UDC 327:911.3]:339.727.24(4-11)
Biblid 0543-3657, 74 (2023)
Vol. LXXIV, no. 1188, pp. 59–80
Original scientific paper
Received: 15/07/2023
Accepted: 10/09/2023
doi: https://doi.org/10.18485/iipe_mp.2023.74.1189.3

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Influence and Estimation of Geopolitical Risk on FDI in Eastern European Economies[2]

SUMMARY

In the current complex international situation, especially under the influence of the Russian-Ukrainian conflict, the inflow of FDI in Eastern European countries is seriously affected by geopolitical risks. However, there is a lack of research on this subject in Eastern Europe. Based on FDI inflow data in Eastern European countries and the political risk ratings of the ICRG from 2009 to 2020, this paper investigates the effect of geopolitical risks on FDI inflow to Eastern Europe using simple linear regression. It has been found that geopolitical risks have a significant negative impact on FDI inflows in Eastern European countries. However, further studies have found that signing RTAs can help alleviate this negative effect; actively carrying out bilateral trade or investment agreements is conducive to the development of FDI in host countries.

Keywords: geopolitical risks, FDI, Eastern Europe.

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[2] This research is supported by the Major Project of Philosophy and Social Sciences Research in Colleges and Universities of Hubei Province (21ZD013); Fundamental Research Funds for the Central Universities (2722022BY013), Zhongnan University of Economics and Law.

Утицај и процена геополитичког ризика на стране директне инвестиције у источноевропским економијама

САЖЕТАК

У тренутној сложеној међународној ситуацији, посебно под утицајем руско-украјинског сукоба, на прилив страних директних инвестиција (СДИ) у источноевропским државама озбиљно утичу геополитички ризици. Међутим увиђа се недостатак истраживања ове теме у Источној Европи. На основу података о приливу СДИ у источноевропским државама и нивоа политичког ризика Међународног водича државних ризика (*International Country Risk Guide*) од 2009. до 2020. године, овај рад истражује утицај геополитичких ризика на прилив СДИ у Источној Европи коришћењем једноставне линеарне регресије. Утврђено је да геополитички ризици имају значајан негативан утицај на прилив СДИ у источноевропске државе. Ипак, даље студије открише су да потписивање регионалних трговинских споразума може помоћи у ублажавању овог негативног ефекта; активно спровођење билатералних трговинских или инвестиционих споразума погодује развоју СДИ у државама домаћинима.

Кључне речи: геополитички ризици, стране директне инвестиције, Источна Европа.

Introduction

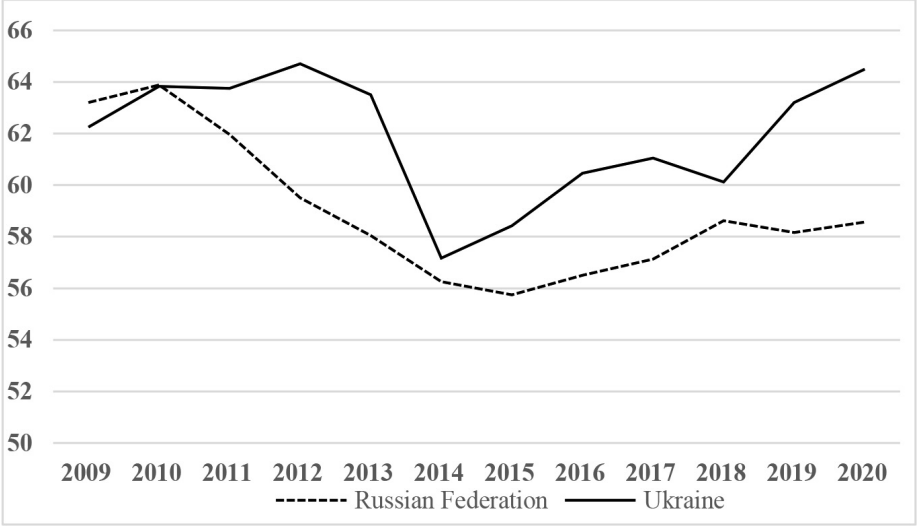
At present, the complexity of the international landscape has resulted in an unprecedented intensity of geopolitical conflicts, with an escalation in the game among major powers. The factors responsible for the current scenario, such as the novel coronavirus pneumonia epidemic and the Ukraine war, are intertwined, and global uncertainty has reached a new height. In the face of multiple risks and challenges, the pan-politicisation tendency of economic activities has begun to expand from the national level to the micro level. Motivated by risk aversion, transnational corporations and other micro-subjects have shown a growing interest in ensuring the stability of the supply chain and the security of economic investments in their decision-making processes, due to which international investment activities have been greatly affected. According to the 2021 World Investment Report released by the United Nations Conference on Trade and Development (UNCTAD), the COVID-19 epidemic has had a significant impact on global foreign direct investment. In 2020, global foreign direct investment declined by 35% year-on-year, reaching its lowest point since 2005. In particular, the total foreign direct investment flowing into Europe was only USD 73 billion, which was a sharp decline of 80%. The 2022 World Investment Report revealed that global foreign direct investment rebounded in 2021, experiencing an increase of 64% when compared with that in 2020; however, many countries around the world

were facing multiple threats related to the economy, food, and energy due to the continuous impact of the outbreak of the Ukraine conflict and the new coronavirus epidemic. The resulting investment uncertainty is likely to result in increased pressure on the growth of global foreign direct investment.

Specifically, the fallout of the Ukrainian crisis that began in 2014 has been challenging for European countries, especially those in Eastern Europe, with economic and geopolitical conflicts steadily intensifying. Since 2022, the continuous escalation of the situation between Russia and Ukraine has further complicated the global political landscape and accelerated the differentiation and reorganisation of global geopolitical forces. In addition to military conflicts, Western countries have put pressure on Russia in terms of economy, trade, finance, and diplomacy, which have a profound impact on international trade activities. Consequently, global multinational companies will undoubtedly pay greater attention to political risk factors in their investment decisions.

An analysis of the political risk indices of Eastern European countries published in the International Country Risk Guide (ICRG) from 2009 to 2020, as well as data on countries' outward foreign direct investment inflows obtained from the UNCTAD database, reveals that Russia and Ukraine, which were both at the centre of contradiction, attained the lowest value of the index around 2014; this was when the Ukraine crisis first broke out (see Fig. 1). At the same time, their foreign direct investment inflows also reached a trough (see Fig. 2). From the perspective of Eastern European countries as a whole, the situation has been rather similar (see Fig. 3).

Figure 1: The political risk ratings of Russia and Ukraine from 2009 to 2020

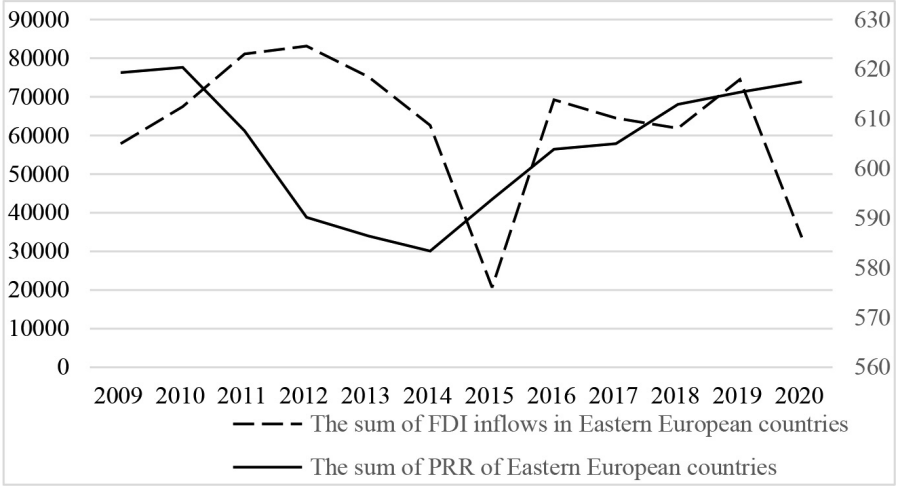


Source: ICRG

Figure 2: FDI inflows in Russia and Ukraine from 2009 to 2020

Source: UNCTAD

Figure 3: PRR and FDI inflows in Eastern Europe from 2009 to 2020



Source: UNCTAD and ICRG

Consequently, it is evident that the occurrence of political conflict is likely to have a significant negative impact on the ability of the affected countries to attract foreign direct investment.

Expanding foreign direct investment is an important step for promoting global economic prosperity as well as global economic and cultural

exchanges. However, amidst the current landscape of frequent geopolitical conflicts, enterprises are reluctant to engage in foreign direct investment; global foreign direct investment, particularly in Europe, is likely to encounter increasingly complex circumstances and challenges. However, there remains a lack of research on this subject in Eastern Europe.

Therefore, this paper uses the example of Eastern European countries to explore whether geopolitical risks can affect the inflow of foreign direct investment. If the results can help establish the fact that political risk inhibits foreign direct investment inflows in Eastern European countries, we will further explore ways to alleviate this negative effect. This will allow us to propose coping strategies for these countries and enable them to either attract foreign investment effectively or avoid the reduction of FDI inflows as much as possible in the face of political conflicts.

The key marginal contributions of this paper are varied. First, based on the example of Eastern Europe, this paper explores the impact of political risk on FDI inflows in Eastern Europe and supplements the existing research in the context of the countries in this region. Second, this paper adopts the perspective of a mechanism, introducing the moderating effect of regional trade agreements (RTAs) between political risks and OFDI inflows in Eastern European countries and testing their role. This is of great significance for policymakers in these countries and can help stabilise foreign investment in a complex international environment.

The structure of the remainder of this article is as follows: The second section presents the literature review, the third section describes the theoretical analyses and research hypotheses, the fourth part introduces the selection of variables and the settings of the model, the fifth part discusses the empirical analyses, and the sixth part presents the conclusions drawn from the research and the corresponding policy recommendations.

Literature review

Factors affecting FDI location choice

In general, the location choice of foreign direct investment has largely been the focus of research in the field of international investment. In addition to monopoly advantage theory, comparative advantage theory, internalisation theory, international production eclectic theory, and other general theoretical research, various econometric models have been extensively used to empirically analyse the determinants of foreign direct investment location choice. Based on the existing literature, the key determinants of foreign direct investment location selection can be identified. These include the following:

(1) The size of the host country's market: The majority of scholars believe that FDI inflows are closely related to the size of the host country's market.[3] In the existing empirical research, the host country's GDP and GDP growth rate are typically used as important control variables or explanatory variables.

(2) Resource endowments and infrastructure: The abundance of natural resources and the degree of infrastructure construction are important determinants of foreign direct investment, which has become a generally accepted conclusion by scholars.[4] Moreover, in the context of productivity factor endowments, the research suggests that labour costs are among the important factors affecting FDI inflows.[5]

(3) Tax burden level of the host country: Several studies on the location choice of foreign direct investment also focus on tax-related factors in the host country. It is widely believed that while a high tax rate in the host country leads to an increase in foreign direct investment, countries with low tax rates have a higher probability of foreign direct investment inflow.[6]

(4) Political factors: Political stability is the basis for market participants to carry out economic activities safely and in a stable manner. Theoretically, political risks increase the risk of investment in the host country, thus inhibiting the inflow of foreign direct investment. At present, scholars have considered various aspects of political risk, such as violent conflict, institutional factors, governmental efficiency, corruption, and the level of the rule of law.

The geopolitical risk of the host country and FDI

(1) *Measurement of geopolitical risks*

The measurement methods for a country's geopolitical risk level are relatively diverse. Among the most commonly used methods is the construction of an index evaluation system through qualitative analysis,

[3] Chien-Hsun Chen, "Regional determinants of foreign direct investment in mainland China", *Journal of Economic Studies*, Vol. 23, No. 2, 1996, 24; Cui Xinjian, "Empirical Analysis of Determinants of Foreign Direct Investment in China", *Contemporary Economic Sciences*, Vol. 4, 2000, 1−6.

[4] Peter J. Buckley, Jeremy L. Clegg, Adam R. Cross, Xin Liu, Hinrich Voss & Ping Zheng, "The determinants of Chinese outward foreign direct investment", *Journal of International Business Studies*, Vol. 38, No. 4, 2007, 503; Aleksynska Mariya & Olena Havrylchyk, "FDI from the south: The role of institutional distance and natural resources", *European Journal of Political Economy*, Vol. 29, 2013, 41.

[5] Yongqin Wang, Du Julan & Wang Kai. "Determinants of China's OFDI location choice: system, tax burden and resource endowment", *Economic Research*, Vol. 49, No. 12, 2014, 126−142.

[6] Richard E. Caves, *Multinational enterprise and economic analysis*, Cambridge University Press, 1996, 193; Roger H. Goron & James R. Hines Jr., "International taxation", *Handbook of Public Economics*, Vol. 4, 2002, 1965.

using principal component analysis or factor analysis for measurement. The majority of these studies on the evaluation of national political risks involve the construction of an index evaluation system from multiple perspectives, including economic, financial, political, cultural, and social risks.[7] With attention being increasingly paid to the transnational investment of enterprises, numerous rating agencies have begun to emerge. They primarily use qualitative analysis combined with quantitative methods to generate scores or rankings of national risks. For example, Caldara and Lacoviello (2022) calculated the GPR index, which can objectively and comprehensively reflect the dynamism of geopolitical risks in a country based on the frequency of geopolitical events reported in international mainstream newspapers.[8] However, when calculating this index, Eastern European countries typically have missing data. Some professional risk assessment agencies have performed detailed calculations on political risks in a country. These include the BERI political risk index released by the US Business Assessment Environmental Assessment Agency for analysing the country's operating environment, the ICRG political risk index compiled by the Political Risk Group Services (PRS) that incorporates 12 determinants of political risk, and the World Bank Institute's WGI Global Governance Index, which measures political risk based on six dimensions.

(2) *The impact of the host country's geopolitical risk on FDI*

Geopolitical risk involves various aspects, including military, cultural, and religious factors, natural disasters, terrorism, and violent conflicts, and is an important consideration for enterprises choosing to make foreign direct investments. Prior research has found that foreign direct investors tend to pay greater attention to international and domestic political conflicts.[9] However, some contradictions remain in the existing research in terms of the impact of political risk in the host country on foreign direct investment.

The largely prevailing perspective is that wars, violent conflicts, and the deterioration of diplomatic relations caused by political risks in host countries have an inhibitory effect on FDI.[10] For instance, Asiedu (2006)

[7] Richard E. Cantor & Packer Frank, "Determinants and lmpact of Sovereign Credit Ratings", *Economic Policy Review*, Vol. 2, No. 2, 1996, 37; Wei Zhou, Chen Zhao & Wu Xianming, "Research on the National Risk of China' s OFDI in the 'Belt and Road': Based on the Quantitative Evaluation of 39 Host Countries Along the Route", *World Economic Research*, Vol. 282, No. 8, 2017, 15−25.

[8] Dario Caldara & Matteo Iacoviello, "Measuring Geopolitical Risk", *American Economic Review*, Vol. 112, No. 4, 2022, 1194.

[9] Douglas Nigh, "Political events and the foreign direct investment decision: An empirical examination", *Managerial and Decision Economics*, Vol. 7, No. 2, 1986, 99−106.

[10] Matthias Busse & Carsten Hefeker, "Political risk, institutions and foreign direct investment", *European Journal of Political Economy*, Vol. 23, No. 2, 2007, 398; Nathan Jensen,

conducted an empirical analysis of African countries and observed that political violence has a negative impact on outward foreign direct investment in Africa.[11] Later, Biglaiser and DeRouen (2007) found that political conflicts have an overall inhibitory effect on global outward foreign direct investment. In general, the negative impact of political risk on FDI is primarily due to the increase in investment costs and decrease in returns foreseen by investors.[12] Vadlamannati (2012) analysed data on US investments in developing countries and found that the higher the political risk, the less the share of equity that investors are willing to hold, the higher the proportion of fixed assets, and the lower the return on investment.[13]

However, these findings have been contradicted by other scholars, who observed that the impact of host country political risk on foreign direct investment may vary in countries with different levels of development and different types of investment; in other words, the impact of political risk on FDI is heterogeneous. In some developing countries, a positive correlation has been reported between FDI inflows and political conflicts.[14] For example, according to some studies, there is the relationship between political conflicts and foreign direct investment in Latin American countries, revealing that political conflicts may attract FDI.[15] A potential reason for this is that Latin American countries have rich natural resources. Similarly, Wang and Sun (2018), as well as Wang and Zu (2021), suggested that China's OFDI is biassed towards countries with high political risk, especially those investing in large-scale energy projects.[16] In general, the trend of research indicates that energy is an important factor for multinational corporations to consider

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"Political Risk, Democratic Institutions, and Foreign Direct Investment", *The Journal of Politics*, Vol. 70, No. 4, 2008, 1041; Quintin Beazer H. & Blake J. Daniel, "The Conditional Nature of Political Risk: How Home Institutions Influence the Location of Foreign Direct Investment", *American Journal of Political Science*, Vol. 62, No. 2, 2018, 473.

[11] Elizabeth Asiedu, "Foreign Direct Investment in Africa: The Role of Natural Resources, Market Size, Government Policy, Institutions and Political Instability", *World Economy*, Vol. 29, No. 1, 2006, 65.

[12] Glen Biglaiser & Karl Jr. DeRouen, "Following the Flag: Troop Deployment and US Foreign Direct Investment", *International Studies Quarterly*, Vol. 51, No. 4, 2007, 838.

[13] Krishna Chaitanya Vadlamannat, "Impact of Political Risk on FDI Revisited: An Aggregate Firm-level Analysis", *International Interactions*, Vol. 38, No. 1, 2012, 116.

[14] Elizabeth Asiedu & Donald Lien, "Democracy, foreign direct investment and natural resources", *Journal of International Economics*, Vol. 84, No. 1, 2011, 107.

[15] Biglaiser Glen & Karl Jr. DeRouen, "Following the Flag: Troop Deployment and US Foreign Direct Investment", 841.

[16] Hao Wang & Qian Sun, "How Does Overseas Political Uncertainty Affect China's Foreign Direct Investment?", *Shanghai Economic Research*, Vol. 6, 2018, 68−78; Yurui Wang & Zu Yuan, "Host country political risk and China's large-scale energy project investment-based on the investigation of countries along the Belt and Road", *Research on financial issues*, Vol. 7, 2021, 110−119.

investment activities, which can greatly reduce investors' consideration of political risks in host countries. For example, Witte et al. (2017) reported that although political conflicts have an inhibitory effect on non-resource greenfield investments, the impact on resource-based greenfield investment is not significant; this can be attributed to the fact that natural resources are not easily destroyed in political conflicts.[17]

In addition, the existing research on the impact of corruption and institutional factors on FDI in the host country also draws differing conclusions. For example, Zheng et al. (2017) used China's provincial panel data to conduct empirical research and found that corruption in the host country has a friction effect on FDI inflows; that is, corruption in the host country tends to inhibit FDI inflows.[18] However, some scholars have reached the contradictory conclusion that enterprises are prone to rent-seeking behaviour when investing in countries that have high levels of corruption; this is conducive to the avoidance of regulatory and administrative restrictions, thus promoting foreign capital inflows.[19] In general, although institutional risk is a factor that investors need to consider, some research indicates that investors in some countries tend to enter countries with higher institutional risk, primarily because the system of the target country may be more similar to that of the home country.[20]

Overall, the findings of the existing research on the relationship between political risk and foreign direct investment in the host country are not consistent. This is largely due to the heterogeneity of the impact of political risk on FDI inflows, which may be affected by varying factors, such as the natural resource endowment of the host country and the investment preference of multinational enterprises in the home country. Moreover, the current literature focuses predominantly on global foreign direct investment. Although there has been extensive research on foreign direct investment in developed countries, the determinants of FDI inflows in Eastern Europe remain relatively unexplored.

[17] Caroline T. Witte, Martijn J. Burger, Elena I. Ianchovichina & Enrico Pennings, "Dodging bullets: The heterogeneous effect of political violence on greenfield FDI", *Journal of International Business Studies*, Vol. 48, No, 7, 2017, 862−892, Skovoroda Rodion, Shaun Goldfinch, Karl DeRouen Jr. & Trevor Buck, "The Attraction of FDI to Conflicted States: The Counter-Intuitive Case of US Oil and Gas", *Management International Review*, Vol. 5, No. 2, 2019, 234.

[18] Lei Zheng & Chen Kezheng, "Will Corruption in the Host Country Hinder Foreign Direct Investment Inflows", *Research on Financial Issues*, Vol. 10, 2017, 102−109.

[19] Egger Peter & Hannes Winner, "Evidence on corruption as an incentive for foreign direct investment", *European Journal of Political Economy*, Vol. 21, No. 4, 2005, 932.

[20] Zhen Pan & Zhongkun Jin "Bilateral Political Relations, Host Country Institutional Risks and China's Foreign Direct Investment", *Financial and Trade Economy*, Vol. 6, 2015, 85−97.

Theoretical analysis and hypothesis

The impact of the host country's geopolitical risk on FDI inflows in Eastern European countries

The geopolitical risk of the host country may depend on various aspects, including war, violent conflict, diplomatic relations, and international public opinion. Theoretically, this refers to a systemic risk that can determine the stability of the capital market. Armed conflicts are likely to directly lead to the loss of assets and personnel, as well as the destruction of local infrastructure, which could seriously affect the business activities of enterprises. The deterioration of diplomatic relations between countries may also cause the host government to take mandatory intervention measures against multinational enterprises and increase the business risks of multinational enterprises, which would have a negative impact on investment activities. Therefore, this paper suggests that, in general, political risks inhibit the inflow of foreign direct investment into Eastern European countries. Based on this analysis, the following research hypothesis is proposed:

H1: The host country's geopolitical risk has a negative impact on the overall inflow of FDI in Eastern European countries. In other words, as the level of geopolitical risk in the host country increases, the amount of FDI attracted by these countries decreases.

Can regional trade agreements alleviate the negative impact of the host country's geopolitical risks on attracting foreign investment?

A regional trade agreement (RTA) typically refers to an international treaty approved by two or more countries or tariff areas to promote mutual trade activities, eliminate trade barriers, and regulate trade cooperation among members. In recent years, the coverage of RTAs has expanded significantly and is rapidly extending to multiple fields, such as trade, the economy, and society. Therefore, its potentially dynamic effects have increasingly attracted the attention of various countries. The standard RTA contains certain investment liberalisation clauses, such as removing restrictions on the participation of foreign investors in domestic economic activities, reducing barriers to capital flows, and increasing service liberalisation. These commitments can decrease investment costs and, consequently, enhance the appeal of contracting countries for foreign direct investment. In recent years, the investment liberalisation rules in RTAs have gradually surpassed those in bilateral investment agreements, reflecting a new trend in the development of international investment treaties.

According to the "signalling mechanism" proposed by Neumayer and Spess (2005), the signing of a trade or investment agreement can send a positive signal to the contracting parties to protect the rights and interests of

investors.[21] At the same time, the signing of an RTA provides an institutional guarantee for the investors, which can reduce investment barriers and enable foreign investors to enter the market legally.[22] Moreover, the signing of RTAs can also bring about the rapid development of regional integration and promote the unity and stability of the market, thus attracting more foreign direct investment.[23] Therefore, in theory, the signing of an RTA can provide protection for foreign investors to a certain extent and alleviate the impact of geopolitical risks on foreign direct investment.

However, in reality, the impact of RTAs on foreign direct investment can be influenced by various factors, such as the institutional, political, and economic conditions of the contracting states, their commitment to implementing the agreement, and the scope and depth of the RTA agreement itself.[24] In general, countries with poor political relations tend to pay greater attention to reducing the risks caused by mutual distrust when signing RTAs. In contrast, when countries with friendly political relations sign RTAs, the depth of the agreement may be negatively affected. Therefore, further discussion on whether the signing of an RTA can alleviate the impact of political risks on foreign direct investment is required, together with national heterogeneity.

Therefore, the following hypotheses are put forth:

H2a: RTAs can alleviate the negative impact of geopolitical risks on FDI inflows in Eastern European countries.

H2b: RTAs cannot alleviate the negative impact of geopolitical risks on FDI inflows in Eastern European countries.

[21] Eric Neumayer & Laura Spess, "Do bilateral investment treaties increase foreign direct investment to developing countries", *World Development*, Vol. 33, No. 10, 2005, 1573−1574.

[22] Allee Todd & Clint Peinhardt, "Contingent credibility: The impact of investment treaty violations on foreign direct investment", *International Organization*, 2011, Vol. 65, No. 3, 414.

[23] Raff Horst, "Preferential trade agreements and tax competition for foreign direct investment", *Journal of Public Economics*, Vol. 88, No. 12, 2004, 274; Egger Peter & Valeria Merlo, "BITs bite: an Anatomy of the Impact of Bilateral Investment Treaties on Multinational Firms", *The Scandinavian Journal of Economics*, Vol. 114, No. 4, 2012, 1242−1243; Zhongyuan Zhang & Minghui Shen, "The impact of sustainable development clauses in international investment agreements on bilateral investment", *World Economic Research*, Vol. 3, 2018, 95−108.

[24] Cardamone Paola & Margherita Scoppola, "The Impact of EU Preferential Trade Agreements on Foreign Direct Investment", *World Economy*, Vol. 35, No. 11, 2012, 1475−1476; Youde Dong & Xingxing Zhao, "Can Free Trade Agreements Promote the Outward Foreign Direct Investment of Chinese Enterprises? An Empirical Study Based on the Knowledge-Capital Model of Multinational Corporations", *International Economic and Trade Exploration*, Vol. 3, 44−61.

Variables and the Model

Model setting

To verify the impact of geopolitical risk on the inflow of foreign direct investment in Eastern European countries, this paper sets the following econometric model for research:

$$ln\ f\ di_{it} = \alpha + \beta \cdot prr_{it} + \beta_2\ contrl_{it} + \mu_i + \varepsilon_{it} \quad (1)$$

where $f\ di_{it}$ represents the level of foreign direct investment received by country i in year t, prr_{it} represents the level of political risk in country i in year t, $contrl_{it}$ represents the control variables, μ_i represents the country fixed effects, and ε_{it} represents the random perturbation term.

Definition of variables

(1) Explained variables

In this paper, the logarithm of the net inflow of foreign direct investment (FDI) in the host country was used as an explanatory variable, which is expected to reflect the level of foreign direct investment activities in a country or region. The data was obtained from the UNCTAD database.

(2) Core explanatory variables

As there are several missing geopolitical risk indices (GPR) in Eastern European countries, this paper primarily implements the Political Risk Ratings (PRR) of the host country in the ICRG, published by the Political Risk Services (PRS), to measure the level of foreign direct investment activities in the host country. This paper mainly adopts the Political Risk Ratings (PRR) of the ICRG published by the Political Risk Services (PRS) to measure the level of geopolitical risk in host countries. The maximum value of the index is 100; countries with a value of 0-49.9 are extremely high-risk. Overall, the higher the score, the lower the level of geopolitical risk. Conversely, the lower the score, the higher the level of geopolitical risk. Therefore, according to hypothesis H1, we expect the regression coefficient of this variable to be positive.

(3) Control variables

The control variables selected in this paper include the host country's GDP (GDP), GDP per capita (GDP PC), GDP growth rate (GDP growth), inflation rate (Inflation), trade dependence (FDI OPEN), natural resource rent level (Resource), total railway mileage (Infrastructure), and total population (Population). The data were mainly obtained from the World Bank database. The variables and their definitions are shown in Table 1.

Table 1: Variables and their definitions

	Variable symbol	Variable name	Definition
Explained variables	LN FDI	Inflow of foreign direct investment	Net inflow of host country OFDI
Core explanatory variables	PRR	Political risk ratings	The level of political risk in the host country
Controlled variables	LN GDP	GDP	The GDP of the host country
	GDP PC	GDP per capita	The per capita GDP of the host country
	GDP GROWTH	GDP growth rate	The GDP growth rate of the host country
	Inflation	Inflation rate	The host country's inflation rate, as measured by the GDP deflator
	FDI OPEN	Dependence on foreign trade	The sum of host country goods exports and imports is divided by the value of the GDP
	Resource	Rental level of natural resources	The total rent of the host country for natural resources as a percentage of GDP
	Ln infrastructure	Total railway mileage	The logarithm of the total mileage of the host country's railway system
	Ln population	Total population	The log value of the total population of the host country

(4) Data description

The core explanatory variables in this paper were derived from the PRR compiled by the ICRG, which incorporates 12 weighted variables such as government stability, social environment, corruption, etc. It can better reflect the political stability and predictability of a country or region, and it is a

relatively more authoritative political risk rating, widely used by academics and international organisations. Since the index is calculated on a monthly basis, the annual indicator was derived for the period 2009–2020 by calculating the arithmetic mean. In addition, based on the availability of data, a sample of 10 countries or regions in Eastern Europe was selected based on the United Nations Statistics Division's classification. The selected countries were Belarus, Bulgaria, the Czech Republic, Hungary, Poland, Moldova, Romania, Slovakia, Ukraine, and Russia.

Empirical results

Descriptive statistics

The descriptive statistics of the variables in this paper are shown in Table 2. The logarithmic mean of the net FDI inflow (LN FDI) during the sample period was 8.0641, with a maximum value of 10.8855 and a minimum value of 4.0214. This indicates a large difference in the net FDI inflow between countries. The logarithmic mean and standard deviation of the political risk level (LNPRR) were 4.2263 and 0.1167, respectively, which were consistent with the results of existing studies.

Table 2: Descriptive statistics

Variable name	Symbol	Observed value	Mean	Standard error	Minimum value	Maximum value
FDI, net inflow	LN FDI	120	8.0641	1.4060	4.0214	10.8855
Political risk level	LN PRR	120	4.2263	0.1167	3.9913	4.4021
GDP	LN GDP	120	25.6835	1.3100	22.4169	28.4607
GDP per capita	GDP PC	120	9.1238	0.6510	7.5493	10.0718
GDP rate of rise	GDP GROWTH	120	1.3894	4.0159	-15.1365	9.0439
Rate of inflation	Inflation	120	5.5061	8.8130	-1.5448	59.2197
Dependence on foreign trade	FDI OPEN	120	4.5543	0.4128	3.6392	5.1736
Natural resources rent	Resource	120	2.3861	3.6431	0.1325	16.2676
Total railway, total mileage	Ln Infrastructure	120	9.0746	1.1161	7.0493	11.3578
Total population	Ln Population	120	16.51	1.108	14.78	18.79

Benchmark results

This section discusses the impact of geopolitical risks on foreign direct investment (FDI) inflows in Eastern European countries. The model used in this study is referred to as Model (1), and the baseline regression results are shown in the first column of Table 3. To avoid the issue of perfect collinearity, the model controlled for country-fixed effects individually instead of incorporating the fixed effect of time, considering that variables such as the GDP and total railway mileage of the host countries are highly correlated with time.

Based on the regression results, the coefficient of prr was found to be 3.7049, which is significant at the 5% level. This indicates that as the political risk ratings increases, indicating a lower level of geopolitical risk, Eastern European countries attract higher levels of FDI. Thus, geopolitical risk has a significant negative impact on FDI inflows in Eastern European countries. This finding is consistent with theoretical expectations.

Table 3: Impact of geopolitical risks on FDI in Eastern European countries

Variable	(1) LNFDI	(2) LN FDI STOCK
LNPRR	3.3669*** (1.2904)	0.9279*** (0.3353)
LN GDP	0.4443 (0.3411)	-1.2524*** (0.1502)
GDP PC	-0.1586 (0.4646)	2.1097*** (0.1743)
GDP GROWTH	0.0298* (0.0156)	-0.0147** (0.0058)
Inflation	0.0184*** (0.0057)	-0.0055 (0.0038)
FDI OPEN	-0.2478 (0.3814)	0.1958 (0.1652)
Resource	0.0152 (0.0172)	-0.0094 (0.0129)
Ln infrastructure	0.9483** (0.4341)	0.5556** (0.2396)
Ln population	-0.4590 (0.7111)	1.5953*** (0.3192)
State fixed effect	control	control
_cons	-16.2167*** (3.6671)	-12.2157*** (2.3701)
N	112	120
adj.R^2	0.8015	0.9738

Note: ***, **, and * indicate significant at the 1 per cent, 5 per cent, and 10 per cent significance levels, respectively, and robust standard errors are in parentheses.

Robustness test

(1) Replacement of explanatory variables

The explanatory variable used in the primary regression model was the net inflow of FDI in the host country. To enhance the reliability of the findings of this research, a different method was adopted to measure the level of FDI for robustness testing. Specifically, the explanatory variables were replaced with the natural logarithm of the stock of FDI in the host country (FDISTOCK). The results of this regression model are shown in column (2) of Table 3. The regression coefficient of PRR was 0.9279, which is significantly positive at least at the 1% level, further establishing the robustness of the results of this research.

(2) Endogeneity test

Due to the potential bidirectional causality between geopolitical risk in the host country and FDI inflows, endogeneity issues may lead to biased estimation results. Therefore, to examine potential endogeneity problems, lagged variables of the political risk variable were incorporated, and the regression model was re-estimated. The first column in Table 4 presents the regression results of the lagged political risk ratings on FDI inflows. The coefficient of prr was significant at least at the 10% level, which is consistent with the baseline regression results and further demonstrates the robustness of the regression results.

(3) Robust standard error test

To verify the inhibitory effect of geopolitical risk on foreign direct investment and enhance the credibility of the data analysis, robust standard errors were employed to conduct a robustness test. In multiple linear regression, standard errors are statistical indicators used to measure the precision of the estimated regression coefficients. Lower values of standard errors indicate more precise estimates of the regression coefficients. However, in real-world applications, the presence of outliers and leverage points in the data may have a significant impact on the estimated regression coefficients, leading to inaccurate standard errors and affecting the accuracy and reliability of regression analysis. To address this issue, robust standard errors can be used to mitigate the influence of these outliers and leverage points on the estimated regression coefficients. In this study, robust standard errors were employed to conduct a robustness test, aiming to better assess the accuracy and predictive ability of the regression model. The results of the regression analysis, shown in the second column of Table 4, indicate that after incorporating the robust standard errors, the regression coefficients and significance levels of the key variables in this study did not undergo any significant changes.

Table 4: Endogeneity test and standard error robustness test

Variable	(1) LN FDI	(2) LN FDI
L_LNPRR	1.9648* (1.7716)	
LN PRR		5.4415** (2.2412)
LN GDP	0.3660 (1.2655)	-0.4306 (-0.3700)
GDP PC	0.0677 (0.1657)	1.5889 (1.4690)
GDPGROWTH	0.0506 (1.5569)	0.0245 (1.1453)
Inflation	0.0103* (1.7260)	0.0175* (1.9107)
FDI OPEN	-0.0621 (-0.1698)	0.1876 (0.2291)
Resource	-0.0098 (-0.6072)	-0.0314 (-0.6126)
Ln infrastructure	0.9345** (2.0230)	3.8044 (0.7666)
Ln population	-0.2790 (-0.4216)	12.7032** (2.5069)
State fixed effect	control	control
_cons	1.9648* (1.7716)	-250*** (-2.8499)
N	103	112
adj.R^2	0.8146	0.8041

Note: ***, **, and * indicate significant at the 1 per cent, 5 per cent, and 10 per cent significance levels, respectively, and robust standard errors are in parentheses.

(4) Mechanism test

To verify whether the signing of RTAs can mitigate the negative impacts of geopolitical risk on FDI inflows in Eastern European countries, we chose the number of RTAs signed by a country as a measure, sourced from the World Development Indicators (WDI) database. Based on the quartiles of the host country's RTA count, a dummy variable called "agreement" (which takes values of 1, 2, 3, or 4, representing samples where the RTA count is in the [0,25%), [25%,50%), [50%,75%), and [75%,100%] quartile intervals, respectively) was defined. To present the regression results more intuitively,

we transformed the variable "prr" as follows, where a higher value of "prr2" indicates a higher level of political risk in the host country:

prr2=100-prr

Subsequently, the variable "agreement" was incorporated into the model as an interaction term, resulting in Model (2), as follows:

$$ln\ fdi_{it} = a + \beta_1 \cdot lnprr2_{it} + \beta_2\ agreement + \beta_3\ lnprr2_{it} * agreement + \beta_4\ contrl_{it} + \mu_i + \varepsilon_{it} \quad (2)$$

We focused on the coefficient of the interaction term to assess whether the signing of RTAs can mitigate the inhibitory effect of geopolitical risk on FDI inflows in Eastern European countries. According to the model specifications, a negative coefficient of the interaction term indicates support for Hypothesis H2a. As shown in the regression results in Table 5, the interaction term was consistently significant and negative, either through direct regression or by lagging the dependent variable by one or two periods before performing the regression. This suggests that the signing of RTAs can mitigate the impact of geopolitical risk on FDI inflows, and this mitigation effect has a long-term impact.

Table 5: Mechanism tests

Variable	(1) LNFDI	(2) l.LN FDI	(3) L2.LN FDI
l nprr 2	-2.8793** (1.1240)	-0.3640 (1.3094)	0.3829 (1.2326)
Agreement	0.2330** (0.1161)	0.1565 (0.1103)	0.4660*** (0.1743)
Ln prr*agreement	-1.1996* (0.6634)	-1.4335* (0.7851)	-2.8996** (1.2565)
LN GDP	0.8984** (0.4117)	0.4024 (0.4215)	0.7356 (0.5621)
GDP PC	-0.7874 (0.5686)	0.0875 (0.6004)	-0.3743 (0.9095)
GDP GROWTH	0.0324** (0.0149)	-0.0018 (0.0179)	-0.0429** (0.0200)
Inflation	0.0149** (0.0062)	-0.0091 (0.0214)	-0.0070 (0.0055)
FDIOPEN	-0.3789 (0.3772)	0.0660 (0.5246)	0.0956 (0.6875)
Resource	0.0411** (0.0207)	0.0053 (0.0216)	0.0592** (0.0270)
Ln infrastructure	1.0886** (0.4302)	0.4567 (0.5699)	0.2193 (0.8875)

Variable	(1) LNFDI	(2) l.LN FDI	(3) L2.LN FDI
Ln population	-1.1244 (0.8195)	0.1463 (0.8558)	-0.0712 (1.3999)
State fixed effect	control	control	control
_cons	277.2491** (112.2076)	24.3236 (131.3974)	-47.1765 (130.0150)
N	112	104	94
adj.R^2	0.8198	0.8058	0.8099

Note: ***, **, and * indicate significant at the 1 per cent, 5 per cent, and 10 per cent significance levels, respectively, and robust standard errors are in parentheses.

Conclusion and Policy Recommendations

In this paper, an empirical study was conducted on the impact of geopolitical risk in host countries on FDI inflows to Eastern European countries. The study used the political risk ratings from ICRG for the period 2009–2020, as well as data from the UNCTAD database and the World Bank. The findings of the study can be summarised as follows: (1) Geopolitical risk plays a crucial role in inhibiting FDI inflows to Eastern European countries. (2) The signing of RTAs has a long-term mitigating effect on the negative impact of geopolitical risks on FDI inflows to Eastern European countries.

Bilateral trade or investment agreements effectively compensate for deficiencies in the institutional, economic, and political environments of the host country. Consequently, they contribute to the reduction of political risks faced by foreign investors and provide a certain level of business security. Given the ongoing impact of events like the Russia-Ukraine situation and the long-term effects of the COVID-19 pandemic, Eastern European countries should prioritise efforts to enhance free trade, reduce barriers to cross-border capital flows, and create favourable conditions for attracting investment by improving the business environment. To achieve these goals, effectively utilising bilateral trade or investment agreements and leveraging their provisions to enhance stability in the local business environment is crucial. Actively engaging in bilateral free trade negotiations with other economies and promoting the signing and upgrading of trade or investment agreements with economic and trade partners can yield positive outcomes. By fully harnessing the mitigating effect of bilateral RTAs on political risks, Eastern European countries can amplify the policy impact of these agreements. Strengthening the effectiveness of signed agreements and establishing specific provisions, including mechanisms for dispute settlement, negative

lists, and policy transparency, will also contribute to increasing the attractiveness of these agreements for foreign investment. The government should actively pursue these goals, ensuring that the depth and scope of specific clauses in the agreements are reasonable. This will help enhance the country's appeal to foreign investors by concluding sufficiently comprehensive trade agreements.

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