries; second, spatial dependence between quality of corporate governance and FDI inflow stock and a spatial dependence between tax policy and FDI inflow stock are detected and modelled during the analysis; third, an improvement of quality of corporate governance in CEE or in EU country results in an increase of FDI inflow into their neighboring countries, which indicates the presence of the reinforcement effects of quality of corporate governance for FDI inflow both for CEE and EU countries; fourth, a decrease in the tax policy of a local CEE country results in an increase of FDI inflow into its neighboring CEE countries, in turn a decrease in the tax policy of the neighboring CEE countries leads to increase of FDI inflow into the local economy.

The study is based on data for 41 countries provided in the World Bank's and the UNCTAD databases. The data covers the period of 2006-2018. The main series include the minority investors' protection index, the rule of law index, the political stability index, the tax burden and net inflow stock of foreign direct investment per capita.

The paper proceeds as follows. Section 2 presents literature review. In Section 3 we describe the data. Section 4 explains the econometric approach implemented in the research. Section 5 clarifies the model's results and defines the studied relationships. Section 6 presents main conclusions of the research. The Appendix contains further information about data the research is based on.

2. Literature review

The determinants of the volume of the FDI inflows are examined in numerous studies. A substantial part of them considers the influence of institutions on FDI. According to North (1991), institutions represent "the humanly devised

constraints that structure political, economic and social interaction. They consist of both informal constraints (…) and formal rules (…)". More formally institutions may be defined as particular organizational entities, procedural devices, and regulatory frameworks (IMF, 2003).

Developed institutions motivate for productive and efficient behavior of economic agents and positively affect their economic performance due to improved doing business environment (Alguacil, Cuadros & Orts, 2011). Examples of institutions that promote economic activity are the protection of property rights and the rule of law. According to growth literature, both stimulate investments in productive capacity (Acemoglu & Johnson, 2005; Rodrik, 2003), improve resources allocation, ensures higher growth prospective and, hence, make a recipient country more attractive for foreign investors (Acemoglu *et al.*, 2005; Kaufmann *et al.*, 2002; Rodrik *et al.*, 2004).

Quality of institutions is of particular importance for less-developed countries, because poor quality of institutions increases the costs of running a business, creates barriers for financial market effectiveness and due to weakening law enforcement increases the probability of foreign assets expropriation (Blonigen, 2005). Moreover, it leads to infrastructure deficiency and reduces provision of public goods which negatively influences the profitability of investments and, consequently, may decrease FDI inflow.

The empirical literature supports these predictions, and various studies demonstrate that a poor institutional environment "poisoned" by corruption (Shleifer & Vishny, 1993; Wei, 2000) or criminality (Daniele & Marani, 2011) decreases FDI inflow, while strong host country's institutions increase it (Wheeler & Mody, 1992; Daude & Stein, 2007).

However, governments are not only concerned about internal institutional environment, but are also involved in competition for foreign investments in order to boost job creation, new technologies, and tax revenues in host countries. Competition between countries for FDI may take the form of the so-called "competition of jurisdictions".

In a narrow sense, competition of jurisdictions may be considered as a rivalry between tax jurisdictions in which countries strive to provide foreign investors with maximum tax relief and financial benefits.

However, tax competition for FDI may cause distortions in intraregional trade and investment patterns, lead to difficulties in securing sources of taxation by national governments (Hwangbo & Kim, 2013), and force countries to pay too much for FDI inflow and cause inefficiently high subsidization of international firms at the expense of the domestic economy (Christiansen, Oman & Charlton,

2003). Therefore, tax competition by itself is regarded to have low effectiveness as an instrument to attract FDI (Parys, 2012).

However, let suppose that foreign investors make location decision in a two-stage process, firstly, drawing up a short list of acceptable national locations on the basis of the country's institutional "fundamentals" (taking into account macroeconomic environment), and, secondly, considering availability of direct tax and financial incentives offered by potential host governments.

Therefore, in a broad sense "competition of jurisdictions" may be considered as an attempt of local governments to offer foreign companies more efficient institutional and fiscal conditions for capital placements in comparison to other countries.

We assume that institutional "fundamentals" have equal impact on both foreign and domestic investors. Such institutions include the rule of law, the quality of corporate governance[1] and stable political environment. Countries with more developed general institutions attract more FDI to their economy (Choi, Lee & Shoham, 2016).

In particular, countries with better rule of law practice tend to receive relatively more FDI. This can be explained by the fact that higher jurisdictional strength of rule of law allows to diminish violation of investor rights, decrease transaction and enforcement costs (Haggard, Macintyre & Tiede, 2008; La Porta *et al.* 2000), which in turn allows more effective management of FDI projects for the parent company. The evidence of the UK corporations' outwards investments shows that weak legal system which does not provide enough possibilities to protect ownership rights decreases the likelihood of attracting high amount of FDI. In such situation, foreign investors prefer to buy smaller stakes of the local companies, which helps to decrease risks of expropriation by local shareholders or managers.

This is also proved at the micro level, as CEO survey results provide evidence that individual firms take into account the jurisdictional strength of rule of law when making investment decisions (Staats & Biglaiser, 2012). Moreover, higher level of rule of law allows country to benefit more from foreign investments inflow as far as recipient states with poor rule of law had to offer higher financial and other incentives to attract the same amounts of FDI in comparison

[1] According to OECD corporate governance specifies the distribution of rights and responsibilities among different participants in the corporation such as the board, managers, shareholders, and other stakeholders, and spells out the rules and procedures for making decisions on corporate affairs. Correspondingly, corporate governance system constitutes a set of mechanisms that outside (minority) investors use to protect themselves against residual value expropriation by the managers and controlling shareholders including: (1) steal of profits; (2) sell of the company's output or assets at below market prices to another company associated with the managers or controlling shareholders; (3) hiring low-qualified family members for managerial positions or overpaying executives (La Porta *et al*., 1999).

to countries with strong rule of law (Li, 2006). Countries with higher level of rule of law tend to attract FDI of "better quality", i.e., FDI from developed countries, as far as countries with higher rule of law standards tend to invest more in host countries with comparable or higher level of legal protections (Kunsch, Schnarr & Rowe, 2014).

The second type of institutions – quality of corporate governance – highlights the level of legal rights protection for specific types of investors, i.e., minority shareholders and company debt holders, rather than the overall society (Choi, Lee & Shoham, 2016). In this regard, researchers consider a leading role of quality of corporate governance in attracting foreign investors as far as FDI inflow is positively influenced by the corporate governance development in the recipient economies (Mazol & Mazol, 2017).

Better corporate governance implementation supports more effective protection of minority shareholders and decreases the specific transaction costs of managing foreign subsidiaries which accelerates the inflow of FDI (Lskavyan & Spatareanu, 2011). Local companies with stronger corporate governance are more transparent and provide better protection of shareholders' rights which makes them more attractive for foreign investors (Leuz, Lins & Warnock, 2008). The evidence from the US companies shows, that they hold fewer shares in the foreign companies with poor corporate governance and higher risks of expropriation by the local co-owners and managers.

Moreover, poorly governed companies attract fewer foreign investments as far as they are valued less by investors. At the macroeconomic level, researchers find positive correlation between gross FDI liabilities of local economy and the quality of shareholders' right protection. Countries with high levels of FDI liabilities tend to have both stronger shareholder protection and stronger rule of law (Cyrus, Iscan & Starky, 2006).

The improvement of corporate governance regulations and laws is especially important for the poor economies, where corporate governance practices are mostly nonexistent (Shleifer & Vishny, 1997) and which lack the development of market institutions and face the so-called "institutional gap"[2]. Understanding the importance of effective corporate governance for the economic development and implementing efforts for its improvement can trigger major institutional changes in developing economies, e.g., decreasing level of corruption (Wu, 2005).

[2] Institutional gap corresponds to the situation in the economy, when growth is constrained due to absence of appropriate institutional evolution.

But, the relationship between corporate governance quality and foreign investments inflow is not so straightforward. Strong corporate governance may reduce the FDI inflow if investor enters the economy via mergers and acquisitions (M&A) (Wang *et al*., 2012). Effective corporate governance ensures better valuation of the target company and M&A can be too expensive for the investor's budget. Besides that, supporting high corporate governance standards increases general management expenses and imposes additional burden on company's budget which can be excessive and reduce company's market value (Bebchuk *et al*., 2014). Moreover, net FDI inflow is highly determined by the investor's strategy, and if foreign investors predominantly seek undervalued assets, they can select countries with less developed corporate governance. This leaves foreign companies more opportunities to find undervalued companies.

Several studies prove that high quality of minority investors protection discourages FDI via M&A as it reduces financial benefits of the foreign investor (Choi, Lee & Shoham, 2016). For example, the FDI inflow is negatively influenced by the improvements of the corporate governance regulations in transition economies (Haliti, Merovci & Hetemi, 2019) which indicates that FDI are targeting undervalued companies in such markets. On the other hand, in low-income countries improvements in corporate governance regulations increase the FDI inflow (Appiah-Kubi *et al*., 2020) which supports market-seeking or resource-seeking FDI strategies in such economies.

Besides that, by its very nature, the FDI decision requires some assessment of the political future of the host country. There are two principal risks that may arise from political instability in the host country that the investor may face. The first is that domestic instability or conflict with neighboring countries will reduce the profitability of operating in the host country due to impairment of domestic sales or exports, disruption of production, or material damage of the facility.

Another risk of political instability arises from the fact that it is likely to affect the value of the host country's currency, thus reducing the value of the assets invested in the host country as well as of the future profits generated by the investment. Moreover, studies show that FDI are characterized with very high sunk costs which makes investors hesitant to enter foreign markets unless they can sign binding long-term contracts to decrease all types of uncertainty. If contracts are well-enforced, each agent will be able to return its investments with higher probability (Levchenko, 2007). Hence, political stability, which helps to ensure contract enforcement, is also important for FDI inflow (Naudé & Krugell, 2007; Busse & Hefeker, 2007).

Finally, Devereux *et al.* (2008) confirm that for companies interested in the maximization of their profits host-country tax rates have an impact on companies' location decisions. Moreover, tax competition for FDI is real in today's global economy: investors compare tax burdens in different locations. However, a low tax burden cannot compensate for a generally weak or unattractive FDI environment. If a higher corporate tax burden is matched by well-developed infrastructure, institutions and appropriate macroeconomic environment, tax competition from relatively low-tax countries not offering similar advantages may not seriously affect location choice.

3. Data

We study the relationship between FDI inward stock and factors that define competition of jurisdictions using balanced panel datasets for 26 developing Central and Eastern Europe countries and 15 developed European Union countries for the period 2006-2018.[3] The definition of a developing/developed country follows World Bank classification.

The full list of studied countries and their country groups are presented in Table A1 of Appendix A.[4] The samples comprise data from the World Bank and UNCTAD databases and their sizes equal 338 and 195 observations, correspondingly. Table A2 presents the detailed description of variables used in the study and the sources of the data.

The dependent variable is measured as a FDI inward stock per capita (*fdi_pc*). The inward FDI, comprise net sales of shares and loans, reinvested earnings in partner companies and net intra-company loans. We use absolute FDI flows, because relative FDI inflow (FDI inflow as a percentage of host country's GDP) captures changes in the relative importance of foreign investment to the host country, but not changes in inflows directly. We take the natural log of the *fdi_pc* to reduce the skewness of its distribution, which increases the model fit.

The main explanatory variables related to the competition of jurisdictions is the quality of corporate governance (*corp_governance*). The effectiveness of national corporate governance systems is evaluated with the help of the minority shareholders rights protection indicator (Johnson *et al.,* 2000). It is measured by the strength of minority investor protection index which is the average of the extent of conflict-of-interest regulation index and the extent of shareholder

[3] The time range is chosen based on availability of data, for example, there is no records for quality of corporate governance for time periods prior to 2006.
[4] Turkmenistan and Montenegro are omitted from the analysis due to missing data. Cyprus, Malta, Iceland, Ireland and Great Britain are also omitted due to the fact that these countries represent islands, which fails the spatial analysis's objective to ensure at least one neighbor for each country (Maddison, 2006; Hao *et al.*, 2016).

governance index. The index ranges from 0 to 10, rounded to the nearest decimal place, with higher values indicating stronger minority investor protection.

Second explanatory variable related to the competition of jurisdictions is rule of law (*rule_of_law*), which measures the enforcement and enactment of law and order in society. In particular, rule of law captures perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence. Estimate gives the country's score on the aggregate indicator, in units of a standard normal distribution, i.e., ranging from approximately -2.5 to +2.5. The relationship between rule of law and FDI is of a complex nature. On one hand, increasing levels of rule of law reinforce judicial systems and on the other it can drive foreign investors away by imposing constraints on foreign capital and the host government.

Third variable that corresponds to the competition of jurisdictions is political stability (*political_stability*), which helps to ensure contract enforcement for investment projects with FDI (Naudé & Krugell, 2007; Busse & Hefeker, 2007).

Finally, fourth explanatory variable of particular interest is tax rate (*tax_rate*). The tax rate reflects marginal tax rates on personal and corporate income and the overall level of taxation as a percentage of GDP. The higher the value of the index the higher the tax burden in the country. Higher tax rate provides disincentives to allocate direct investment in a given country (Buettner & Ruf, 2007).

The control variables representing other macroeconomic determinants of the value of FDI inflow include GDP per capita (*gdp_pc*), inflation (*inflation*), urban population (*urban_population*), unemployment (*unemployment*) and resource rent (*resource_rent*). Particularly, the gross domestic product per capita should be positively related to the foreign direct investment inflow as it reflects the size of the host country economy (Cieślik, 2005). Another purely economic variable, used in order to assess the basic characteristics of the country's economy, is inflation reflecting stability of the country's economy (Asiedu, 2006).

Next factor that may exert additional influence on the inflow of FDI is the urbanization of the economies approximated with the percentage of the country's population living in the cities. It is difficult to a priori predict the effect of urbanization as it may both encourage foreign investors by facilitating face-to-face communication and informational spillovers and discourage them by causing negative externalities such as congestion or pollution (Cieślik, 2005).

We employ a measure of rents from natural resources to control for the fact that, all other things being equal, large natural resources are a major attractor to foreign investors. Our measure is equal to the sum of oil rents, natural gas rents, coal rents (hard and soft), mineral rents, and forest rents (% of GDP) (World Bank, 2020a). Additionally, the availability of rents from natural resources is often negatively related to the quality of institutions in host countries and, therefore, the omission of this variable can bias the results especially for regression with developing countries. Particularly, companies from developing countries that invest in the primary sector are generally state-owned and therefore could be motivated by factors other than economic ones. These investors appear to be less deterred by poor institutions in host countries than large private multinationals from developed countries (UNCTAD, 2007). For example, Chinese, Indian and Malaysian state-owned companies invest in Sudan that possesses some of the worst institutions in the world. China and Malaysia are also participating in Iranian investment projects, while China and Russia are major foreign investors in Belarus. Additionally, there is a binary variable (*eu*), which takes the value 1, if the CEE country belongs to the European Union and the value 0 otherwise.

Table 1 contains descriptive statistics of variables used in the study.

Table 1: Descriptive statistics

Variable	Obs.	Mean	Std. dev.	Min	Max
fdi_pc	533	0.020	0.052	2.980E-05	0.436
corp_governance	533	5.564	1.111	1.667	8.500
rule_of_law	533	0.491	1.033	-1.447	2.100
political_stability	533	0.335	0.733	-2.021	1.512
tax_rate	533	43.202	17.003	7.400	137.200
gdp_pc	533	2.462E+04	2.523E+04	633.340	1.120E+05
inflation	533	4.039	5.647	-1.736	59.220
unemployment	533	9.847	6.194	2.397	36.025
urban_population	533	65.854	15.125	26.512	98.001
resource_rent	533	3.525	6.978	0.010	41.952
eu	338	0.423	0.495	0	1

Source: Authors' own calculations based on World Bank and UNCTAD data.

Table 2 and Figures A1-A5 present mean values of FDI as the percentage of GDP and the four aforementioned indices of competition of jurisdictions in the period 2006-2018. The data are structured to present values separately for Central and Eastern Europe and developed EU countries. This division is based both on their geographical location and historical or cultural heritage, which may partly explain the differences in the FDI inflow stock and differences of competition of jurisdictions variables.

Table 2: Mean value of FDI inflow stock per capita and competition of jurisdictions in developing CEE countries and developed EU countries, 2006-2018

Variable	CEE	EU	Min: CEE	Max: CEE	Min: EU	Max: EU
Mean value of FDI inflow stock as per capita, mln. USD	0.004	0.047	2.980E-05	0.019	0.002	0.436
Competition of jurisdictions						
Mean value of quality of corporate governance	5.599	5.503	1.667	8.500	3.000	7.500
Mean value of rule of law	-0.101	1.518	-1.447	1.373	0.0839	2.100
Mean value of political stability	0.040	0.848	-2.021	1.148	-0.474	1.512
Mean value of tax rate, %	41.959	45.358	7.400	137.200	19.800	75.300

Source: Authors' own calculations based on World Bank and UNCTAD data.

From the table, it can be seen that CEE countries are characterized by the relatively high level of quality of corporate governance protection and relatively low level of tax burden in comparison to developed EU countries. However, the data presented in Table 2 indicate a large difference in terms of FDI inflow stock, rule of law and political stability between developing CEE countries and developed EU countries in favor of last ones.

4. Methodology and hypotheses development

For the empirical analysis, we apply panel spatial Durbin error model (SDEM) with fixed effects. The main reason to employ spatial econometrics is to take into account the problem of spatial interdependence in the data, where the lack of that leads to biased and inefficient estimates. In this regard, the SDEM model allows for modelling both local and global spatial spillovers (LeSage, 2014).[5] In our study the dependent variable represents FDI inward stock, therefore modelling local spillovers seems to be reasonable, because its change in one country should not cause adjustment in FDI inflow stock in other neighboring countries. Additionally, the use of the spatial panel data estimation helps to examine whether competition or cooperation of jurisdictions exists among countries and which of its factors defines it.

Spatial Durbin error model comprises of spatial dependence in disturbances and spatial lags of explanatory variables:

[5] A spatial spillover appears when the n_{th} characteristic of the i_{th} region located at position i in space exerts a significant influence on the outcomes (y_j) of a region located at position j. A spillover may be defined as global when the endogenous interaction and feedback are present, i.e., when changes in one region trigger a sequence of adjustments in potentially all regions in the sample (LeSage, 2014). Local spillovers do not lead to such endogenous interaction outcome.

$$Y = X\beta + WX\theta + u,$$
$$u = \rho Wu + \varepsilon, \quad (1)$$

where Y is the dependent variable, X is the set of independent (explanatory) variables, W is the spatial weight matrix, $WX\theta$ defines spatial lags of independent variables, u is the error term, and ρWu expresses spatial lags in error term.

We use inverse distance matrix with weights equal $1/d_{ij}$, where d_{ij} represents distance between country i and country j and captures linear relations of neighbors with all territorial units (the strength of this relationship is proportional to the distance between units).

Parameter estimates in SDEM provide a variety of information about relationships among the observations, and contain a range of information on relationships between spatial units (e.g., country). A change in a single observation associated with any given explanatory variable will affect the spatial unit itself (a direct effect) and potentially affect all other spatial units indirectly (a spillover effect), i.e., includes the so-called effect of feedback loops that arise as a result of impacts passing through neighboring units (e.g., from country i to j to k) and back to the unit that the change originated from (country i) (LeSage & Pace, 2009).

Therefore, the direct effect measures the impact of changing an independent variable on the dependent variable of a spatial unit. The spatial spillover effect measures the impact of changing an independent variable in a particular unit on the dependent variable of all other units, or the impact of changing an independent variable in other units on the dependent variable in particular unit (LeSage & Pace, 2014) and is used to examine the hypothesis as to whether or not spatial spillovers exist (LeSage & Pace, 2009; Elhorst, 2010). In SDEM, the direct effect is expressed by the coefficient estimate of the explanatory variable, while the spillover effect is represented by the coefficient estimate of its spatial lagged value.

Another spatial parameter to be interpreted in SDEM is the one associated with a spatially autocorrelated error term (parameter ρ from Equation (1)). A significant and positive ρ reflects the short-term spillovers' fluctuations that are similar in neighboring locations, i.e., meaning cooperation between countries for FDI; whereas a significant and negative ρ indicates the existence of competitive mechanisms of reaction to common shocks modelled by the error term (Kopczewska *et al.*, 2017).

Additionally, in the literature there is also present an opposing view indicating that an alliance between foreign investors and domestic elite incentivizes the use of corruption, repressing law and political environment, higher or special regimes of taxes in order to maintain their privileged positions (Blanton &

Blanton, 2007; Spar, 1996). Not controlling for the potential endogeneity of the studied variables as the FDI determinants may contribute to bias of estimators. Lagging independent variables mitigates this problem. What is more, in the case of modelling of the FDI flows such an approach is justified by the fact that an investor's decision about locating assets in a given country does not result in an instant FDI decision. Therefore, it is reasonable to assume that the investment decision is made taking into account conditions from the previous period.

Therefore, all independent variables used in SDEM specifications (see Equation (1)) have been lagged by one period in order to resolve the problems of endogeneity and simultaneity of variables.

Finally, the existence of spatial dependence in the model is confirmed by the outcomes of the Global Moran I test, which indicates the existence of spatial dependence in error terms in the data.

5. Empirical results

Table 3 and Table 4 present the results of the SDEM model based on Equation (1) for the CEE and EU countries, correspondingly, providing the direct and spillover effects of the independent variables for six specifications of the model: A1-A6 for CEE countries and B1-B6 for EU countries. The appraisals are based on fixed-effects estimation, since Hausman tests reject the random-effects assumption in all cases. The existence of spatial dependence in the models is confirmed by the outcomes of the Global Moran I test, which indicates the existence of spatial dependence in error terms in the data.

We use sequential estimation procedure. The first step of the process is to estimate the simplest specifications generated through Equation (1), defined as the models with spatial lags only for control macroeconomic variables (*gdp_pc*, *inflation*, *resource_rent*) in case of CEE countries (see Table 3) and for control variables (*gdp_pc*, *unemployment*, *resource_rent*) in case of EU countries (see Table 4) ('A1' and 'B1' models, correspondingly). Once these results are obtained, step two is to run the models with additional spatial lag for *corp_governance* ('A2' and 'B2' models), but taking into account the results of the initial estimations. This procedure is repeated for models with spatial lag for *rule_of_law* ('A3' and 'B3' models), with spatial lag for *political_stability* ('A4' and 'B4' models) and for *tax_rate* ('A5' and 'B5' models). Finally, the models with spatial lags for all above independent variables are estimated ('A6' and 'B6' models).

The empirical results displayed in Table 3 suggest that all four variables constituting competition of jurisdictions have significant direct effects in all calculated models; however, only for two of them, namely quality of corporate

governance and tax rate, there are both direct influence and spillover feedback to FDI inflow stock of a local economy from neighboring countries.

Table 3: Estimation results of SDEM model for developing CEE countries

Models	A1	A2	A3	A4	A5	A6
ln*fdi_pc*$_{lagt}$	0.525***	0.523***	0.526***	0.525***	0.508***	0.505***
	(0.025)	(0.025)	(0.025)	(0.025)	(0.026)	(0.027)
corp_governance$_{lagt}$	-0.022**	-0.023**	-0.022**	-0.022**	-0.026**	-0.025**
	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.012)
corp_governance$_{lagt\_lags}$		0.086*				0.078*
		(0.052)				(0.041)
rule_of_law$_{lagt}$	0.273***	0.268***	0.264***	0.271***	0.248***	0.215**
	(0.071)	(0.071)	(0.074)	(0.072)	(0.071)	(0.076)
rule_of_law$_{lagt\_lags}$			-0.177			-0.428
			(0.393)			(0.430)
political_stability$_{lagt}$	0.055*	0.054*	0.054*	0.055*	0.056**	0.052*
	(0.028)	(0.028)	(0.028)	(0.028)	(0.028)	(0.028)
political_stability$_{lagt\_lags}$				-0.040		-0.024
				(0.163)		(0.167)
tax_rate$_{lagt}$	-0.002**	-0.002**	-0.002**	-0.002**	-0.003**	-0.003***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
tax_rate$_{lagt\_lags}$					-0.016*	-0.018**
					(0.008)	(0.008)
ln*gdp_pc*$_{lagt}$	0.218*	0.209*	0.224*	0.215	0.166	0.157
	(0.132)	(0.132)	(0.133)	(0.132)	(0.132)	(0.134)
ln*gdp_pc*$_{lagt\_lags}$	0.456*	0.117	0.551*	0.465*	-0.016	-0.189
	(0.239)	(0.341)	(0.318)	(0.242)	(0.348)	(0.467)
inflation$_{lagt}$	0.0003	0.001	0.0003	0.0003	0.008	0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.008)	(0.002)
inflation$_{lagt\_lags}$	0.003	0.006	0.003	0.003	0.009	0.012
	(0.007)	(0.008)	(0.007)	(0.007)	(0.008)	(0.008)
resource_rent$_{lagt}$	-0.007**	-0.007**	-0.007**	-0.007**	-0.005*	-0.006**
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
resource_rent$_{lagt\_lags}$	0.014	0.013	0.011	0.014	0.019	0.012
	(0.019)	(0.018)	(0.019)	(0.019)	(0.020)	(0.021)
urban_population$_{lagt}$	0.023***	0.023***	0.023***	0.023***	0.029***	0.031***
	(0.008)	(0.008)	(0.008)	(0.008)	(0.009)	(0.009)
unemployment$_{lagt}$	0.003	0.003	0.003	0.003	0.001	-0.001
	(0.059)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
eu$_{lagt}$	-0.181***	-0.173***	-0.182***	-0.179***	-0.190***	-0.185***
	(0.059)	(0.059)	(0.059)	(0.060)	(0.059)	(0.059)
R^2	0.663	0.856	0.622	0.659	0.762	0.768
Number of observations	338	338	338	338	338	338
Moran I Test	0.161***	0.2162***	0.143***	0.177***	0. 136***	0.147***
Hausman LM Test	-207.523***	226.205***	84.174***	-132.547***	-339.501***	74.98***

Notes: *** – significance at 1% level, ** – significance at 5% level, * – significance at 10% level. Estimation is from the balanced panel of 26 countries covering the period 2006-2018. ln – denotes logarithm of the underlying variable. Values of *t* statistics in parenthesis. Global Moran's I statistic measures spatial autocorrelation and defines a formal indication of the linear correlation degree between one country and its neighbors in the model.
Source: Author's calculations.

For the quality of corporate governance, the direct effect is significantly negative for all models, whereas the spillover effect is significantly positive. On the one hand, the significantly negative direct effect indicates that a one-unit increase in the *corp_governance* decreases FDI inflow stock by 2.3% in case of 'A2' model or by 2.6% in case of 'A6' model.

One possible explanation is that the promotion of corporate governance standards in the developing CEE countries establishes formal rules in business environment, which in turn reverses investments from "specific" businesses (e.g., represented by investors that have lower threshold for corruption) [6] affiliated with public officials and may lead to decline in FDI inflow stock. In this case Wu (2005) shows that good corporate governance can lead to reduced level of corruption: improvement of corporate governance by firms will not only impose more constraints on firms' decisions to bribe but also expose corrupt officials to higher risks of being caught. Therefore, this result lies in line with the theory of regulatory capture (Stigler, 1971), which suggests that the decisions by public officials might be influenced and sometimes distorted by the influence activities of rent-seeking interest groups.

On the other hand, the significant positive spillover effect, first, suggests that an increase in the *corp_governance* in a given CEE country results in an increased FDI inflow to its neighboring countries, and, second, emphasizes that a one-unit increase in the *corp_governance* of neighboring countries increases FDI inflow stock in the local CEE economy by 8.6% ('A2' model) or by 7.8% ('A6' model). In the first case it indicates the presence of the reinforcement effects of quality of corporate governance for FDI inflow. Therefore, the lack of minority investors' rights abuses in one of the studied CEE countries decreases the total investors' uncertainty associated with investment in this region and serves as a signal of economic stability and development, which in turn increases FDI inflow.

A possible reason for second case is that neighboring countries with higher quality of corporate governance affect the local country's investment environment through attraction of investors confident in the corporate governance standards leading to increase in inter-regional capital flows based on improved governance and stable policies of neighboring countries.[7] Under such circumstances, externalities are able to spill corporate governance standards across nations, which is conducive to the interpretation of higher FDI inflow stock. In other words, development of corporate governance in neighboring countries would boost FDI sharing knowledge, and transferring technology and skills, which significantly increases the FDI inflow stock in the local country.

More importantly, we observe that the spillover effect of *corp_governance* is much greater than the direct effect. This result suggests that the detrimental effect of a country's

[6] According to Transparency International, corruption is more pervasive in countries where governments listen only to the voices of wealthy or well-connected individuals.
[7] According to Bebchuk & Neeman (2009) a high quality of corporate governance may be the product of high economic growth, a developed stock market, or an advanced-stage economy.

corp_governance on its FDI inflow stock is relatively small when compared with the beneficial effect of the neighboring countries' *corp_governance* on the local investment environment. This highlights the importance of taking into account the spatial dependence to assess the effect of *corp_governance* on FDI inflow.

In the case of the tax rate, both the direct effects and the spillover effects are significantly negative. The significantly negative direct effect indicates that a one percentage point decrease in the *tax_rate* increases FDI inflow stock by 0.3%. The significantly negative spillover effect, first, suggests that a decrease in the *tax_rate* in a given country results in an increased FDI inflow to its neighboring countries, and, second, emphasizes that a one percentage point decrease in the *tax_rate* of neighboring countries increases FDI inflow stock in the local economy by 1.6% ('A5' model) or by 1.8% ('A6' model).

So, the above result demonstrates that tax competition for FDI inflow exists and takes the form of replicated behavior, when one neighbor country observes corporate tax decisions of their neighbors and attempts to copy their tax policy as much as possible (see Table 2 – average tax rates are lower in developing CEE countries, than in developed EU countries). This also highlights the importance of taking into account the spatial dependence to assess the effect of *tax_rate* on FDI inflow.

Concerning other variables of the competition of jurisdictions, the direct effects for *rule_of_law* and *political_stability* are significantly positive; however, the spillover effects are statistically insignificant for all models. Therefore, increase in rule of law or political stability in the host country improves investment environment leading to increase in FDI inflow, however, there are no signs of competition or cooperation both for *rule_of_law* and *political_stability* for FDI inflow.

Regarding parameters of the control macroeconomic variables certain remarks need to be made. We first focus on the economic development – FDI inflow stock nexus, whereby the signs of the direct effect of ln*gdp_pc* is significantly positive, indicating that the FDI inflow would increase with economic development (e.g., a one percent increase in the ln*gdp_pc* increases FDI inflow stock by 0.22% in case of 'A1' model). However, if we take into account spatial dependence of developing CEE countries on tax policy, the direct effect of ln*gdp_pc* becomes statistically insignificant, thus, once again indicating the presence of competition in case of tax policy.

Resource rent has significant negative direct effect and urbanization has significant positive direct effect, thus implying that increase in natural resources rents causes a decrease in the FDI inflow of a given country, whereas population density causes a decrease in the FDI inflow (e.g., a one percentage point increase

in the *resource_rent* decreases FDI inflow stock by 0.7% and a one percentage point increase in the *urban_population* increases FDI inflow stock by 2.3% in case of 'A1' model).

Finally, for all control macroeconomic variables, the obtained results indicate the insignificance of spillover effects. This suggests that economic development, inflation and resource rent in all neighboring CEE countries has no impact on the FDI inflow stock of the local country.

Next, the empirical results displayed in Table 4 suggest that only two variables (*corp_governance* and *political_stability*) constituting competition of jurisdictions have significant direct effects in all calculated models and only for one of them, namely quality of corporate governance, there are both direct influence and spillover feedback to FDI inflow stock of a local economy from neighboring countries.

For the quality of corporate governance, the direct effect and spillover effect are significantly positive, which indicates, first, that a one-unit increase in the *corp_governance* increases FDI inflow stock by 3.5% in case of 'B2' model or by 3.2% in case of 'B6' model. Second, it suggests that an increase in the *corp_governance* in a given EU country results in an increased FDI inflow to its neighboring countries, and, second, emphasizes that a one-unit increase in the *corp_governance* of neighboring countries increases FDI inflow stock in the local EU economy by 14.2% ('B2' model) or by 13.0% ('B6' model).

As in case of developing CEE countries this result also indicates the presence of the reinforcement effects of quality of corporate governance for FDI inflow. Therefore, the lack of minority investors' rights abuses in one of the EU countries decreases the total investors' uncertainty associated with investment in this region and serves as a signal of economic stability and development.

Table 4: Estimation results of SDEM model for developed EU countries

Models	B1	B2	B3	B4	B5	B6
ln*fdi_pc*$_{lagt}$	0.657***	0.670***	0.644***	0.647***	0.658***	0.664***
	(0.052)	(0.051)	(0.052)	(0.052)	(0.052)	(0.052)
corp_governance$_{lagt}$	0.034**	0.035**	0.029*	0.030*	0.035**	0.032*
	(0.017)	(0.017)	(0.017)	(0.017)	(0.017)	(0.017)
corp_governance$_{lagt\_lags}$		0.142*				0.130*
		(0.074)				(0.076)
rule_of_law$_{lagt}$	0.165	0.200	0.1549	0.1688	0.164	0.199
	(0.126)	(0.126)	(0.1260)	(0.1258)	(0.126)	(0.126)
rule_of_law$_{lagt\_lags}$			-0.134			-0.553
			(0.397)			(0.540)
political_stability$_{lagt}$	0.153***	0.156***	0.1585***	0.1353**	0.153**	0.144**
	(0.060)	(0.059)	(0.0592)	(0.0615)	(0.060)	(0.061)
political_stability$_{lagt\_lags}$				-0.3070		-0.191
				(0.2729)		(0.277)
tax_rate$_{lagt}$	0.003	0.004	0.0033	0.0031	0.003	0.004
	(0.003)	(0.003)	(0.0028)	(0.0028)	(0.003)	(0.003)
tax_rate$_{lagt\_lags}$					0.001	0.006
					(0.015)	(0.015)
ln*gdp_pc*$_{lagt}$	0.012	0.039	0.0309	-0.0201	0.016	0.017
	(0.443)	(0.439)	(0.4410)	(0.4434)	(0.446)	(0.440)
ln*gdp_pc*$_{lagt\_lags}$	-1.100	-2.766**	-1.1556	-1.5823	-1.057	-2.940**
	(1.062)	(1.387)	(1.0590)	(1.1086)	(1.158)	(1.400)
inflation$_{lagt}$	0.020*	0.024**	0.0196*	0.0213*	0.021*	0.024**
	(0.011)	(0.011)	(0.0113)	(0.0114)	(0.011)	(0.011)
resource_rent$_{lagt}$	0.039***	0.047***	0.0403***	0.0423***	0.039***	0.048***
	(0.014)	(0.015)	(0.0141)	(0.0144)	(0.014)	(0.003)
resource_rent$_{lagt\_lags}$	0.002	0.048	0.0090	0.0196	0.001	0.056
	(0.066)	(0.070)	(0.0656)	(0.0675)	(0.066)	(0.070)
urban_population$_{lagt}$	0.021**	0.027**	0.0226**	0.0213**	0.021**	0.026**
	(0.010)	(0.011)	(0.0102)	(0.0103)	(0.010)	(0.011)
unemployment$_{lagt}$	-0.0004	0.001	-0.0004	-0.0006	-0.0004	0.001
	(0.007)	(0.007)	(0.0066)	(0.0066)	(0.007)	(0.007)
unemployment$_{lagt\_lags}$	-0.014	-0.052*	-0.0115	-0.0162	-0.013	-0.050*
	(0.020)	(0.028)	(0.0203)	(0.0191)	(0.023)	(0.028)
R^2	0.312	0.404	0.334	0.366	0.304	0.409
Number of observations	195	195	195	195	195	195
Moran I Test	0.136***	0.218***	0.153***	0.247***	0. 141***	0.217***
Hausman LM Test	737.816***	704.633***	554.089***	542.057***	524.173***	533.363***

Notes: *** – significance at 1% level, ** – significance at 5% level, * – significance at 10% level. Estimation is from the balanced panel of 26 countries covering the period 2006-2018. ln – denotes logarithm of the underlying variable. Values of *t* statistics in parenthesis. Global Moran's I statistic measures spatial autocorrelation and defines a formal indication of the linear correlation degree between one country and its neighbors in the model.
Source: Author's calculations.

Concerning political stability, its increase in the host EU country also improves investment environment leading to increase in FDI inflow, however, there are no signs of competition or cooperation in case of political stability for FDI inflow in developed EU countries.

For other control macroeconomic variables, the obtained results indicate a significant and negative influence of the indirect effects of the GDP per capita and unemployment, and a significant and positive influence of the direct effects of the inflation, urban population and resource rent. It suggests that in fact what matters for investors in developed EU country compared to CEE country are the

minority investors' rights protection and its overall macroeconomic development compared to neighboring economies.

6. Conclusion

Although many studies have investigated the effect of different economic and institutional factors on FDI, a spatial econometric approach has seldom been used. Thus, the present study provides a wide-ranging analysis of the different aspects of the influence of competition of jurisdictions and their constituting factors, i.e., the quality of corporate governance, rule of law, political stability, and tax rate (burden), on foreign direct investment inflow in CEE and EU countries. The empirical analysis has been based on a spatial panel Durbin error model. The model granted next results.

Firstly, the obtained results indicate that a reduction in quality of corporate governance, an enhancement in rule of law and political stability, and adjustment of tax policy in developing CEE countries with emerging institutions have significant positive impact on the FDI inflow stock in these countries. Conversely, only improvement of quality of corporate governance and political stability has a positive impact on the volume of FDI inflow into developed EU countries with advanced institutions.

The observation concerning negative direct effect of quality of corporate governance on FDI signifies that the promotion of corporate governance standards in the developing CEE countries establishes formal rules in business environment, which in turn may reverse investments from "specific" businesses (e.g., represented by investors that have lower threshold for corruption) affiliated with public officials and may lead to decline in FDI inflow stock.

Secondly, a spatial dependence between quality of corporate governance and FDI inflow stock and a spatial dependence between tax policy and FDI inflow stock are detected and modelled during the analysis. The results of the spatial model highlight the significance of spillover effects of quality of corporate governance and tax policy on FDI in CEE countries, while only significance of spillover effects of quality of corporate governance on FDI in EU countries.

Thirdly, an improvement of quality of corporate governance in CEE or in EU country results in an increase of FDI inflow into their neighboring countries, which indicates the presence of the reinforcement effects of quality of corporate governance for FDI inflow both for CEE and EU countries. Thus, the lack of minority investors' rights abuses in one of the studied CEE or EU countries

decreases the total investors' uncertainty associated with investment in this region and serves as a signal of economic stability and development, which in turn increases FDI inflow.

Finally, a decrease in the tax policy of a local CEE country results in a increase of FDI inflow into its neighboring CEE countries, in turn a decrease in the tax policy of the neighboring CEE countries leads to increase of FDI inflow into the local economy. This observation leads to the conclusion that for tax policy there is room for competition between CEE countries that takes the form of replicated behavior, when one local country observes corporate tax decisions of neighboring countries and attempts to copy their tax policy as much as possible (see Table 2 – average tax rates are lower in developing CEE countries, than in developed EU countries).

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Appendix A

Table A1: Developing CEE countries and developed European countries

Developing CEE countries			
Albania	Bulgaria	Latvia	Serbia
Armenia	Croatia	Lithuania	Slovakia
Azerbaijan	Czech Republic	Macedonia	Slovenia
Belarus	Georgia	Moldova	Tajikistan
Estonia	Hungary	Poland	Ukraine
Bosnia and Herzegovina	Kazakhstan	Romania	Uzbekistan
	Kyrgyz Republic	Russia	
Developed European countries			
Austria	France	Luxembourg	Spain
Belgium	Germany	Netherlands	Sweden
Denmark	Greece	Norway	Switzerland
Finland	Italy	Portugal	

Table A2: Description of variables

Variable	Description	Data source
fdi	Foreign direct investment: inward stock (current millions of US$)	UNCTAD (2020)
population	Total population	World Bank (2020a)
fdi_pc	FDI inward stock per capita (current millions of US$ per capita)	UNCTAD (2020) World Bank (2020a)
corp_governance	The quality of the corporate governance in the country is measured by the strength of minority investor protection index which is the average of the extent of conflict-of-interest regulation index and the extent of shareholder governance index. The index ranges from 0 to 10, rounded to the nearest decimal place, with higher values indicating stronger minority investor protections.	World Bank (2006b, 2006c, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019)
rule_of_law	Rule of law captures perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence. Estimate gives the country's score on the aggregate indicator, in units of a standard normal distribution, i.e., ranging from approximately -2.5 to +2.5.	World Bank (2020b)
political_stability	Political stability measures perceptions of the likelihood of political instability and/or politically-motivated violence, including terrorism. Estimate gives the country's score on the aggregate indicator, in units of a standard normal distribution, i.e., ranging from approximately -2.5 to +2.5.	World Bank (2020b)
tax_rate	Total tax rate (% of commercial profits).[8]	World Bank (2020a)
gdp_pc	GDP per capita (current US$)	World Bank (2020a)
eu	A binary variable, which equals 1 if a country is a member of the European Union	World Bank (2020a)
inflation	Inflation, consumer prices (annual %)	World Bank (2020a)
unemployment	Total unemployment (% of total labor force)	World Bank (2020a)
urban_population	Urban population (% of total population)	World Bank (2020a)
resource_rent	Total natural resources rents as the sum of oil rents, natural gas rents, coal rents (hard and soft), mineral rents, and forest rents (% of GDP)	World Bank (2020a)

[8] The higher the value of the tax rate the higher is the tax burden in the country.