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Impact of COVID-19 and the Ukrainian War on FDI in a Panel of Eastern European Economies

SUMMARY

The COVID-19 pandemic, coupled with the Russia-Ukraine war, has had disastrous consequences for the global economy. As a result of the crisis, the normal way of conducting business has changed drastically, and, with the ongoing Russian invasion in Ukraine, many governments and companies have taken immediate investment-related measures. Undoubtedly, the majority of Eastern European countries have been severely hit. It is therefore crucial to find out what impact these challenges have on foreign direct investment in these countries. To do so, the paper employs the panel data technique to estimate the impact of COVID-19 and the Ukrainian war on FDI in Eastern European economies from 1995 to 2022. The regression results show that both the pandemic and the war have discouraged foreign investment in the panel of countries considered in the sample. The results further indicate that per capita growth and trade openness are important determinants of FDI.

Keywords: COVID-19, Ukrainian war, Eastern Europe, Fixed effect model.

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Утицај пандемије COVID-19 и украјинског рата на стране директне инвестиције у панелу источноевропских економија

САЖЕТАК

Пандемија COVID-19, заједно са ратом Русије и Украјине, имала је катастрофалне последице на глобалну економију. Као резултат кризе нормалан начин пословања драстично се променио, а с текућом руском инвазијом на Украјину многе владе и компаније предузеле су хитне мере везане за инвестиције. Без сумње, већина источноевропских земаља тешко су погођене. Стога је кључно открити какав утицај ови изазови имају на стране директне инвестиције (СДИ) у овим земљама. Да би се то учинило, рад користи технику панел података за процену утицаја COVID-19 и украјинског рата на СДИ у источноевропским економијама од 1995. до 2022. Резултати регресије показују да су и пандемија и рат обесхрабрили стране инвестиције у панелу разматраних земаља. Резултати даље указују да су раст по глави становника и отвореност трговине важне детерминанте СДИ.

Кључне речи: COVID-19, украјински рат, Источна Европа, модел фиксних ефеката

Introduction

The COVID-19 pandemic and the Ukrainian war are both human tragedies with serious global economic implications. The COVID-19 outbreak, which started in Wuhan in December 2019, has rapidly spread its tentacles across the world, resulting in rapid fatal contagion and a global economic recession. Indeed, by March 2020, most countries were facing an exponential increase in the number of COVID-19-positive cases and an alarming mortality rate. Countries were therefore forced to impose measures such as quarantine, lockdown, social distancing, and bans on foreigners. Such restrictions caused economies to be confronted with major disruptions and uncertainty in the business world, resulting in shocks in the demand and supply of goods and services, which eventually led to a global economic downturn. The negative demand shocks, fall in production, factory closures, and layoffs resulted in a delay in investment decisions and consumer spending. Additionally, the containment measures taken by the governments of several countries also had a direct and indirect impact on foreign direct investment decisions. According to the United Nations Conference on Trade and Development (2021), FDI flows actually fell by 35% to $1 trillion in 2020 following the outbreak and spread of the

virus.[4] The investment impact was generally more concentrated in countries that were more severely affected by the pandemic, and these countries were therefore forced to take more drastic measures. Evidently, countries that are closely integrated into the global value chains that revolve around China were not spared either. Interestingly, the global foreign direct investment flows have shot back up by 77% in 2021, with the recovery rates being much higher in developed countries as opposed to developing ones.[5] However, the global FDI momentum weakened in 2022, and the UNCTAD (2023) predicts a decline for 2023 as well.[6] This is a contraction that is largely driven by the ongoing war in Ukraine, inflationary energy and food prices, and debt pressures.

Indeed, while the world economy started to recover from the economic disruption due to the COVID-19 pandemic, the Russia-Ukraine war escalated in February 2022. The ongoing war further exacerbated the economic situation, and unfortunately, no solution has been reached. In response to the situation, the US and other Western countries have imposed numerous import and export sanctions on Russia. Additionally, the Russian Federation was banned from SWIFT transactions, and over 750 international businesses implanted in Russia ceased their operations. These measures resulted in an unprecedented trade contraction.[7] The situation worsened further as the Russian factories also had to close down following the bans on imports and exports, the devaluation of their currency, and the shortage of raw materials. Consequently, foreign direct investment and other capital flows to and from both Ukraine and Russia have been crippled.[8] Unfortunately, these international responses have had a double-edged effect as they have also disrupted bilateral and multilateral relationships with many countries, supply chains, and trade chains.[9] Indeed, as many countries are dependent on Russia for oil, gas, and wheat, the trade, investment, and

[4] "World Investment Report 2021: Investing in Sustainable Recovery Investing, United Nations Conference on Trade and Development", United Nations Publications, https://unctad.org/system/files/official-document/wir2021_en.pdf, 05/28/2023, 10.

[5] Ibid.

[6] "World Investment Report 2023", United Nations Publications, https://unctad.org/publication/world-investment-report-2023, 05/29/2023.

[7] Mario Arturo Ruiz Estrada & Evangelos Koutronas, "The Impact of the Russian Aggression against Ukraine on the Russia-EU Trade", *Journal of Policy Modeling*, Vol. 44, No. 3, 2022, 603.

[8] "OECD Policy Responses on the Impacts of the War in Ukraine", OECD iLibrary, https://www.oecd-ilibrary.org/finance-and-investment/international-investment-implications-of-russia-s-war-against-ukraine-abridged-version_6224dc77-en;jsessionid=2En1_1wx_oIns0dQF_TYXVXg44GbycW1naSu_fwx.ip-10-240-5-16#:~:text=According%20to%20recent%20World%20Bank,pre%2Dwar%20economy%20in%202021, 28/05/2023.

[9] Ajeigbe Kola Benson, "Does the Russia-Ukraine War Affects Trade Relations and Foreign Direct Investment Flows from Europe into Asia and Africa?", *Research in Business & Social Science*, Vol. 12, No. 2, 2023, 288.

economic contraction experienced by Russia eventually cascaded down to several other countries, thereby impeding the post-pandemic economic recovery. The World Bank asserts that due to surging energy, a reduction in energy supply, and disruptions in trade and food, economic activity will remain "deeply depressed" throughout 2023. However, the OECD (2022) and Ruta (2022) believe that the impact on global foreign direct investment will be "limited" or "muted".[10] Indeed, Russia's FDI inflows and outflows are believed to be marginal. Along the same vein, Ruta (2022) states that despite the large investments of European countries in the energy sector of Russia and their dependence on Russian oil and gas, the direct impact of Russia and Ukraine on global FDI is limited.[11] Nonetheless, the indirect impact could be "profound and far-reaching" due to the loss in investor confidence.[12] The author further maintains that the long-term impact on investment will depend largely on the level of government intervention. Furthermore, Eastern European countries rely heavily on bilateral investments with Russia, especially in the energy sector. Ruta (2022) points out that the FDI into and from Russia consists of only a small share of the total FDI from and in these countries.[13]

The ripple effects of the COVID-19 pandemic and the Ukrainian war cannot be ignored. While the global economic prospects appear bleak, the direct and indirect consequences on foreign direct investment remain uncertain. Notably, foreign direct investment is vulnerable to different shocks. In the past, shocks such as financial crises, natural calamities, and wars have been seen to affect foreign direct investment globally.[14] However, the COVID-19 pandemic differs slightly from the previous shocks as it involved measures such as lockdowns, remote working, and social

[10] Ibid.; Michele Ruta, (ed.), In: *The Impact of the War in Ukraine on Global Trade and Investment*, World Bank Group, Washington, 2022, 1–84.

[11] Ibid., 10.

[12] Ibid.,

[13] Ibid., 62.

[14] Meltem Ucal, et al., "Relationship between Financial Crisis and Foreign Direct Investment in Developing Countries Using Semiparametric Regression Approach", *Journal of Business Economics and Management*, Vol. 11, No. 1, 2010, 20–33; Adina Dornea, et al., "The Impact of the Recent Global Crisis on Foreign Direct Investment. Evidence from Central and Eastern European Countries", *Procedia Economics and Finance*, Vol. 12, 2012, 1012–17; Olga Stoddard & Ilan Noy, "Fire-Sale FDI? The Impact of Financial Crises on Foreign Direct Investment", *Review of Development Economics*, Vol, 19, No. 2, 2015, 387–99; Lochan Kumar Batala, et al., "Natural Disasters' Infuence on Industrial Growth, Foreign Direct Investment, and Export Performance in the South Asian Region of Belt and Road Initiative", *Natural Hazards*, Vol. 108, 2021, 1853–76; Thomas Neise, et al., "The Efect of Natural Disasters on FDI Attraction: A Sector-based Analysis over Time and Space", *Natural Hazards*, Vol. 110, No. 2, 2022, 999–1023; Chengchun Li, et al., "The Impact of Civil War on Foreign Direct Investment Flows to Developing Countries", *The Journal of International Trade & Economic Development*, Vol. 26, No. 4, 2021, 488–507.

distancing, which raised investment costs.[15] Similarly, the Ukrainian war is different from the previous shocks as it began at a time when the economy had just been crippled by the COVID-19 pandemic. The already surging food and commodity prices were further fueled by the war. Additionally, the heavy reliance of many nations on Ukraine and Russia for wheat and energy products, coupled with the massive corporate exodus from Ukraine, further worsened the sustainedly higher prices and global economic impacts. As such, it is crucial to analyse the combined impact of the COVID-19 pandemic and the Russia-Ukraine war on foreign direct investment.

Indeed, a number of studies have mushroomed in the past few years, investigating the impact of the pandemic on foreign direct investment and the impact of the Russia-Ukraine war on foreign direct investment.[16] However, to the best of our knowledge, only a few studies and research articles have delved into the combined impact of the pandemic and the war on foreign direct investment flows.[17] Therefore, this paper attempts to add on to the literature by investigating the detrimental relationship among the COVID-19 pandemic, the Ukrainian war, and foreign direct investment. Additionally, this paper will depart from previous studies by focusing on a sample of Eastern European economies, as they are relatively more vulnerable to these two shocks given their relatively higher dependence on Russia. The study makes use of the panel data technique to investigate the impact of COVID-19 and the Ukrainian war on FDI in Eastern Europe from 1995 to 2022.

A Brief Literature Review

The COVID-19 pandemic and foreign direct investment

The economic impact of different uncertainties resulting from different pandemics has been explored in the past. Indeed, Garrett (2008) mentions the

[15] Kazunobu Hayakawa, Hyun-Hoon Lee & Cyn-Young Park, "The effect of COVID-19 on foreign direct investment", *Asian Development Bank Economics Working Paper Series*, No. 653, 2022, 1.

[16] Jing Fang, Alan Collins & Shujie Yao, "On the global COVID-19 pandemic and China's FDI", *Journal of Asian Economics*, Vol. 74, 2021; Kazunobu Hayakawa, Hyun-Hoon Lee & Cyn-Young Park.,"The effect of COVID-19 on foreign direct investment"; Sinem Koçak & Özge Barış-Tüzemen, "Impact of the COVID-19 on foreign direct investment infows in emerging economies: evidence from panel quantile regression", *Future Business Journal*, Vol. 8, No. 1, 2022: Ajeigbe Kola Benson, "Does the Russia-Ukraine War Affects Trade Relations and Foreign Direct Investment Flows from Europe into Asia and Africa?"; Dilip Ratha & Eung Ju Kim, "Russia-Ukraine conflict: implications for remittance flows to Ukraine and Central Asia", *KNOMAD Policy Brief*, No. 17, 2022, 1–8.

[17] Vakhtang Charaia & Mariam Lashkhi, "Foreign direct investments during the coronomic crisis and armed conflict in the neighbourhood, Case of Georgia", *Globalization and Business*, Vol. 7, No. 3, 2022, 51–56.

possibility that the 1918 influenza pandemic could have decreased investment and savings.[18] Similarly, Lee and McKibbin (2004) argue that the Severe Acute Respiratory Syndrome (SARS) caused investment losses.[19] The recent COVID-19 pandemic also entailed several uncertainties and, as such, had severe economic consequences, including drops in foreign direct investments.

As clearly explained by Hayakawa and Park (2022), there are three dimensions through which foreign direct investment flows are damaged by the COVID-19 pandemic.[20] The first dimension considers the impact of the pandemic on the host country and the home country. Given the numerous and heightened uncertainties that COVID-19 entails, FDI will be affected. Choi, Furceri, and Yoon (2021) argue that foreign direct investment is subject to higher fixed costs and is more sensitive to the political environment than domestic investment due to the limited information about the host country.[21] This implies that the host country's attractiveness decreases due to the COVID-19 pandemic, with a much higher decrease in countries that are more severely affected. The decrease in FDI outflows will also move in tandem with the severity of the COVID-19 pandemic in the home country. Indeed, constraints faced by investors decrease their ability to invest abroad.[22] Nevertheless, outward FDI can also be triggered by the pandemic, according to Hayakawa and Park (2022).[23] They believe that, depending on the severity of the pandemic, companies might decide to export abroad to sustain the business or even shift to producing and selling abroad due to the mobility restrictions imposed by the pandemic. The second dimension considered by Hayakawa and Park (2022) relates to the fact that, despite the fact that all businesses faced many restrictions during the pandemic, they were not all affected to the same extent.[24] For instance, remote working, a restriction for quite a while, was more infeasible for the manufacturing sector as opposed to the services sector. This implies that investments in certain sectors would be more impacted than others. Lastly, Hayakawa and Park (2022) argue that the pandemic will be more detrimental to greenfield FDI as opposed to cross-border mergers and

[18] Garrett A. Thomas, "Pandemic economics: The 1918 influenza and its modern-day implications", *Federal Reserve Bank of St. Louis Review*, Vol. 90, No. 2, 89.

[19] Jong-Wha Lee & Warwick J. McKibbin, "Estimating the global economic costs of SARS", In: Stacey Knobler, Adel Mahmoud & Stanley Lemon (eds), *Learning from SARS: preparing for the next disease outbreak: workshop summary*, National Academies Press, Washington, DC, 2004, 92–109.

[20] Kazunobu Hayakawa, Hyun-Hoon Lee & Cyn-Young Park, "The effect of COVID-19 on foreign direct investment", 2.

[21] Sangyup Choi, Davide Furceri & Chansik Yoon, "Policy uncertainty and foreign direct investment", *Review of International Economics*, Vol. 29, No. 2021, 2.

[22] Kazunobu Hayakawa, Hyun-Hoon Lee & Cyn-Young Park, "The effect of COVID-19 on foreign direct investment", 1.

[23] Ibid., 3.

[24] Ibid., 16.

acquisitions.[25] However, on the other side of the coin, a fall in the value of firms in countries severely affected by the pandemic might boost cross-border mergers and acquisitions as investors would be able to acquire them at a cheaper price.

Fu, Alleyne, and Mu (2021) resort to using panel data across 96 countries from 2019 to 2020 and employ the Heckman selection model to assess the impact of the COVID-19 pandemic on foreign direct investment margins.[26] They provide empirical evidence of a negative link between the two variables of interest. They also find that investors were unwilling to invest when the degree of the severity of the pandemic was higher in either the host country or the home country, or both. However, the situation in the host country affects the foreign direct investment flows more than that of the home country. Additionally, they also provide evidence that the service sector's FDI was more affected by the pandemic than other sectors. Hayakawa and Park (2022) conduct a similar study. However, they make use of the Poisson pseudo-maximum-likelihood method to analyse how the COVID-19 pandemic has affected the home and host countries in both the manufacturing and services sectors. We used quarterly data spanning over the period 2019-2021 for a sample of 173 home countries and 192 host countries. They find that for the host country and for the manufacturing sector, both greenfield foreign direct investment and cross-border M&A are negatively affected. On the other hand, for the services sector in the host country, the negative impact is only detected for greenfield foreign direct investment. As for the home country, both greenfield foreign direct investment and cross-border M&A are seen to be positively affected in the manufacturing sector.

Fang, Collins, and Yao (2021) use quarterly data from the OECD countries, the BRICS countries, and Singapore from 2009 to 2020 to verify the impact of COVID-19 on the foreign direct investment inflows of several countries. The empirical results confirm a significant negative impact on foreign direct investment inflows, with elasticities of -6.6%, -7.6%, and -8.9% when the proxy of the pandemic was the number of new cases, new deaths, and cumulative cases, respectively. Interestingly, when the countries are categorised into groups, they find that the impact is more severe in the North and South Americas, followed by Europe. However, the impact in Asia and Oceania is insignificant. A similar result is obtained by Nawo and Njangang (2022), who examine the link between the COVID-19 pandemic and FDI in a sample of 79 developed and developing countries.[27] By making use of a

[25] Ibid., 2.

[26] Yingjie Fu, Antonio Alleyne & Yifei Mu, "Does Lockdown Bring Shutdown? Impact of the COVID-19 Pandemic on Foreign Direct Investment", *Emerging Markets Finance and Trade*, Vol. 57, No. 10, 2021, 2972–2811.

[27] Larissa Nawo & Henri Njangang, "The effect of covid-19 outbreak on foreign direct investment: do sovereign wealth funds matter?", *Transnational Corporations Review*, Vol. 14, No. 1, 2022, 1–17.

cross-sectional ordinary least squares method, they confirm the negative correlation between two proxies of the COVID-19 pandemic (number of deaths and total number of cases) and foreign direct investment. Additionally, they find that the impact is significant in countries that have a sovereign welfare fund, as opposed to those without, where the impact is insignificant.

Unlike previous studies, Giofré (2021) investigates the impact of the adoption of government stringency measures to restrain the spread of COVID-19 on foreign investment.[28] Applying data from 53 countries to a Robust least squares regression, he finds that the average stringency index has no link with inward investments. However, the author finds that when the country fixed effect is removed and the severity of the pandemic is controlled, the within-country stringency index is positively and significantly correlated with inward portfolio investments at the end of the first quarter of 2020. The latter also argues that this implies investors find prompt interventions demonstrate a higher level of commitment than gradual ones. Along the same vein, Camino-Mogro and Armijos (2020) focus on the impact of one particular stringency measure, the lockdown, and the origin of direct investment inflows in Ecuador.[29] They use a regression in discontinuity in time design and real-time data for 2020 and find a decrease of 64% in foreign direct investment inflows, with a higher negative impact detected when the source of investment originates from North and South America.

Another proxy was adopted by Ho and Gan (2021), who focused on the impact of the World Pandemic Uncertainty Index (WPUI) as a measure of the COVID-19 outbreak on foreign direct investment in a sample of 142 economies for the period 1996-2019.[30] They resort to a two-step generalized method of moments to show that health pandemics have a negative impact on foreign direct investment inflows. Interestingly, they also find that foreign direct investment is more sensitive to pandemic shocks in emerging economies and the Asia-Pacific region than in other economies. Similarly, Koçak and Barış-Tüzemen (2022) make use of the WPUI to explore the effects of the COVID-19 outbreak on foreign direct investment in 12 emerging countries over the period of 2014Q1–2021Q3.[31] They show that the impact of

[28] Maela Giofré, "COVID-19 stringency measures and foreign investment: an early assessment", *The North American Journal of Economics and Finance*, Vol. 58, 2021.

[29] Segundo Camino-Mogro & Mary Armijos, "The effects of COVID-19 lockdown on Foreign Direct Investment: evidence from Ecuadorian firms", *Munich Personal RePEc Archive*, University Library of Munich, Germany, 2022, 1–22.

[30] Linh Tu Ho & Christopher Gan, "Foreign Direct Investment and World Pandemic Uncertainty Index: Do Health Pandemics Matter?", *Journal of Risk and Financial Management*, Vol. 14, No. 3, 2021.

[31] Sinem Koçak & Özge Barış-Tüzemen, "Impact of the COVID-19 on foreign direct investment infows in emerging economies: evidence from panel quantile regression".

the index depends on the levels of foreign direct investment and that the negative impact of the WPUI increases as the quantiles of FDI rise. Furthermore, they argue that the drop in foreign direct investment inflows in emerging economies is due to the fact that the primary and manufacturing sectors constitute a large part of foreign direct investment inflows.

On the other hand, while most studies focused principally on foreign direct investment flows, Ajide and Osinubi (2020) focused on the link between foreign direct investment outflows during the COVID-19 pandemic in 43 countries.[32] They make use of ordinary least squares and quantile regression analyses to prove that there exists a positive relationship between the pandemic (as captured by the number of confirmed cases and deaths) and FDI outflows. Likewise, Hysa et al. (2022) also investigate the impact of the pandemic on foreign direct investment outflows in a sample of 22 European Union countries for the first three quarters of 2020.[33] The results show that the pandemic fueled the foreign direct investment outflows. They also detect a higher impact if the proxy for COVID-19 is taken to be the number of cases instead of the number of deaths.

The Ukrainian war and foreign direct investment

The war in Ukraine adds to the uncertainties with respect to foreign direct investment. As a matter of fact, the impact of war and conflict has also been analysed, and there is a general consensus that situations of conflict and war discourage foreign direct investments.[34] However, it is important to consider the unique characteristics of the Russia-Ukraine war when considering the potential impact on foreign direct investment. Indeed, the war started at an unfortunate time, when the world was still struggling to overcome the destructive impact of the COVID-19 pandemic, thereby dimming the possibility of a post-pandemic economic recovery. The sanctions and counter-sanctions that have mushroomed as a result of the Ukrainian war are only aggravating the potential impact on foreign direct investment. As pointed out by Kalotay (2022), these sanctions result in higher

[32] Tolulope T. Osinubi & Folorunsho M. Ajide, "Covid-19 pandemic and outward foreign direct investment: a preliminary note", *Economics - Časopis za inovacijska i ekonomska istraživanja*, Vol. 8, No. 2, 2020, 79–88.

[33] Eglantina Hysa, et al., "COVID-19—a black swan for foreign direct investment: Evidence from European countries", *Journal of Risk and Financial Management*, Vol. 15, No. 4, 1–21.

[34] Adil H. Suliman & André Varella Mollick, "Human Capital Development, War and Foreign Direct Investment in Sub-Saharan Africa Footnote", *Oxford Development Studies*, Vol. 37, 2009, 47–61; Chengchun Li, Syed Mansoob Murshed & Sailesh Tanna, "The impact of civil war on foreign direct investment flows to developing countries"; Gerald Yong Gao, Danny Tan Wang & Yi Che, "Impact of historical conflict on FDI location and performance: Japanese investment in China", *Journal of International Business Studies*, Vol. 49, 2018, 1060–1080.

costs and lower ease of doing business.[35] Nevertheless, competitors benefit from the discontinuation of businesses by Western countries. Kolotay (2022) further stresses that the resulting shock in production due to the war and the difficulty in accessing finance due to the imposed sanctions will be serious disincentives for investments. Indeed, the author identifies three sanctions that result in major blows to foreign direct investments: the freezing of Russian banking assets, their exclusion from SWIFT, and trade and investment bans.[36]

However, Ruta (2022) stresses that Ukraine and Russia are not "major players in the global FDI network".[37] The latter states that Russia's inward and outward foreign direct investment stock accounts for only 1% of the global stock. As for Ukraine, it accounts for 0.1% of the global inward foreign direct investment, while the outward foreign direct investment is negligible. Nevertheless, Ruta (2022) does recognise the fact that Eastern European countries and Asian countries have a greater and more significant dependence on Russia for bilateral investments.[38] While the destination and source countries of foreign direct investment for Russia include many European countries, the foreign direct investment to and from Russia for these countries accounts for only a small proportion of their total foreign direct investment.[39]

Charaia, Lashkhi, and Lashkhi (2022) try to analyse the challenges and impact of foreign direct investment on the service sector in Georgia while considering the COVID-19 pandemic.[40] They argue that there are more challenges than opportunities. Global investors are seen to be more careful with their investment decisions, and consequently, reforms are required to overcome the "coronomic and war challenges" simultaneously. On the other hand, Mbah & Wasum (2022) try to analyse the impact of the war on the economy in the US, the UK, Canada, and Europe.[41] Their review of the literature suggests that the war will cause spikes in inflation, pull consumption down, disrupt supply chains, increase uncertainty, impede economic growth,

[35] Kálmán Kalotay, "The war in Ukraine deals a blow to Russia's foreign direct investment links", Challenges, No. 238, 2022, 6.

[36] Ibid., 7.

[37] Michele Ruta, (ed.), In: The Impact of the War in Ukraine on Global Trade and Investment, 70.

[38] Ibid.

[39] Ibid.

[40] Vakhtang Charaia & Mariam Lashkhi, "Foreign direct investments during the coronomic crisis and armed conflict in the neighbourhood, Case of Georgia".

[41] Ruth Endam Mbah & Divine Forcha Wasum, "Russian-Ukraine 2022 War: A review of the economic impact of Russian-Ukraine crisis on the USA, UK, Canada, and Europe", *Advances in Social Sciences Research Journal*, Vol. 9, No. 3, 2022, 144–153.

and reduce investments. They argue that Europe will be the most affected, as both Russia and Ukraine are significant exporters to Europe.

Empirically, several studies revolving around the Russia-Ukraine war have surfaced. These studies have focused on the impact of the Ukrainian war on several factors, including the economy, exchange rates, trade, and commodities.[42] However, the number of studies investigating the impact of this war on foreign direct investment flows is relatively sparse. Nevertheless, they all detect a detrimental impact on foreign direct investment flows. For instance, Estrada and Koutronas (2022) make use of an Intraregional Trade Disruption from War Simulator (ITDW-Simulator) to estimate the macroeconomic impact of the military conflict between Russia and Ukraine.[43] They find that conflict has affected agricultural, industrial, and manufacturing services and foreign direct investment flows. Similarly, Benson (2023) analyses the impact of the Russia-Ukraine war on trade relations and foreign direct investment flows in a sample of 85 countries during the years 2012 and 2021 using the generalised method of moments technique.[44] Findings show that war has a significant setback to FDI and trade relations due to increased military expenditure.

While empirical studies investigating the impact of the recent pandemic on foreign investment have increased exponentially, studies analysing the impact of the Ukrainian war are relatively scant. In addition, based on the literature on the COVID-19 pandemic and the Ukrainian war, it is clear that there is not enough empirical evidence with regards to their combined

[42] Iana Liadze, et al., "Economic costs of the Russia-Ukraine war", *The World Economy*, Vol. 46, No. 4, 2023, 874–886; Madina Khudaykulova, He Yuanqiog & Akmal Khudaykulov, "Economic consequences and implications of the Ukraine-Russia war", *International Journal of Management Science and Business Administration*, Vol. 8, No. 4, 44–52; Rajesh Tiwari, et al., "Impact of Russia Ukraine War on Exchange Rate in India", SSRN, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4281532, 30/05/2023; Florin Aliu, Simona Hašková & Ujkan Q. Bajra, "Consequences of Russian invasion on Ukraine: evidence from foreign exchange rates", *The Journal of Risk Finance*, Vol. 24, No. 1, 2023. 40–58; Ebru Orhan, "The effects of the Russia-Ukraine war on global trade", Journal of International Trade, Logistics and Law, Vol. 8, No. 1, 2022, 141–146; "Russia-Ukraine war will disrupt global wheat trade", Oxford Analytica, https://www.emerald.com/insight/content/doi/10.1108/OXAN-DB268182/full/html, 30/05/2023; Ben T. Hassen & El H. Bilali, "Impacts of the Russia-Ukraine war on global food security: towards more sustainable and resilient food systems?", *Foods*, Vol. 11, No. 15, 2023, 99–114; Channing Arndt, et al., "The Ukraine war and rising commodity prices: Implications for developing countries", *Global Food Security*, Vol. 36, 2023; Adam Rose, Zhenhua Chen & Dan Wei, "The economic impacts of Russia–Ukraine War export disruptions of grain commodities", *Applied Economic Perspectives and Policy*, Vol. 45, 2023, 645–665.

[43] Mario Arturo Ruiz Estrada & Evangelos Koutronas, "The Impact of the Russian Aggression against Ukraine on the Russia-EU Trade", 600.

[44] Ajeigbe Kola Benson, "Does the Russia-Ukraine War Affects Trade Relations and Foreign Direct Investment Flows from Europe into Asia and Africa?", 288.

impact on foreign direct investment. This is particularly important given that foreign direct investment flows have already been hit by a global slump after the COVID-19 pandemic. Moreover, as explained above, this analysis is even more important in the context of the Eastern European countries, which rely relatively more on Russia and Ukraine.

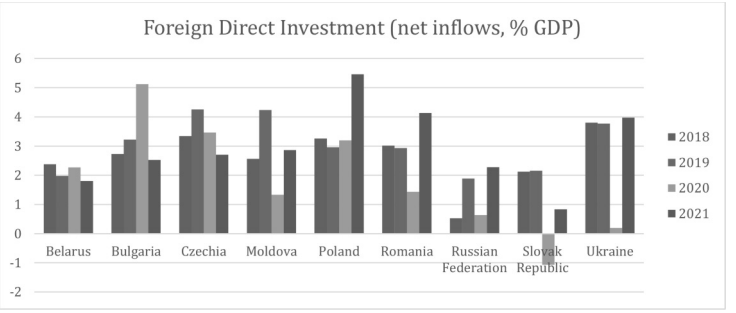
A Brief Overview

The COVID-19 outbreak, which started in December 2019, had an immediate detrimental impact on foreign direct investments in 2020 for Ukraine, the Slovak Republic, the Russian Federation, Romania, Moldova, and the Czech Republic. As reported in the figure below, the highest blow was felt by Ukraine, closely followed by the Slovak Republic and Moldova, which recorded decreases of 3.57%, 3.22%, and 2.91%, respectively, in the net inflows of FDI. Interestingly, the net inflows for Belarus, Bulgaria, and Poland went up post-pandemic. Indeed, inflows grew in Belarus (by 0.29%). The UNCTAD (2021) states that the country adopted anti-pandemic restrictions later than most of the world, and these measures were relatively less restrictive.[45] In fact, large inflows were registered in the first quarter of the year, after which the next three quarters had practically no net inward FDI. As for Bulgaria, the growth in net inflows for the year 2020 was probably due to the fact that investments in the country were relatively easier and more attractive than in other Eastern European countries. Generally, there are no limits on foreign ownership or firm control, and investments are not screened or restricted in Bulgaria. On the other hand, Poland witnessed prompt policy actions, including fiscal and monetary support, which cushioned the blow of the pandemic and maintained its attractiveness as a foreign investment destination. The Polish development had introduced a "financial Shield" that not only mitigated the impact of the pandemic but also stimulated investment. Additionally, the well-diversified nature of Poland helped to reduce its vulnerability to external shocks. Moreover, Hungary also recorded a massive spike, with its net inflow of 60% in 2019 rising to 106.6% in 2020[46]. As a matter of fact, the Hungarian Investment Promotion Agency helped implement 907 projects in 2020 (97 of which were large FDI projects), thereby realising an investment worth EUR 4,078 million.

[45] "World Investment Report 2021: Investing in Sustainable Recovery Investing, United Nations Conference on Trade and Development", 11.

[46] Note that the data for Hungary is not reported in the chart as the values are much higher relative to those of the other Eastern European Countries.

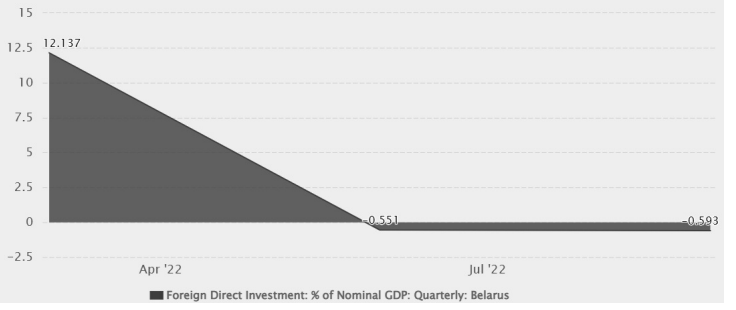
Figure 1: Foreign Direct Investment (Net Inflows, % GDP)



Source: World Development Indicators

As for the impact of the Ukrainian war, it is clear from the graphs below[47], which depict the quarterly foreign direct investment (% GDP) from January 2022, that the foreign direct investment has been knocked down for the Eastern European countries. However, there is a variation in the way the countries are responding to the war in terms of the foreign direct investment dynamics. In most countries (Bulgaria, Moldova, Poland, Romania, Slovakia, and Hungary), foreign direct investment levels have experienced steep downward trends before moving back up in June, only to fall back down in September. It appears that the war is having a fragmentary impact on foreign direct investment in these countries, mostly depending on the sanctions and counter-sanction measures imposed. However, Belarus has failed to show any signs of recovery after foreign direct investment (%GDP) fell to a low of -0.551 in June. As for the Czech Republic, the impact of the war was initially muted. In fact, the foreign direct investment (%GDP) rose to 3.489 in June 2022, after which it started to gradually fall to 2.384 in September.

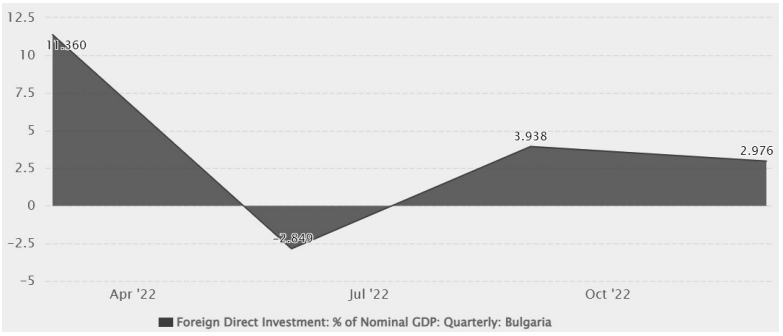
Figure 2: Foreign Direct Investment (%GDP) for Belarus from January 2022 to September 2022



Source: www.ceicdata.com

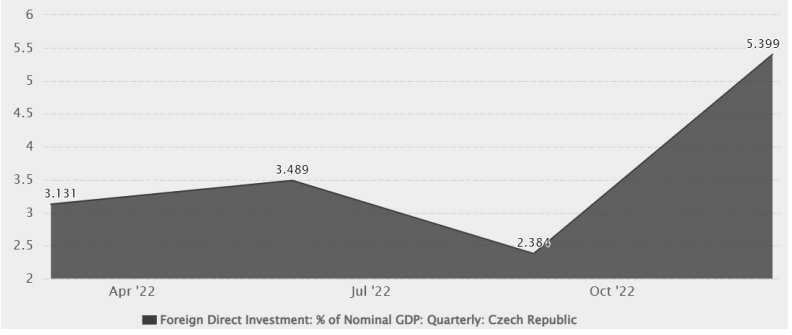
[47] Note that no data was available for Ukraine for the period under consideration.

Figure 3: Foreign Direct Investment (%GDP) for Bulgaria from January 2022 to December 2022



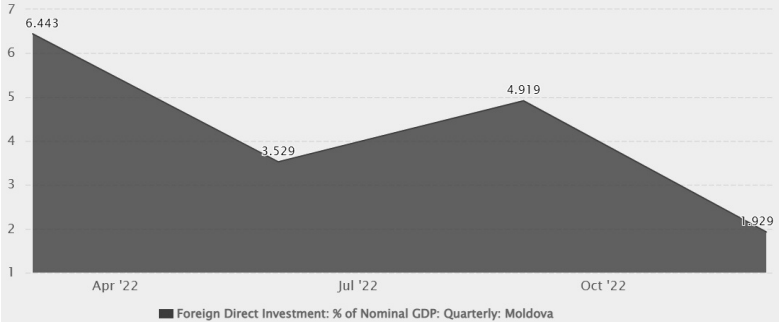
Source: www.ceicdata.com

Figure 4: Foreign Direct Investment (%GDP) for Czech Republic from January 2022 to December 2022



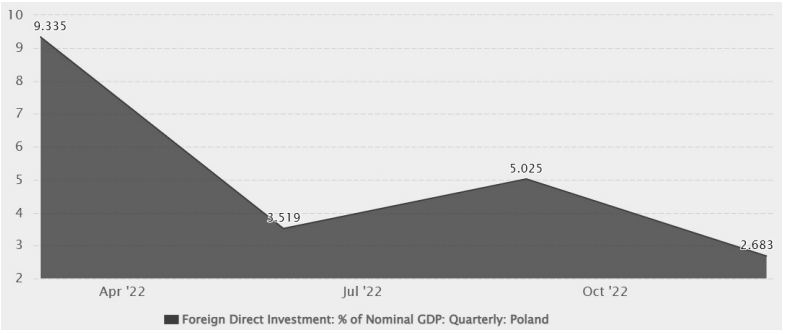
Source: www.ceicdata.com

Figure 5: Foreign Direct Investment (%GDP) for Moldova from January 2022 to December 2022



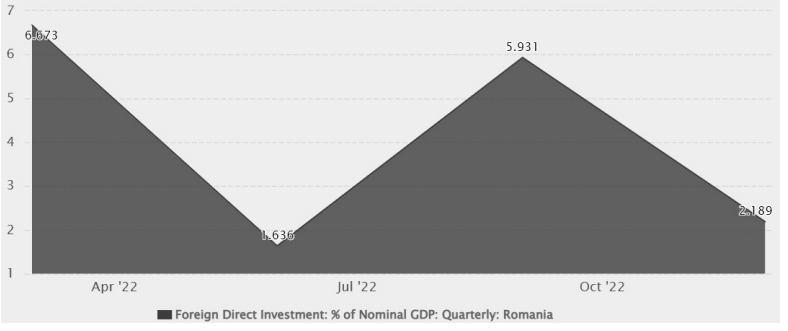
Source: www.ceicdata.com

Figure 6: Foreign Direct Investment (%GDP) for Poland from January 2022 to December 2022



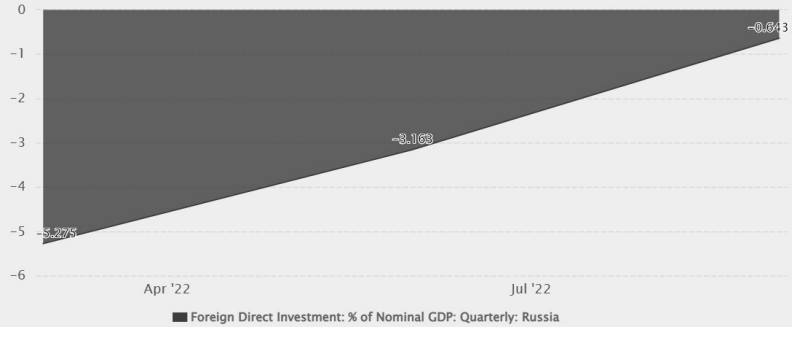
Source: www.ceicdata.com

Figure 7: Foreign Direct Investment (%GDP) for Romania from January 2022 to December 2022



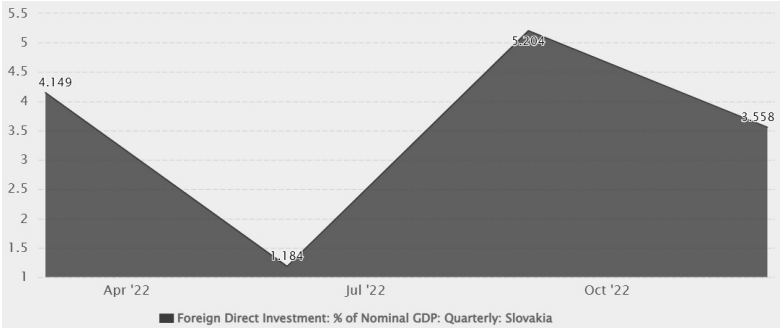
Source: www.ceicdata.com

Figure 8: Foreign Direct Investment (%GDP) for Russia from January 2022 to September 2022



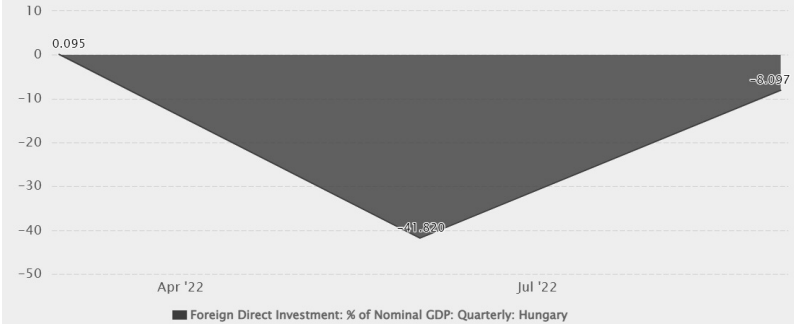
Source: www.ceicdata.com

Figure 9: Foreign Direct Investment (%GDP) for Slovakia from January 2022 to December 2022



Source: www.ceicdata.com

Figure 10: Foreign Direct Investment (%GDP) for Hungary from January 2022 to September 2022



Source: www.ceicdata.com

Clearly, the war in Ukraine has interrupted the post-COVID-19 recovery of foreign direct investment. Given the diverse impact of the global COVID-19 pandemic and the Ukrainian war on the foreign direct investment inflows of Eastern European countries, it is important to empirically investigate their combined effect on foreign direct investment in the region. The close proximity of the Eastern European countries in terms of their dependence and bilateral trade links with Russia and Ukraine makes this study even more meaningful. It is indeed important to gauge the real impact of the proper short-term and long-term policy measures to be adopted.

Methodology and empirical findings

To carry out the empirical test of the impact of the Ukraine war and COVID-19 on FDI for a panel of the nine Eastern European countries over the 1995-2022 period, the following equations are estimated:

$$ln\ FDI_{it} = \alpha\ war_{i,t} + \beta \ln real\ GDP_{it} + \gamma \ln trade\ openness_{it} + \delta \ln corruption\ index_{it} + \eta \ln violence\ index_{it} + \mu_i + u_{i,t}, \quad (1)$$

$$ln\ FDI_{it} = \alpha\ covid_{i,t} + \beta \ln real\ GDP_{it} + \gamma \ln trade\ openness_{it} + \delta \ln corruption\ index_{it} + \eta \ln violence\ index_{it} + \mu_i + u_{i,t}, \quad (2)$$

where i and t are the nine countries and year indicators, respectively, and μ_i is the constant term and $u_{i,t}$ is the error term. The dummy variable $covid_{i,t}$, which is set to one for the period 2019-2021 and zero otherwise, captures the impact of COVID-19 on FDI. The dummy variable $war_{i,t}$, which is set to one for the period 2014-2021 and zero otherwise, captures the impact of the Ukraine war on FDI. Apart from the dummy variables, $war_{i,t}$ and $covid_{i,t}$, the variables of the regression equation are given in terms of the natural logarithm (ln). The dependent variable is Foreign Direct Investment (FDI), and the set of control variables consists of real GDP, the level of trade openness, the corruption perception index, and a violence index. Data on the dependent and control variables have been obtained from the World Bank Indicators.

The correlation index in Table 1 (see annex) shows no problem of serial correlation. The estimation technique used for Equations (1) and (2) is a linear estimation. Although the OLS estimator can be used, the assumption that the unobserved country-specific effects are the same across countries does not hold in a panel of countries. The unobserved country-specific effects are likely to be different across countries.[48] Given that this study looks at the various factors impacting FDI across countries and across time, the occurrence of heterogeneity is likely, and the OLS estimator is not consistent. As such, the panel regression analysis is used to capture the heterogeneity by allowing for country-specific variations over time. Equations (1) and (2) are therefore estimated using the random effect and fixed effect techniques. The fixed effect technique indicates that the error term and the individual-specific effect should not be correlated, while, according to Greene (2011), the individual impact is a random variable and does not have a correlation with the independent variables under the random effect technique.[49] The Hausman Specification test is then used for the selection between the random effect model and the fixed effect model.

The results are shown in the table below:

[48] Ruth A. Judson & Ann L. Owen, "Estimating dynamic panel data models: a guide for macroeconomists," *Economics Letter*, Vol. 65, No. 1, 1999, 123–47.

[49] William H. Greene, *Econometric analysis*, 5th edition, 2011, Prentice-Hall, New Jersey.

Table 1: Regression Results; Dependent variable: Ln FDI

	MODEL 1		**MODEL 2**	
Variables	**FEE**	REE	**FEE**	REE
C	**-9.453902*** **	-5.474878***	**-5.076626**	-2.731073
WAR	**-0.637378*** **	-0.485376***	**-**	-
COVID	**-**	-	**-0.437557** **	-0.344877**
LRGDP	**0.297896*** **	0.135158***	**0.154177*** **	0.056393
LTO	**0.412002** **	0.536906***	**0.224024** **	0.332558
LCI	**1.650412** **	1.039305**	**1.124226**	0.741456
LVIO	**-0.265747**	-0.179906	**0.155016**	0.138683
Hausman Test	P<10%- FEE Chosen			

*** represent significance at 1%, ** represent significance at 5%

To start with the empirical analysis, Equation (1) is estimated using the fixed effect model. Many countries, including Ukraine and Russia, are involved in trade relations and FDI, which enhance globalisation. Ukraine and Russia have trade relations with each other as well as with many other countries, including the countries of the European Union. Indeed, the findings of this study indicate that the Ukraine war has a significant negative effect on the level of FDI. The war has significantly affected relations among these countries, thus affecting investment flow and economic activities in the nine Eastern European countries too. The significant negative effect of the war is plausible given the various sanctions levied by the UN and EU nations on imports and exports. The sanctions have disrupted supply chains and trade relations, impacting the global economy as well as Ukraine and Russia's bilateral and multilateral trade relations.[50]

With regards to the other explanatory variables, real GDP has a positive effect on FDI at a significant level of 1%. This is in line with Dunning's (1993) eclectic paradigm, which suggests that one of the main reasons firms invest abroad is to have access to the host's market as well as the nearby countries.[51]

[50] Muhammad Eid Balbaa, et al., "The Impacts of Russian-Ukrainian War on the Global Economy", https://www.researchgate.net/profile/Muhammad-Balbaa/publication/ 360 074361_The_Impacts_of_Russian-Ukrainian_War_on_the_Global_Economy/links/ 6260411cbca601538b5a325f/The-Impacts-of-Russian-Ukrainian-War-on-the-Global-Economy.pdf, 06/15/2023, 1-21;

[51] John H. Dunning, *Multinational Enterprises and the Global Economy*, 1993, Workingham, Addison-Wesley.

In the same way that a higher level of GDP implies better market opportunities and greater attractiveness, a higher real GDP also reflects the dynamism of the host country. The findings also indicate that there is a positive effect of trade openness on the level of FDI. Policies on trade openness have a positive impact on attracting FDI.[52] The effect of trade openness on FDI is, however, not statistically significant.

There is also evidence that the corruption index has a positive and significant effect on FDI (an increase in the corruption perception index indicates that corruption has decreased). It is observed that corruption is acting as a barrier to FDI inflow within the countries, as it can be noticed that a 1% increase in corruption will decrease FDI inflow by 1.65%. The results are consistent with studies conducted by Epaphra and Massawe (2017), who showcased that corruption acts as a "grabbing hand" by reducing FDI.[53] In addition, Egger, P., and Winner, H. (2006) also found a negative relationship between FDI and corruption.[54]

As expected, the violence index has a negative effect on FDI, although the effect is not statistically significant. As mentioned previously, there is the issue of whether to use the random effect of the fixed effect model with panel data. As a start, both models have been used, and when estimating the effect of the Ukraine war on FDI using the random effect model, the results do not differ much from the fixed effect model. The Hausman specification test is further used to choose between the two techniques, and in this case, the Hausman test favours the fixed effect model.

The objective of this study is to also examine the effect of COVID-19 on FDI in the nine Eastern European countries over the 1995-2022 period. Since the Hausman test results favour the fixed effect model, the latter is used for the empirical analysis, and the findings are shown in Table 2. The findings show that COVID-19 has a negative effect on the level of FDI, and it is statistically significant. The pandemic crisis generated by COVID-19 has had a dramatic impact on the global economy itself since countries had to enforce lockdowns and social distancing measures. These measures had a negative impact on supply chains, thus unbalancing economies across the world. COVID-19 has thus created uncertainty in global capital flows, along with a negative effect on investment prospects due to the lockdown measures. In fact, any form of crisis can be detrimental to FDI. In their study, Dornean and

[52] Avik Chakrabarti, "The determinants of foreign direct investment: Sensitivity analyses of cross-country regressions", *KYKLOS*, Vol. 54, 2001, 90.

[53] Manamba Epaphra & John Massawe, "The Effect of Corruption on Foreign Direct Investment: A Panel Data Study", *Turkish Economic Review*, Vol. 4, No. 1, 2017, 54.

[54] Peter Egger & Hannes Winner, "How corruption influences foreign direct investment: A panel data study", *Economic Development and Cultural Change*, Vol. 54, No, 2, 2006, 459–486.

Oanea (2015) conclude that the economic crisis has an adverse effect on FDI in Central and Eastern European countries.[55]

The findings are similar to the empirical analysis of Equation (1) for the remaining explanatory variables. More specifically, there is evidence that an increase in real GDP leads to an increase in the level of FDI in the nine Eastern European countries. Similarly, the findings also show that trade openness and the corruption index have a positive effect on FDI, although the effects are not statistically significant. As compared to the findings of Equation (1), where the violence index has a negative effect on FDI, the effect is now positive for Equation (2); however, the coefficient is not statistically significant.

Conclusion

Both the pandemic and the Ukrainian War are likely to compel policymakers to rethink how to attract investors to boost economic and social welfare. The present study focuses on a sample of eastern European countries to investigate the impact of the pandemic and the war on FDI. The fixed effect model confirms that both the pandemic and the war have discouraged foreign investment in Eastern Europe. It can be argued that uncertainties have a negative impact on international investors' attitudes. Eastern European countries are relatively weaker and more vulnerable as compared to more advanced countries. Hence, policies to enhance the business environment in these countries are important, and they will make the countries more resilient to shocks like the pandemic and the war. Importantly, reformed tax policies and incentives to encourage foreign investors, as well as new trade agreements, will help these countries attract FDI. Retraining the workforce and implementing better governance will also help attract FDI. It is also important to restore peace in Ukraine, as it is becoming more and more injurious to the global market and investment, negatively affecting economic growth and social welfare. Policymakers need to develop better crisis management skills in order to reunite nations and help eliminate conflicts.

Also, post-COVID-19 recovery is expected to see an improvement in FDI. However, if governments and policymakers focus more on regionalization and ownership restrictions, then FDI may decline. A reduction in bureaucracy and regulatory environments will be attractive to foreign firms. More so, the governments of the host countries should reassure businesses that the local operating conditions are stable, transparent, and unlikely to change. Such political stability will encourage FDI.

[55] Adina Dornea, et al., "'The Impact of the Recent Global Crisis on Foreign Direct Investment. Evidence from Central and Eastern European Countries", 1017.

Table 2: Correlation matrix

	FDI	WAR	COV	RGDP	TO	CI	VIO
FDI	1	-0.2144	-0.1201	-0.1511	0.1069	0.1286	0.1515
WAR	-0.2144	1	0.5448	0.1611	0.1792	0.0915	-0.1185
COV	-0.1201	0.5448	1	0.1103	0.0699	0.0821	-0.0437
RGDP	-0.1511	0.16113	0.1103	1	-0.4418	-0.1945	-0.3147
TO	0.1069	0.1792	0.0699	-0.4418	1	0.2790	0.4124
CI	0.1286	0.0915	0.0821	-0.1945	0.2790	1	0.7966
VIO	0.1515	-0.1185	-0.0437	-0.3147	0.4124	0.7966	1

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