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Friendship Paradox in Investment: How Diplomatic Proximity Affects FDI Inflows*

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Abstract

This study examines whether bilateral diplomatic proximity between Serbia and FDI-origin countries is positively or negatively associated with foreign direct investment (FDI) inflows. Using an augmented gravity model and a dynamic panel (System GMM) specification, it introduces a political proximity index (sScore) capturing foreign-policy similarity and geopolitical alignment alongside standard economic determinants; a squared term is added as an exploratory check for non-linearity. The static models show a statistically significant negative association between diplomatic proximity and FDI, which remains negative but only marginally significant in the dynamic specification. Serbia thus tends to attract more investment from countries that are not its closest diplomatic partners, a pattern the paper calls the "friendship paradox". A policy simulation illustrates the magnitude of this association, while the evidence on non-linearity is treated as secondary. The findings indicate that economic fundamentals and partner-country investment capacity are more decisive for FDI than diplomatic proximity, since Serbia's closest partners are often capital-scarce economies. The study concludes that diplomatic proximity should be analysed in conjunction with economic fundamentals and partner-country capital capacity, rather than presumed to increase investment on its own. These results are country-specific and should be interpreted as conditional associations rather than causal effects.

Keywords: *foreign direct investment, diplomatic proximity, geopolitical alignment, gravity model, Serbia*

JEL classification: *F21, F59, C33, O52*

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1. Introduction

Foreign direct investment (FDI) serves as a crucial driver of economic growth, fostering capital accumulation, technology transfer, and job creation in recipient economies. Within Europe, the European Union (EU) has long played a central role in facilitating cross-border investment by ensuring regulatory convergence, trade openness, and legal certainty (Polanco Lazo & Sauvé, 2018). However, FDI inflows are not solely determined by economic fundamentals; political and diplomatic relations between investors and host countries also influence investment decisions.

A growing body of research highlights the impact of bilateral diplomatic relations on FDI flows within Europe and beyond. While strong diplomatic ties may enhance investor confidence by reducing political risk and institutional uncertainty, diplomatic tensions may deter investment and lead to capital reallocation (Yılmaz, 2024). For Serbia, understanding how diplomatic alignment is associated with investment patterns is particularly relevant due to its geopolitical position and dual economic orientation. As a country striving for EU integration while maintaining strong ties with non-EU partners, such as China and Russia, Serbia navigates a complex diplomatic landscape that may shape investor confidence and FDI inflows. Diplomatic relations shape perceptions of political stability, regulatory predictability, and long-term economic cooperation, all of which are critical to investment decisions. The effects of diplomatic relations on FDI are especially pronounced in politically sensitive sectors such as energy, infrastructure, and high-tech industries, where investor confidence is closely tied to government relations and strategic alliances (Dollija & Teneqexhi, 2024).

Beyond direct economic incentives, diplomacy influences FDI through bilateral investment treaties, trade agreements, and institutional cooperation, which can reduce transaction costs and facilitate cross-border investment. Conversely, diplomatic tensions or misalignment with key investors may discourage capital inflows, particularly in economies where policy uncertainty remains a concern. For example, recent research suggests that diplomatic disputes can lead to the renegotiation or termination of trade agreements, affecting both the volume and composition of FDI inflows (Nwala, 2023). Additionally, economic diplomacy plays a crucial role in shaping investor sentiment, attracting long-term investment through enhanced cooperation between businesses and policymakers (Erokhin, 2024).

At the same time, the assumption that diplomatic closeness reliably translates into higher FDI is not self-evident. Existing gravity-based evidence suggests that bilateral FDI flows are strongly shaped by economic, macroeconomic and institutional fundamentals, including market size, distance, openness, inflation, interest rates, globalization and economic freedom (Mishra & Jena, 2019). This implies that diplomatic alignment may complement, but does not necessarily dominate, the economic determinants of capital flows. Moreover, international

relations literature conceptualizes interstate relations as varying across different levels of rivalry, peace, and security cooperation, suggesting that political proximity should not be treated as a simple linear or binary condition (Diehl et al., 2021). In Serbia's case, a further structural consideration is compositional: the partners with which it maintains the closest diplomatic ties are predominantly neighbouring and politically allied economies that are themselves capital-scarce, whereas several of its largest investors are politically more distant. Taken together, these arguments raise the possibility of a *friendship paradox*, in which closer diplomatic relations are associated with lower rather than higher FDI inflows.

This study examines the relationship between the bilateral diplomatic proximity and FDI inflows to Serbia, considering both EU and non-EU investment sources. Using an augmented gravity model, we integrate a diplomatic proximity indicator, sScore, alongside traditional economic determinants to assess its association with FDI inflows. Given Serbia's strategic position between EU and non-EU economies, this research offers valuable insights into the extent to which diplomatic proximity complements or contrasts with economic determinants of investment. The inclusion of a dynamic panel model using the System Generalized Method of Moments (System GMM) estimator provides an additional robustness check by accounting for persistence in investment emphasis and potential endogeneity between diplomatic proximity and FDI flows.

Beyond the regression analysis, the study incorporates an illustrative policy simulation based on a common reference value of diplomatic proximity, sScore = 0.5, and a dynamic panel estimation using System GMM. The simulation is used to illustrate the substantive meaning of the estimated coefficient, while the GMM specification examines whether the main finding remains stable under a dynamic specification and whether the relationship contains exploratory non-linear elements.

Given these dynamics, an empirical analysis of Serbia's FDI patterns is essential to determine the extent to which diplomatic relations are associated with economic determinants in shaping investment decisions. By integrating political and economic factors, this study provides insights into the conditions under which diplomatic proximity may or may not correspond to stronger investment inflows.

Building on the gravity model of FDI and the strand of research emphasizing the investment-enhancing role of diplomacy, the study first tests the conventional expectation:

> H1: *Stronger bilateral diplomatic proximity between Serbia and FDI-origin countries is positively associated with FDI inflows.*

This hypothesis builds on theoretical foundations suggesting that political stability, diplomatic alignment, and institutional trust reduce transaction costs and enhance cross-border investment (Bevan et al., 2004; Kahouli & Maktouf, 2015). Given

Serbia's dual economic orientation between the EU and non-EU partners, this study examines whether diplomatic relations complement or override economic determinants in shaping FDI decisions.

Against this conventional expectation, and in line with the competing arguments outlined above, we formulate a second, directional hypothesis:

> H2: *Stronger bilateral diplomatic proximity between Serbia and FDI-origin countries is associated with lower FDI inflows.*

This hypothesis reflects the proposed *friendship paradox* introduced above, whereby investment decisions in Serbia's case may be dominated by economic fundamentals rather than by political closeness.

To avoid imposing a strictly linear interpretation, the empirical strategy also includes a quadratic term of diplomatic proximity in the dynamic specification. This extension is exploratory and is treated as supplementary to the main *friendship paradox* argument.

The remainder of the paper is organized as follows: Section 2 reviews the relevant literature. Section 3 presents the methodological approach and model specification. Section 4 describes the empirical data and provides the preliminary analysis of the dataset. Section 5 presents and discusses the main empirical results. Finally, Section 6 offers concluding remarks, implications, limitations and suggestions for future research.

2. Literature review

FDI has been extensively analysed through the lens of economic models, with the gravity model serving as one of the main frameworks for explaining bilateral investment flows (Bevan et al., 2004; Kahouli & Maktouf, 2015). In its basic form, the gravity approach assumes that investment between countries is shaped by economic size, geographic proximity, trade intensity and institutional conditions. While traditional gravity-based studies primarily emphasise economic fundamentals, more recent research has extended this framework by incorporating political, institutional and diplomatic factors. From this perspective, bilateral diplomatic relations may influence FDI by reducing uncertainty, lowering transaction costs and strengthening investor confidence (Musera, 2020). Well-established diplomatic relations may therefore contribute to higher investment inflows when they improve predictability and signal a stable environment for long-term economic cooperation.

Institutional theory complements this perspective by arguing that FDI is not driven only by market-related factors, but also by the stability and predictability

of the host country's political and legal environment. Political risk remains an important concern for foreign investors, and diplomatic alignment may help mitigate such risks by improving institutional trust, facilitating communication between governments and supporting dispute-resolution mechanisms (Yılmaz, 2024). Economic diplomacy may also shape the investment climate through trade agreements, bilateral investment treaties, regulatory harmonisation and targeted investor engagement (Erokhin, 2024). In this sense, diplomacy can operate as a complementary institutional channel through which states seek to improve their attractiveness to foreign investors.

Empirical studies, however, present a mixed picture regarding the impact of diplomatic relations on FDI. Several studies support the view that strong diplomatic ties and economic diplomacy can enhance investment inflows, particularly in emerging markets where political stability and legal certainty are important for investor confidence (Dollija & Teneqexhi, 2024; Musera, 2020). Bilateral investment treaties, diplomatic missions, investment summits and high-level political visits may signal commitment to cooperation and reduce perceived risk. Recent evidence is consistent with this logic. Kim (2025), for example, finds that political visits can increase outward FDI to partner countries, although their effect depends on institutional and political conditions. Similarly, Li (2025) shows that senior leaders' diplomatic visits significantly promote Chinese outward FDI, while the effect on inward FDI to China is weaker and not always statistically significant. In a related vein, He et al. (2025) find that city-level diplomacy, in the form of international sister-city agreements, significantly increases inward FDI, with a stronger effect in larger and more market-oriented cities. These findings suggest that diplomacy can matter for investment, but also that its effect depends on institutional context, the direction of investment, and broader economic conditions.

At the same time, another strand of research challenges the assumption that diplomatic proximity is a dominant determinant of FDI. Gravity-based evidence suggests that bilateral FDI flows are strongly shaped by market size, distance, openness, macroeconomic stability, labour costs, taxation and other economic fundamentals (Mishra & Jena, 2019). This implies that diplomatic alignment may complement, but does not necessarily override, the economic logic of investment. In practice, investors may allocate capital to politically more distant countries when those countries offer stronger market opportunities, better cost conditions, regulatory advantages or access to strategic sectors. Diplomatic closeness should therefore not be treated as a sufficient condition for attracting FDI.

Recent literature on geopolitics and international business further reinforces this conditional interpretation and connects the analysis of FDI with political economy and international relations perspectives. Bhaumik et al. (2025) argue that geopolitical alignment influences both multinational enterprise strategies and host-country policy responses, but that its effect depends on countries' outside options,

technology gaps and domestic political conditions. This means that geopolitical alignment does not operate mechanically. Rather, it shapes the strategic environment within which firms and governments make investment decisions. Using a gravity framework covering 234 economies over 2009-2021, Jurakovaite and Gaigaliene (2026) similarly find that bilateral cross-border investment is shaped by political-system and diplomatic proximity: flows tend to increase between allied countries and to decline toward more politically distant or less democratic recipients, even after controlling for conventional gravity determinants. Recent global investment evidence also points to a more uncertain and fragmented investment environment, in which geopolitical tensions, economic volatility and policy uncertainty increasingly affect investor confidence and cross-border capital flows (United Nations Conference on Trade and Development, 2025). Empirical evidence from Adil et al. (2026) further indicates that geopolitical risk can negatively affect FDI inflows, supporting the view that political and geopolitical factors matter for investment, but often through risk, uncertainty and strategic constraints rather than through diplomatic goodwill alone. In line with this, Wang et al. (2025) show that heightened geopolitical risk reduces FDI inflows even at the subnational level, underscoring that geopolitical factors often operate through risk and uncertainty.

Within the European context, regulatory convergence and trade openness have played a major role in attracting FDI, particularly within the EU framework (Polanco Lazo & Sauvé, 2018). The EU's common market policies, which reduce trade barriers and harmonise investment-related regulations, have encouraged cross-border capital flows. For non-EU countries such as Serbia, alignment with EU investment rules and market standards has been an important factor in attracting European investors (Kaeding & Udovič, 2024). Serbia's EU accession process, together with reforms aimed at increasing openness and improving the business environment, has therefore contributed to the country's investment attractiveness. However, Serbia's geopolitical position also makes it a specific case. While a substantial share of FDI comes from EU member states, Serbia has simultaneously developed political and economic relations with non-EU partners, including China and Russia. Filipović and Zakić (2025) describe this orientation as a *multi-vector* foreign policy, in which Serbia deliberately maintains parallel economic and political ties with the EU, China, Russia and other partners, with direct economic implications, including for the composition and origin of its FDI inflows. Some of these relationships involve state-backed or strategically motivated investment projects, especially in infrastructure, energy, and other politically sensitive sectors. In addition, recent research based on Delphi findings (Bugarčić et al., 2026) indicates that experts expect Serbia to maintain its cooperation with both the EU and China, and anticipate stronger growth in economic relations with China without significantly reducing the importance of the EU.

Diplomatic diversification has therefore become a visible feature of Serbia's external economic positioning. By maintaining relations with both EU and non-

EU partners, Serbia seeks to preserve access to different sources of capital, markets and strategic cooperation. However, the extent to which diplomatic diversification translates into sustainable FDI growth remains uncertain. Existing research does not sufficiently explain whether diplomatic proximity directly increases investment or whether FDI is shaped primarily by the economic capacity and strategic interests of partner countries.

Taken together, these strands point to a more ambivalent role of diplomacy than the conventional view implies. Diplomatic proximity may reduce uncertainty and support cooperation, but it may also be insufficient for attracting FDI when politically close partners lack investment capacity. In such circumstances, strong diplomatic alignment may coincide with lower investment potential rather than with higher capital inflows. This compositional logic provides the theoretical basis for the *friendship paradox* examined in this study, namely the possibility that stronger diplomatic relations between Serbia and partner countries are associated with lower FDI inflows. The paradox does not imply that diplomacy is irrelevant; rather, it suggests that diplomacy may be less decisive than economic fundamentals, partner-country investment capacity and the strategic priorities of investors.

This interpretation also connects to broader discussions of strategic neutrality and geopolitical flexibility. In small and transition economies positioned between competing political and economic blocs, maintaining room for manoeuvre across different partners may help preserve access to diverse sources of capital and reduce dependence on a narrow set of politically aligned partners. Recent international business research similarly emphasises that geopolitical alignment shapes FDI through the interaction between multinational enterprise strategies, host-country policy responses and countries' outside options (Bhaumik et al., 2025). From this perspective, excessive diplomatic closeness may entail potential costs if it narrows policy flexibility, increases institutional overdependence or signals alignment with partners that do not possess sufficient outward investment capacity. In the Serbian case, this logic is particularly relevant because political closeness and investment capacity do not necessarily coincide.

The possibility that the relationship between diplomatic proximity and FDI may also depart from strict linearity is treated as a secondary consideration. International relations literature conceptualises interstate relations as varying across different levels of rivalry, peace, and security cooperation, suggesting that political proximity should not be understood as a simple binary condition (Diehl et al., 2021). However, in the present study, the central theoretical claim is not that there is an optimal level of political alignment, but that the Serbian case may reveal a negative association between diplomatic closeness and FDI inflows. For this reason, the non-linear specification is included as an exploratory extension of the main analysis rather than as the core contribution of the paper.This study contributes to the literature by examining the relationship between bilateral diplomatic proximity and FDI inflows

in Serbia, considering both EU and non-EU investment sources. By incorporating a diplomatic proximity indicator, examining the *friendship paradox* and exploring possible non-linear extensions, the paper provides country-specific evidence from a transition economy located between different geopolitical and investment spheres. In doing so, it extends the gravity model of FDI by integrating diplomatic and geopolitical dimensions, while also showing that political closeness does not necessarily translate into greater investment inflows.

3. Methodology and model specification

One of the first applied models that tried to explain bilateral trade flows is the gravity model, based on Newton's law of gravitation (Tinbergen, 1962). This model was later extended to investment flows. Similar to the pattern of international trade, the model assumes that the level of investments depends on the size of the economy, both the host and home countries of FDI. At the same time, the distance between the two countries will have a negative sign, which assumes that a greater inflow of investments can be expected from geographically closer countries. Several studies have empirically examined this relationship, extending the model by including new variables of interest to complement the model (Bevan et al., 2004; Globerman & Shapiro, 1999; Kahouli & Maktouf, 2015; Zwinkels & Beugelsdijk, 2010). Gravity modelling is also applied in assessing the effects of diplomatic activities on trade volume (Peternel & Grešš, 2021).

Our initial model, in addition to measuring the size of the domestic and partner economies and the distance between them, includes sScore as a proxy for bilateral diplomatic proximity between Serbia and FDI-origin countries. In this study, sScore is interpreted as an indicator of foreign-policy similarity and broader geopolitical alignment, rather than as a direct measure of investor perceptions, institutional trust or political stability. The baseline specification has the following form (Model 1):

$$lnFDI_{ijt} = \alpha + \beta_1 lnGDP_{it} + \beta_2 lnGDP_{jt} + \beta_3 distw_{ij} + \\ + \beta_4 Bilateral\_Diplomatic\_Relations_{ij} + \varepsilon_{ij} \quad (1)$$

In order to extend the baseline specification, we include bilateral exports from Serbia to the country of capital origin and the degree of openness of the partner country, measured by the globalization index. Model 2 is specified as follows:

$$lnFDI_{ijt} = \alpha + \beta_1 lnGDP_{it} + \beta_2 lnGDP_{jt} + \beta_3 distw_{ij} + \\ + \beta_4 Bilateral\_Diplomatic\_Relations_{ij} + \beta_5 lnExport + \\ + \beta_6 Globalisation\_index + \varepsilon_{ij} \quad (2)$$

Following Mishra and Jena (2019), Model 3 further includes variables that reflect the macroeconomic conditions of the host economy and may influence FDI inflows: GDP growth, inflation rate and taxes. The model has the following form:

$$\begin{aligned} lnFDI_{ijt} = {} & \alpha + \beta_1 lnGDP_{it} + \beta_2 lnGDP_t + \beta_3 distw_{ij} + \\ & + \beta_4 Bilateral\_Diplomatic\_Relations_{ij} + \beta_5 lnExport + \\ & + \beta_6 Globalisation\_index + \beta_7 GDPgrowth + \beta_8 InflationRate + \\ & + \beta_9 Taxes + \varepsilon_{ij} \end{aligned} \tag{3}$$

Considering the characteristics of the sample, which consists of countries from which Serbia received FDI during the observed period, we additionally include two dummy variables: EU member state and common border. Therefore, Model 4 has the following form:

$$\begin{aligned} lnFDI_{ijt} = {} & \alpha + \beta_1 lnGDP_{it} + \beta_2 lnGDP_{jt} + \beta_3 distw_{ij} + \\ & + \beta_4 Bilateral\_Diplomatic\_Relations_{ij} + \beta_5 lnExport + \\ & + \beta_6 Globalisation\_index + \beta_7 GDPgrowth + \beta_8 InflationRate + \\ & + \beta_9 Taxes + \beta_{10} EUdummy + \beta_{11} Borderdummy + \varepsilon_{ij} \end{aligned} \tag{4}$$

To extend the model's analytical relevance beyond estimation, we implement a policy simulation based on the final regression specification. The simulation evaluates a counterfactual scenario in which all countries are compared with a reference level of diplomatic proximity, sScore = 0.5. This reference value is not treated as an optimal level of alignment, but only as a common benchmark that allows us to illustrate how changes in diplomatic proximity would translate into predicted FDI changes under the estimated linear specification.

For each country, we compute the difference ΔsScore between the current and target alignment, and apply the estimated regression coefficient (β = −1.4872) from Model 4 FEE to calculate the projected effect on FDI inflows. The percentage change in FDI is calculated using the transformation appropriate for log-linear models, where the dependent variable is in natural logarithmic form. Following standard econometric interpretation (Wooldridge, 2013; Gujarati & Porter, 2009), the expected percentage change is derived using the formula:

$$\%\Delta FDI = (e^{\beta \cdot \Delta sScore} - 1) \cdot 100 \tag{5}$$

This simulation is used as an illustrative extension of the main regression result. It does not identify an optimal level of diplomatic alignment and does not, by itself, provide evidence of a non-linear relationship. Rather, it shows how the estimated negative association between diplomatic proximity and FDI would operate under a common counterfactual benchmark.

In addition to fixed effects models, the empirical strategy is extended using a dynamic panel estimation via the two-step System GMM method (Model 5). This approach allows for greater robustness by addressing the potential endogeneity between diplomatic alignment and FDI flows, as well as the temporal persistence in investment patterns. The model includes the lagged dependent variable to capture dynamic effects and, as an exploratory extension, includes both the linear and squared terms of diplomatic proximity to examine whether the relationship departs from strict linearity:

$$\begin{aligned} lnFDI_{ijt} = {} & \alpha + \beta_1 lnFDI_{ijt-1} + \beta_2 lnGDP_{it} + \beta_3 lnGDP_{jt} + \beta_4 distw_{ij} + \\ & + \beta_5 Bilateral\_Diplomatic\_Relations_{ij} + \\ & + \beta_6 Bilateral\_Diplomatic\_Relations^2_{ij} + \beta_7 lnExport + \\ & + \beta_8 Globalisation\_index + \beta_9 GDPgrowth + \beta_{10} InflationRate + \\ & + \beta_{11} Taxes_{ij} + \beta_{12} EUdummy + \beta_{13} Borderdummy + \varepsilon_{ij} \end{aligned} \quad (6)$$

By accounting for unobserved heterogeneity, autocorrelation and potentially endogenous regressors, the dynamic model provides an additional assessment of whether the core finding from the static specifications remains stable under a more demanding econometric specification. The squared term is included only to explore possible departures from linearity and is interpreted as supplementary to the main *friendship paradox* argument.

The empirical strategy is designed to identify conditional associations between diplomatic proximity and FDI inflows within an augmented gravity framework, rather than to establish a definitive causal effect. Although the dynamic specification helps address persistence in FDI inflows and potential endogeneity, the estimated relationship may still partly reflect broader geopolitical and structural characteristics of Serbia's investment profile.

4. Empirical data and analysis

The dependent variable is FDI inflow by country of origin, obtained from the National Bank of Serbia (NBS). Since NBS data by country of origin have been available from 2010, this year is used as the starting point of the analysis. The final empirical period is restricted to 2010-2018, because sScore data are available only up to 2018. Data on GDP, GDP growth, inflation rate and taxes are taken from the World Bank. Bilateral exports from Serbia to FDI-origin countries are obtained from the International Trade Centre. The Globalisation Index, used as a measure of partner-country openness, is taken from the KOF Swiss Economic Institute. Physical distance between capital cities and the dummy variables for EU membership and common border are taken from the CEPII dataset.

To provide additional context for Serbia's investment profile, we also describe selected FDI trends after 2018, although the econometric analysis itself is restricted to the 2010–2018 period due to the availability of sScore. The share of FDI in GDP ranged from around 3% in the early 2010s, increased to approximately 7-7.5% between 2018 and 2023, and declined slightly to around 5.5% in 2024. The composition of FDI by country of origin also changed substantially over time. In 2012, the Russian Federation accounted for a record 23% of FDI inflows, while EU-28 countries together accounted for 61.9%, led by Austria, the Netherlands, Luxembourg and France. China's share was only 0.1% in 2012, but increased markedly in later years, reaching 33.5% in 2022. By contrast, the share of EU-27 countries declined to around 33% in 2022, while the United Kingdom and Japan also became visible sources of investment. Russia's share declined from 23% in 2012 to 1.5% in 2022, reflecting the changing geopolitical and investment environment (National Bank of Serbia, 2024). Table 1 provides an overview of selected FDI inflows by country of origin. These descriptive trends are used only to contextualise Serbia's investment profile. They are not included in the econometric estimation, which is restricted to the 2010-2018 period due to the availability of sScore.

Table 1: FDI inflow by origin country, in millions USD

Year	EU-27	China	Russia	USA
2010	801.8	2.1	216.2	59.9
2011	2,724.5	18.9	488.5	37.0
2012	617.5	1.3	232.5	31.5
2013	1,064.9	22.2	189.7	22.1
2014	1,051.7	86.4	73.5	8.5
2015	1,509.6	66.5	96.4	38.5
2016	1,370.8	219.4	41.1	16.8
2017	1,701.7	179.2	170.4	37.6
2018	1,932.9	690.0	263.0	70.4
2019	2,309.9	344.9	576.8	185.7
2020	1,956.0	528.5	55.5	62.8
2021	1,762.4	630.4	39.9	105.6
2022*	401.0	491.5	30.4	56.7

Note: Data for 2022* is for the period Jan-Jun
Source: National Bank of Serbia (2024)

Diplomatic proximity between Serbia and FDI-origin countries is measured using sScore, developed by Signorino and Ritter (1999). In this study, sScore is used as a proxy for foreign-policy similarity and bilateral geopolitical alignment. The indicator ranges from -1 to 1, where higher values indicate greater similarity in the foreign-

policy positions of two countries, while lower values indicate greater political distance From the perspective of FDI, sScore does not directly measure investor perceptions, institutional trust, regulatory quality or political stability, nor does it capture informal diplomatic channels, high-level political visits, sector-specific agreements, investment promotion activities or the intensity of day-to-day diplomatic engagement. Rather, it captures the broader political and geopolitical environment within which bilateral economic relations take place. For this reason, the variable is interpreted cautiously as an indicator of diplomatic proximity, not as a comprehensive measure of the overall quality and complexity of diplomatic relations.

Variables based on similar concepts have been used in different fields of international relations and political economy research (Dafoe, 2011; Diehl et al., 2021; Gartzke, 2007). However, their use in empirical analyses of economic relations, particularly bilateral investment flows, remains limited. This makes sScore relevant for the present study, but also requires a cautious interpretation of the results. The available period for this indicator is up to -2018, which determines the time span of the empirical analysis. Consequently, the econometric models are restricted to the period for which both FDI data and sScore are available.

Regarding sScore values in the observed period, Serbia records higher levels of diplomatic proximity with several neighbouring countries, such as North Macedonia, Montenegro and Bosnia and Herzegovina, as well as with some non-EU partners. By contrast, lower sScore values are observed for countries whose foreign-policy positions and geopolitical orientation differ more substantially from those of Serbia. This pattern is consistent with the interpretation of sScore as a measure of foreign-policy similarity and geopolitical alignment rather than as a direct measure of investment attractiveness or investor confidence.

Given that the analysis focuses on a single host country, Serbia, the findings should be understood as country-specific evidence from a transition economy with a specific geopolitical position, rather than as a general model of the diplomacy-FDI relationship across all economies.

The initial assumptions of the model were tested through a correlation matrix and a multicollinearity test. Table 2 gives insight into the level of correlation and multicollinearity (Variance Inflation Factor, VIF) test results. A positive correlation is present for all analysed variables except for distance and inflation, as expected. The positive sign of GDP indicates that a greater inflow of investments can be expected if the country of origin and the host country are larger. The distance is also in line with the assumption of the model that a smaller inflow of investments is expected from geographically distant countries. Among other variables, only inflation has a negative sign, and the highest degree of positive correlation is shown by exports, indicating the mutual connection between FDI and trade flows. Regarding multicollinearity risk, all VIF values are lower than 5, which indicates that there is no problem of multicollinearity in the model.

Table 2: Correlation and multicollinearity test

	Correlation with FDI	VIF
GDP_Srb	0.0352	1.87
GDP_partner_country	0.3235	3.14
distance	-0.1987	2.82
Bilateral_Diplomatic_Relations	0.0007	2.40
Export	0.4165	2.51
Globalisation index	0.3425	2.49
GDPgrowth	0.1501	1.29
InflationRate	-0.1075	4.14
Taxes	0.1503	3.97
EU_member_state	0.3711	2.75
common_border	0.0432	2.31

Source: Authors' calculations

5. Results and discussion

Table 3 shows the results according to the applied techniques and the defined model. Four separate models were tested using pooled ordinary least squares (POLS), while the fourth model was tested using fixed effect estimation (FEE) to ensure the robustness of the analysis (year and country fixed effects). The regression results follow the basic assumptions of the gravity model. The GDP of the FDI origin country is singled out as statistically significant across all observed models, while distance has a negative sign, although with a very small Beta coefficient. In contrast to evidence from the trade literature that uses the gravity approach, distance does not appear to be a significant obstacle to FDI.

The main variable of interest, bilateral diplomatic proximity, is negative and statistically significant in all specifications except Model 1. This finding should not be interpreted as evidence that diplomatic proximity independently causes lower FDI inflows. Rather, it indicates a conditional negative association between diplomatic proximity and FDI within the augmented gravity framework. In substantive terms, Serbia tends to receive larger investment inflows from countries that are not necessarily its closest diplomatic partners. This result is consistent with the proposed *friendship paradox*: politically and diplomatically closer partners may have limited outward investment capacity, while several politically more distant partners may invest more because of stronger economic fundamentals, larger capital bases, market strategies or sector-specific interests.

In the Serbian case, this pattern may partly reflect the composition of the country's diplomatic and investment relations. The finding therefore suggests that diplomatic proximity alone is not sufficient to explain FDI inflows, and that partner-country economic capacity remains central to the investment relationship.

Table 3: Estimates of augmented gravity models

Dependent variable: lnFDI	Model 1	Model 2	Model 3	Model 4	Model 4 FEE
lnGDP_Srb	0.6076	0.3053	-0.2078	-0.0826	
	(1.2624)	(1.1578)	(1.5683)	(1.5016)	
lnGDP_partner_country	0.5747***	0.2516***	0.2749***	0.4839***	
	(0.0676)	(0.0741)	(0.0741)	(0.0881)	
distance	-0.0003***	-0.0002***	-0.0002***	-0.0001**	-0.0001**
	(0.0000)	(0.0000)	(0.0000)	(0.0001)	(0.0001)
Bilateral_Diplomatic_Relations	-0.3205	-1.5719***	-1.4578***	-1.5114***	-1.4872***
	(0.5731)	(0.5486)	(0.5460)	(0.5253)	(0.5273)
lnExport		0.4527***	0.4278***	0.2815***	0.2713***
		(0.0654)	(0.0659)	(0.0772)	(0.0780)
Globalisation index		0.0825***	0.0779***	0.0226	0.0205
		(0.0148)	(0.0149)	(0.0199)	(0.0200)
GDPgrowth			0.1354**	0.1380**	0.1477**
			(0.0609)	(0.0583)	(0.0670)
InflationRate			-0.0097	-0.0259	-0.0564
			(0.0588)	(0.0564)	(0.0658)
Taxes			0.0136	0.0108	-0.0142
			(0.0400)	(0.0383)	(0.0415)
EU_member_state				1.3640***	1.3822***
				(0.3120)	(0.3135)
common_border				1.3992***	1.4053***
				(0.3819)	(0.3829)
Constant	-5.8229	-0.1776	11.8007	8.3967	7.0820***
	(30.9777)	(28.4149)	(37.8126)	(36.2285)	(2.6371)
F statistics	26.23***	31.57***	22.35***	22.80***	16.82***
R-squared	0.2429	0.3682	0.3845	0.4394	0.4440
Adj R-squared	0.2337	0.3566	0.3673	0.4201	0.4176

Note: Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Source: Authors' calculations

Regarding the remaining variables, bilateral exports are positively and statistically significantly associated with FDI inflows in all specifications in which they are included. This supports the view that investment and trade flows are closely connected, although the model does not allow us to infer the specific motives of foreign investors. The globalisation index loses statistical significance after additional controls are introduced, while inflation and taxes in the host country, Serbia, do not show a statistically significant association with FDI inflows. By contrast, real GDP growth is positively and significantly associated with FDI, suggesting that stronger domestic economic performance may be linked to higher investment inflows. The dummy variables for EU membership and common border are also positive and statistically significant, indicating that institutional proximity, regional connectedness and access to the European economic space remain relevant factors in Serbia's FDI profile. This finding is consistent with the broader interpretation that FDI inflows are shaped not only by diplomatic proximity, but also by economic size, trade links and structural characteristics of partner countries.

The findings do not support H_1, which proposed that stronger bilateral diplomatic proximity between Serbia and FDI-origin countries would be positively associated with FDI inflows. Instead, the results support H_2 and reveal a *friendship paradox*: within the estimated gravity framework, higher diplomatic proximity is associated with lower FDI inflows. This is the central empirical finding of the paper, as it shows that diplomatic closeness does not necessarily translate into investment attraction in the Serbian case. The result is consistent with the argument that FDI decisions are strongly shaped by economic fundamentals, such as market size, partner-country investment capacity and the broader business environment (Mishra & Jena, 2019).

This interpretation is further illustrated by the policy simulation presented in Table 4. The simulation compares selected countries with a common reference value of diplomatic proximity, sScore = 0.5. This value is not treated as an optimal or recommended level of diplomatic alignment, but as a benchmark that helps illustrate the substantive meaning of the estimated coefficient. For countries with low current sScore values, such as Israel (-0.168), the UAE (-0.165) and Singapore (-0.083), an increase toward the reference value is associated with a projected decline in FDI between approximately 58% and 63%. Conversely, for countries with very high sScore values, such as North Macedonia (0.906) and Bosnia and Herzegovina (0.873), a decrease toward the reference value is associated with a projected increase in FDI of approximately 74% to 83%. These simulated changes illustrate the practical magnitude of the *friendship paradox*: diplomatically closer partners are not necessarily Serbia's strongest sources of investment.

Table 4: Policy simulation results

Country	Current sScore	Change to 0.5	Estimated FDI Change (%)	Scenario
Israel	-0.168	+0.668	-63.0%	Increase to 0.5
UAE	-0.165	+0.665	-62.8%	Increase to 0.5
Singapore	-0.083	+0.583	-58.0%	Increase to 0.5
North Macedonia	0.906	−0.406	+82.9%	Decrease to 0.5
Bosnia and Herzegovina	0.873	−0.373	+74.3%	Decrease to 0.5

Note: The countries displayed in the table were selected as illustrative examples, representing those with the most extreme sScore values in the dataset.

Source: Authors' calculations

Overall, the policy simulation illustrates the practical magnitude of the *friendship paradox* identified in the main regression results. It shows that diplomatic proximity, as measured by sScore, should not be interpreted independently from partner-country economic capacity, trade links and broader investment potential. The simulation does not identify an optimal level of diplomatic alignment and is not used as evidence that strategic neutrality is universally more favourable for investment.

As an additional robustness check, we estimate a two-step System GMM model. This specification accounts for the dynamic structure of FDI inflows by including the lagged dependent variable and helps address potential endogeneity between diplomatic proximity and investment flows. In line with the revised theoretical framework, the squared term of diplomatic proximity is included as an exploratory extension to examine whether the relationship departs from strict linearity.

The estimation results, presented in Table 5, show that the lagged FDI coefficient is positive but not statistically significant, indicating limited evidence of persistence in FDI inflows. The linear term of bilateral diplomatic proximity remains negative and marginally significant, while the squared term is positive and also marginally significant. These results are consistent with the central *friendship paradox*, as they confirm that stronger diplomatic proximity is not associated with higher FDI inflows in the Serbian case. However, the quadratic term is interpreted cautiously and remains secondary to the main finding. The GMM specification therefore does not shift the central conclusion toward an inverted-U argument; rather, it provides an exploratory indication that the diplomacy-FDI relationship may contain some non-linear elements, while the main contribution of the paper remains the negative association between diplomatic proximity and FDI.

Table 5: Two-step System GMM model results

Variable	Coefficient	Std. Error	z	p-value
L.FDI	0.0751	0.1110	0.68	0.499
Bilateral_Diplomatic_Relations	-141.3936	76.6808	-1.84	0.065
Bilateral_Diplomatic_Relations^2	134.5058	70.6452	1.90	0.057
lnGDP_Srb	-6.6334	4.3578	-1.52	0.128
lnGDP_partner_country	4.7386	3.6189	1.31	0.190
distance	-0.0081	0.0060	-1.36	0.174
lnExport	-0.5119	1.0239	-0.50	0.617
Globalisation index	0.6056	0.4816	1.26	0.209
GDPgrowth	0.1762	0.1642	1.07	0.283
InflationRate	0.0727	0.1719	0.42	0.672
Taxes	0.2007	0.1202	1.67	0.095
EU_member_state	-26.9213	2.8618	-9.41	0.000
common_border	5.4288	17.4701	0.31	0.756

Note: Diagnostics: Observations: 400; Groups: 50; Instruments: 35; AR(1) p-value: 0.003; AR(2) p-value: 0.879; Hansen test p-value: 0.276; Sargan test p-value: 0.275

Source: Authors' calculations

Among the control variables, most coefficients retain the expected signs, although their statistical significance is reduced in the dynamic specification. This is not uncommon in System GMM estimation, where the inclusion of instruments and the correction for endogeneity may increase standard errors (Windmeijer, 2005). GDP growth and the globalisation index remain positively signed, but do not reach conventional significance levels. Similarly, the statistical insignificance of inflation and taxes should not be interpreted as evidence that these factors are irrelevant for investors, but rather as an indication that their independent effect is not isolated in this specific bilateral specification once other macroeconomic, bilateral and partner-country controls are included. One notable result is the coefficient for EU membership, which is statistically significant and negative in the dynamic specification. Although this result differs from the static models, it should be interpreted cautiously. It may suggest that formal regional or institutional proximity does not automatically translate into higher FDI inflows when other factors, such as partner-country investment capacity, sectoral strategies, trade links and diplomatic positioning, are also taken into account. This interpretation is consistent with earlier research showing that integration into supranational frameworks does not necessarily increase investment attractiveness in all country contexts (Elkomy et al., 2016).

The dynamic specification is therefore used primarily as a robustness and exploratory check. It is consistent with the central finding that stronger diplomatic proximity is not associated with higher FDI inflows in the Serbian case. The negative coefficient of diplomatic proximity remains the key result, while the positive and marginally significant squared term suggests only that the relationship may contain some non-linear elements. This evidence is not strong enough to make the inverted-U relationship or strategic neutrality the central conclusion of the paper. Instead, it supports the main *friendship paradox* argument: diplomatic closeness alone is not sufficient to attract investment when politically close partners lack strong outward investment capacity.

At the same time, these findings do not imply that diplomacy is irrelevant for FDI. Rather, they refine the expected role of diplomacy in investment attraction. Previous studies have shown that political alignment and diplomatic activity can support bilateral trade, investment flows and broader economic cooperation (Fernandes & Forte, 2022; Musera, 2020; Peternel & Grešš, 2021; Škare et al., 2020). However, the Serbian case suggests that diplomatic proximity is more likely to support investment when it is accompanied by economic fundamentals, trade intensity, partner-country capital capacity and credible investment opportunities. This is also consistent with research indicating that the economic effects of diplomatic activity may be particularly relevant for developing and transition economies (Creusen & Lejour, 2011).

The implication is therefore analytical rather than prescriptive. The results suggest that FDI inflows should be understood as the outcome of interaction between diplomatic proximity, partner-country economic capacity and Serbia's specific geopolitical position. In this sense, diplomatic flexibility and economically oriented engagement remain relevant, but the results do not provide a basis for recommending a single optimal level of diplomatic alignment or for treating strategic neutrality as the central policy conclusion of the paper.

6. Conclusion

This study examined the relationship between bilateral diplomatic proximity and FDI inflows in Serbia by extending the gravity model with a political and geopolitical dimension. The initial hypothesis (H_1), which proposed that stronger bilateral diplomatic proximity between Serbia and FDI-origin countries would be positively associated with FDI inflows, is not supported by the empirical results. Instead, the findings support H_2 and reveal a *friendship paradox*: in the Serbian case, higher diplomatic proximity is associated with lower FDI inflows.

This finding represents the central contribution of the paper. It shows that diplomatic closeness does not necessarily translate into investment attraction, particularly

when politically close partners have limited outward investment capacity. In Serbia's case, several countries with high diplomatic proximity are neighbouring or politically aligned economies with relatively limited capital-exporting capacity. Conversely, several countries with lower diplomatic proximity are economically larger, more globally integrated or more active as outward investors. The results therefore indicate a mismatch between political closeness and investment capacity, suggesting that diplomatic proximity should be analysed together with economic fundamentals, trade relations, market strategies and partner-country capital capacity. The paper also contributes to the gravity-based literature by showing that political and diplomatic variables may alter, rather than simply reinforce, conventional expectations about investment flows.

The study has several limitations. First, the analysis is restricted by the availability of sScore data, which ends in 2018. This means that more recent geopolitical changes can be discussed only as contextual background and are not directly included in the econometric models. Second, sScore captures foreign-policy similarity and broader geopolitical alignment, but it does not directly measure investor perceptions, institutional trust, regulatory quality, political stability, informal diplomatic channels or sector-specific diplomatic engagement. Third, the study focuses on Serbia as a single host country with a specific geopolitical and economic position. The findings should therefore be interpreted as country-specific evidence rather than as a general model of the diplomacy-FDI relationship across all economies. Finally, although the empirical strategy includes fixed effects and a dynamic GMM specification, the results should be understood as evidence of conditional associations rather than definitive causal effects.

Future research could extend this analysis in several directions. Comparative studies across other transition and small open economies, including both EU and non-EU cases, would help assess whether the *friendship paradox* is specific to Serbia or whether it also appears in other geopolitically positioned countries. Future studies should also update the analysis when newer diplomatic proximity data become available or use alternative indicators capable of capturing diplomatic relations during the crisis periods of the 2020s. Future work could also use sector-level FDI data to examine whether diplomatic proximity matters differently across industries, particularly in infrastructure, energy, technology or manufacturing. Finally, qualitative diplomatic indicators and investor perception surveys could provide a deeper understanding of how political signals, geopolitical alignment and diplomatic relations are interpreted by foreign investors.

The implication is analytical rather than prescriptive. For small and transition economies, diplomatic engagement may be most relevant when it is connected to economic fundamentals, credible investment opportunities and partner-country capital capacity.

From a policy perspective, this suggests that investment-promotion efforts should account for partner-country investment capacity and the diversification of FDI sources, rather than rely on political or diplomatic closeness alone. For Serbia in particular, this implies that economic diplomacy is likely to be most effective when it targets partners with genuine capital-exporting potential, while preserving flexibility across both EU and non-EU sources of investment.

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Paradoks prijateljstva u investiranju: Kako diplomatska bliskost utječe na priljev izravnih stranih ulaganja

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Sažetak

Ova studija ispituje je li bilateralna diplomatska bliskost između Srbije i zemalja porijekla stranih izravnih ulaganja (FDI) pozitivno ili negativno povezana s priljevima stranih izravnih ulaganja. Koristeći prošireni gravitacijski model i dinamičku panel-specifikaciju (System GMM), uvodi se indeks političke bliskosti (sScore) koji obuhvaća sličnost vanjske politike i geopolitičko usklađivanje, uz standardne ekonomske determinante. Kvadratni član uključen je kao eksplorativna provjera nelinearnosti. Statički modeli pokazuju statistički značajnu negativnu povezanost između diplomatske bliskosti i FDI-ja, koja ostaje negativna, ali samo granično značajna u dinamičkoj specifikaciji. Srbija stoga privlači više ulaganja iz zemalja koje nisu njezini najbliži diplomatski partneri, što se u radu naziva „paradoksom prijateljstva". Simulacija javnih politika ilustrira veličinu ove povezanosti, dok se dokazi o nelinearnosti smatraju sekundarnima. Rezultati upućuju na to da su ekonomski fundamenti i investicijski kapacitet zemalja partnera važniji za FDI od diplomatske bliskosti, budući da su najbliži partneri Srbije u većini slučajeva gospodarstva s ograničenim kapitalnim kapacitetima. Analiza pokazuje da diplomatsku bliskost treba razmatrati zajedno s ekonomskim fundamentima i kapitalnim kapacitetom zemalja partnera, umjesto da se unaprijed pretpostavlja kako ona sama po sebi povećava ulaganja. Ovi su rezultati specifični za promatranu zemlju te ih treba tumačiti kao uvjetovane povezanosti, a ne kao uzročno-posljedične učinke.

Ključne riječi: *izravna strana ulaganja, diplomatski odnosi, politička bliskost, gravitacijski model, GMM, Srbija*

JEL klasifikacija: *F21, F59, C33, O52*

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