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Article

Exploring the Nexus Between Foreign Direct Investment Inflows and Economic Growth: A Robust Empirical Analysis of European Low- and Middle-Income Countries

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Abstract: Understanding the relationship between foreign direct investment (FDI) inflows and economic growth is essential for enhancing output, introducing new technologies, and developing managerial capabilities. The study addresses a gap in the literature regarding FDI and economic growth in low- and middle-income European countries from 1995 to 2022. Employing various econometric methods, including Dynamic GMM, Hausman-Taylor IVs, Fixed Effects, Pooled OLS, and Random Effects, the analysis reveals a negative relationship between economic growth and FDI inflows. The finding suggests that FDI does not necessarily lead to improved economic performance. Additionally, trade openness negatively impacts FDI levels, while increased R&D and inflation positively influence these dynamics. The effects of tertiary education, ease of doing business, and corruption control are mixed, with strong rule of law being a significant attractor for FDI. These insights provide valuable guidance for policymakers in low- and middle-income European countries aiming to formulate effective strategies for attracting foreign investments and fostering economic growth.

Keywords: Economic Growth; Foreign Direct Investment; Globalization; European Low- and Middle-Income Countries

1. Introduction

Over the years, a significant number of scholars have concentrated their attention on the study of the directions for economic growth and the factors that promote it, especially in low and middle-income countries. Investment, whether because of domestic sources or initiated through foreign direct investment, stands out as one of the leading impetuses of any nation's economic development in that it acts as one of the key drivers of general growth [1]. More specifically, the inflows of FDI also help the host countries in the form of new investments, technologies and managerial talents. These inputs increase productivity and further promote growth [2]. The inflows of FDI bring about more capital for the purpose of domestic investment and contribute to the economic progress in the following key aspects: (i) by increasing domestic investment capacity and (ii) by enhancing productivity, through the application of new technologies to local resources, beyond what can be achieved only through national investment [3]. When it comes to capital formation, FDI plays a vital

role as it enhances the amount and the quality of the capital assets improving the host country [4]. FDI inflows not only increase the stock of capital but also improve the quality of these capital assets [5]. As stated by Mayow et al. [6] it is observed that FDI improves economic infrastructure, adds capacity for exports and creates jobs. On the other hand, Kling et al. [7] note that FDI is a way of technological and knowledge development taking place in the local industry and benefiting the local labor. Interestingly, Numbu et al. [8] opined that there is no FDI effectiveness without human capital in the host country denoting the two-way effect of FDI on the human capital level in the host country and the extent of knowledge spillover absorption by the local enterprises.

The interaction of FDI with economic performance has evoked the analysis of the macro and micro perspectives as well. Spillovers and linkages at the micro level help clarify FDI's impacts [9, 10, 11]. Considerable attention has also been given to the implications of FDI for the host countries through multinational enterprises (MNEs) [12, 13, 14]. As Thede and Karpaty [15] pointed out, emerging countries are normally viewed as high-risk markets by MNEs; however, MNEs already working in a corrupt environment can learn how to compete and lower their market entry costs, which is a competitive edge. In literature, the pressure regulatory mechanisms, the spread of the best practices, and the disaggregation of professional estimates are all such mechanisms that explain the relations [16]. Regulatory pressure from host governments and international communities prevents subsidiary companies from bribing better [17]. The competitiveness of FDI induces better production technology and management competencies from host countries through competition and person-employee training [18]. Professionalization effects are resorting to job creation by MNEs, which due to the global competition integrated into their operations must promote specialized education and professional networks [19]. Spillover effects, from the micro perspective, detail the advantages that local firms accrue because of FDI through enhanced efficiency and knowledge intensive attributes of MNEs all at a fraction of the cost [9, 10]. Two main forms of spillovers are distinguished: productivity spillovers, which characterize an increase in the productivity of local companies by the factors of MNEs without appropriating all the profits [20], and market access spillovers, where MNEs do enhance local firms' capacity by waiving export constraints through provision of distribution channels, market access and clients' information [21].

The research has three principal contributions that are significant. First, it builds a critical, evidence-based argument rather than just summarizing existing research, creating a nuanced conceptual framework. Second, it utilizes econometric techniques, Dynamic GMM, Hausman-Taylor IVs, Fixed Effects, Pooled OLS and Random Effects that appear to have been ignored in previous investigations. Third, it considers developments and other factors that have been understudied in previous research, such as the degree of education (tertiary education), advancement of technology (investment in research and development), or quality of the country's policy as observed in the Ease of doing business ranking. This procedure adds complexity to the coherent structure and provides wider insights into the circumstances related to FDI and its influence on economic growth.

The primary aim of the research is to undertake an in-depth examination of the interplay between FDI inflows and the economic growth within low- and middle-income European countries during the temporal span from 1995 to 2022.

The paper is organized as follows: Section 2 reviews the literature on FDI's impact on economic growth. Section 3 details the research methodology and presents empirical data. Section 4 presents the findings from the analysis. Section 5 discusses the conclusions, and Section 6 covers policy

implications and recommendations.

2. Literature Review

Economic growth and foreign direct investment show a clear cause and effect relationship. In accordance with the "FDI-led growth hypothesis", FDI inflows tend to generate growth in the host countries due to capital expansion, job creation and technology transfer [22]. However, the "market size hypothesis" explains that, as the host country's GDP increases at a fast rate and more investment opportunities arise, more foreign funds also pour in further increasing FDI [23]. While it is still highly believed that foreign direct investment would catalyze the speed of growth in the host countries, Zhuang et al. [24] disclosed that the level of this effect on growth seems rather influenced by certain conditions of the target country. Rehman [25] established two major findings in his study of FDI and economic growth in Pakistan: FDI is influenced by economic growth, but not vice versa. Additionally, the author concluded that FDI, human capital and exports are some of the key drivers of economic development while low human capital development acts as a hindrance to economic growth. In the timeframe of seventeen years, Noori [26] studied the effect of FDI on the economy of Jordan and found a positive relationship between these two. By applying panel data estimations to analyze the link between FDI and economic growth, Pegkas [27] found that the level of FDI stock significantly and positively influences economic growth in Eurozone countries. Furthermore, according to the Saini et al. [28] study on SAARC, FDI has been found to enhance real GDP, gross national income, and exports while suppressing financial stability and the level of growth in trade. Zekarias [29] also considered the relationship between FDI and economic growth in Eastern African countries over a period of 34 years where the positive impact of FDI was established. 5% convergence was also noted along with no major displacement of local investment by mounted FDI and domestic investment in trade in the region. According to the findings of Duarte et al. [30] the bound test verified the existence of a long-lasting relationship between GDP and FDI. The FDI contributes to the economic growth in Cabo Verde and there are two directional relationships: FDI is related to GDP and GDP is related to FDI. FDI increases economic growth and in turn, economic growth increases FDI. Additionally, both economic growth and domestic credit to the private sector are crucial for attracting FDI [31]. Also, in South Africa, Sunde [32] has outlined a one-way causality where FDI is a key factor of economic growth. Kinuthia & Murshed [33] observed that for Kenya, such economic growth boosts the level of FDI, while for Malaysia, the greater inflow of FDI leads to greater economic growth. However, Akinlo [34] contended that with growth effects of FDI on the Nigerian economy, the effects are time responsive and tend to occur a long while after and are not significant.

Moreover, Iwasaki & Suganuma [35] demonstrated that FDI enhances total factor productivity, particularly in areas with higher coverage of foreign capital. Authors further remarked about a positive interaction of the FDI with the R&D conducted locally, highlighting the importance of absorptive capability for regional development in Russia. Tareq et al. [36] analyzed the impact of ease of doing business on inward FDI flows globally, for the period 2011 − 2015. The researchers observed that higher levels of inward FDI are facilitated by improvements in the areas of contract enforcement, credit access, and property registration. Contractor et al. [37] reached a similar conclusion, finding that countries with better contract enforcement and more efficient international trade regulations tend to attract more FDI. Similarly, Hossain [38] discovered that corruption is a hindrance in FDI while GDP, population growth, urban growth, openness to trade, tele-density, primary school

enrollment, agglomeration, bureaucracy, law and democracy positively affect FDI. Conversely, risk and inflation are negatively related to FDI. Li et al. [39] found that FDI significantly boosts domestic innovation. Authors also identified three factors—absorptive capacity, foreign presence, and local market competition—that influence how FDI affects innovation.

European low- and middle-income countries have been identified as being less economically developed in terms of the availability of factors of production and technology [40]. These countries were largely relying on a massive number of foreign investments for their development. However, as the economies of these countries transitioned from being centrally governed to a market oriented one, the patterns of growth in these countries changed [41]. Researchers like Lazarevic and Valve [42] examined the transformation processes and their consequences in the case of transition economies belonging to the group of low and middle-income European countries. It was found that foreign capital would come in the form of funds, know-how and management, and more efficiently working exporting. As a number of these countries sought to integrate themselves into the EU, Papadopoulos et al. [43] notes that they sought to position themselves as attractive countries for FDI. Over the years, FDI has developed to be a most critical asset for the success of these redirecting economies in their efforts to reconstruct the economy. These countries successfully attracted FDI, mainly because of their efforts aimed at privatizing a large number of important national enterprises [44]. Privatization, changes to the economy, and the establishment of sufficiently developed security markets that made it possible to carry out portfolio investments were all significant factors in the geographical variance of foreign direct investment. From the 2000s onward, the economic growth rate accelerated, and the economies found themselves in a favorable phase of the economic cycle. During this period, there was also an increase in the level of FDI [45]. The joining of European countries to the EU in the year 2004 was also beneficial as it strengthened their political integration and even more so, made them economically integrated into the European Economic Area [46]. Thus, the objective of this article will be to analyze the patterns of economic transformation and FDI in low and middle-income countries of Europe.

3. Materials and Methods

In this section, the portion of the data, the variables, and the model that was used to determine the link between FDI and economic growth in the European countries that are low- and middle-income are discussed. The research covers the following countries: Albania, Montenegro, North Macedonia, Serbia, Kosovo, Belarus, Bulgaria, Republic of Moldova, Romania, Russian Federation, Ukraine. However, although FDI is widely known to enhance the economic growth of developing countries, its effects on low- and middle-income economies of Europe are largely moderated by many challenges. These challenges include the lack of entry barriers for capital, lack of technological resources, and the lack of labor [47]. Measuring the effect of these forces acting on FDI or FDI growth can drastically change the type and scale of FDI's effects on these countries' economies. For this reason, although FDI is still one of the most reliable engines of economic growth, its degree of impact and results may be high or low depending on the influence of local situations as well as the global economy.

3.1. Data Overview

Since the research focuses exclusively on secondary data collection, information was obtained

from different credible sources including [45, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58], government and international publications, trade association publications, academic journals, and research papers from research institutions. The data set covers a period of twenty-seven years namely, from 1995 to 2022, with observations utilized for all variables. The choice of this timeframe is mainly affected by the constraints of data availability. For instance, countries such as Albania, Montenegro, North Macedonia, Serbia, and Kosovo lacked data preceding the year 1995, thus, prompting the commencement of data collection from that year onwards. Correspondingly, Bosnia and Herzegovina have been left out of the research because there is no official data for the mentioned period of the research.

3.2. Description of Variables

Variables included in the model are described in Table 1.

Table 1. Description of variables.

No.	Variables	Description	Code	Source
1	Foreign direct investment	Net inflows (BoP, current US$)	FDI	World Bank
2	GDP per capita	GDP per capita (current US$)	GDP	World Bank
3	Inflation	Inflation, consumer prices (annual %)	INF	World Bank
4	Trade openness	Trade openness as a % of GDP	TO	World Bank
5	Control of Corruption	Control of Corruption: Estimate	CC	World Bank
6	Rule of Law	Rule of Law: Estimate	RL	World Bank
7	School enrollment, tertiary	School enrollment, tertiary (% gross)	SET	World Bank
8	Research and development expenditure	Research and development expenditure (% of GDP)	RD	World Bank
9	Ease of doing business score	Ease of doing business score (0 = lowest performance to 100 = best performance)	EDB	World Bank

Source: author's calculation.

Table 1 delineates the array of variables under consideration:

- **Foreign Direct Investment (FDI):** As a proxy for economic growth, FDI is the dependent variable, represented by net inflows (Balance of Payments, current US$).
- **Gross Domestic Product (GDP) per Capita:** Considered a comprehensive measure of economic growth, GDP per capita (current US$) serves as an independent variable in the research.
- **Inflation:** Quantified through the Consumer Price Index, inflation indicates the annual percentage change in the price of a standard basket of goods and services. This index can exhibit either constancy or fluctuate periodically, such as annually.
- **Trade Openness:** Computed as the aggregate of imports and exports of goods and services normalized by GDP.

- **Control of Corruption:** This metric evaluates the extent to which elites and private interests exert influence over the state apparatus, utilizing public power for personal gain. It encompasses both minor and major instances of corruption.
- **Rule of Law:** This parameter assesses societal adherence to established social norms, particularly concerning the credibility of law enforcement agencies, judicial systems, property rights enforcement, contract enforcement, as well as the prevalence of crime and violence.
- **School enrollment, tertiary:** Refers to the count of high school graduates, regardless of their age, who successfully enroll in post-secondary education, including universities and institutions offering specialized higher learning programs.
- **Research and development expenditure:** Refer to the ratio of Research and Development (R&D) expenditure to the total output of the economy, expressed as a percentage of Gross Domestic Product (GDP).
- **Ease of doing business score:** When evaluated over different years, the ease of doing business score indicated how the business environment for local entrepreneurs in an economy had evolved. This score was measured on a scale from 0 to 100, with 0 signifying the worst performance and 100 representing the best.

3.3. Model Framework

The investigation into the impact of FDI and economic growth utilized a comprehensive methodology that incorporated various econometric methods. This includes OLS, Fixed Effects, Random Effects, Hausman-Taylor, and Generalized Method of Moments (GMM).

The first method that was attempted was OLS, which is an approximate statistical method used to estimate the unknown parameters of the linear regression application. OLS is simple, easy to interpret, takes minimum computation time and effort, which enabled the model to reduce the overall residual sum of squares [59]. This technique served as a foundation for understanding more complex statistical and mathematical models.

Considering that OLS performance is observable to external parameters and values to such an extent, the approach was extended to cover two main models of panel data analysis: Fixed Effects and Random Effects. Fixed Effects models utilize information about the study individuals that do not change over time in order to make proper estimation of the effects of time-varying predictors. These models assume that there is a correlation between the individual specific effects and the predictors so that these effects are ignored by only looking at changes over time within individuals [60]. In contrast, the Random Effects models relate such parameters to the underlying predictors in such a way that there's no correlation between the individual specific effects and the included predictors, and both individual and group level variation is used to make more precise estimates provided data allows for such an approach [61]. Nonetheless, both models do have shortcomings. For example, the Fixed Effects models are inefficient for cases in which there is an insignificant variation within individuals, and the Random Effects models give biased estimates when the no-correlation assumption is violated.

Furthermore, with a view to achieving better results, there was also performed a Hausman-Taylor estimation which is an econometric model that incorporates Fixed Effect and Random Effect models. This solves the problem of endogeneity and unobserved heterogeneity in the individual

specified using panel data [62]. Emphasizing on the strengths of both Fixed and Random Effects models, the Hausman-Taylor technique enhances time invariant variables inclusion with delivery of estimations that are sound and accurate.

As the results were more consistent and could be relied upon, the Dynamic GMM model developed by Arellano and Bond [63] and refined by Blundell and Bond [64] was applied further. This model seeks to resolve the problem of endogeneity in dynamic panel data models which regress on lagged levels of the dependent variable. It differentiates the model to eliminate the individual effects and instruments the differenced lagged dependent variable on the deeper lagged dependent variable. To affirm the validity, among others, two specification tests suggested by Arellano and Bond [63] and by Arellano and Bover [65] were performed. The first is Sargan´s test i.e. for testing the hypothesis of null over-identifying restrictions i.e. the use of exogenous instruments. The second test is the Arellano-Bond test which was applied to evaluate the legitimacy of dynamic panel data models.

Two additional tests are very basic to be used to test the co-integration relations across all panel units as well. The first one applied is Kao test which considers that there is one and the same cointegrating relationship among all the units under study which is non-historical [66]. The second one is Pedroni test which is very flexible since it admits heterogeneous cointegrating relations across units. It provides various statistics to test for cointegration, reflecting the potential variation in relationships between different panel units [67].

The application of a wide spectrum of econometric approaches makes it possible to conduct detailed and conclusive investigation of FDI and economic growth. Nevertheless, since the structure of the Dynamic GMM model provides the best available solution for controlling the problem of endogeneity and unobserved individual effects in dynamic panels, the interpretation of the final results will be based only on this model. This approach makes it possible to draw such conclusions only if the most sophisticated and thorough analysis is carried out.

3.4. Model Specification

The model is specified as follows:

$$Y_{it} = c + \beta_1 (Y_{it-1}) + \beta_2 (GDP_{it}) + \beta_3 (INF_{it}) + \beta_4 (TO_{it}) + \beta_5 (CC_{it}) + \beta_6 (RL_{it}) + \beta_7 (SET_{it}) + \beta_8 (RD_{it}) + \beta_9 (EDB_{it}) + u_{it} \quad (1)$$

where Y_{it} is the dependent variable, which is classified by FDI net inflows (BoP, current US$), i = 1, . . ., 11 (countries), t = 1995, . . ., 2022 (years), while c is the constant term. The independent variables comprise by: Y_{it-1}, which is the first lagged of dependent variable; GDP which represents GDP per capita (current US$); INF stands for Inflation, consumer prices (annual %); TO symbolizes Trade Openness as a % of GDP; CC characterizes Control of Corruption: Estimate; RL represents Rule of Law: Estimate; SET stands for School Enrollment, Tertiary; RD characterizes Research and Development Expenditure; and EDB represents Ease of Doing Business Score. While u_{it} is the exogenous disturbance.

4. Results

The investigation's empirical findings are presented in this section. The following Table 2 explains the descriptive statistics. As evident, variations in the number of observations per variable arise due to missing data in select countries such as Albania, Montenegro, North Macedonia, Serbia,

and Kosovo. Specifically, the variable EDB experienced data gaps during the period 1995-2015 in these countries, resulting in the lowest number of observations, amounting to only 55. Concerning FDI, European low- and middle-income countries exhibit a rate of 9.14%. The average GDP per capita growth rate stands at 3.69%, while the average inflation rate, measured by consumer prices (annual %), registers at 6.94%. Moreover, in terms of Trade openness, European low- and middle-income countries demonstrate a favorable percentage of 94.32%, while their Control of Corruption index stands at -0.50%. Furthermore, the average Rule of Law index indicates a score of -0.44%. The average of School enrollment, tertiary, stands at 52.66%, while in terms of Research and Development Expenditure European low- and middle-income countries demonstrate a favorable percentage of 62%. Conversely, the average Ease of Doing Business Score stands at 72.12%.

Table 2. Descriptive statistics.

Variable	Obs.	Mean	Std. Dev.	Min.	Max.
FDI	272	9.14	0.68	6.88	10.87
GDP	291	3.69	0.26	2.75	4.20
INF	292	6.94	8.18	-2.41	59.21
TO	289	94.32	26.35	43.77	170.81
CC	260	-0.50	0.30	-1.17	0.36
RL	260	-0.44	0.37	-1.30	0.45
SET	258	52.66	20.33	9.96	101.42
RD	221	0.62	0.28	0.08	1.28
EDB	55	72.12	4.51	58.07	80.74

Source: author's calculation.

Table 3 presents the results between estimators, Ordinary Least Squares (OLS), Fixed Effects, Random Effects, Hausman-Taylor, and Generalized Method of Moments (GMM). Because of heterogeneity, the pooled OLS estimator's coefficient may yield findings that are biased. As a result, there have been computed the estimators for the Fixed Effects and Random Effects shown in Table 3. The Hausman test has been applied to distinguish between Fixed Effects models and Random Effects models (Appendix section - Table A1). The Hausman test statistics concluded that the fixed effects estimator is more effective while the random effect estimator is inconsistent. As a result, the Hausman-Taylor estimator is used to address the endogeneity issue, which in regression might result in biased coefficients (Table 3).

In order to determine whether approach IV eradicated the correlations between the particular individual unobservable effect and the explanatory variables, the Hausman test calculation assisted in selecting between the Fixed Effect estimate and the Hausman-Taylor estimator. As a result, since the issue of the endogeneity of variables can be resolved by applying the approach IV, it can be determined that the Hausman Taylor IV estimator ends up being the best option in this case. However, the interpretation of the results will be based only on the Generalized Method of Moments (GMM) model. This choice is made because the GMM approach offers a robust framework for addressing potential endogeneity and heteroskedasticity issues, providing more reliable and efficient estimates in the presence of such complexities. Therefore, the subsequent discussion will center on the results and insights obtained from the GMM model, highlighting its implications and contributions to the

analysis.

As a result, the Arellano-Bond AR (1) is significant, first order autocorrelation is expected. AR (2) is not significant, no second order autocorrelation in the errors. These results confirm the model specification and instrumentation, and the results are robust. While the Sargan´s test results suggest that the instruments are valid, meaning not correlated with the residuals and the model is correctly specified. Additionally, to assess the cointegration of the panel data groups, there have been applied the Kao and Pedroni tests. In both cases, the instruments indicate that the data and the panel data groups exhibit full cointegration. Additionally, most of the instruments presented within the Kao and Pedroni tests show a p-value smaller than 0.05, which further confirms that there is no lack of cointegration in the data (check Table A3 and Table A4 in appendix section).

Table 3. Regression results.

Variable	OLS	FE Regression	RE Regression	Hausman FE RE	GMM Dynamic Panel Data
FDI lag				0.0178	0.0056
t-Statistic					(0.03)
GDP	0.1706	0.7399	0.1706	0.8281	-0.7941
t-Statistic					(-0.47)
INF	0.0231	-0.1915	0.0231	-0.0121	0.0428*
t-Statistic					(1.25)
TO	-0.0073	0.0089	-0.0073	-0.0020	-0.0115**
t-Statistic					(-1.57)
CC	-0.2107	0.6752	-0.2107	0.2085	0.5988
t-Statistic					(0.58)
RL	0.8846	0.4136	0.8846	0.3220	0.8491*
t-Statistic					(1.12)
SET	0.0246	0.0307	0.0246	0.0221	0.0162
t-Statistic					(0.74)
RD	0.7376	0.9133	0.7376	0.7476	1.3812**
t-Statistic					(1.61)
EDB	0.0373	-0.0228	0.0370	0.0134	0.0492
t-Statistic					(0.66)
Arellano-Bond test for AR (1)			Z =	-4.12	
			Pr > z	0.000	
Arellano-Bond test for AR (2)			Z =	2.13	
			Pr > z	0.033	
Sargan Test of overid.			Chi (6)	29.93	
restrictions			Prob > chi2	0.083	

Note(s): Reliability and significance will be based on the t-statistic coefficient, where parameters 1 to 1.5 results are significant on *, parameters 1.5 to 2 are **, and over 2 on ***. Source: author's calculation.

According to the empirical evidence presented in Table 3, the first lag of FDI shows a positive relationship between the value of FDI from the previous period and the current period, but the effect lacks statistical significance, suggesting that while there is an association, it may be random or not strong enough to be confidently deemed meaningful. The negative coefficient of GDP per capita at -0.7941, with a *t-Statistic* of -0.47, indicates that there is no statistically significant relationship between GDPs per capita and FDI, suggesting that GDP per capita does not have a meaningful impact on foreign direct investment in this context. The variable INF, with a positive coefficient of 0.0428 and a *t-Statistic* of 1.25, is statistically significant, indicating that higher inflation is associated with a meaningful increase in foreign direct investment. The variable TO, with a negative coefficient of -0.0115 and a *t-Statistic* of -1.57, is not statistically significant, suggesting that the effect of trade openness on foreign direct investment is not strong or reliable in this context. The variable CC has a positive coefficient of 0.5988 and a *t-Statistic* of 0.58, indicating that while there is a positive relationship between CC and foreign direct investment, the effect is not statistically significant, suggesting the association may not be strong or reliable. In the other side, the variable RL has a positive coefficient of 0.8491 and a *t-Statistic* of 1.12, indicating a statistically significant positive effect on foreign direct investment, suggesting a meaningful and reliable association. The variable SET has a positive coefficient of 0.0162 and a *t-Statistic* of 0.74 indicates that there is no statistically significant relationship between SET per capita and FDI. The variable RD has a positive coefficient of 1.3812 and a *t-Statistic* of 1.61, and is statistically significant, implying that while there is a positive association with foreign direct investment, this relationship is strong enough to be considered statistically reliable. While the variable EDB has a positive coefficient of 0.0492 and a *t-Statistic* of 0.66, but it is not statistically significant, indicating that although there is a positive association with foreign direct investment, this effect is not strong enough to be considered statistically reliable.

5. Conclusions

The association between FDI inflows and economic growth has been explored using panel data models in low- and middle-income European countries. Several econometric models have been applied to look into the relationships between these two. The analysis included the panel data from 1995 to 2022. There were selected eleven European low- and middle-income countries for investigation since all of them had available and comprehensive data on all the indicators. The general conclusions show that there is a negative relationship between FDI and economic growth in European low- and middle-income countries. This affirmation supports the argument that there may be other factors at play such that higher amounts of FDI may not necessarily lead to enhancement of economic performance in these settings, hence implying that there is complex nature of the FDI-economic growth nexus. The analysis showed that INF and FDI have a positive relationship. This indicates that investors might perceive inflation as an increase in returns or a sign of economic dynamism, hence promoting FDI in these economies. Furthermore, the results show an inverse relationship between TO inflows and FDI. This implies that higher levels of trade openness do not induce more foreign investments and might well be associated with other factors that make these economies less attractive for FDI. The findings also indicate that the CC has a significant positive correlation with FDI inflows though it is not statistically significant. This means that while better control of corruption is positively related with FDI, it merely suggests that improved control of corruption will result to better FDI in those countries. The results derived from the RL imply that there exists a positive relationship that is

statistically significant between the RL and FDI inflows. This indicates that countries with better adherence to the rule of law are likely to attract more FDI hence improving the legal and institutional environment may well be the solution to increasing FDI in these countries. Furthermore, there's a positive relationship between SET and FDI inflows, however, the connection isn't particularly strong. This suggests that while higher levels of education might be associated with increased FDI, it's not the dominant factor. Other elements likely play a more significant role in attracting FDI to these countries. Additionally, the positive and significant correlation between R&D expenditure and FDI inflows indicates that foreign investors may perceive substantial R&D spending as a sign of innovation, technological progress, and economic potential, making these countries more appealing for investment. It underscores the importance of creating a supportive environment for research and development to attract and sustain FDI. Whereas the positive but not significant correlation between EDB and FDI inflows suggests that, while improvements in the business environment generally coincide with higher foreign direct investment, this relationship isn't statistically significant in European low- and middle-income countries.

6. Policy Implications and Recommendations

Based on the analysis of FDI inflows and economic growth in European low- and middle-income countries, some key policy implications and recommendations emerge. First, the negative relationship between FDI and economic growth means simply increasing foreign investment won't boost growth. Policymakers should review the FDI strategy and consider other measures to make FDI growth-enhancing. Secondly, the positive relationship between inflation and FDI means rising inflation could signal high returns or economic dynamism to investors. Governments should monitor and manage inflation to leverage investor sentiment without negative economic impact. The negative relationship between trade openness and FDI means greater trade liberalization alone won't attract more foreign investment; broader economic reforms are needed. Strengthening the rule of law is key as its positive relationship with FDI means a robust legal and institutional framework is needed to create an investment friendly environment. Furthermore, increasing investment in research and development (R&D) is recommended as its positive relationship with FDI means investing in research and development makes countries more attractive to investors. Although better control of corruption is associated with higher FDI, it's not statistically significant; therefore, other factors should be considered. Similarly, while improvements in the business environment show a positive but not significant relationship with FDI, a comprehensive approach addressing multiple factors is needed. Lastly, the impact of tertiary education on FDI is positive but not significant so higher education alone won't be a major driver of foreign investment. Addressing these areas can help European low- and middle-income countries craft better policies to attract foreign investors and support sustainable growth.

Recommendations for Further Investigation: As with any research area further research is needed. Future research could use different methodologies and bigger samples to include countries with similar characteristics to increase the robustness and generalizability of the findings. FDI on domestic investment and economic growth could be an area to focus on for future research. Scholars in this field could also dive deeper into FDI on environmental quality looking at micro and macro level factors. By doing so researchers can contribute to a broader understanding of the FDI, economic development and environmental sustainability nexus.

Limitations: One of the main limitations of this research is the availability of FDI data, particularly for the years 1995-2006, in certain countries including Albania, Montenegro, North Macedonia, Serbia and Kosovo. Although this limited the data collection, it was not a major obstacle to the research. Despite there is no data for these years and countries, the research managed to overcome these limitations and draw some insights with some contextual considerations.

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Appendix A

Table A1. Southeast European countries.

No.	European low- and middle-income countries
1	Albania
2	Montenegro
3	North Macedonia
4	Serbia
5	Kosovo
6	Belarus
7	Bulgaria
8	Republic of Moldova
9	Romania
10	Russian Federation
11	Ukraine

Table A2. Hausman test.

Hausman test			
Test	**Chi2**	**Prob > Chi2**	**Results**
Fixed Effects vs Random Effects	14.71	0.0651	reject Ho
Hausman - Taylor vs Fixed Effects	0.77	0.9993	reject Ho

Source: author's calculation.

Table A3. Kao test for cointegration.

Statistic		p-value
Modified Dickey-Fuller t	0.2184	0.4136
Dickey-Fuller t	-4.4309	0.0000
Augmented Dickey-Fuller t	-4.1734	0.0000
Unadjusted modified Dickey-Fuller t	-0.9793	0.1637
Unadjusted Dickey-Fuller t	-5.2151	0.0000

Source: author's calculation.

Table A4. Pedroni test for cointegration.

Statistic		p-value
Modified Phillips-Perron t	2.2596	0.0119
Phillips-Perron t	-1.8802	0.0300
Augmented Dickey-Fuller t	-1.6050	0.0542

Source: author's calculation.

References

[1] Huijie, G. (2018). Outward foreign direct investment and employment in Japan's manufacturing industry. Journal of economic structures. https://doi.org/10.1186/s40008-018-0125-z

[2] Mukhtarov, S., Alalawneh, M. M., Ibadov, E., & Huseynli, A. (2019). The impact of foreign direct investment on exports in Jordan: An empirical analysis. Journal of International Studies, 12(3).

[3] Gupta, S., Yadav, S. S., & Jain, P. K. (2021). Does FDI generate economic growth? Evidence from the Indian economy. The Management Accountant Journal, 56(4), 32-35.

[4] Rehman, F. U., Islam, M. M., & Sohag, K. (2024). Does infrastructural development allure foreign direct investment? The role of Belt and Road Initiatives. International Journal of Emerging Markets, 19(4), 1026-1050. https://doi.org/10.1108/IJOEM-03-2022-0395

[5] Khan, N. (2021). Analyzing the Impact of Inflation Targeting Adoption on FDI Inflows. Academy of Strategic Management Journal, 20(1).

[6] Mayow, M. A., Gökmen, A., & Temiz, D. (2024). The Effect of Foreign Direct Investment Inflow on the Economic Growth in Somalia. Smart Strategies and Societal Solutions for Sustainable International Business.

[7] Kling, G., Volz, U., Murinde, V., & Ayas, S. (2021). The impact of climate vulnerability on firms' cost of capital and access to finance. World Development. https://doi.org/10.1016/j.worlddev.2020.105131

[8] Numbu, L. P., & Belyaeva, Z. S. (2021). The relationship between foreign direct investment and GDP in Cameroon (2000–2020). R-Economy, 7(3), 200-209.

[9] Kling, G., Volz, U., Murinde, V., & Ayas, S. (2021). The impact of climate vulnerability on firms' cost of capital and access to finance. World Development. https://doi.org/10.1016/j.worlddev.2020.105131

[10] Osei, M. J., & Kim, J. (2020). Foreign direct investment and economic growth: Is more financial development better? Economic Modelling, 93, 154-161. https://doi.org/10.1016/j.econmod.2020.07.009

[11] Osunkwo, F. O. (2020). Foreign direct investment and economic growth of Nigeria (1980-2018). Journal of Economics and Business, 3(1).

[12] Paul, J., & Feliciano-Cistern, M. M. (2021). Five decades of research on foreign direct investment by MNEs: An overview and research agenda. Journal of business research, 124, 800-812. https://doi.org/10.1016/j.jbusres.2020.04.017

[13] Yavas, B. F., & Malladi, R. K. (2020). Foreign direct investment and financial markets influences: Results from the United States. The North American Journal of Economics and Finance, 53, 101182. https://doi.org/10.1016/j.najef.2020.101182

[14] Szunomár, Á. (2020). Theories of Internationalization and Foreign Direct Investment: How to Explain FDI from Emerging MNEs? Emerging-market Multinational Enterprises in East Central Europe, 3-19. https://doi.org/10.1007/978-3-030-55165-0_1

[15] Thede, S., & Karpaty, P. (2023). Effects of corruption on foreign direct investment: Evidence from Swedish multinational enterprises. Journal of Comparative Economics, 51(1), 348-371. https://doi.org/10.1016/j.jce.2022.10.004

[16] Antonietti, R., & Mondolo, J. (2023). Inward FDI and the quality of domestic institutions: A cross-country panel VAR analysis. Economic Systems, 47(3), 101078. https://doi.org/10.1016/j.ecosys.2023.101078

[17] Mariotti, S., & Marzano, R. (2021). The effects of competition policy, regulatory quality and trust on inward FDI in host countries. International Business Review, 30(6), 101887. https://doi.org/10.1016/j.ibusrev.2021.101887

[18] Fang, S., Xu, D., Xu, L. C., & Shams, H. (2023). Does FDI have a social demonstration effect in developing economies? Evidence based on the presence of women-led local firms. Journal of International Business Studies, 54(7), 1332-1350.

[19] Danzman, S. B. (2020). Foreign direct investment policy, domestic firms, and financial constraints. Business and Politics, 22(2), 279-306. https://doi.org/10.1017/bap.2019.13

[20] Sugiharti, L., Yasin, M. Z., Purwono, R., Esquivias, M. A., & Pane, D. (2022). The FDI spillover effect on the efficiency and productivity of manufacturing firms: Its implication on open innovation. Journal of Open Innovation: Technology, Market, and Complexity, 8(2), 99. https://doi.org/10.3390/joitmc8020099

[21] Ahmed, E. M., & Kialashaki, R. (2023). FDI inflows spillover effect implications on the Asian-Pacific labor productivity. International Journal of Finance & Economics, 28(1), 575-588. https://doi.org/10.1016/j.respol.2023.104837

[22] Ben Abdallah, A. (2024). The relationship between trade openness, foreign direct investment inflows, and economic growth in middle east and north of Africa region: autoregressive distributed lag model vs. vector error correction model. Journal of the Knowledge Economy, 15(1), 1118-1141. https://doi.org/10.1007/s13132-023-01099-x

[23] Hikmah, E. (2024). Analysis of Economic Freedom, Foreign Direct Investment, and Economic Growth. Jurnal Ekonomi Pembangunan, 22(01), 89-103. https://doi.org/10.22219/jep.v22i01.33754

[24] Zhuang, Y., Yang, S., Razzaq, A., & Khan, Z. (2022). Environmental impact of infrastructure-led Chinese outward FDI, tourism development and technology innovation: a regional country analysis. Journal of Environmental Planning and Management, 66 (2), 367-399.

[25] Rehman, N. U. (2016). FDI and economic growth: empirical evidence from Pakistan. Journal of Economic and Administrative Sciences, 32(1), 63-76. https://doi.org/10.1108/JEAS-12-2014-0035

[26] Noori, S. (2019). Impact of foreign direct investment on economic growth in Jordan. Journal of Administration and Economics, (119), 77-94. http://doi.org/10.31272/JAE.42.2019.119

[27] Pegkas, P. (2015). The impact of FDI on economic growth in Eurozone countries. The Journal of Economic Asymmetries, 12(2), 124-132. https://doi.org/10.1016/j.jeca.2015.05.001

[28] Saini, A., Madan, P., & Batra, S. K. (2015). Impact of FDI inflow on economic growth of SAARC economies. International Journal of Engineering, Business and Enterprise Applications, 12(2), 161-166.

[29] Zekarias, S. M. (2016). The impact of foreign direct investment (FDI) on economic growth in Eastern Africa: Evidence from panel data analysis. Applied Economics and Finance, 3(1), 145-160. http://dx.doi.org/10.11114/aef.v3i1.1317

[30] Duarte, L. D. R. V., Kedong, Y., & Xuemei, L. (2017). The relationship between FDI, economic growth and financial development in Cabo Verde. International Journal of Economics and Finance, 9(5), 132-142.

[31] Acquah, A. M., & Ibrahim, M. (2020). Foreign direct investment, economic growth and financial sector development in Africa. Journal of Sustainable Finance & Investment, 10(4), 315-334. https://doi.org/10.1080/20430795.2019.1683504

[32] Sunde, T. (2017). Foreign direct investment, exports and economic growth: ADRL and causality analysis for South Africa. Research in International Business and Finance, 41, 434-444. https://doi.org/10.1016/j.ribaf.2017.04.035

[33] Kinuthia, B. K., & Murshed, S. M. (2015). FDI determinants: Kenya and Malaysia compared. Journal of Policy Modeling, 37(2), 388-400. https://doi.org/10.1016/j.jpolmod.2015.01.013

[34] Akinlo, A. E. (2004). Foreign direct investment and growth in Nigeria: An empirical investigation. Journal of Policy modeling, 26(5), 627-639. https://doi.org/10.1016/j.jpolmod.2004.04.011

[35] Iwasaki, I., & Suganuma, K. (2015). Foreign direct investment and regional economic development in Russia: an econometric assessment. Economic Change and Restructuring, 48, 209-255.

[36] Tareq, Hassan, Z., & Sumaiya. (2018). Ease of Doing Business and Its Impact on Inward FDI. Indonesian Journal of Management and Business Economics, 1(1), 52–65.

[37] Contractor, F. J., Dangol, R., Nuruzzaman, N., & Raghunath, S. (2020). How do country regulations and business environment impact foreign direct investment (FDI) inflows? International Business Review, 29(2), 101640. https://doi.org/10.1016/j.ibusrev.2019.101640

[38] Hossain, S. (2016). Foreign direct investment (FDI) and corruption: Is it a major hindrance for encouraging inward FDI? African Journal of Business Management, 10(10), 256-269. https://doi.org/10.5897/AJBM2016.8032

[39] Li, J., Strange, R., Ning, L., & Sutherland, D. (2016). Outward foreign direct investment and domestic innovation performance: Evidence from China. International Business Review, 25(5), 1010-1019. https://doi.org/10.1016/j.ibusrev.2016.01.008
[40] Kaplinsky, R., & Kraemer-Mbula, E. (2022). Innovation and uneven development: The challenge for low- and middle-income economies. Research Policy, 51(2). https://doi.org/10.1016/j.respol.2021.104394
[41] Győrffy, D. (2022). The middle-income trap in Central and Eastern Europe in the 2010s: institutions and divergent growth models. Comparative European Politics, 20(1), 90-113.
[42] Lazarevic, D., & Valve, H. (2017). Narrating expectations for the circular economy: Towards a common and contested European transition. Energy research & social science, 31, 60-69. https://doi.org/10.1016/j.erss.2017.05.006
[43] Papadopoulos, N., Hamzaoui-Essoussi, L., & El Banna, A. (2016). Nation branding for foreign direct investment: An Integrative review and directions for research and strategy. Journal of Product & Brand Management, 25(7), 615-628. https://doi.org/10.1108/JPBM-09-2016-1320
[44] Jimborean, R., & Kelber, A. (2017). Foreign direct investment drives and growth in Central and Eastern Europe in the aftermath of the 2007 global financial crisis. Comparative Economic Studies, 59, 23-54. https://doi.org/10.1057/s41294-016-0018-9
[45] The World Bank Open Data. (2024). Control of Corruption: Estimate. World Bank.
[46] Martín-Retortillo, M., & Pinilla, V. (2015). On the causes of economic growth in Europe: why did agricultural labor productivity not converge between 1950 and 2005? CLIOMETRICA, 9, 359-396. https://doi.org/10.1007/s11698-014-0119-5
[47] Marques, A. C., & Caetano, R. (2020). The impact of foreign direct investment on emission reduction targets: Evidence from high-and middle-income countries. Structural Change and Economic Dynamics, 55, 107-118. https://doi.org/10.1016/j.strueco.2020.08.005
[48] Statista. (2024). Annual number of new jobs created by foreign direct invest projects in Europe from 2010 to 2022. Statista Research Department.
[49] Statista. (2024a). Value of foreign direct investment (FDI) inward stock in the European Union from 2005 to 2022. Olan McEvoy.
[50] OECD. (2024). Foreign Direct Investment Statistics: Data, Analysis and Forecasts. OECD.
[51] The World Bank Open Data. (2024a). Foreign direct investment, net inflows (BoP, current US$). World Bank.
[52] The World Bank Open Data. (2024b). GDP per capita (current US$). World Bank.
[53] The World Bank Open Data. (2024c). Inflation, consumer prices (annual %). World Bank.
[54] The World Bank Open Data. (2024d). Rule of Law: Estimate. World Bank.
[55] The World Bank Open Data. (2024e). School enrollment, tertiary (% gross). World Bank.
[56] The World Bank Open Data. (2024f). Research and development expenditure (% of GDP). World Bank.
[57] The World Bank Open Data. (2024g). Ease of doing business score (0 = lowest performance to 100 = best performance). World Bank.
[58] UNCTAD. (2024). Investment statistics and trends. Geneva: The United Nations Conference on Trade and Development.
[59] Merlin, M. L., & Chen, Y. (2021). Analysis of the factors affecting electricity consumption in DR Congo using fully modified ordinary least square (FMOLS), dynamic ordinary least square (DOLS) and canonical cointegrating regression (CCR) estimation approach. Energy, 232, 121025. https://doi.org/10.1016/j.energy.2021.121025
[60] Breuer, M., & Dehaan, E. (2024). Using and interpreting fixed effects models. Journal of Accounting Research, 62(4), 1183-1226. https://doi.org/10.1111/1475-679X.12559
[61] Bodnar, O., & Bodnar, T. (2024). Objective Bayesian meta-analysis based on generalized marginal multivariate random effects model. Bayesian Analysis, 19(2), 531-564.
[62] Kunce, M. (2023). Political Death Creep: Revisited Using Hausman-Taylor. Journal of Statistical and Econometric Methods, 12(1), 19-34.
[63] Arellano, M., & Bond, S. (1991). Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations. The review of economic studies, 58(2), 277-297. https://doi.org/10.2307/2297968
[64] Blundell, R., & Bond, S. (1998). Initial conditions and moment restrictions in dynamic panel data models. Journal of Econometrics, 87(1), 115-143. https://doi.org/10.1016/S0304-4076(98)00009-8

[65] Arellano, M., & Bover, O. (1995). Another look at the instrumental variable estimation of error-components models. Journal of Econometrics, 68(1), 29-51. https://doi.org/10.1016/0304-4076(94)01642-D
[66] Hatemi-J, A. (2020). Hidden panel co-integration. Journal of King Saud University-Science, 32(1), 507-510.
[67] Pala, A. (2020). Energy and economic growth in G20 countries: Panel cointegration analysis. Economics and Business Letters, 9(2), 56-72.

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