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THE EFFECTIVENESS OF BILATERAL INVESTMENT TREATIES IN ATTRACTING FOREIGN DIRECT INVESTMENT: THE CASE OF SERBIA

ABSTRACT: *Over the past several decades there has been increasing competition among countries to attract foreign direct investment, which is often hypothesised to positively affect the development of host countries. Bilateral investment treaties are one of the policy instruments the host countries often use as a means to encourage foreign direct investment inflows. In this study, we aim to explore the effectiveness of bilateral investment treaties in achieving these goals in the case of Serbia. Using the panel data on Serbia and its 198 partner economies observed in the period 2010–2019, we estimate a gravity model of foreign direct investment inflows by applying the Poisson pseudo-maximum likelihood method. We found that ratified bilateral investment treaties have a statistically significant positive effect on foreign direct investment inflows in Serbia. Furthermore, the quality of the treaties was found to positively affect the inflows, whereby the anti-discriminatory provisions seem to be the most important. The results imply that Serbia could attract more foreign direct investment by concluding new bilateral investment treaties and improving the quality of the existing ones.*

KEY WORDS: *bilateral investment treaties (BIT), foreign direct investment (FDI), investment promotion, Serbia*

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1. INTRODUCTION

In many countries, foreign direct investment is often perceived as a tool for the economic development of host countries. Foreign investment also often leads to economic development, improved export performance, technology transfer, and positive spillovers (Bjelić, 2018; Borensztein et al., 1998; Kastratović, 2020). Because of these potential benefits, potential host countries often face intense competition in attracting foreign direct investment.

Bilateral investment treaties may serve as an instrument to improve the environment for foreign investment in the host country. The provisions of the treaties offer concessions and protection to foreign investment under international law, stipulating the standards of treatment of the investment. Furthermore, the treaties provide the transparency of the conditions and legal framework of the host countries. Finally, through ratification of the treaties, host countries demonstrate their commitment to liberal foreign investment policies and the protection of investors' interests (Egger & Merlo, 2007; Neumayer & Spess, 2005). The aforesaid benefits should lower the investment costs and risks and lead to an increase in foreign direct investment flows between the countries which conclude the treaties (Egger & Merlo, 2012). For this reason, these treaties are often considered an instrument for attracting foreign direct investment. Considering that bilateral investment treaties limit the sovereignty of the host country, relegating the authority of the national judicial system to foreign arbitrations, it is particularly important to assess the potential benefits and rationale of their ratification.

The existing related literature provides conflicting evidence on the effects of bilateral investment treaties. In most developed countries with a stable and liberal environment for investment, bilateral investment treaties, for the most part, have a positive effect on foreign direct investment inflows (Dixon & Haslam, 2016; Falvey & Foster-McGregor, 2017; Kox & Rojas-Romagosa, 2020). However, the effects' size varies considerably depending on the host country observed (Brada et al., 2021). In contrast, in developing countries with a less stable environment for investment, bilateral investment treaties appear to be ineffective (Beri & Nubong, 2021; Frenkel & Walter, 2019). Therefore, the effects of bilateral investment treaties seem to be contingent upon the conditions in the individual host countries under consideration.

In this paper, we aim to explore how effective bilateral investment treaties are in terms of attracting foreign direct investment to Serbia. This is an interesting case study considering the indications of potentially positive effects (Grieveson et al., 2021), which so far have not been quantitatively and formally tested. In the process, we test two main hypotheses. According to the first one, ratified bilateral investment treaties have a positive effect on bilateral foreign direct investment inflows in Serbia. The second hypothesis states that higher-quality treaties lead to higher inflows of foreign direct investment.

We test the hypotheses by employing a gravity model of foreign direct investment flows to Serbia. We estimate the model using the sample of Serbia and its 198 partner economies observed in the period between 2010 and 2019 and by applying the Poisson pseudo-maximum likelihood estimator. Our results support both of our initial hypotheses, showing that bilateral investment treaties, particularly the high-quality ones, are an effective instrument for attracting foreign direct investment.

Our study adds to the previous related empirical studies by considering not only the effects of bilateral investment treaties on bilateral inflows of foreign direct investment in Serbia but also by exploring the role of the quality and contents of these treaties. In addition, we analyse the case of Serbia, which has previously not been the focus of similar empirical research. Finally, we employ a methodology which allows us to take into account zero investment flows, which are largely neglected in the related literature.

The remainder of this paper is structured as follows. Section 2 provides an overview of the related theoretical and empirical literature examining the effectiveness of bilateral investment treaties in attracting foreign direct investment. Section 3 discusses the methodology applied in our analysis, as well as the sample characteristics and data sources. In Section 4, we provide a descriptive analysis of the patterns of use of bilateral investment treaties in Serbia and their overall quality. Following this, in Section 5, we present and discuss the main findings of our empirical analysis. The final section presents the main conclusions.

2. LITERATURE REVIEW

There are both theoretical and empirical studies investigating the impact of bilateral investment treaties on foreign direct investment inflows. One of the few theoretical models derives a direct relationship between bilateral investment treaties and foreign direct investment (Egger & Merlo, 2012). It shows that bilateral investment treaties reduce the fixed costs of foreign affiliates' operations, which should, in turn, lead to an increased number of foreign affiliates and a larger scale of their activities in the host country.

The common aim of the relevant empirical studies is to test and quantify the effects of bilateral investment treaties on foreign direct investment inflows. The majority of these studies employ an augmented gravity model to describe foreign direct investment flows (Busse et al., 2010; Falvey & Foster-McGregor, 2017; Kox & Rojas-Romagosa, 2020; Singh, Shreeti et al., 2022). These studies provide some empirical evidence that bilateral investment treaties are often effective in attracting foreign direct investment. However, there is no consensus regarding this conclusion, as there are many notable exceptions.

All the related empirical studies can be classified into two main categories: single-country studies and multi-country studies. The studies in both categories are somewhat inconclusive.

For instance, Crotti et al. (2010) concluded that bilateral investment treaties encouraged foreign direct inflows in Australia, which they observed in the period between 1993 and 2007. Bhasin and Manocha (2016) drew a similar conclusion in the case of India, which they analysed in the period between 2001 and 2012.

In contrast, Dagbanja (2019) found no significant effects of bilateral investment treaties in the case of Ghana using a descriptive approach. Similar results were also found in the case of India (Singh et al., 2022). The insignificant results could be explained by the relatively lower level of institutional quality of the observed countries which cannot be substituted by the bilateral investment treaties, making the treaties ineffective.

Some of the first studies to investigate the effectiveness of bilateral investment treaties were multi-country studies. For example, Neumayer and Spess (2005)

found that the total number of signed and ratified bilateral investment treaties positively affects the aggregate foreign direct investment inflows in developing countries. More recent studies also report positive effects of bilateral investment treaties. For instance, Dixon and Haslam (2016) assessed such a positive effect in the case of 18 Latin American countries. North-South flows of foreign direct investment were also found to be positively affected by bilateral investment treaties, as evidenced by the study of the member countries of the Organisation of Economic Cooperation and Development (Falvey & Foster-McGregor, 2017). An analysis based on a sample of 19 Asian host countries suggests a similar conclusion, albeit with some regional heterogeneity (Mumtaz & Smith, 2018). Kox and Rojas-Romagosa (2020) used a sample of 8,500 country pairs in the period 2001–2012 in their study. They found strong positive effects of bilateral investment treaties. Positive but much less pronounced effects are reported for 16 member countries of the Regional Comprehensive Economic Partnership region observed in the period 2009–2018 (Uttama, 2021). Finally, bilateral investment treaties were found to nearly double the cross-border mergers and acquisitions in 139 countries observed in the period 1980–2014 (Bhagwat et al., 2021).

Contrastingly, the liberalisation of the investment regime through bilateral investment treaties has no effect on 48 African countries, as indicated by the results of Beri and Nubong (2021). A similar result is reported by Frenkel and Walter (2019). Perhaps the most closely related study to ours was conducted by Grieveson et al. (2021). They observed 22 transition countries in the period 1995–2017 and found no significant effects of bilateral investment treaties. However, their sample was somewhat limited as they only covered a minority of partner economies. Still, their results suggest that Serbia could be a notable exception to this general finding, although the authors did not analyse this case separately.

Our literature review suggests that the effects of bilateral investment treaties on foreign direct investment are, in general, positive. However, there are many exceptions. The empirical results vary for many reasons, including different sample sizes, characteristics of countries included in the sample, possible endogeneity issues, various methodological approaches, differences in control variables, and other model specification choices. The rigorous meta-analysis of these studies indicates that after all these differences are taken into account, bilateral investment treaties have, on average, small positive effects (Brada et al., 2021).

There are several notable shortcomings in most of the studies covered in this review. The determined effects in the studies are insufficiently precise, either because of the small sample size or sample heterogeneity. In addition, many studies observe aggregate inflows of foreign direct investment from the rest of the world. However, bilateral investment treaties by definition require a dyadic approach in the analysis. Another important gap in the existing literature is the neglect of the heterogeneity of bilateral investment treaties.

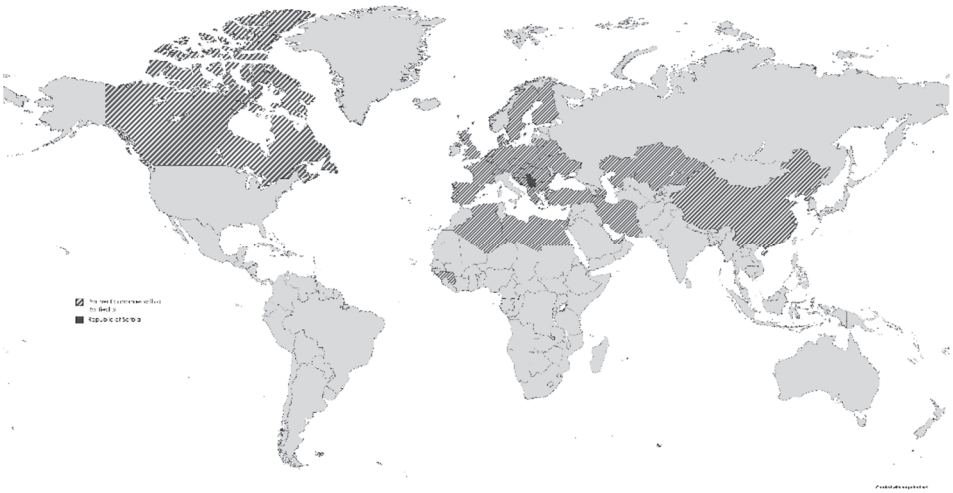
In this paper, we differentiate the treaties on the basis of their quality. By focusing on a single country, we construct a more homogenous sample in terms of foreign direct investment types and institutional framework, which should make the results more precise and relevant for policymakers. Finally, most of the related studies neglect nonlinearity and zero foreign direct investment flows when estimating a gravity model. We rectify this issue in this paper.

3. THE USE OF BILATERAL INVESTMENT TREATIES IN SERBIA

Serbia has a long history of using bilateral investment treaties. The oldest examples of these treaties which are still active were ratified during the period of Yugoslavia in the 1970s. The interest in bilateral investment treaties surged during the 2000s after Serbia adopted a liberal stance on foreign investment. In this period, Serbia ratified 37 bilateral investment treaties – over two-thirds of all the currently active treaties. This was followed by intensive inflows of foreign direct investment, which surpassed the level of 4.2 billion USD in 2006 (Kastratović, 2016). These dynamics reversed with the global financial crisis. After 2010, Serbia witnessed an unsteady recovery of the inflows, which started to exceed the pre-crisis levels in 2018. However, in 2020 there was another decrease in foreign direct investment inflows, which can largely be attributed to disruptions caused by the Covid-19 pandemic.

In 2022, Serbia had 47 active ratified bilateral investment treaties with nearly a quarter of its partner economies. With several notable exceptions, such as Russia, India, Ireland, Italy, and Norway, Serbia ratified bilateral investment treaties with most of the countries from which it has significant inflows of foreign direct investment. These partner economies are presented in the map in Figure 1. Over 57% of the partner economies belong to the group of developed economies.

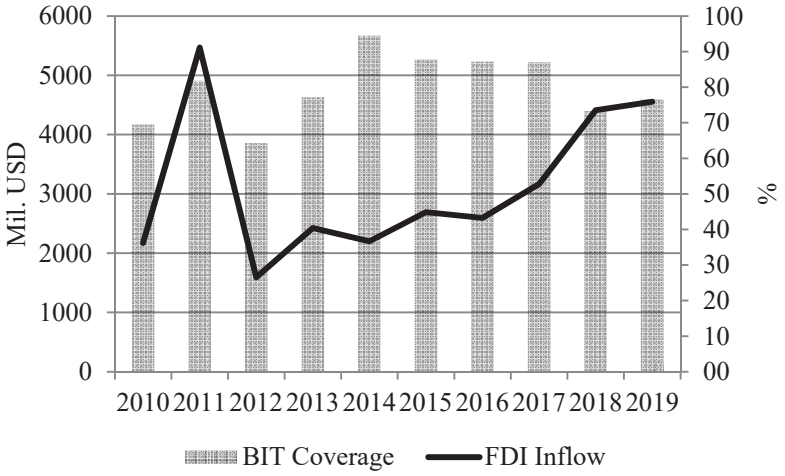
Figure 1: Countries with which Serbia has a Ratified Bilateral Investment Treaty (2022)



Source: Prepared by the authors.

We present foreign direct investment inflows in Serbia and the coverage of these inflows by bilateral investment treaties for the period 2010–2019 in Figure 2. In this period, bilateral investment treaties covered 79.9% of foreign direct investment inflows on average, with the increasing number of ratified treaties being followed by an increase in the coverage of the investment inflows, which, in certain years, surpassed a 90% share.

Figure 2: Foreign Direct Investment Inflows in Serbia and their Bilateral Investment Treaty Coverage (2010-2019)

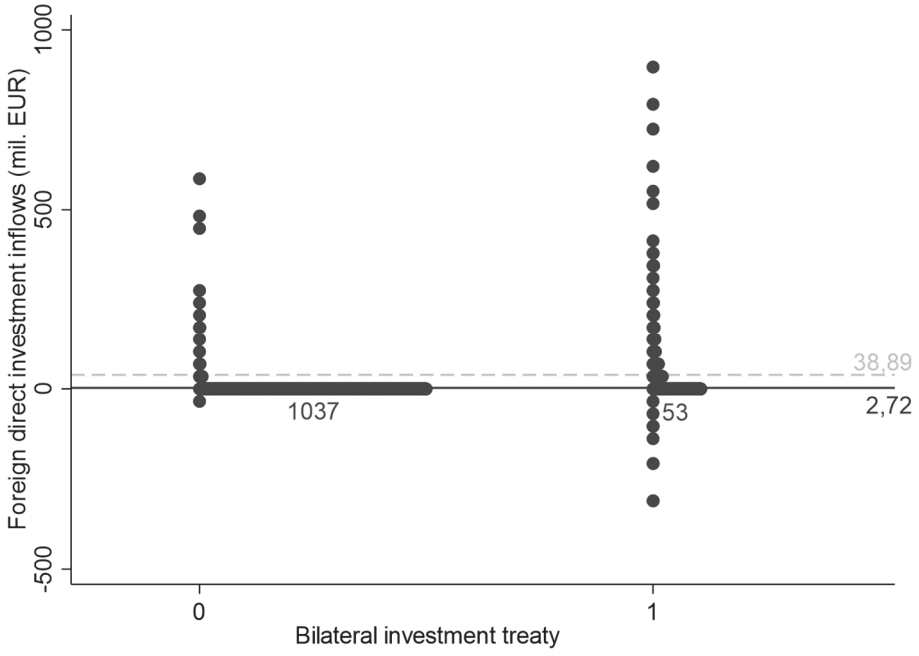


Source: Authors' calculation.

The comparison between foreign direct inflows from the economies with which Serbia has a ratified bilateral investment treaty and the ones with which it does not is presented in Figure 3. The comparison refers to the full sample, including 1,980 observations. The mean value of foreign direct investment inflows from countries with a ratified bilateral investment treaty is 38.89 million EUR, whereas the mean inflow from the other group equals 2.72 million EUR. The difference is statistically significant at the 1% significance level. Furthermore, there are significantly more zero investment flows between Serbia and partner economies without a ratified bilateral investment treaty.

The average value of the BITSel aggregate index is 1.50. According to the criteria of Chaisse and Bellak (2015), the bilateral investment treaties ratified by Serbia are moderate to high quality treaties. The consistently high quality of the treaties is particularly noticeable in relation to the temporal scope of the treaties, arbitration rules, national treatment of foreign investment, and the liberal regime of the transfer of funds. In contrast, the existing treaties are markedly lacking in terms of the breadth of investment definition, the use of umbrella clauses, coverage of indirect expropriations, and limitations to the most-favoured-nation treatment.

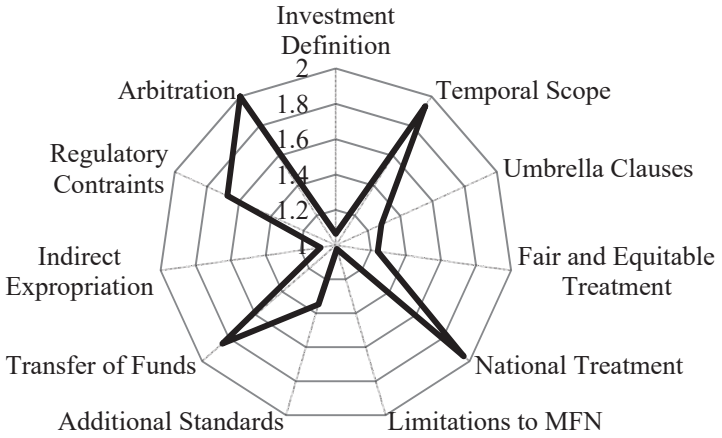
Figure 3: Distribution of Foreign Direct Investment Inflows to Serbia Dependent on the Bilateral Investment Treaty Status



Source: Authors' calculation.

We consider the quality of the existing bilateral investment treaties of Serbia by presenting the data on the BITSel index and its components in Figure 4.

Figure 4: The Quality of the Active Bilateral Investment Treaties of Serbia



Source: Authors' calculation.

It is expected that the provisions of the new and existing bilateral investment treaties will change as new initiatives regarding the contents of the treaties are promoted by the European Union and the United Nations Conference on Trade and Development. The standards defined in these initiatives were adopted by Serbia and the other countries in the region in 2020. On one hand, if implemented, some of these standards will improve the quality of the bilateral investment treaties. On the other hand, according to these standards, environmental, health, and labour standards need to be included in the preambles and other parts of the future bilateral investment treaties, which could increase the burden on foreign investors. Nevertheless, the modernisation of bilateral investment treaties could be an important step for Serbia in attracting foreign direct investment (Pavić, 2016).

4. METHODOLOGY

We base our empirical analysis on the augmented gravity model (Tinbergen, 1962). This class of models is predominantly used in the empirical analysis of international trade. However, its relevance has been confirmed for the analysis of

bilateral foreign direct investment flows (Deichmann et al., 2022; Mutti & Grubert, 2004). This model specification follows from the theories of asset trade and the knowledge-capital model and can successfully incorporate both horizontal and vertical types of foreign direct investment (Carr et al., 2001; Uttama, 2021). The model is generally considered to be a good framework for the analysis of foreign direct investment patterns and their major macro-level determinants (Blonigen, 2005; Crotti et al., 2010). In our study, we consider several specifications of the gravity model to describe the impact of bilateral investment treaties on foreign direct investment inflows, while controlling for the effects of other relevant factors. The baseline specification of our model can be represented by the following equation:

$$FDI_{ijt} = \beta_0 BIT_{ijt}^{\beta_1} GDP_{ijt}^{\beta_2} DGDPpc_{ijt}^{\beta_3} DIST_{ij}^{\beta_4} \exp(\delta_1 LANG_{ij} + \delta_2 CEFTA_{ijt} + \mu_{ij} + \lambda_t)\, \varepsilon_{it} \quad (1)$$

where FDI_{ijt} denotes inflows of foreign direct investment from country *i* to Serbia in the period *t*, BIT_{ijt} refers to variables encompassing the effects of bilateral investment treaties between country *i* and Serbia in the period *t*, GDP_{ijt} is the product of the gross domestic products of Serbia and the partner economy, DGDPpcijt is the difference in gross domestic product per capita, D_{ij} is the geographic distance between the capitals of country pairs, $LANG_{ij}$ is a dummy variable reflecting the common language of the country pairs, $CEFTA_{ij}$ is the common participation in the CEFTA 2006 agreement, μ_j refers to random individual effects which account for the unobserved heterogeneity of country pairs, λ_t refers to time effects, and ε_{it} is the error term.

Our dependent variable is the bilateral inflow of foreign direct investment expressed in EUR (FDI_{ijt}). The use of absolute foreign direct investment inflows is the most widely employed approach in the related empirical literature (Busse et al., 2010; Falvey & Foster-McGregor, 2017; Neumayer & Spess, 2005; Singh et al., 2022). We adopt this approach as it allows for a more direct estimation of the effectiveness of bilateral investment treaties and enables greater comparability of our results with the related literature.

In most of the relevant literature, zero investment flows are disregarded or transformed into arbitrary positive values. Both approaches could bias the results. For this reason, we use the Poisson pseudo-maximum likelihood approach, which

allows us to take into account the zero investment flows. In addition to only non-negative values, we consider absolute flows (which include both positive and negative values). The interpretation for this additional specification is slightly different, referring to the intensity of foreign direct investment flows, rather than the level of the investment inflows. However, the results change little when the alternative approach is followed, which is expected considering only a small fraction of the total number of observations contains negative investment values and are mostly related to special cases of sudden disinvestment, changes in intracompany loans, and valuations of foreign subsidiaries (Kox & Rojas-Romagosa, 2020). This is in line with the results of the meta-analysis of the related literature, which suggests that the choice of treatment of foreign direct investment flows does not have a significant effect on the determined effects of bilateral investment treaties (Brada et al., 2021).

The independent variable in the focus of our research is the bilateral investment treaty variable (BIT_{it}). In our baseline model, this variable is defined as a dummy variable taking the value 1 if there is a ratified bilateral investment treaty between the two observed countries in a given year and 0 otherwise. In this regard, we follow the approach of related empirical studies (Bhasin & Manocha, 2016; Crotti et al., 2010; Frenkel & Walter, 2019; Grieveson et al., 2021). We consider ratification dates rather than signing dates because the treaties only produce legal effects and provide protection to the investors on ratification.

The use of a single dummy variable to encompass the effects of bilateral investment treaties is problematic because such an approach implicitly assumes that all the treaties are homogenous. However, different treaties contain diverse provisions offering varying levels of investment protection. For this reason, we also consider the effects of their quality. For this purpose, we use the most widely used measurement of bilateral investment treaties quality – the BITSel index (Chaisse & Bellak, 2015). The index provides a single score of bilateral investment treaty quality by considering eleven types of provisions of the treaties. As the BITSel database does not contain values for Serbia, we follow the methodology provided by Chaisse and Bellak (2015) and map the contents of bilateral investment treaties using the content analysis approach, considering definitions of foreign investment used, the temporal scope of the treaty, the use of umbrella clause, the use of the "fair and equitable treatment" clause, the exceptions to the

national treatment, the exceptions to the most-favoured-nation clause, the use of additional standards regarding admission and establishment, the rules on the transfer of funds, the rules on indirect expropriation, arbitration rules, and the use of additional regulatory constraint, such as the explicit definition of environmental and labour standards. In addition to the most general value of the BITSel quality indicator, we calculate the values of subindices to investigate whether certain aspects of the bilateral investment treaties (including the quality of liberalisation – BITSel-lib$_{ijt}$, the anti-discrimination quality – BITSel-ad$_{ijt}$, the breadth of scope – BITSel-breadth$_{ijt}$, and the regulatory constraint quality of the treaties – BITSel-reg$_{ijt}$) affect the inflows of foreign direct investment to a greater or lesser extent.

Our control variables include some of the most widely used determinants of foreign direct investment in the related literature, including market size, the difference in gross domestic product per capita, common language (history and border), and participation in regional trade agreements.

The market size variable (GDP$_{ijt}$) captures the market-seeking foreign direct investment. The most commonly used approximation of market size in the related literature is gross domestic product (Busse et al., 2010; Falvey & Foster-McGregor, 2017). We determine the product of the gross domestic product of the observed country pairs rather than using separate variables for the gross domestic product of the destination and origin economies because the latter approach would lead to collinearity between the destination economy's gross domestic product and time effects. Furthermore, we considere the gross domestic product of both the destination country and the country of origin in order to remain consistent with the gravity model framework. In this regard, we follow the approach of empirical studies applying gravity models to describe the trade flows of a single country and its partner economies (Batra, 2006; Guan & Ip Ping Sheong, 2020; Rahman & Dutta, 2012). Alternatively, we control for market size using the population sizes (POP$_{ijt}$) of the observed countries, following the approach of Neumayer and Spess (2005). As gross domestic product and population are highly correlated, the two proxies for market size are used in separate specifications only to avoid multicollinearity problems. Larger integrated markets should generally allow for more firms to internationalise their operation and increase the capacity for a greater number of foreign affiliates. Both

of these should jointly be reflected on the macro level as the increase in bilateral foreign direct investment inflows. The variable also indicates that larger flows are established between larger countries, which is one of the basic ideas of the gravity model of trade.

Vertical foreign direct investment is controlled using the difference in gross domestic product per capita ($DGDPpc_{ijt}$). In the related literature, this variable is widely considered to reflect differences in factors endowments and labour skills, which is a crucial determinant for foreign direct investment (Bhasin & Manocha, 2016; Deardorff, 1998; Dixon & Haslam, 2016). It could also partially reflect differences in labour costs. Larger differences in skills should lead to larger bilateral flows of vertical foreign direct investment.

Distance between the countries ($DIST_{ij}$) is among the key variables of the gravity model and one of the most commonly used in the related literature (Bhasin & Manocha, 2016; Crotti et al., 2010; Falvey & Foster-McGregor, 2017; Kox & Rojas-Romagosa, 2020; Mumtaz & Smith, 2018). The geographic distance in our analysis is determined by using the circle formula and the data on latitudes and longitudes between the capitals of the observed countries. Larger geographic distances between the countries should, ceteris paribus, increase transportation costs. This could discourage the vertical foreign direct investment, which is associated with intensive cross-border flows of intermediary products. Additionally, the distance between the home and host country makes the coordination of business activities more difficult. This should negatively affect all types of foreign direct investment. Contrastingly, horizontal foreign direct investment should cut transport costs as sales of foreign affiliates replace traditional exports, so they could, to an extent, also be positively related to geographic distance. The net effect of these opposing forces should be captured by the coefficient of the distance variable.

Another frequently used variable in the majority of gravity models is common language ($LANG_{ij}$) (Bhasin & Manocha, 2016; Crotti et al., 2010; Falvey & Foster-McGregor, 2017). It is defined as a dummy variable taking the value of 1 when the country pair shares the same language and 0 otherwise. The variable reflects cultural proximity between the observed countries. A more familiar cultural environment should generally be more attractive for foreign investors and lower

the entry barriers they face. The cultural links between the countries are also explored through the use of the common history variable ($HIST_{ij}$), which shows whether the two countries were part of the same country in the past. Finally, the proximity between the countries is approximated using the common border variable ($BORDER_{ij}$). As the three proximity variables exhibit high correlation, we consider them in separate specifications to avoid the problem of multicollinearity.

Regional trade agreements are often hypothesised to affect foreign direct investment flows (Egger & Merlo, 2012; Grieveson et al., 2021; Kox & Rojas-Romagosa, 2020; Mumtaz & Smith, 2018). For this reason, we include a dummy variable to control for the effects of the participation of Serbia and some of its partner economies in the CEFTA 2006 agreement ($CEFTA_{ijt}$).

We estimate the gravity model by using the Poisson pseudo-maximum likelihood estimator, following the approach of Busse et al. (2010). This estimator is particularly suitable for use with samples containing a large portion of zero flows. In our sample, 55.05% of observations contain zero values of the dependent variable. Using simpler estimation techniques, such as generalised least squares, could bias the results in such circumstances. Therefore, we employ the Poisson pseudo-maximum likelihood estimator, which was shown to be highly suitable for the estimations of gravity-type models (Silva & Tenreyro, 2006). Moreover, this estimator is consistent in the presence of heteroscedasticity and allows for individual effects specification, which is important for accounting for multilateral resistance factors. The use of this approach allows us to estimate the gravity equation in its original multiplicative form, which is more theoretically consistent (Burger et al., 2009). As the introduction of fixed effects in the model would make the country pairs dummy variables collinear with time-invariant variables, and the time-invariant variables are important for the proper specification of our model, we control the heterogeneity of individual country pairs using the random intercept Poisson pseudo-maximum likelihood approach (Prehn et al., 2016). In our relatively large sample, the approach yields nearly identical estimates which differ little from the usual fixed-effects Poisson pseudo-maximum likelihood approach, while allowing us to estimate the effects of time-invariant variables.

Our analysis covers the period between 2010 and 2019. We restrict our analysis to this period because the methodology of compiling foreign direct investment data in Serbia was revised in 2010. For this reason, the inclusion of observations prior to 2010 could lead to comparability issues. In this period, we observe 198 partner economies of Serbia[1], which yields a total number of 1,980 observations. Since a few observations are missing for some of the control variables, the model estimation is based on between 1,823 and 1,969 observations, depending on the specification. The descriptive statistics of the sample are presented in Table A2 in the Appendix.

Descriptive statistics show that there is a great variety in terms of foreign direct inflows in Serbia. However, on average, the mean inflows are somewhat modest, which is driven by the lack of investment inflows from many countries. The statistics also reveal that Serbia has a ratified bilateral investment treaty with more than 22% of the partner economies considered. Finally, the statistics indicate considerable variety in partner economies' characteristics.

The results of the correlation analysis are presented in Table A3 in the Appendix. They show that foreign direct investment is significantly correlated with most of the explanatory variables considered. Moreover, the sign of the correlation coefficient is as expected. As for the potential multicollinearity problems, the closely related variables are, as expected, moderately and, in some instances, highly correlated. For this reason, these variables are estimated in separate specifications.

Our sample was constructed by combining several data sources. The data on foreign direct investment was provided by the National Bank of Serbia. The data on bilateral investment treaties are sourced from the International Investment Agreements Navigator database provided by the United Nations Conference on Trade and Development. Distance and the dummy variables of the gravity models come from the database provided by *Centre d'Etudes Prospectives et d'Informations* (CEPII). Finally, the United Nations Conference on Trade and Development provided the data on gross domestic product and population.

[1] The complete list of the considered partner economies is provided in Table A1 in the Appendix.

5. RESULTS AND DISCUSSION

We present our baseline model estimation results in Table 1. Models 1 and 2 are the specifications represented by Equation 1, where the first one is estimated using the sample of only non-negative foreign direct investment inflows, while the latter uses the sample including disinvestments. Models 3–5 refer to alternative specifications of Model 1, using different proxies for economy size and proximity. As evidenced by the Wald statistics and pseudo coefficient of determination, all the specifications are statistically significant and fit the data well. The Ramsay Regression Equation Specification Error Test results suggest no specification issues with any of the considered specifications.

The results suggest that bilateral investment treaties have a statistically significant positive effect on foreign direct investment inflows. The corresponding coefficients are statistically significant at the 5% significance level in the majority of specifications. These results are also economically significant as they indicate that bilateral investment treaties lead to an increase in annual foreign direct investment flows of between 69.78% and 96.39% depending on the specification. This implies that bilateral investment treaties are a highly effective tool for promoting and facilitating the inflows of foreign direct investment in Serbia. The reason for this could be the benefits foreign investors obtain from the treaties, which effectively lower the fixed costs and the risks associated with their investments.

Foreign direct investment inflows in Serbia are strongly affected by the size of the Serbian economy and its partner economies. This indicates the market-seeking motives of foreign investors in Serbia. In all specifications, the gross domestic product variable is statistically significant at the 1% level. The results do not change much if an alternative proxy for the economy size is used.

Table 1: The Effects of Bilateral Investment Treaties on Foreign Direct Investment Inflows

Model	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)
Variable					
BIT_{ijt}	0.665**	0.677**	0.531*	0.656**	0.651**
	(0.304)	(0.286)	(0.293)	(0.296)	(0.293)
GDP_{ijt}	0.050***	0.051***		0.050***	0.050***
	(0.007)	(0.007)		(0.007)	(0.007)
POP_{ijt}			0.000***		
			(0.000)		
$DGDPpc_{ijt}$	0.017***	0.017***	0.019***	0.017***	0.017***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
$DIST_{ij}$	-0.560***	-0.570***	-0.563***	-0.561***	-0.569***
	(0.113)	(0.110)	(0.114)	(0.113)	(0.115)
$LANG_{ij}$	0.258	0.233	0.133		
	(0.359)	(0.323)	(0.316)		
$CEFTA_{ijt}$	-1.481***	-1.588***	-1.481***	-1.304***	-1.131***
	(0.366)	(0.342)	(0.330)	(0.315)	(0.377)
$HIST_{ij}$				0.077	
				(0.271)	
$BORDER_{ij}$					-0.158
					(0.332)
Constant	3.547***	3.540***	3.651***	3.556***	3.595***
	(0.391)	(0.368)	(0.370)	(0.386)	(0.391)
Total Observations	1823	1969	1968	1823	1823
Wald	125.498	133.504	123.78	127.508	127.302
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Pseudo R^2	0.528	0.519	0.486	0.528	0.528
RESET test (p-value)	0.781	0.711	0.086	0.782	0.790

Source: Authors' calculation.

Note: Robust standard errors are presented in the parentheses. ***, **, and * denote coefficients significant at the 1%, 5%, and 10% significance levels, respectively. Wald denotes the Wald test statistics and the corresponding p-value, provided in the parentheses. RESET test refers to the results of the Ramsay Regression Equation Specification Error Test.

Differences in gross domestic product per capita between the partner economies also strongly and positively affect foreign direct investment inflows. The effect is statistically significant at the 1% significance level in all of the considered specifications. The results suggest that an increase in the difference in the gross domestic product per capita between Serbia and the partner economy of 1,000 USD leads to an increase in foreign direct investment inflows of 18.47%. This implies that vertical foreign direct investment is also highly important as some foreign investors in Serbia appear to be strongly driven by resource-seeking motives.

As expected in the gravity model, geographic distance between the partner economies is negatively related to foreign direct investment inflows in Serbia. The results reveal that increasing the distance between the capitals of countries by a thousand kilometres more than halves the value of foreign direct inflows to Serbia. The estimated coefficients are statistically significant at the 1% level in all specifications and their values are stable. Their significance paired with the significance of gross domestic product and population variables demonstrates the adequacy of the gravity model framework for the analysis of foreign direct investment flows.

The common language, history, and border variables are found not to have a significant effect on foreign direct investment inflows in Serbia. When compared to trade gravity models, cultural proximity seems to play a lesser role in determining the investment flows. This could be the result of modest outflows of foreign direct investment from the countries in the Western Balkan region with which Serbia shares the highest cultural proximity.

Finally, common CEFTA 2006 membership was found to negatively affect foreign direct investment inflows. The result could be explained by the narrow scope of investment-related provisions of the agreement, as it only explicates the common legal standards, while providing no framework for more complex issues such as dispute settlements, effectively offering the same or lower levels of protection to foreign investors in comparison to bilateral investment treaties.

In Table 2, we explore the effects of bilateral investment quality on foreign direct investment inflows in Serbia. Model 6 uses the most general proxy for the quality of bilateral investment treaties – the aggregate BITSel Quality index, whereas

Models 7–10 use the more narrowly defined indices, specifically quality of liberalisation, the anti-discrimination quality, the breadth of scope, and the regulatory constraint quality of the treaties, respectively.

Table 2: The Effects of Quality of Bilateral Investment Treaties on Foreign Direct Investment Inflows

Model	Model (6)	Model (7)	Model (8)	Model (9)	Model (10)
Variable					
$BITSel_{ijt}$	0.405**				
	(0.190)				
$BITSel\text{-}lib_{ijt}$		0.298*			
		(0.176)			
$BITSel\text{-}ad_{ijt}$			0.703**		
			(0.306)		
$BITSel\text{-}breadth_{ijt}$				0.236***	
				(0.076)	
$BITSel\text{-}reg_{ijt}$					0.108
					(0.079)
GDP_{ijt}	0.050***	0.050***	0.050***	0.048***	0.052***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
$DGDPpc_{ijt}$	0.017***	0.017***	0.017***	0.017***	0.017***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
$DIST_{ij}$	-0.567***	-0.587***	-0.554***	-0.490***	-0.639***
	(0.113)	(0.119)	(0.112)	(0.106)	(0.109)
$LANG_{ij}$	0.225	0.130	0.278	0.569	-0.002
	(0.349)	(0.334)	(0.362)	(0.417)	(0.292)
$CEFTA_{ijt}$	-1.442***	-1.406***	-1.504***	-1.567***	-1.291***
	(0.352)	(0.348)	(0.372)	(0.394)	(0.309)
Constant	3.547***	3.540***	3.651***	3.556***	3.595***
	(0.391)	(0.368)	(0.370)	(0.386)	(0.391)
Total Observations	1823	1823	1823	1823	1823
Wald	129.371	130.397	126.48	136.281	118.508
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Pseudo R^2	0.526	0.522	0.529	0.545	0.519
RESET test (p-value)	0.760	0.819	0.772	0.553	0.799

Source: Authors' calculation.

Note: Robust standard errors are presented in the parentheses. ***, **, and * denote coefficients significant at the 1%, 5%, and 10% significance levels, respectively.

Similar to the baseline model, these specifications are all statistically significant as a whole, providing a good fit for the data and showing no signs of specification issues.

The results presented in the Table 2 suggest that, in general, the quality of bilateral investment treaties matters for inflows of foreign direct investment. The estimated effect is statistically significant at the 5% significance level. The values of the estimates indicate that if Serbia provides the highest level of investment provisions to foreign investors, it could increase its inflows of foreign direct investment from the countries with which it has ratified such a favourable treaty by 49.97%. Looking at the individual aspects of the treaties' qualities, we can see that the highest positive effects on investment inflows could be realised by improving the anti-discrimination quality of the bilateral investment treaties. Increasing the breadth of the treaties' scope and liberalising the investment regime could also improve the inflows of foreign direct investment, albeit to a lesser extent. The corresponding coefficients are statistically significant at least at the 10% level. Finally, the regulatory constraint quality of the treaties has no significant effect on the investment inflows. This could imply that host countries' provisions of access to arbitration for foreign investors have become standard practice. Therefore, further improvements in this group of provisions bring little marginal benefit to investors. This is reflected in the lack of impact on the investment inflows.

The estimation of Models 6–10 may serve as a robustness check for the control variables. Regardless of the changes in specification, all the control variables previously presented in Table 1 maintained their statistical significance. Moreover, there was little change in the estimates' values. This indicates the stability of the obtained results.

A series of sensitivity tests were conducted using Models 11–16, and the results are shown in Table 3. Using Models 11 and 12, we explored the potential significance of time lags for the bilateral investment treaty variables. The results provide no evidence of a more complex lag structure for the independent variables in focus.

For the estimation of Models 13 and 14, we restricted our sample by excluding all offshore partner economies. The effects of bilateral investment treaties and their

quality remain statistically significant with similar coefficient values obtained using the full sample. The same is true for the control variables.

Table 3: Robustness Checks

Model	Model (11)	Model (12)	Model (13)	Model (14)	Model (15)	Model (16)
Variable						
BIT_{ijt}	1.908**		0.548*		0.653**	0.648**
	(0.832)		(0.321)		(0.307)	(0.314)
BIT_{ijt-1}	-0.437					
	(1.119)					
BIT_{ijt-2}	-0.588					
	(0.824)					
$BITSel_{ijt}$		1.218**		0.320		
		(0.604)		(0.195)		
$BITSel_{ijt-1}$		-0.29				
		(0.821)				
$BITSel_{ijt-2}$		-0.376				
		(0.597)				
GDP_{ijt}	0.047***	0.047***	0.062***	0.062***	0.051***	0.050***
	(0.007)	(0.007)	(0.005)	(0.005)	(0.007)	(0.007)
$DGDPpc_{ijt}$	0.015***	0.015***	0.018***	0.018***	0.017***	0.017***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
$DIST_{ij}$	-0.487***	-0.491***	-0.764***	-0.772***	-0.570***	-0.559***
	(0.115)	(0.114)	(0.092)	(0.091)	(0.120)	(0.117)
$LANG_{ij}$	0.383	0.347	0.039	0.003	0.243	0.106
	(0.422)	(0.409)	(0.345)	(0.334)	(0.359)	(0.479)
$CEFTA_{ijt}$	-1.567***	-1.522***	-1.406***	-1.368***	-1.474***	-1.286**
	(0.453)	(0.435)	(0.349)	(0.335)	(0.365)	(0.520)
Constant	3.302***	3.350***	3.852***	3.916***	3.569***	3.565***
	(0.427)	(0.413)	(0.396)	(0.371)	(0.397)	(0.403)
Total Observations	1445	1445	1771	1771	1529	1682
Wald	113.186	117.585	328.591	336.821	120.446	119.739
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Pseudo R^2	0.517	0.515	0.587	0.586	0.497	0.514
RESET test (p-value)	0.451	0.392	0.144	0.147	0.886	0.780

Source: Authors' calculation.

Note: Robust standard errors are presented in the parentheses. ***, **, and * denote coefficients significant at the 1%, 5%, and 10% significance levels, respectively.

In Model 15, we further tested the robustness of our baseline model by excluding all the geographically distant partner economies from the sample.[2] This restriction had little effect on our empirical results. Finally, in Model 16 we excluded small partner economies which have a gross domestic product of less than a billion USD. In line with the previous robustness check, this change also made no significant difference for either the statistical or economic significance of the independent variables of the baseline model

The robustness of the results is further tested by estimating our baseline model using the subsamples for the periods 2011–2019 and 2010–2018. The results of these estimations are presented in Table A4 in the Appendix. As previously, all the specifications are statistically significant and show no signs of specification errors. Despite the change in the sample, both the existence of bilateral investment treaties and their quality remain statistically significant at the 5% level. Their economic significance, for the most part, also remained unchanged, as indicated by the coefficient values. The significance and the coefficient values for the control variable further show the stability of the determined results. Therefore, we can conclude that our empirical results are robust to changes in specification and sample.

6. CONCLUSION

In this paper, we considered the role of bilateral investment treaties in attracting foreign direct investment in Serbia. For this purpose, we used an augmented gravity model of foreign direct investment inflows to Serbia. We estimated the model using a sample of 198 country pairs observed in the period 2010–2019.

Our results suggest that the ratification of bilateral investment treaties has a strong and statistically significant effect on bilateral inflows of foreign direct investment in Serbia. Furthermore, the quality of the treaties also plays a significant role in attracting investment. The most important aspects of the quality in this regard appear to be the anti-discriminatory provisions of the treaties. Provisions liberalising the regime of foreign investment and the scope of treaties are also found to positively affect the investment inflows. The presented

[2] For this purpose, all the partner economies whose capital cities are further than 10,000 kilometres from the capital of Serbia were considered distant.

empirical results are robust to the use of alternative specifications, proxies, and samples. Therefore, the results support our initial hypotheses.

Our results are in line with the findings of other related single-country studies (Bhasin & Manocha, 2016; Crotti et al., 2010). They also support the previous findings of the majority of related multi-country studies (Falvey & Foster-McGregor, 2017; Kox & Rojas-Romagosa, 2020), and confirm the conjecture of Grieveson et al. (2021) in relation to Serbia. The intensity of the effects is also similar to the effects found in the related literature. The significant effects of the treaties' quality corroborate the hypothesis of Chaisse and Bellak (2015) and previous findings of Dixon and Halsam (2016). However, our results differ from the results of studies focusing on less developed countries (Beri & Nubong, 2021; Dagbanja, 2019). This could indicate that Serbia has a sufficiently stable and favourable institutional framework that allows the bilateral investment treaties to be effective.

The evidence provided by this study implies that the policymakers in Serbia could use bilateral investment treaties as an instrument for attracting foreign direct investment. Concluding bilateral investment agreements with countries that invest in Serbia or have the potential to significantly invest in the future but do not have an existing treaty might be particularly beneficial. The increase in inflows of foreign direct investment could also be achieved by renegotiating existing bilateral investment treaties and improving their quality, particularly in regard to anti-discrimination. Finally, the results may imply that the provisions made in the treaties appear credible to foreign investors.

It should be noted that in addition to the benefits of bilateral investment treaties considered in this study, treaties also place constraints on the economic policy of the host country. Therefore, it is important to coordinate the use of bilateral investment treaties with other aspects of economic policy. It is also noteworthy that bilateral investment treaties not only affect inflows of foreign direct investment but can also support the internationalisation of enterprises in Serbia. An interesting avenue for future research would be to consider the effects of the treaties on foreign direct investment outflows, or even the extent of internationalisation of Serbian companies.

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APPENDIX

Table A1: Partner Economies in the Sample

Afghanistan	Canada	Finland	Kuwait	Niger	South Africa
Albania	Cayman Islands	France	Kyrgyzstan	Nigeria	Spain
Algeria	Central African Republic	French Polynesia	Lao People's Democratic Republic	North Macedonia	Sri Lanka
Angola	Chad	Gabon	Latvia	Norway	Sudan
Anguilla	Chile	Gambia	Lebanon	Oman	Suriname
Antigua and Barbuda	China (People's Republic of)	Georgia	Lesotho	Pakistan	Sweden
Argentina	Chinese Taipei	Germany	Liberia	Palestinian Authority or West Bank and Gaza Strip	Switzerland
Armenia	Colombia	Ghana	Libya	Panama	Syrian Arab Republic
Aruba	Comoros	Greece	Lithuania	Papua New Guinea	Tajikistan
Australia	Congo	Grenada	Luxembourg	Paraguay	Tanzania
Austria	Costa Rica	Guatemala	Macau, China	Peru	Thailand
Azerbaijan	Côte d'Ivoire	Guinea	Madagascar	Philippines	Timor-Leste
Bahamas	Croatia	Guinea-Bissau	Malawi	Poland	Togo
Bahrain	Cuba	Guyana	Malaysia	Portugal	Tonga
Bangladesh	Curacao	Haiti	Maldives	Qatar	Trinidad and Tobago

Barbados	Cyprus	Honduras	Mali	Romania	Tunisia
Belarus	Czech Republic	Hong Kong, China	Malta	Russia	Turkey
Belgium	Democratic People's Republic of Korea	Hungary	Mauritania	Rwanda	Turkmenistan
Belize	Democratic Republic of the Congo	Iceland	Mauritius	Saint Kitts and Nevis	Turks and Caicos Islands
Benin	Denmark	India	Mexico	Saint Lucia	Tuvalu
Bermuda	Djibouti	Indonesia	Moldova	Saint Vincent and the Grenadines	Uganda
Bhutan	Dominica	Iran	Mongolia	Samoa	Ukraine
Bolivia	Dominican Republic	Iraq	Montenegro	Sao Tome and Principe	United Arab Emirates
Bosnia and Herzegovina	Ecuador	Ireland	Montserrat	Saudi Arabia	United Kingdom
Botswana	Egypt	Israel	Morocco	Senegal	United States
Brazil	El Salvador	Italy	Mozambique	Seychelles	Uruguay
Brunei Darussalam	Equatorial Guinea	Jamaica	Myanmar	Sierra Leone	Uzbekistan
Bulgaria	Eritrea	Japan	Namibia	Singapore	Vanuatu
Burkina Faso	Estonia	Jordan	Nepal	Sint Maarten	Venezuela
Burundi	Eswatini	Kazakhstan	Netherlands	Slovak Republic	Viet Nam
Cabo Verde	Ethiopia	Kenya	New Caledonia	Slovenia	Yemen
Cambodia	Faeroe Islands	Kiribati	New Zealand	Solomon Islands	Zambia
Cameroon	Fiji	Korea	Nicaragua	Somalia	Zimbabwe

Table A2: Descriptive Statistics

Variable	Obs.	Mean	Std. dev.	Min	Max
FDI_{ijt}	1980	11.489	58.464	-322.233	885.04
BIT_{ijt}	1980	0.223	0.416	0	1
$BITSel_{ijt}$	1980	0.333	0.625	0	1.727
GDP_{ijt}	1969	1.708	7.542	0.000	106.753
$DGDPpc_{ijt}$	1969	10.45	26.689	-5.959	176.023
POP_{ijt}	1978	328.606	1244.93	0.044	12577.48
$DIST_{ij}$	1980	6.046	4.092	0.197	18.002
$BORDER_{ij}$	1980	0.04	0.197	0	1
$LANG_{ij}$	1980	0.025	0.157	0	1
$HIST_{ij}$	1980	0.025	0.157	0	1
$CEFTA_{ijt}$	1980	0.027	0.163	0	1

Source: Authors' calculation.

Note: FDI_{ijt} is expressed in millions of EUR, GDP in 10.000 million USD, POP in millions of people, DIST in thousands of kilometres, and BIT, BORDER, LANG, HIST, and CEFTA are all dummy variables.

Table A3: Correlation Matrix

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1) FDI_{ijt}	1										
(2) BIT_{ijt}	0.251*	1									
(3) $BITSel_{ijt}$	0.249*	0.997*	1								
(4) GDP_{ijt}	0.164*	0.100*	0.106*	1							
(5) $DGDPpc_{ijt}$	0.181*	0.133*	0.132*	0.137*	1						
(6) POP_{ijt}	0.072*	0.172*	0.180*	0.548*	-0.051*	1					
(7) $DIST_{ij}$	-0.199*	-0.518*	-0.514*	0.01	-0.066*	0.004	1				
(8) $BORDER_{ij}$	0.044*	0.322*	0.316*	-0.039	-0.063*	-0.045*	-0.285*	1			
(9) $LANG_{ij}$	0.005	0.223*	0.223*	-0.035	-0.057*	-0.039	-0.223*	0.784*	1		
(10) $HIST_{ij}$	0.029	0.223*	0.223*	-0.034	-0.035	-0.04	-0.222*	0.621*	0.795*	1	
(11) $CEFTA_{ijt}$	-0.003	0.208*	0.208*	-0.037	-0.067*	-0.041	-0.230*	0.659*	0.843*	0.645*	1

Source: Authors' calculation.

Note: * denotes statistically significant correlation at the 5% level.

Table A4: Sensitivity Analysis

Model	Model (17)	Model (18)	Model (19)	Model (20)
Variable				
BIT_{ijt}	0.740**	0.659**		
	(0.323)	(0.306)		
$BITSel_{ijt}$			0.449**	0.399**
			(0.201)	(0.190)
GDP_{ijt}	0.049***	0.049***	0.049***	0.049***
	(0.007)	(0.008)	(0.007)	(0.008)
$DGDPpc_{ijt}$	0.017***	0.018***	0.017***	0.018***
	(0.002)	(0.002)	(0.002)	(0.003)
$DIST_{ij}$	-0.541***	-0.536***	-0.549***	-0.544***
	(0.115)	(0.123)	(0.115)	(0.123)
$LANG_{ij}$	0.309	0.491	0.268	0.452
	(0.383)	(0.389)	(0.370)	(0.378)
$CEFTA_{ijt}$	-1.503***	-1.558***	-1.457***	-1.513***
	(0.393)	(0.424)	(0.376)	(0.409)
Constant	3.492***	3.378***	3.554***	3.436***
	(0.415)	(0.391)	(0.399)	(0.375)
Total Observations	1635	1654	1635	1654
Wald	117.648	97.284	121.412	101.013
	0.000	0.000	0.000	0.000
Pseudo R^2	0.526	0.511	0.524	0.509
RESET test (p-value)	0.746	0.366	0.771	0.384

Source: Authors' calculation.

Note: Models 11 and 12 refer to the baseline model presented by Equation 1 and estimated using the subsamples for periods 2011-2019 and 2010-2018, respectively. Models 13 and 14 are identical to Model 6, except that the two models were estimated using the aforementioned subsamples. Robust standard errors are presented in the parentheses. ***, **, and * denote coefficients significant at 1%, 5%, and 10% significance levels, respectively. Wald denotes the Wald test statistics and the corresponding p-value, provided in the parentheses. RESET test refers to the result of Ramsay Regression Equation Specification Error Test results.