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The Environmental, Economic and Social Dimensions of Sustainable Foreign Direct Investment: The Case of CEE Countries

Abstract. *The impact of Triple Bottom Line (TBL) on foreign direct investment (FDI) inflows in host countries' economies varies from one economy to another, depending on the specific social, cultural and political conditions, as well as the level of prior foreign capital penetration. Therefore, it is important to identify possible correlations between FDI and a range of economic and social indicators. Our research considered a comparison between Western and CEE countries in the EU. In Western countries, the FDI inflows are significantly influenced by all dimensions, except CO2 emissions. Central and Eastern European countries need to reassess their views on corporate governance. By focusing on political stability, government effectiveness, and reducing corruption, these nations can create a more cohesive legislative framework. This, in turn, can foster economic growth that benefits both businesses and communities, with the state acting as a facilitator in this process. Enhancing corporate governance could lead to improved investment climates and better overall economic outcomes.*

Keywords: *foreign direct investment (FDI), sustainable investments, ESG factors.*

JEL Classification: F21, E22, Q51, Q56.

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1. Introduction

In the last period, humanity has faced a series of challenges related to the environment and which can affect, in the long term, life on the planet. Thus, regarding the increase in the temperature of the environment as a result of the amount of greenhouse gases released into the atmosphere, important differences are found between the present time and the period of the last ice age (Harvey, 2015). Consequently, society, scientists and practitioners have become more and more aware that the key to success is sustainable development (Correia, 2019).

Starting from sustainability as an “old ideal” (Engardio, Capell, Carey, & Hall, 2007), the general concern for a series of new concepts closely related to this is starting to be felt, such as: sustainable development (Varey, 2011; Borland & Lindgreen, 2013), corporate sustainability (James et. al., 2015), index of sustainability (Consolandi et al., 2009; Singh, Murty, Gupta, & Dikshit, 2009; Babicky, 2013), greenwashing (Bradford, 2007) and others.

The effective application of the sustainability concept is conditioned, in Correia's (2019) approach, by using the “Triple Bottom Line” (3BL/TBL) concept in management. (people, planet itself and profit). Milton Friedman, winner of the Nobel Prize, who in 1970 published an article in which he claims that the only and last social responsibility of any business is to increase its profit, does not seem to share the same opinion (Friedman, 2013).

At the opposite pole, in 1981 Freer Spreckley proposes the social audit, which aims to measure three categories of factors with the maximum importance: the social, environmental and economic benefits. The latter are brought together by the author in his book ("Social Audit-A Management Tool for Co-operative Working") under the phrase "Triple Bottom Line". In 1994, John Elkington, the famous British management consultant and sustainability guru, coined the phrase "Triple Bottom Line" as a way to measure performance in corporate America. In this sense, the author promotes the idea that any business, to be considered truly sustainable, must follow three essential pillars: economic prosperity, care for the environment and social justice (Elkington 1999).

After Freer and Elkington, another positive interpretation of the triple bottom line is the one of a tool through which the company's management approached sustainability as a must have objective (Miller, 2020; Loviscek, 2020). Moreover, TBL has become over time an indicator of sustainability, often interpreted by maximizing the economic, social and environmental dimensions of the business (Hernke, 2017). So, as consequence, the concept has become increasingly used in management, consulting, investment, and by non-governmental organisations in recent years. This is how, with the idea of improving the working conditions of employees and with the aim of supporting the community, some companies have implemented environmentally friendly programs-design for recycling, life cycle analysis or environmental certification and social practices (Gimenez, Sierra & Rodon, 2012). The authors researched the impact that these programs had on each of the TBL dimensions, conducting a study on manufacturing plants within the assembly industry in 19 countries. The conclusion was that internal environmental programs positively

influence all three dimensions, while social programs, only two of them (social performance and that of environment).

Given the link between sustainability and TBL, some authors argue that these are equivalent terms, so they can be used with the same connotation in the literature (Alhaddi, 2015; Fernandes & Weiss, 2024). Performing a three-dimensional analysis of the existing relationship between sustainability, triple bottom line and economic development, Nogueira, Gomes and Lopes (2023) pursued concepts such as business strategies (competitiveness, decision-making, planning and performance). As a result of the existing relationship between TBL and economic development, the authors formulated a theoretical-conceptual model regarding the application of TBL in order to achieve economic development. The model was based on 4 clusters previously identified by the authors (obtaining competitive advantage; decision making; planning and stimulating economic, social and environmental performance). The paper has, as objective, describing the environmental, economic and social dimensions of sustainable foreign direct investment based on the model by authors Kapuria and Singh (2019). A comparison is made between Western and CEE economies, considering the influence of these dimensions on FDI inflows. The results will show that, in Western countries, the FDI inflows are significantly influenced by all dimensions, except CO₂ emissions. Central and Eastern European countries need to reassess their views on corporate governance.

The rest of the paper is organized as follows: section 1 presents a review of the existing literature and the working hypotheses, section 2 refers to the chosen methodology, section 3 is dedicated to results and the last section to conclusions, perspectives and limitations of the study.

2. Literature Review

The phenomenon of globalization generated, on the one hand, the development of commercial relations between business partners located in different economies around the globe, and on the other hand, the emergence and development of certain international investment strategies known as FDI. But also as an effect of globalization, the world's economies in general and FDI in particular have suffered from certain negative past or current events (the COVID-19 pandemic, respective the conflict between Russia and Ukraine). In a world context marked by such events, Pontecchiani (2023) drew attention to the fact that the global economy is increasingly facing a series of critical situations, one of which being sustainability.

In recent decades, the role, importance, and impact of FDI at micro, macro, and global levels have been widely debated in the economic literature. One of the key issues concerns the relationship between FDI and economic growth. Thus, while some authors consider FDI as the main engine of economic growth (Barro and Sala-i-Martin, 1995), others argue that the effect of FDI on economic growth differs, in relation to the reference economy (Siddique et al., 2017). Refining Siddique's findings, Melnyk et al. (2014) and Busch, Ferrarini & Grünwald (2024) consider that FDI positively influences the economic growth of developed countries, while,

on the opposite pole, Saqib et al. (2013) underlines the FDI's negative impact on the economic growth in the underdeveloped economies. Taking as a starting point the analysis of the link between FDI and economic growth, Batten & Vo (2010) agree with the existence of a strong positive influence of FDI on economic growth in more developed countries. Wan (2010) and Kubny, Lundsgaarde & Patel (2008) presents contradictory results: on the one hand, FDI is considered to contribute to the increase of domestic capital, job creation, and income growth, as well as to the promotion of technology, thereby boosting the host country's economy. On the other hand, FDI can generate negative effects, such as the crowding out of domestic investments, unfair competition between foreign and domestic companies, and the "market-stealing effect" due to a weak absorption capacity, leading to market inequalities or contributing to a foreign currency outflow. Some empirical studies support the hypothesis that obtaining inconclusive results regarding the influence of domestic FDI on economic growth could be due by the use, in research, of total FDI. As a consequence, Wang (2009) studied the heterogeneous effects of different sector-level FDI inflows on host country's economic growth, using data from 12 Asian economies over the period of 1987 to 1997 and finding that the effect of FDI on economic growth in the host countries is different if we refer to the productive sector, in comparison with the other sectors. The positive effect that FDI has on economic growth was also observed by Mehic, Silajdzic & Babic-Hodovic (2014). The authors analyzed the relationship between the two previously mentioned indicators, using specific data for seven economies from the South-East of Europe between 1998 and 2007. The obtained results showed that FDI modernizes the economy and encourages the restructuring and internalization of economic activities, especially in the manufacturing sector.

However, current trends have shifted the focus from economic growth and development to "green growth" and sustainable development and another question has been raised: what is the impact of FDI on sustainable growth, the environment, and ultimately on sustainable development. Even so, there is little knowledge about the conditions that could lead to a significant positive relationship between FDI flows and sustainable development (Kubny et al., 2008), although the development of the private sector is considered crucial for achieving sustainability goals, as noted by Sachs (2012). Although the literature in the field abounds of studies which analyzes the impact of FDI on economic growth, Pontecchiani (2023) states that the studies that link FDI to sustainability and that seek to quantify the FDI impact on triple-bottom line sustainability indexes are still few in number.

Caetano et al. (2023) argue that, as a major source of private capital, FDI could contribute to enhancing sustainability, particularly if applied using the concept of "sustainable investments" introduced by Aust et al. (2020). To this end, the author analyses 14 EU countries, examining the impact of FDI and other determining factors on CO₂ emission levels over the period from 1995 to 2018. The conclusion is that, regardless of whether countries are recipients or sources of high levels of FDI, sustainable development and renewable energy are both drivers of FDI.

As can be seen, the literature abounds with a multitude of approaches to the role of foreign direct investment in relation to sustainability, even though there is limited understanding of their role in promoting sustainable growth objectives, due to the lack of an internationally agreed definition and relevant data on "green FDI" (Golub, Kauffmann & Yeres, 2011).

The connection between FDI and "green growth" is analysed by Ofori et al. (2023), who highlight the concept of inclusive green growth, which essentially involves building societies that are socially inclusive and ecologically sustainable, ensuring that natural capital continues to provide the essential resources and environmental services necessary for people's lives (Fay, 2012). In this context, FDI can promote sustainable innovation and green growth (Amendolagine et al., 2021; Melane-Lavado et al., 2018), thereby reducing pollution-related mortality and the welfare costs associated with "dirty" economic growth, which is linked to cascading pollution.

A research oriented towards the impact of FDI on sustainability (the quality of the environment in the countries of Central and Eastern Europe in the 1995-2014 period of time) is also carried out by the authors Christoforidis & Katrakilidis (2021), who analyse for this purpose, the connection between FDI, economic growth, energy consumption and CO₂ emissions. The results are somewhat surprising because on one hand, the increase in energy consumption has the effect of environmental degradation, but, on the other hand, the economic growth of the ECE countries has a positive effect on the increase in the environmental performance of these countries, because it owes to a sustainable development of the economies in question.

In 2011, Golub et al. are of the same opinion showing in their research that the environment will be protected by the fact that the ecological technologies used by foreign capital (environmentally friendly or green technologies and practices) will be able to be transferred through technology spillovers to local firms. Recent studies explore the pollution haven hypothesis (PHH), reaching the same idea: weak environmental regulation in a host economy will attract FDI, leading to environmental degradation and confirming a positive relationship between FDI and CO₂ emissions in some countries or regions. Building on this hypothesis, Pavlović et al. (2021) confirm this direct and positive causality, using the example of the Balkan countries, while González et al. (2014) confirm it for European Union countries. Referring to PHH, Demena & Afesorgbor (2020) introduces the idea according to which foreign capital investments in developing countries could generate so-called "dirty production". Of course, there may also be the problem of cascading pollution havens, where companies invest abroad with the intention of finding other firms to carry out their "dirty" production processes, thereby posing as environmentally friendly companies (OECD 1999, p.14).

According to other opinions in the literature, the link between CO₂ emissions and FDI can be inconclusive due to the pollution halo hypothesis, which suggests that universal environmental regulations should transfer a country's green technology to its partners through FDI flows (Pao & Tsai, 2011). Duan and Jiang (2021) investigate the role of multinational corporations in CO₂ emissions, showing

that they have led to pollution haven effects in both high and low-income economies. They also note that extreme anti-globalization would reduce global CO₂ emissions by over 10% annually.

Let's not forget that the phenomenon of globalization is a collection of forces and effects and it is unlikely for these forces and effects to be all either favourable or unfavourable to the environment (Frankel, 2009). Starting from this desideratum, globalization can have a positive effect on economic growth by facilitating specialization between countries based on their comparative advantage and by enabling the transfer of resources between countries (Antweiler et al., 2001). The significant increase in trade flows between developed and developing countries, as a consequence of globalization, has led to a more integrated and globalized international market (De Benedictis and Tajoli, 2011; Aller et al., 2015).

According to traditional theoretical literature, trade affects the environment through three main different channels (Antweiler et al., 2001):

- The scale effect asserts that higher GDP leads to greater pollution;
- The composition effect, as a consequence of trade, could positively or negatively affect a country's environmental conditions;
- The technique effect predicts a positive impact of trade on the environment through the use of cleaner production techniques.

These are known as the direct effects of trade. These direct trade effects on environmental degradation have been extensively examined in empirical literature.

As we can see, there is no consensus on whether the relationship between trade and environmental quality is positive, negative, or non-existent.

3. Model specification

3.1 Model Description and Hypothesis

A main concern of the last decades, both in practice and in literature, has been the economic growth and its determining factors. Considered to be engines of economic growth, investments can be internal or take the form of FDI. In other words, the way in which FDI contributes to the economic growth of a country translates into the fact that they lead to a productivity increase, because they generate new investments, provide better technologies and managerial skills superior to those existing until then in the host countries (Pegkas, 2015).

Given the significance of EU accession and the numerous studies confirming its impact on economic growth, we consider it of real interest to analyse FDI inflows into EU countries from a dual perspective: that of location (which concerns the investors' decision to choose one of the 27 European markets) and that of sustainability (where we consider beyond the influence factors grouped into four categories, a comparison between Eastern and Western Europe). Thus, our analysis considers the factors influencing sustainable FDIs, grouped according to three directions—environmental, social, economic. The fourth dimension considered the institutional environment characterized by government efficiency, perceptions of

corruption, and political stability, based on the model by authors Kapuria and Singh (2019).

Sustainability, as perceived by the academic and business communities, has four dimensions: environmental, economic, social, and the dimension that considers corporate governance of companies, making a comparison between the countries of CEE and Western Europe, considering their classification on the European Union website.

In this analysis, we aim to test and validate the following two hypotheses:

H₁: Environmental, social, economic, and governance factors positively influence sustainable foreign direct investments in CEE countries, considering EU membership.

H₂: Environmental, social, economic, and governance factors positively influence sustainable foreign direct investments in Western European countries, considering EU membership.

3.2 The analysis

The paper employs a static panel estimation model with FDI as the dependent variable and various independent variables considering the following four dimensions:

$$FDI = f(\text{Environmental, Economic, Social, Governance}).$$

To study the determinants of the sustainable characteristics of FDI inflows, the following specifications for static panel estimations can be applied:

$$FDI_{it} = \alpha + \beta_1 * ENV_{it} + \beta_2 * ECO_{it} + \beta_3 * SOC_{it} + \beta_4 * GOV_{it} + \beta_5 * CEE_i + \mu_i + \lambda_t + \varepsilon_{it}$$

where:

$$\begin{aligned} ENV_{it} &= CO2_{it} \\ ECO_{it} &= OPEN_{it} + RD_{it} \\ SOC_{it} &= LFPR_{it} \\ GOV_{it} &= POL_{it} + GOVEFF_{it} + CPI_{it} \end{aligned}$$

The paper focuses on the **difference between Western and Eastern Europe**, so we also introduce interaction effects:

$$FDI_{it} = \alpha + \sum_k \beta_k X_{kit} + \sum_k \gamma_k (X_{kit} \times CEE_i) + \mu_i + \lambda_t + \varepsilon_{it}$$

where X_{kit} denotes the explanatory variables. The interaction coefficients γ_k show whether the determinants of FDI differ between Western Europe and Central and Eastern Europe.

The variables considered for analysis are presented in Table 1.

Table 1. Variables relevant to the model

Variables	Variable's type	Representati on mode	Data source
Net FDI inflows to EU countries	Dependent (% of GDP)	FDI _{it}	World Bank Data (2000-2022)
Environmental dimension			
CO2 emissions per capita	Nominal Independent (th t)	CO2 _{it}	Our World in Data (2000-2022)
Economic dimension			
Commercial (Trade) opening	Nominal Independent (the "error" term)	OPEN _{it}	World Bank Data (2000-2022)
Research and development expenses	Nominal Independent (% of GDP)	RD _{it}	World Bank Data (2000-2022)
Social dimension			
Labour force rate participation (female)	Nominal Independent (%)	LFPR _{it}	World Bank Data (2000-2022)
Corporate governance dimension +			
Political stability	Nominal Independent (score 1-10)	POL _{it}	World Bank Data (2000-2022)
Government effectiveness	Nominal Independent	GOVEFF _{it}	World Bank Data (2000-2022)
Corruption Perception Index	Nominal Independent (score 1-6)	CPI _{it}	www.transparency.org
Other variables			
EU membership	Independent dummy 1. Western Europe 0. CEE Countries	EU	https://commission.europa.eu/index_en

Where $i = 1...27$ represents EU member countries and $t = 2000...2022$.

The dependent variable is the stock of foreign direct investments (FDI) in the host country i at time t .

Source: Authors' own creation.

Here are the independent variables outlined for our analysis of foreign direct investment in terms of environmental, economic, social, and governance dimensions:

1. Environmental Dimension: CO₂ emissions per capita are used to represent the level of pollution resulting from the burning of fossil fuels. This indicator is adjusted by the population size to yield CO₂ emissions per capita.

2. Economic Dimension: Regarding research and development (R&D), the number of patents applied for annually at the European Union level by non-residents, relative to the total number of patents at the country level, is considered. Additionally, R&D expenditures relative to the gross domestic product (GDP) for the same period are taken into account. In the economic dimension we also included the trade openness, which refers to the degree to which a country is integrated into the global economy through international trade. It measures the importance of exports and imports relative to the size of the economy.

3. Social Dimension: The female labour participation rate is used to gauge the social dimension and non-discrimination, by comparing this indicator to its male counterpart.

4. Governance Dimension: At the national level, corporate governance considers the public's perception of how well the government and its institutions work for the good of the community, or conversely, suggest corruption. This includes the real effective exchange rate as a measure of government effectiveness, which is the nominal effective exchange rate (a measure of a currency's value relative to a weighted average of several foreign currencies) divided by a price deflator or a cost index. The Corruption Perceptions Index (CPI) Provided by Transparency International (TI) ranks countries by the degree to which corruption is perceived to exist in the public sector. Political stability and absence of violence/terrorism measure perceptions of the likelihood of political instability and/or politically motivated violence, including terrorism. The number of data sources indicates the number of data sources on which the aggregate estimate is based.

The analysis will include a comparative study between Western and CEE economies, considering their membership in the European Union.

4. Results and discussion

Given the variables considered, we will analyze the Pearson correlation coefficients presented in Table 2.

Table 2. Pearson Correlation Coefficients

	FDI	CO2	RD	OPEN	LFPR	GOVEFF	CPI	POL
FDI	1.0000	0.0099	-0.1597	-0.0361	-0.1393	0.0317	0.0107	-0.1506
CO2		1.0000	0.2036	-0.0018	0.0669	0.1516	0.4104	-0.1157
RD			1.0000	0.0291	0.5011	0.2324	0.7939	0.2330
OPEN				1.0000	-0.0110	-0.0587	-0.0019	0.0683
LFPR					1.0000	0.0694	0.6172	0.1074
GOVEFF						1.0000	0.3309	0.2180
CPI							1.0000	0.0825
POL								1.0000

Source: Authors processing using EViews 10.

The coefficients in Table 2 reveal predictable interpretations. The positive correlation between FDI and CO₂ is consistent in the context of widespread use of fossil fuels. Industrialization comes with pollution, giving countries and companies additional reasons to stimulate, subsidize, and facilitate investments in renewable energy. The Corruption Perceptions Index and government efficiency have similar influences, both promoting FDI by creating a beneficial economic and political environment for investments. The employability of female staff is a sign of progress; thus it can only have a positive influence on the various dimensions of the economic environment considered. Political stability is negatively correlated with the

dependent variable (FDI), meaning that an increase in FDI translates into a decrease in the coherence of the political environment. While it may seem contradictory, this relationship is an expression of facilitating oligopoly and the penetration of developing countries by companies which, in some cases, annihilate national local companies.

In the case of our model, four dimensions of sustainability (economic, social, environmental, and corporate governance) are considered, making a comparison between CEE and Western European countries. Given the information from Table 1, these are, in some cases, dimensions characterized by multiple indicators, as mentioned in the justification of the hypotheses.

Preliminary analysis

To determine the most appropriate panel data specification, the Hausman test was conducted in EViews. The null hypothesis of the Hausman test states that the random-effects estimator is consistent and efficient, while the alternative hypothesis supports the fixed-effects estimator. The test results produced a p-value below the 5% significance level ($p < 0.05$), leading to the rejection of the null hypothesis. Consequently, the random-effects model was deemed inappropriate for the analysis, and the fixed-effects approach was selected as the preferred specification. Further tests were then performed to determine whether one-way or two-way fixed effects provided the most suitable representation of the data.

Table 3. Redundant Fixed Effects Tests

Effects Test	Statistic	d.f.	Prob.
Cross-section F	5.958468	(23,486)	0.0000
Cross-section Chi-square	128.427843	23	0.0000

Source: Authors' own creation.

After selecting the fixed-effects approach through the Hausman test, the Redundant Fixed Effects Test was performed to verify whether cross-sectional effects should be included in the model. As reported in Table 3, both the Cross-section F statistic (5.958, $p = 0.0000$) and the Cross-section Chi-square statistic (128.428, $p = 0.0000$) are highly significant. Therefore, the null hypothesis that cross-sectional fixed effects are redundant is rejected. This result indicates the presence of significant country-specific heterogeneity that cannot be ignored in the estimation process. The findings suggest that unobserved characteristics specific to each EU country play an important role in explaining variations in FDI inflows over the period analysed.

Results

Table 4. The results of the two-way fixed-effects model – European Union

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CO ₂	0.394929	0.243463	1.622131	0.1054
RD	-1.767764	0.887322	-1.992246	0.0469
OPEN	-0.003249	0.015643	-0.207730	0.8355
LFPR	-0.228643	0.148110	-1.543741	0.1233

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CPI	1.164055	0.446173	2.608974	0.0094
POL	-0.337757	0.186089	-1.815025	0.0701
GOVEFF	-0.110976	0.023431	-4.736396	0.0000
C	29.09858	7.388647	3.938283	0.0001
R-squared	0.285399	Mean dependent var		19.61805
Adjusted R-squared	0.241288	S.D. dependent var		27.31912
S.E. of regression	25.22373	Sum squared resid		309211.0
F-statistic	6.469996	Durbin-Watson stat		1.263006
Prob(F-statistic)	0.000000			

Source: Own processing using EViews 10.

The results of the two-way fixed-effects model indicate that the explanatory variables jointly have a statistically significant impact on FDI inflows, as evidenced by the F-statistic ($F = 5.200$, $p < 0.001$). The model explains approximately 36.3% of the variation in FDI inflows across EU countries over the period 2000–2022.

Analyzing the data from Table 4, we observe that CO₂ emissions per capita are not a significant influence on FDI flows, therefore the environmental dimension and labour force participation rate for women do not impact the investment decisions of non-residents in a particular market. However, the other two dimensions (economic and government) are significant in this decision-making process. With a major influence, the economic dimension, consisting essentially of research and development and trade openness, is an important deciding factor for non-resident companies in entering a specific market. A similar situation is observed in the case of governance, where political stability, governmental efficiency, and low corruption create an environment conducive to attracting FDI.

The proposed hypotheses, however, involve a comparative analysis of countries in CEE and Western Europe, considering the variables of interest. The results of the analysis are presented in Tables 5 and 6.

Table 5. The results of the two-way fixed-effects model – Western Europe

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CO2	0.471380	0.321844	1.464622	0.1441
RD	-2.498918	1.294805	-1.929957	0.0546
OPEN	0.007721	0.030156	0.256037	0.7981
LFPR	-0.536953	0.256622	-2.092390	0.0373
GOV EFF	-0.151207	0.063711	-2.373322	0.0183
CPI	1.675978	0.972306	1.723716	0.0859
POL	-0.084861	0.224113	-0.378652	0.7052
C	44.04114	9.629531	4.573550	0.0000
R-squared	0.302264	Mean dependent var		18.29723
Adjusted R-squared	0.252426	S.D. dependent var		30.79213
S.E. of regression	28.21472	Sum squared resid		222899.7
F-statistic	6.064900	Durbin-Watson stat		1.226914
Prob(F-statistic)	0.000000			

Source: Own processing using EViews 10.

Practically, the results from Tables 5 and 6 confirm the general results for the entire European Union, indicating that the overall trend is driven by the (predominantly) developed economies in this region.

Table 6. The results of the two-way fixed-effects model – CEE countries

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CO2	0.273946	0.289876	0.945045	0.3458
RD	-1.256806	1.345796	-0.933875	0.3515
OPEN	-0.021734	0.031344	-0.693418	0.4889
LFPR	0.161289	0.203736	0.791660	0.4295
GOVEFF	-0.127288	0.034005	-3.743249	0.0002
CPI	0.224452	0.416708	0.538632	0.5907
POL	-0.172453	0.284400	-0.606374	0.5450
C	15.42242	11.20833	1.375978	0.1704
R-squared	0.298274	Mean dependent var		17.50067
Adjusted R-squared	0.241853	S.D. dependent var		21.18100
S.E. of regression	19.79768	Sum squared resid		77997.71
F-statistic	5.286644	Durbin-Watson stat		1.319128
Prob(F-statistic)	0.000000			

Source: Own processing using EViews 10.

Comparing the two regional groups reveals notable differences in the determinants of FDI. The analysis indicates that, while higher CO₂ levels may not have a strong impact, ecological dimensions and corporate governance show potential positive influences on the dependent variable for both regions. The significance of CPI only in Western Europe suggests that transparency and corruption control matter more in mature economies where investors are comparing countries with similar economic fundamentals.

Female labour force participation and corruption control appear to matter only in Western Europe, while governance effectiveness is significant in both regions. The stronger significance of government effectiveness in CEE countries may reflect the importance of institutional reforms and administrative capacity during the post-transition period. Conversely, the lack of significance of most economic and environmental variables suggests that FDI decisions in CEE countries may be influenced by factors not explicitly captured by the model, such as labour costs, market potential, tax incentives, infrastructure quality, or EU integration dynamics. Overall, the findings indicate that the determinants of FDI are not homogeneous across the European Union. Institutional factors appear to play a more prominent role than environmental or economic variables, while the influence of social and governance indicators differs between Western European and CEE countries.

The CEE countries should change their perception on the corporate governance dimension, because political stability, government effectiveness and the perception on corruption are the main ways to a coherent legislative body which could bring economic growth to both companies and communities, using state as an intermediate.

5. Conclusions

The globalization of the world economy has led to a significant increase in foreign direct investments, and transition economies are becoming increasingly open to international business operations. They are liberalizing their regimes, making them more attractive to foreign investors. Multinational companies have numerous positive effects on the growth and development of the countries in which they invest. These effects are primarily reflected in employment opportunities, tax benefits, the transfer of technology, knowledge, and skills, capital flows, and similar aspects. The positive effect depends on the host country's environment and its absorption capacity. However, not all countries are similar in this regard, and the effects of foreign direct investment are not equal across all countries. The success of the chosen strategy depends primarily on the overall level of social and economic development of the country and on the ability of governments and domestic firms to optimally exploit the benefits brought by FDI.

In the case of Central and Eastern Europe, the socioeconomic consequences of rising CO₂ emissions and climate change represent a significant threat to development and livelihoods by altering physical geography, affecting environmental conditions, undermining food security, and destroying means of livelihood. The underdeveloped and developing economies typical of CEE countries, which rely heavily on agriculture, are at greater risk due to the negative impact of climate change and economic stagnation. Human well-being is indirectly affected by the loss of biodiversity, environmental degradation, increased risk of extreme weather events (e.g., droughts, floods), health risks, increased exposure to hunger and water crises, and ultimately the ongoing need to adapt daily activities across all sectors, including agriculture, forestry, tourism, and infrastructure. Attracting FDI leads to increased CO₂ emissions, making it necessary to shift towards renewable and sustainable energy.

Institutional quality emerges as the most important determinant of FDI inflows in the European Union. Among the governance variables, the CPI has a positive and statistically significant effect in the overall EU model, indicating that higher transparency and lower perceived corruption increase a country's attractiveness to foreign investors. This finding highlights the importance of sound institutions in fostering a favourable investment climate.

The determinants of FDI differ between Western European and Central and Eastern European countries. The separate estimations reveal that female labour force participation and corruption control are significant only in Western Europe, while government effectiveness is the only significant determinant in the CEE group. These results suggest that foreign investors respond differently to socio-economic and institutional conditions across the two regions.

Economic and environmental factors appear to play a limited role in explaining FDI inflows once country-specific and time-specific effects are controlled for. Neither trade openness, R&D expenditure, nor CO₂ emissions exhibit robust statistical significance in the overall model. This finding indicates that structural

country characteristics and institutional factors may be more relevant than traditional economic indicators in attracting FDI within the EU.

Government effectiveness is negatively associated with FDI inflows in both Western Europe and CEE countries. Although this result contrasts with conventional theoretical expectations, it may reflect the particular dynamics of European economies during the analysed period, including the attraction of foreign investment to countries undergoing economic and institutional transformation. Therefore, the coefficient should be interpreted cautiously and not as evidence that weaker governance promotes FDI.

The results confirm the importance of accounting for country-specific and time-specific heterogeneity when analysing FDI determinants. The Hausman test supported the use of fixed effects, while the redundant fixed-effects tests confirmed the presence of significant country effects. Consequently, the two-way fixed-effects specification provides a more reliable framework for analysing FDI inflows by controlling for unobserved characteristics that vary across countries and over time.

As further directions for research, we consider an analysis on investment in green energy at EU level, in order to reduce or contain CO₂ emissions. As barriers to cross-border trade and investments have been dismantled during the past two decades, worldwide competition for attracting funds has intensified. Investors have historically been attracted to the EU due to its large market size, the high degree of stability and the skilled labour force. The CEE countries should show commitment for sustainability, government stability and less corruption, in order to become attractive for investors, not only through low costs, but by choosing the Western economies path.

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