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*Vesna Bucevska**
*Gunter Merdzan***

# FOREIGN DIRECT INVESTMENT, DOMESTIC INVESTMENT, AND THE ROLE OF INSTITUTIONS IN CENTRAL, EASTERN, AND SOUTH-EASTERN EUROPE

**ABSTRACT:** *The paper examines the relationship between foreign direct investment (FDI) and domestic investment in Central, Eastern, and South-Eastern European (CESEE) countries from 1995 to 2021. The primary hypothesis posits that FDI exerts a positive influence on domestic investment, with variations observed across diverse institutional contexts. The research utilises fixed effects and a one-step difference generalised method of moments (GMM) to determine whether FDI leads to an increase or decrease in domestic investment in CESEE countries. The findings indicate that FDI has a favourable and statistically significant influence on domestic investment. However, the coefficients for FDI are less than one, indicating that while FDI stimulates overall investment, it does not create a crowding-in effect where the rise in total investment surpasses the FDI inflows. When the data is split on the basis of institutional quality, it is evident that FDI continues to positively impact domestic investment in high and low-institutional-quality settings. The coefficients for FDI in both subgroups are less than one, implying that institutional quality does not substantially change the correlation between FDI and domestic investment. These results indicate the positive and significant impact of FDI on domestic investment, without crowding-in effects for the entire sample of CESEE economies and both subgroups that differ in institutional quality.*

**KEY WORDS:** *Domestic investment, foreign direct investment, economic growth, fixed effects, GMM*

**JEL CLASSIFICATION:** E22, F21, F41

* Ss. Cyril and Methodius University in Skopje, Faculty of Economics – Skopje, Chair of Mathematics and Statistics, Skopje, Republic of North Macedonia, vesna@eccf.ukim.edu.mk, ORCID: 0000-0002-4411-4953

** Ss. Cyril and Methodius University in Skopje, Faculty of Economics – Skopje, Chair of Economics, Skopje, Republic of North Macedonia, gjunter.merdzan@eccf.ukim.edu.mk (corresponding author), ORCID: 0000-0002-1894-9623

## 1. INTRODUCTION

The growth of Central, Eastern, and South-Eastern European (CESEE) countries relies heavily on external financing, with foreign direct investment (FDI) playing a crucial role in their development. FDI refers to the net inflow of investments aimed at acquiring a significant and lasting management interest (10 per cent or more of the voting stock) in an enterprise operating in an economy other than that of the investor (World Bank, 1996). The inflow of FDI has been crucial for the privatisation process and economic development in CESEE countries (Popescu, 2014). Many countries transitioning from this region have offered special incentives and subsidies to attract foreign capital.

The inflow of FDI has been particularly significant for CESEE countries over the past three decades. Between 1993 and 2020, the average FDI inflows to CESEE amounted to a remarkable 4.4% of the region's gross domestic product (GDP), significantly exceeding the global average of 2.5% (Jovanović & Hanzl-Weiss, 2022). This notable trend has led to an increase in academic research focused on FDI and its impact on the economies of CESEE.

FDI affects host countries, i.e., countries that receive FDI inflows, in different ways. First, FDI and domestic investment together constitute the total investment in the host country. Under Solow's neoclassical growth model, FDI increases the capital stock as an exogenous factor and promotes the short-term economic growth of the host country through capital formation financing (Solow, 1956). Accordingly, the impact of FDI on growth is identical to that of domestic investment. In contrast, in endogenous growth models (Grossman & Helpman, 1991; Lucas, 1988; Romer, 1990), FDI is generally assumed to be more productive than domestic investment. These models imply that FDI can promote long-term economic growth by diffusion of technology in the host country (Borensztein et al., 1998), acquisition and diffusion of management skills and employee training, alternative management practices and better organisational arrangements (de Mello, 1999; Kljucnikov & Belas, 2016; Kottaridi & Stengos, 2010; Krajnakova et al., 2015; Li & Liu, 2005; Srovnalikova & Karbach, 2016; Yao & Wei, 2007), as well as the expansion of international production networks, and access to markets (Alfaro et al., 2004; Crespo & Fontoura, 2007).

In addition, FDI is used as a means of expanding an industry in a host country (Eller et al., 2006), reducing a country's dependence on one or more sectors, directing investment toward less attractive economic activities, and diversifying the economic base (Lee & Chang, 2009). It stimulates the creation of new companies as well as the expansion of existing ones, job creation, and tax collection. Such a transfer of technological and managerial know-how provides opportunities for local companies to remain viable in conditions of increasing competition. For example, Balasubramanyam et al. (1999) claim that FDI has a positive effect only if a host country employs a strategy of export stimulation. Moreover, a country must have a sufficient level of human capital and well-developed financial markets (Wang & Wong, 2009).

However, FDI can also have negative effects, such as increased income inequality (Feenstra & Hanson, 1997) and overreliance on foreign capital (Alfaro & Charlton, 2007). It may also slow economic growth, especially in concentrated industries with high entry barriers (Glass & Saggi, 2002). Additionally, FDI can hinder human capital development, leading to "brain drain" as local expertise is leveraged by international firms (Kottaridi & Stengos, 2010; Reiter & Steensma, 2010). The impact of FDI on domestic competition varies, with some studies showing a crowding-out effect on local businesses after multinational corporations enter the market (Mišun & Tomšk, 2002).

A number of studies have examined the impact of FDI on the economies of CESEE countries. Studies by Campos and Kinoshita (2003) and Neuhaus (2006) have shown that FDI is associated with positive effects on economic growth. Kherfi and Soliman (2005) studied the impact of FDI on economic growth in Central and Eastern Europe (CEE) and the Middle East and North Africa (MENA) and found that FDI inflows stimulate economic growth only in EU accession countries of the CEE region. However, the effect of FDI on growth in MENA and non-EU accession countries is either non-existent or negative. EU membership candidacy seems to be a key driver for more effective reforms that contribute to the positive effect of FDI inflows on growth. Vojtovič et al. (2019) examined the impact of FDI on economic growth in 11 CEE countries from 1997 to 2014 and found both contemporaneous and lagged relationships, suggesting that FDI has a positive impact on economic growth, with this effect being further strengthened by financial market development. Similarly, Jovanović and Hanzl-

Weiss (2022) provided further empirical support by demonstrating the predominantly favourable impact of FDI inflows on economic growth in CESEE, with notably substantial effects attributed to German and Austrian FDI. On the other hand, Bačić et al. (2004) argued that FDI has had no effects on GDP, as most of the FDI has been brownfield and therefore has not contributed to new capital formation.

Furthermore, several studies have investigated the impact of FDI on productivity and employment. Damijan et al. (2003), Javorcik (2004), and Lipsey (2006) found that FDI has led to positive technological spillovers and has had a beneficial impact on productivity. On the other hand, Jovanović and Hanzl-Weiss (2022) found that FDI had no impact on labour productivity because higher GDP was followed by an increase in employment and therefore output per worker remained unchanged. Bijsterbosch and Kolasa (2010) and Damijan et al. (2013) argued that the effects on productivity vary and depend on the destination of FDI flows, with industries of higher technology intensity experiencing greater benefits.

When it comes to employment, Hunya and Geishecker (2005) found mixed effects – FDI reduced employment in domestically owned manufacturing companies but increased employment in foreign-owned enterprises. Onaran and Stockhammer (2008) reported generally insignificant employment effects with some evidence of negative impacts. Jude and Silaghi (2016) noted that foreign direct investment (FDI) leads to a phenomenon of creative destruction. This is where the introduction of labour-saving technologies initially has a negative effect on employment. However, the progressive integration of foreign affiliates into the local economy eventually brings positive long-term effects. Jovanović and Hanzl-Weiss (2022) argue that FDI in CEE reduces unemployment rates, but this effect occurs only after two years and is linked to reinvested profits.

Regarding the impact of FDI on wages in CESEE countries, Jovanović and Hanzl-Weiss (2022) found that FDI boosts wages in CESEE, while Onaran and Stockhammer (2008) and Stockhammer and Onaran (2009) show that FDI increases wages in the short term, while the full wage spillover effects of FDI require time for labour market adjustments.

The effect of FDI on income inequality has been a subject of significant research. Mahutga and Bandelj (2008) as well as Zulfiu Alili and Adnett (2018) have presented findings suggesting that FDI contributes to increased income inequality in CESEE countries. However, Mihaylova (2015) has put forth a compelling argument, contending that this effect is prominent only at lower levels of human capital and economic development. As education becomes more widespread and GDP per capita increases, the adverse distributional effect of FDI diminishes.

Ganić (2019) found that FDI had no effect on poverty in the Central European region, but it reduced poverty in the Western Balkans. Stehrer et al. (2020) discussed the income generated by EU FDI in the CEE EU member states. They found that the cumulated FDI income earned in the region is roughly equal to the cumulated outward investment to the region. This means that the income EU investors make grossly covers their new investment outlays. Additionally, around three-quarters of the earned income has not stayed in the host economies but has been sent back abroad. The rate at which income is sent back from the CEE EU member states is lower than the rate from the EU-28.

According to Jovanović and Hanzl-Weiss (2022), total FDI inflows in CEE have no impact on income inequality and poverty, but FDI from the EU15 and FDI from Germany and Austria reduce both income inequality and poverty.

The existing literature regarding the relationship between FDI and domestic investment presents mixed findings; FDI has the potential to either encourage, complement, or replace domestic investment. While many studies have focused on developing nations (Al-Sadig, 2012; Gökçeli et al., 2022; Gondim et al., 2018; Mamatkulov, 2020; Wang, 2010), there is a lack of research exploring the relationship between FDI and domestic investment in CESEE countries. Our study aims to make a significant contribution to the existing body of literature by examining the impact of foreign FDI and domestic investment in the CESEE countries. To analyse this relationship, our study utilises fixed effects and the generalised method of moments (GMM) to address potential endogeneity concerns and capture the dynamic nature of investment decisions. By focusing specifically on the CESEE countries, our research offers valuable insights into how FDI influences domestic investment within this unique regional context, characterised by varying levels of institutional quality and economic development. This research will be an important resource for scholars, policymakers, and practitioners seeking to understand the complexities of the CESEE region and its implications for broader economic and social trends.

Based on our analysis, foreign direct investment has a positive impact on domestic investment in CESEE countries. Our findings indicate that while FDI contributes significantly to gross fixed capital formation (GFCF), the coefficients fall below one, suggesting that FDI does not result in a crowding-in effect where total investment surpasses FDI inflows. This relationship holds true across different institutional quality settings, indicating that FDI's influence on domestic investment is not significantly affected by institutional context.

The paper is structured as follows: the second section presents some empirical background on the direct and indirect impacts of foreign direct investment on domestic investment; the third section presents specific trends in the movement of FDI and domestic investments in the CESEE countries as well as individually in each of the countries; the fourth section elaborates on the data and methodology employed for analysis; the fifth section presents a discussion of the findings; and the final section offers a concise summary of the results along with pertinent recommendations for policymakers in these nations.

## 2. LITERATURE REVIEW

Research on the nexus between FDI and domestic investment and economic growth in host countries can be divided into two categories: studies that examine the relationship between FDI and economic growth, and studies that examine the crowding-in and crowding-out effects between FDI and domestic investment.

The link between FDI and economic growth is explained by two main theories: (i) the modernisation theory, which is based on neoclassical growth models, such as Solow's model (Solow, 1956) and endogenous growth theories, and (ii) the dependency theory. It is important to note that the modernisation theory focuses on the benefits of FDI, and the dependency theory on the negative effects of FDI. According to Solow's growth model (Solow, 1956), capital accumulation primarily influences economic growth in the short term, and technology sourced through FDI identified as a key driver of long-term economic growth. Moreover, the endogenous growth theories suggested by Romer (1990), Aghion and Howitt (1992), and Grossman and Helpman (1991) highlight the critical importance of FDI in stimulating economic growth through mechanisms such as technology diffusion (imitation), learning-by-doing, and encouraging local firms to engage in research and development. Consistent with Romer's endogenous growth model, Agosin and Machado (2005) present a clear and concise theoretical framework that posits foreign affiliates in developing nations introduce new products for both domestic and international markets, thereby positively influencing capital formation through upstream and downstream spillovers. However, they assert that for a comprehensive crowding-in effect to be anticipated, the sectoral distribution of foreign direct investment (FDI) inflows must differ from the current productive capacity of the host countries.

The industrial organisation theory, developed by Hymer (1960, 1970, 1976, 1990) and Kindelberger (1969), and the eclectic paradigm (Dunning, 1977) explain that companies operating in foreign countries have to compete with domestic firms that have certain advantages. To overcome these disadvantages, foreign companies need to have "firm-specific advantages" in Hymer's terms (Hymer, 1960, 1970 and 1990) or "monopolistic advantage" in Kindleberger's terms (Kindelberger, 1969), in the form of superior technology, patented products, brand names, management skills, economies of scale, and access to cheaper sources of finance. Dunning's eclectic FDI theory (Dunning, 1977), also referred to as the OLI framework, synthesises ownership, location, and internalisation advantages to clarify the rationale behind firms' FDI decisions. This implies that FDI can act as a significant driver of economic growth in developing nations by introducing advanced technologies that are absent in the local market and by enhancing the use of underutilised labour and dormant resources.

In contrast, dependency theory assumes that host economies are adversely affected by FDI, primarily due to repatriation of profits (Mihalache-O'Keef & Li, 2011; Dos Santos, 1970), acquisition of ownership of raw materials and goods (Prebisch, 1962), worsening income inequality (Chase-Dunn, 1975; Emmanuel, 1969), rising unemployment (Hein, 1992), and crowding-out effects (Rakhmatullayeva et al., 2020).

The new trade theory serves as an alternative framework to classical trade theories for analysing actual trade patterns. This model initially incorporated aspects such as economies of scale, market imperfections, and product differentiation. Markusen (1984) and Helpman (1984) significantly expanded the model by integrating FDI and multinational enterprises (MNEs). Foreign investors assess their location choices on the basis of a balance between the benefits of centralised production for achieving economies of scale and the cost savings associated with producing goods in various countries nearer to local markets. This concept led to distinguishing between two types of FDI: horizontal FDI and vertical FDI, as well as the development of two models to explain the determinants of FDI. The horizontal FDI model posits, as developed by Markusen (1984), that the primary motivation for investors is to penetrate markets with high growth potential in order to sell their products. The volume of FDI inflows is influenced by the size and growth opportunities within host countries. These forms of FDI act as substitutes for exports; thus, transportation and commercial costs serve as motivating factors for horizontal FDI (Campos & Kinoshita, 2003). In contrast, the vertical FDI model, as articulated by Helpman (1984), attributes the incentives for FDI to variations in factor prices. The essence of this model lies in the differing endowments of production factors across countries (Markusen & Maskus, 2002). Consequently, foreign investors are likely to favour regions that offer lower production costs.

The knowledge-capital (KC) model of the MNEs represents an integration of the theories of horizontal and vertical FDI into a model of the new trade theory. The term knowledge-capital model is derived from the assumption that MNEs have an ownership advantage compared with other firms due to some knowledge asset, such as patents, blueprints, procedures, brand names, trademarks, or reputation. The KC model regards FDI as a flow of knowledge in the form of managerial and engineering services, financial services, reputation, and trademarks across borders. This model incorporates three key factors: commercial costs, the absolute and relative disparities in production factor endowments between countries, and the barriers to investment. Knowledge is treated as a valuable asset that can be readily transferred to production units located in different geographical areas, necessitating a highly skilled workforce and exhibiting significant mobility (Markusen & Maskus, 2002). The model advocates for the complete liberalisation of trade and investment as a means to enhance the wealth of the host nation.

The KC model has also been tested empirically. While Carr et al. (2001) strongly supported the KC model, Markusen and Maskus (2001) rejected it for the subsample of US affiliate sales. Later, using the same data set as in Carr et al. (2001), Markusen and Maskus (2002) proposed another empirical model that distinguishes between the vertical model, the horizontal model, and the intellectual capital model and found support for both the KC model and the horizontal model, but no support for the vertical model. In contrast, Braconier et al. (2003) added Swedish data to the Markusen and Maskus (2002) dataset and found more support for vertical investment and the KC model. Anghel (2006) applied the KC model to a sample of multinational companies from EU countries engaging in FDI in seven transition countries and demonstrated that there is a combination of horizontal and vertical types of FDI, with horizontal FDI predominating. Sohn (2016) applied the KC model on country-pair data for China and countries in the Association of Southeast Asian Nations (ASEAN) with nations in the Organisation for Economic Co-operation and Development (OECD) during the period 1985–2010 and demonstrated that China's rise in FDI induced a strong synergic impact on FDI flows to ASEAN countries from OECD nations. Using a large international dataset, Kox (2022) found strong, robust, and consistent support for the KC model and demonstrated the important role of public knowledge production for foreign direct investment.

Since the early 2000s, an increasing amount of empirical research has sought to clarify the potential crowding-in or crowding-out effects in recipient nations in order to evaluate the overall net impact of FDI on domestic investment. Initial findings for developing countries are inconclusive, as the net impact of FDI can vary based on host country characteristics, including governance quality, local policies, financial development (Alfaro et al., 2004), technological gaps, and the absorptive capacity of local businesses (Barrios et al., 2005).

Agosin and Machado (2005) studied 36 developing nations from 1971 to 2000 and were unable to establish a definitive conclusion regarding the impact of FDI on domestic investment. Aitken and Harrison (1999), Wang (2010), Morrissey and Udomkerdmongkol (2012), Göçer et al., (2014), Yao and Salim (2020), Ali et al. (2021), and Magbondé et al. (2024) concluded that FDI exerts a crowding-out effect on domestic investment in developing countries.

Conversely, a more recent study by Farla et al. (2016), which employed the same dataset as that of Morrissey and Udomkerdmongkol (2012), arrived at a contrasting conclusion. By enhancing the domestic investment proxy used by Morrissey and Udomkerdmongkol (2012) and refining their estimation techniques, Farla et al. (2016) found evidence for a crowding-in effect. Similarly, Lalwani (2002), Al-Sadig (2012), and Abu and Karim (2016) provided empirical evidence in support of the crowding-in hypothesis.

Conversely, Polat (2017) and Gökçeli et al. (2022) concluded that FDI does not have a significant influence on domestic investment. Agosin and Mayer (2000) and Pilbeam and Oboleviciute (2012) reported mixed effects of FDI on domestic investment across different regions. On the other hand, Kim and Seo (2003) along with Tang et al., (2008) argued that FDI and domestic investment work together to promote economic growth, without undermining or reducing the importance of domestic investment.

Research on the relationship between FDI and domestic investment in CESEE countries has also produced inconsistent findings.

Mišun and Tomšk (2002) conducted a study on the impact of FDI on domestic investment in Poland, Hungary, and the Czech Republic, covering the years 1990 to 2000 for Poland and Hungary, and 1993 to 2000 for the Czech Republic. Their findings indicated that FDI led to an increase in domestic investment in the Czech Republic and Hungary, while in Poland, it resulted in a decrease in domestic investment due to crowding-out effects. Mileva (2008) expanded the analysis to a broader sample of 22 transition countries, including both EU members and non-members, to examine the influence of FDI on domestic investment. The results suggested that FDI flows could produce modest investment spillovers within host economies across the entire sample, particularly in countries that either have completed or are close to completing their transition processes. In contrast, in ten nations of the Commonwealth of Independent States and Albania, FDI flows were found to crowd out domestic investment. Similarly, Szkorupová, (2015) investigated the crowding-in and crowding-out effects of FDI on domestic investment in CEE from 1993 to 2012 through panel regression analysis. The research revealed that FDI frequently crowds out domestic investment due to various factors. During the transformation phase, FDI was primarily motivated by privatisation, which allowed foreign investors to take control of critical sectors such as telecommunications and manufacturing, thereby hindering the competitiveness of domestic firms, particularly as government policies often favoured foreign entities. Titarenko (2006) reached a similar conclusion regarding Lithuania. Additionally, Kosová (2010) provided empirical evidence indicating that crowding out has a short-term impact on the Czech Republic, while Zajc Kejžar (2016) corroborated this finding for Slovenia.

In a similar vein, Jude (2019) examined the same relationship using data from ten CEE nations spanning the years 1995 to 2015. FDI is considered to exhibit a "creative destruction phenomenon," characterised by an initial short-term crowding-out effect, which is subsequently followed by a long-term crowding-in impact. The manner of entry significantly influences the effect of FDI on domestic investment. The findings indicated that greenfield FDI, which involves the establishment of entirely new firms represented by foreign affiliates and the acquisition of fixed assets (in addition to capital stock), demonstrates a pronounced crowding-out effect. Conversely, mergers and acquisitions, which entail a transfer of ownership of existing assets (without an increase in capital stock), do not facilitate capital accumulation. Given that greenfield FDI typically aims to establish trade connections with domestic enterprises, it fosters a crowding-in effect over the long term.

Jovanović and Hanzl-Weiss (2022) found no impact of FDI on domestic investment in CESEE countries. FDI has not crowded out domestic investment, but it has not crowded in domestic investment either, perhaps reflecting the weak linkages between foreign and local firms.

Several studies have highlighted the role of institutions, corruption, and governance in attracting FDI in developing countries**.** Bénassy-Quéré et al. (2007) and Miao et al. (2021) found that institutions and specific governance indicators played a critical role in attracting FDI. In contrast, Magbondé et al. (2024) did not find any significant effect of institutions on investment. Furthermore, financial development and its interaction with FDI inflows do not exhibit a significant impact on investment. Minović et al. (2021) noted that controlling corruption, maintaining political stability, and upholding the rule of law are crucial in driving FDI inflows to the Western Balkans. Nonetheless, there is a lack of definitive evidence suggesting that good governance fosters domestic investment, as the influence of FDI on domestic investment is contingent upon the prevailing institutional environment.

The preceding literature review highlights a scarcity of research focused on the impact of FDI on domestic investment in CESEE countries. Furthermore, the results from the available studies are ambiguous, demonstrating crowding-out (Kosová, 2010; Szkorupová, 2015; Titarenko, 2006; Zajc Kejžar, 2016), mixed (Jude, 2019; Mileva 2008; Mišun & Tomšk, 2002) or no effects of FDI on domestic investment (Jovanović & Hanzl-Weiss, 2022). This study aims to significantly contribute to the existing literature by examining the correlation between FDI and domestic investment, particularly within the CESEE context and different institutional frameworks. As there is a shortage of studies focusing on this region, our study provides valuable insights into how FDI influences domestic investment, including whether it results in a crowding-in or crowding-out effect, across various levels of institutional quality. By delving into these dynamics, the study offers a nuanced understanding that is often overlooked in broader analyses, particularly within the context of emerging economies in Central, Eastern, and South-Eastern Europe.

## 3. FOREIGN DIRECT INVESTMENT AND DOMESTIC INVESTMENT IN THE COUNTRIES OF CENTRAL, EASTERN, AND SOUTH-EASTERN EUROPE

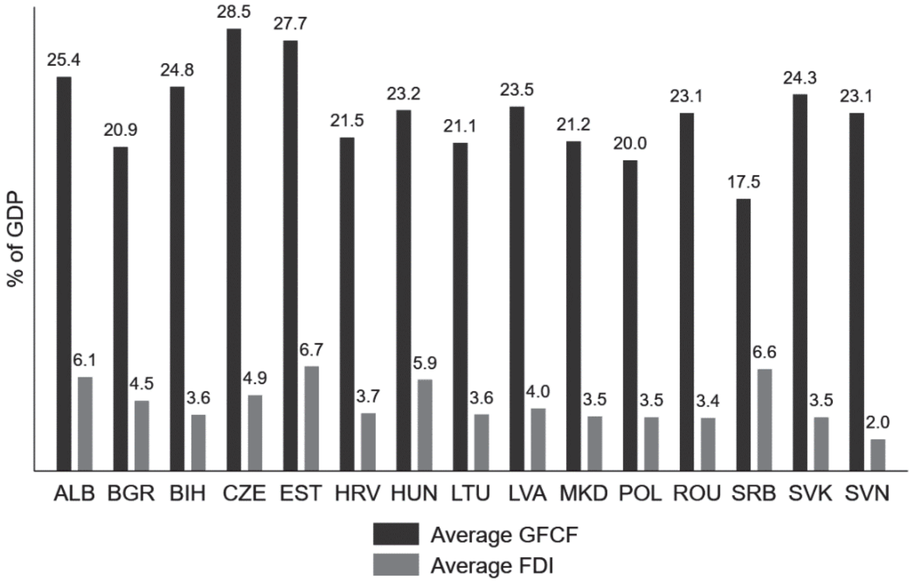
This section provides a comparative analysis of domestic investment presented by GFCF and FDI as a percentage of GDP across several CESEE countries from 1995 to 2021. This analysis aims to identify domestic and foreign investment trends and understand the factors influencing these economic indicators.

The Czech Republic, Estonia, and Albania were among the top-performing CESEE countries in average domestic investment percentages from 1995 to 2021. The Czech Republic led with a substantial GFCF percentage of 28.5%, closely followed by Estonia at 27.7%, and Albania at 25.4%. These statistics highlight significant investment in their domestic economies, particularly infrastructure and industrial development initiatives. In contrast, Bulgaria, Poland, and Serbia had comparatively lower average GFCF percentages of 20.9%, 20.0%, and 17.5%, respectively, from 1995 to 2021. This may reflect more cautious investment strategies or potential economic constraints limiting these countries' capacity for large-scale capital formation. Despite these lower percentages, both groups of nations have implemented structural reforms and attracted foreign investment to bolster their economies (Figure 1).

Estonia, Serbia, and Hungary have notably maintained relatively high average foreign direct investment (FDI) percentages of 6.7%, 6.6%, and 5.9% from 1995 to 2021, respectively. These figures indicate favourable conditions for foreign investments attributed to strategic geographic positioning, liberal economic policies, and a dynamic market environment. In contrast, Slovenia has recorded a lower average FDI percentage of 2.0% from 1995 to 2021. This may indicate market saturation, potential economic risks, or restrictive foreign investment regulations. Nevertheless, Slovenia has taken proactive steps to introduce new laws and offer incentives to attract foreign investment and create a more hospitable environment for foreign businesses and investors (Figure 1).

The analysis indicates that the CESEE countries have had differing levels of success in attracting foreign direct investment and stimulating domestic capital formation. While some nations have excelled in these areas, others may encounter challenges that necessitate strategic interventions. Encouraging domestic investments ensures enduring economic growth and stability, particularly amid increasingly uncertain global economic conditions. Through increased domestic investment, the CESEE countries can broaden their sources of economic growth and lessen their dependency on foreign direct investment, thereby establishing a more resilient and stable economic footing for the future.

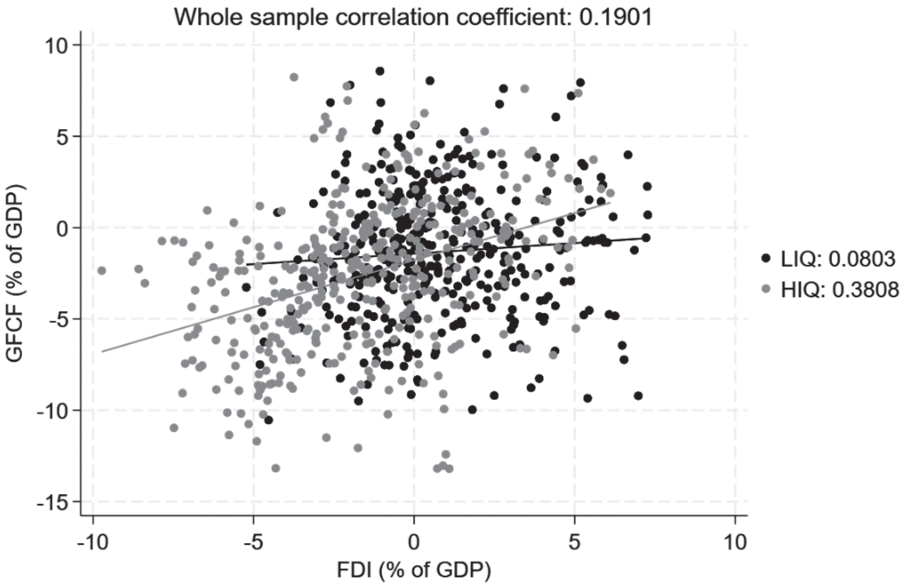
**Figure 1.** Average FDI and GFCF as a percentage of GDP in CESEE countries in the period 1995–2021




**Source:** Authors' calculations based on data from the World Bank, World Development Indicators database, https://databank.worldbank.org/source/world-development-indicators#..

The scatter chart depicted in Figure 2 illustrates the correlation between FDI and GFCF as a percentage of GDP in CESEE countries from 1995 to 2021. This correlation has been adjusted for the effects of other variables, such as real GDP per capita growth, real interest rates, and gross domestic savings, all of which may influence this relationship. The chart presents compelling evidence of a robust positive correlation between these two variables, with the overall sample correlation coefficient standing at 0.19. This suggests that countries with higher FDI also tend to have higher levels of domestic investment, and vice versa. The statistical significance of this correlation underscores the idea that foreign investment can indeed have a positive impact on a country's domestic economy.

**Figure 2.** Scatter chart on the relationship between FDI and GFCF as a percentage of GDP in CESEE countries in the period 1995–2021

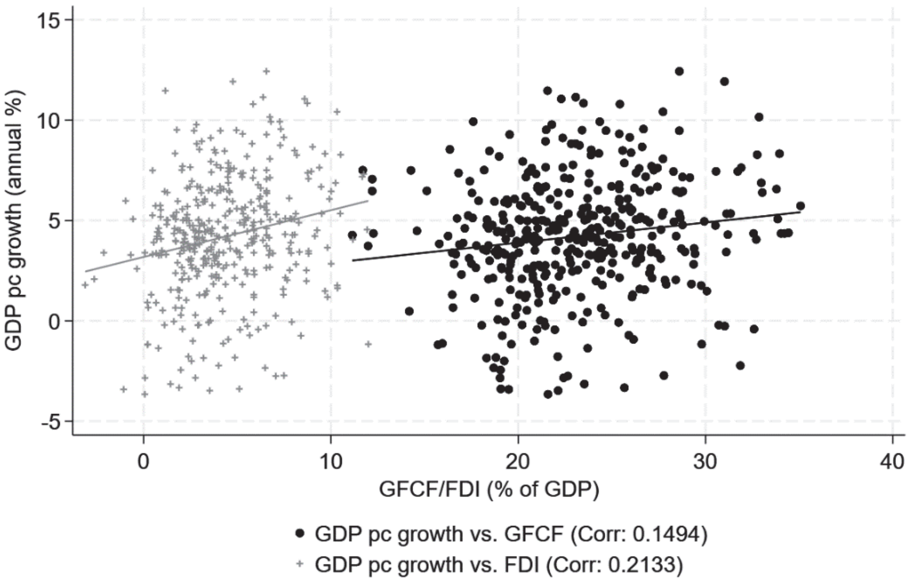



**Note:** LIQ – Countries with lower institutional quality; HIQ – Countries with higher institutional quality. Source: Authors' calculations based on data from the World Bank, World Development Indicators database, https://databank.worldbank.org/source/world-development-indicators# and Fraser Institute, Economic Freedom database, https://www.fraserinstitute.org/economic-freedom/dataset?geozone=world&year=2021&page=dataset&min-year=2&max-year=0&filter=0.

It is clear from the data that CESEE countries with higher institutional quality, as determined by the economic freedom index of the Fraser Institute (2021), exhibit a stronger correlation coefficient (0.38) compared to those with lower institutional quality (0.08). This indicates that countries with better institutional quality generally experience a more positive link between domestic and foreign direct investments. It is worth noting, however, that correlation alone does not establish causation, and additional research is required to fully comprehend the underlying causal mechanisms. Nevertheless, these findings offer valuable insight into the potential advantages of enhancing institutional quality to advance sustainable economic growth in CESEE countries.

In Figure 3, we can see a scatter chart of the correlation between FDI as a percentage of GDP and GDP per capita growth and the correlation between GFCF as a percentage of GDP and GDP per capita growth. The scatter chart shows that both FDI and domestic investment have positive correlation coefficients with GDP per capita growth of 0.21 and 0.15, respectively. Furthermore, the graph reveals that the correlation between FDI and GDP per capita growth is stronger than that of domestic investment and GDP per capita growth. The findings from this analysis suggest that attracting foreign investment can benefit a country's economic development. Countries that can effectively attract FDI may experience increased GDP per capita growth compared to countries that do not attract foreign investment.

**Figure 3.** Scatter chart on the relationship between FDI as a percentage of GDP and GDP per capita growth and GFCF as a percentage of GDP and GDP per capita growth in CESEE countries in the period 1995–2021




**Source:** Authors' calculations based on data from the World Bank the World Bank, World Development Indicators database, https://databank.worldbank.org/source/world-development-indicators#.

The evidence shows a strong positive correlation between foreign direct investment and domestic investment, suggesting that higher levels of FDI are often accompanied by greater domestic investment. This indicates that foreign investment could encourage or occur alongside increased domestic economic activity. Additionally, the data indicates that countries with better institutional quality exhibit a stronger correlation between these investments, highlighting the significance of good governance and robust institutions in enhancing the positive effects of FDI. While FDI has a slightly stronger correlation with GDP per capita growth than domestic investment, it may have a slightly greater impact on economic development. These findings emphasise the importance of prioritising institutional quality and creating a favourable investment climate in CESEE nations. By doing so, policymakers can maximise the benefits of FDI, which could lead to more substantial and sustainable economic growth. Therefore, policymakers should strengthen institutional frameworks and economic policies that efficiently attract and utilise foreign investment to ensure it brings concrete economic improvements.

## 4. THEORETICAL FRAMEWORK, EMPIRICAL METHODOLOGY, AND DATA

### 4.1. Theoretical Framework and Empirical Methodology

In this section, we present the theoretical framework, empirical methodology, and data used to analyse the impact of foreign direct investment on domestic investment in selected countries in CESEE. This study specifically focuses on GFCF, i.e., gross fixed capital formation, as a measure of investment, representing the net additions to fixed assets within an economy. The significance of GFCF as a determinant of long-term economic growth is well-established in neoclassical economic theory, which emphasises the centrality of capital accumulation to growth (Solow, 1956). The model is an augmented investment function, reflecting a partial adjustment process between the existing and desired capital stock under liquidity and time adjustment constraints. The investment rate is expected to demonstrate high persistence, modelled as an autoregressive process (Carkovic & Levine, 2005). The partial adjustment process justifies the inclusion of lagged GFCF as an independent variable in the model.

Our model considers lagged GDP growth, real interest rates, and gross domestic savings as the primary factors influencing investment (Carkovic & Levine, 2005;

Jude, 2019; Wang, 2010). Incorporating lagged GDP growth considers the accelerator effect, which posits that higher economic growth stimulates investment by fostering optimism about future demand and profitability. This idea is rooted in Keynesian economic theory, which highlights the role of firms' expectations in shaping investment choices (Keynes, 1936). By factoring in lagged GDP growth, the model captures how previous economic performance shapes current investment decisions as businesses adjust their strategies based on past growth.

Real interest rates are utilised as a control variable to signify the expense of borrowing. Following classical economic theory, higher real interest rates elevate the cost of capital, thus deterring investment, while lower interest rates diminish borrowing costs and render investment more appealing (Modigliani & Miller, 1958). This addition underscores the impact of financing costs on investment, a pivotal consideration in capital expansion decisions. Gross domestic savings is a crucial control variable that reflects the availability of financial resources for investment. Higher savings rates lead to more capital for investment, promoting capital accumulation and supporting economic growth. Both classical and neoclassical growth theories highlight the importance of savings in financing investment, suggesting that increased domestic savings result in higher levels of investment and, consequently, greater economic growth (Domar, 1946; Harrod, 1939). By including gross domestic savings in the analysis, we can consider the impact of the domestic financial environment on investment decisions.

According to the theoretical explanations, the equation for estimating the effects of foreign direct investment on domestic investment takes the following form:

$$GFCF_{i,t} = \alpha_i + \beta_1 GFCF_{i,t-1} + \beta_2 FDI_{i,t} + \beta_3 GDPG_{i,t-1} + \beta_4 RIR_{i,t} + \beta_5 GDS_{i,t} + \varepsilon_{i,t}\ , \tag{1}$$

where $GFCF_{i,t}$ is gross fixed capital formation as a percentage of GDP, $GFCF_{i,t-1}$ is lagged gross fixed capital formation as a percentage of GDP, $FDI_{i,t}$ is foreign direct investment as a percentage of GDP, $GDPG_{i,t-1}$ is lagged GDP per capita growth as an annual %, $RIR_{i,t}$ is real interest rate, $GDS_{i,t}$ is gross domestic savings as a percentage of GDP for country $i$ and period $t$, $\alpha_i$ is the country-fixed effect, $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5$ are coefficients for the variables, and $\varepsilon_{i,t}$ is the error term.

The analysis utilises a fixed-effects model to account for unobservable differences across countries. Each country may exhibit distinct characteristics, such as variations in institutional quality, infrastructure, cultural influences, or long-standing economic policies, which could impact domestic investment. These features remain constant over time but differ across countries and can significantly influence the dependent variable. By employing a fixed-effects model, we effectively control these country-specific factors encapsulated by the country-specific intercept $\alpha_i$. While this intercept varies by country, it remains constant over time for each country. The fixed-effects approach alleviates any bias if these unobserved characteristics are correlated with the independent variables. Essentially, the fixed-effects model isolates the impact of the independent variables on the dependent variable by adjusting for all time-invariant discrepancies between countries.

However, although the fixed-effects model effectively controls for unobserved heterogeneity, it does not fully account for the dynamic nature of the investment process. Investment decisions are inherently dynamic, meaning past investment levels influence current investment. This creates a situation where the lagged dependent variable is included as a regressor, introducing potential endogeneity issues. Endogeneity arises because the lagged dependent variable is likely correlated with the error term, particularly in panel data with short periods and numerous cross-sectional units. To address this, dynamic panel data models, such as the GMM, are employed. The GMM approach, particularly the difference GMM or system GMM, is specifically designed to handle the endogeneity of the lagged dependent variable and other potentially endogenous regressors. GMM uses instrumental variables, often constructed from the lagged values of the dependent variable and other exogenous variables, to offer consistent and unbiased estimates.

We utilised the difference GMM to capture the dynamic nature of the equation. This method, originally developed by Arellano and Bond (1991), involves transforming the data by first differencing to eliminate country-specific effects that could bias the results. The differenced equation takes the following form:

$$\Delta GFCF_{i,t} = \beta_1 \Delta GFCF_{i,t-1} + \beta_2 \Delta FDI_{i,t} + \beta_3 \Delta GDPG_{i,t-1} + \beta_4 \Delta RIR_{i,t} + \beta_5 \Delta GDS_{i,t} + \Delta\varepsilon_{i,t} \,, \tag{2}$$

where $\Delta$ refers to the first difference of the variables capturing the change from period $t-1$ to $t$, $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5$ are coefficients for the first-differenced variables, and $\Delta\varepsilon_{i,t}$ is the first-differenced error term.

However, our model is constructed based on 15 cross-sections and 27 periods (1995–2021), which may not be ideal for generalised GMM. Still, some authors, such as Jude (2019), have successfully employed GMM in similar contexts, particularly to capture the dynamic relationships inherent in the investment process. To address the issue of having more instruments than cross-sections, we restricted the instruments for the lagged dependent variable to lags 2 and 3, and utilised the collapse option to reduce the number of instruments. To decide between the difference GMM (Arellano & Bond, 1991) and system GMM (Arellano & Bover, 1995; Blundell & Bond, 1998), we referred to Bond (2002) and considered that the coefficient of the lagged dependent variable estimated by the fixed-effect model should be viewed as a lower bound estimate. If the coefficient of the lagged dependent variable estimated by the difference GMM is similar to the fixed-effects estimation, then the system GMM is preferred.

Given that GFCF represents net investment in fixed assets that encompasses both domestic and foreign investment, a positive coefficient on FDI does not necessarily imply that FDI leads to crowding-in effects. It indicates that an increase in FDI results in a higher total investment, as captured by GFCF. For the crowding-in effect to occur, the coefficient before FDI must be greater than one, signifying that a one-unit increase in FDI leads to a total investment increase of more than one unit (Jude, 2019).

According to Jude (2019), in the long run, the investment rate converges to its steady-state equilibrium level, meaning that $GFCF_{i,t-1} = GFCF_{i,t}$. Thus, the marginal effect of FDI on GFCF assimilated to the long-run elasticity of investment to FDI is given by the following equation:

$$\beta_L = \frac{\beta_S(FDI)}{1-\beta_1}, \qquad (3)$$

where $\beta_L$ refers to the long-run elasticity of investment to FDI, $\beta_S$ is the estimated coefficient of FDI from the regression, and $\beta_1$ is the estimated coefficient of the lagged dependent variable. The significance of this long-run elasticity is tested using a non-linear Wald test. The hypotheses we are testing are $\beta_L = 1$ and $\beta_L > 1$, in order to test whether there is crowding-in effect in the long run or not.

### 4.2. Data and Variables

The data needed for the empirical analysis of CESEE countries were obtained from the World Development Indicators database of the World Bank (2023), the annual macro-economic database (AMECO) of the European Commission (2024), the International Financial Statistics of the International Monetary Fund (2024), Federal Reserve Bank of St. Louis (2024), the Fraser Institute (2021), and national sources. The data set examined annual data for each country in the sample for the following variables:

- Domestic investment (GFCF as a percentage of GDP);
- Foreign direct investment (FDI inflows as a percentage of GDP);
- GDP per capita growth (annual %);
- Real interest rate (short-term interest rate minus the GDP deflator);
- Gross domestic savings (as a percentage of GDP).

According to data availability, we selected the following 15 countries from CESEE: Albania, Bosnia and Herzegovina, Bulgaria, Croatia, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, North Macedonia, Poland, Romania, Serbia, Slovak Republic, and Slovenia. The paper deals with annual data from 1995 to 2021. Table 1 presents descriptive statistics of the variables and their sources.

**Table 1.** Descriptive statistics of the variables and their sources

| Variable | Obs. | Mean | Std. Dev. | Min. | Max. | Source |
|---|---|---|---|---|---|---|
| Domestic investment (GFCF) | 405 | 23.06 | 4.35 | 11.14 | 35.08 | World Bank (2023), Gross fixed capital formation (% of GDP), 1995–2021 |
| Foreign direct investment (FDI) | 405 | 4.37 | 2.68 | -3.13 | 12.00 | World Bank (2023), Foreign direct investment, net inflows (% of GDP), 1995–2021 |
| GDP per capita growth (GDPG) | 405 | 4.20 | 2.93 | -3.65 | 12.44 | World Bank (2023), GDP per capita growth (annual %), 1995–2021 |
| Real interest rate (RIR) | 405 | 0.98 | 3.64 | -8.62 | 11.43 | European Commission (2024), International Monetary Fund (2024), Federal Reserve Bank of St. Louis (2024), National sources, Short-term interest rate minus GDP deflator, 1995–2021 |
| Gross domestic savings (GDS) | 405 | 18.17 | 9.31 | -6.89 | 34.82 | World Bank (2023), Gross domestic savings (% of GDP) |

**Source:** Authors' calculations.

The selected sample consists of countries at various stages of economic development, including those from former socialist systems, countries in transition, and those that have successfully emerged from transition. After estimating the entire sample, we divided it into two subsections based on institutional quality, using the average Fraser Institute economic freedom index as a proxy for this measure. We then conducted a fixed-effects estimation for these two subsamples, considering the small cross-sections relative to the period. Although some countries are not independent throughout the analysis timeframe (e.g., Serbia), data is shown separately. Some data, especially real interest rates, are obtained from national sources. The outliers in the data were removed.

Table 2 presents the correlation coefficients between the variables from the panel data from 1995 to 2021 in the examined countries. The correlation analysis reveals noteworthy positive and significant relationships between GFCF and FDI, confirming the hypothesis that FDI is interconnected and positively linked to domestic investment levels. The moderate yet significant correlations indicate that FDI is crucial in encouraging domestic investment among the sample countries. However, further analysis through econometric modelling is necessary to establish causal relationships and comprehend the underlying dynamics between domestic investment and FDI.

**Table 2.** Correlation matrix of the variables

| Variable | GFCF | FDI | GDPG | RIR | GDS |
|---|---|---|---|---|---|
| GFCF | 1 | | | | |
| FDI | 0.2173*** | 1 | | | |
| GDPG | 0.1494*** | 0.2133*** | 1 | | |
| RIR | -0.0245 | -0.0555 | -0.1696*** | 1 | |
| GDS | 0.2774*** | -0.0091 | -0.0682 | -0.4079*** | 1 |

**Note:** *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

**Source:** Authors' calculations.

Before proceeding with the equations' estimation, it is essential to assess the time series properties of the variables to ensure the validity of the estimation techniques. Specifically, it is crucial to first check for cross-sectional dependence and perform unit root tests. After conducting the Breusch-Pagan LM test to consider cross-sectional dependence, we used the Pesaran CADF and CIPS tests for panel data unit root testing, with a maximum of one lag. The test results are shown in Table 3.

**Table 3.** Unit root test results

| Variable | Test | Test Stat. | CV 10% | CV 5% | CV 1% | Z(t-bar) | p-value |
|---|---|---|---|---|---|---|---|
| GFCF | Pesaran CADF | -2.083 | -2.14 | -2.25 | -2.45 | -1.250 | 0.106 |
| GFCF | Pesaran CADF + trend | -3.096*** | -2.66 | -2.76 | -2.96 | -3.233 | 0.001 |
| GFCF | CIPS | -2.182* | -2.14 | -2.25 | -2.45 | | |
| GFCF | CIPS + trend | -2.996*** | -2.66 | -2.76 | -2.96 | | |
| FDI | Pesaran CADF | -3.217*** | -2.14 | -2.25 | -2.45 | -5.776 | 0.000 |
| FDI | Pesaran CADF + trend | -3.317*** | -2.66 | -2.76 | -2.96 | -4.152 | 0.000 |
| FDI | CIPS | -3.931*** | -2.14 | -2.25 | -2.45 | | |
| FDI | CIPS + trend | -3.958*** | -2.66 | -2.76 | -2.96 | | |
| GDPG | Pesaran CADF | -2.841*** | -2.14 | -2.25 | -2.45 | -4.275 | 0.000 |
| GDPG | Pesaran CADF + trend | -3.086*** | -2.66 | -2.76 | -2.96 | -3.192 | 0.001 |
| GDPG | CIPS | -3.980*** | -2.14 | -2.25 | -2.45 | | |
| GDPG | CIPS + trend | -4.233*** | -2.66 | -2.76 | -2.96 | | |
| RIR | Pesaran CADF | -2.433*** | -2.14 | -2.25 | -2.45 | -2.647 | 0.004 |
| RIR | Pesaran CADF + trend | -3.200*** | -2.66 | -2.76 | -2.96 | -3.663 | 0.000 |
| RIR | CIPS | -3.577*** | -2.14 | -2.25 | -2.45 | | |
| RIR | CIPS + trend | -4.179*** | -2.66 | -2.76 | -2.96 | | |
| GDS | Pesaran CADF | -2.510*** | -2.14 | -2.25 | -2.45 | -2.953 | 0.002 |
| GDS | Pesaran CADF + trend | -2.450 | -2.66 | -2.76 | -2.96 | -0.542 | 0.294 |
| GDS | CIPS | -2.847*** | -2.14 | -2.25 | -2.45 | | |
| GDS | CIPS + trend | -2.958** | -2.66 | -2.76 | -2.96 | | |

**Note:** *** $p<0.01$, ** $p<0.05$, * $p<0.1$.
**Source:** Authors' calculations.

Based on the test results, it is evident that all variables, with the exception of GFCF and gross domestic savings, exhibit stationarity at levels with and without trend at a 1% significance level. The data shows that GFCF is non-stationary without trend and stationary at the level with a trend at a 1% significance level according to the Pesaran CADF test. Additionally, according to the CIPS test, it is stationary at the level without trend at a 10% significance level and with a trend at a 1% significance level. On the other hand, gross domestic savings is stationary at the level without trend at a 1% significance level and non-stationary at the level with trend according to the Pesaran CADF test. According to the CIPS test, it is stationary at the level without trend at a 1% significance level and at the 5% significance level without trend.

The majority of the tests indicate that the variables are stationary at their levels with a significance level of 1%. The results are essential for conducting further econometric analysis, as they confirm the suitability of these variables in models that rely on stationarity.

## 5. RESULTS AND DISCUSSION

This section shows the regression results for the estimated equations discussed in the previous section. Table 4 displays the fixed-effects and one-step difference GMM results for the whole sample.

The findings in Table 4 reveal a notably positive and statistically significant influence of lagged GFCF in both models. This suggests a robust continuity in domestic investment, emphasising the pivotal role of past investment levels in shaping current investment decisions. The magnitude of these coefficients aligns with existing literature underscoring the significance of consistent investment behaviour, whereby previous capital formation activities markedly impact future investment choices (Choe, 2003).

Based on the findings, the coefficients on FDI are positively and significantly associated with domestic investment in both the fixed-effects and difference GMM models. This suggests that FDI has a positive impact on domestic investment. However, as Jude (2019) discussed, a coefficient greater than one would be necessary to indicate a crowding-in effect, where FDI stimulates more than just its direct contribution to investment. Coefficients below 1 imply that while FDI does increase overall investment levels, it does not lead to a crowding-in effect, meaning that the increase in total investment is less than proportional to the increase in FDI inflows. This result is consistent with earlier findings that FDI's impact on domestic investment can be significant but not necessarily multiplicative (Borensztein et al., 1998).

Wald test results, presented in Table 4, show a $p$-value of 0.0000 for the hypothesis that the long-run elasticity of investment to FDI is equal to 1. This extremely low $p$-value leads us to reject the null hypothesis that the long-run elasticity of investment to FDI is equal to 1 with high confidence. The Wald test's rejection of the null hypothesis suggests that the long-run elasticity of investment with respect to FDI is significantly different from one. Given that the estimated coefficients for FDI in both models are below one, this elasticity is less than one. This implies that while FDI contributes positively to total investment (Borensztein et al., 1998), it does not induce a crowding-in effect where domestic investment increases by more than the amount of FDI inflows.

Alfaro et al. (2004) found that FDI can complement domestic investment by bringing in capital, technology, and managerial expertise, thereby enhancing overall investment levels. However, the magnitude of this effect does not always exceed unity, as required for a crowding-in phenomenon. Similarly, Javorcik (2004) highlights that while FDI can stimulate domestic investment through various channels, the extent of this stimulation is contingent on factors such as the absorptive capacity of the host economy and the sectors in which FDI is concentrated.

The findings indicate that lagged GDP growth remains positive and statistically significant in both models. This outcome aligns with the accelerator theory of investment, which posits that higher economic growth triggers increased investment in the following periods. The positive association between GDP growth and investment implies that robust economic performance prompts businesses to enhance their productive capabilities (Alfaro et al., 2004).

Other control variables, such as real interest rate, show a positive but not statistically significant effect in both models. This lack of significance suggests that the cost of capital, as measured by real interest rates, may not be a primary determinant of domestic investment in this sample. This finding could imply that factors such as credit availability or external financial conditions are more critical in influencing investment decisions (Modigliani & Miller, 1958).

In the fixed-effects model, the coefficient on gross domestic savings is positive and marginally significant but insignificant in the difference GMM model. This suggests that while domestic savings may contribute to investment, their effect is limited when dynamic effects and potential endogeneity are considered (Feldstein & Horioka, 1980; Loayza et al., 2000).

**Table 4.** Regression results for the whole sample

| Variables | Fixed effects | Difference GMM |
|---|---|---|
| | GFCF | GFCF |
| L.GFCF | 0.5767097*** | 0.7046575*** |
| | (0.0727679) | (0.0754005) |
| FDI | 0.1425214*** | 0.1129981*** |
| | (0.0497949) | (0.0391783) |
| L.GDPG | 0.2509586*** | 0.2187857*** |
| | (0.0447041) | (0.0455607) |
| RIR | 0.0372813 | 0.0061947 |
| | (0.0477974) | (0.06264) |
| GDS | 0.0564711* | 0.0278917 |
| | (0.0334537) | (0.0382545) |
| Constant | 8.254681*** | |
| | (1.639425) | |
| Observations | 390 | 375 |
| Adj. R-squared | 0.7007 | |
| F statistic | 72.48 | |
| $p$ > F | 0.0000 | |
| Ramsey RESET test | 1.52 | |
| $p$ > Ramsey RESET | 0.2090 | |
| Breusch-Pagan LM test | 161.867 | |
| $p$ > Breusch-Pagan LM test | 0.0003 | |
| AR(1) test | | -2.62 |
| $p$ > AR(1) | | 0.009 |
| AR(2) test | | 0.76 |
| $p$ > AR(2) | | 0.449 |
| Sargan test | | 0.02 |
| $p$ > Sargan | | 0.882 |
| Hansen test | | 0.03 |
| $p$ > Hansen | | 0.853 |
| Wald test: $\beta_L$(FDI) = 1 ($p$-value) | 0.0000 | 0.0000 |

**Notes:** Robust standard errors in parentheses; *** $p$<0.01, ** $p$<0.05, * $p$<0.1.

**Source:** Authors' calculations.

The diagnostic tests conducted on the regression models provide important insights into the robustness and validity of the results. The Ramsey RESET test, with a $p$-value of 0.2090, suggests that the fixed-effects model does not suffer from misspecification, indicating that the functional form of the model is appropriate for the data. This implies that the model correctly specifies and captures the underlying relationships between the variables without omitting important factors or including unnecessary ones.

The AR(1) and AR(2) tests in the difference GMM model are crucial for assessing the validity of the instruments used in the model. The AR(1) test shows significant first-order autocorrelation in the residuals with a $p$-value of 0.009, which is expected due to the nature of the differenced model. However, the AR(2) test, with a $p$-value of 0.449, indicates no significant second-order autocorrelation. The absence of second-order autocorrelation is important because it confirms that the instruments are valid and that the differenced model does not suffer from problems related to autocorrelation in the residuals, thereby ensuring the consistency of the GMM estimates. The Sargan and Hansen tests further support the validity of the instruments in the difference GMM model. The Sargan test, with a $p$-value of 0.882, and the Hansen test, with a $p$-value of 0.853, both indicate that the instruments are not over-identified. This means that the instruments are appropriately correlated with the endogenous regressors but uncorrelated with the error term. This ensures that the instruments used in the model are valid and that the model's estimates are not biased due to over-identification issues.

The following analysis involves splitting the dataset into two subsamples based on institutional quality, measured by the average economic freedom index of the Fraser Institute between 1995 and 2021. The objective is to examine each subgroup's domestic and foreign direct investment relationship. This is driven by the hypothesis that institutional environments significantly influence the effectiveness and impact of FDI. By categorising the dataset into countries with higher and lower institutional quality, we aim to explore whether the relationship between FDI and domestic investment displays variation under different institutional conditions. Analysing these subsamples allows us to uncover the nuanced effects of institutional quality on investment dynamics. This approach provides valuable insights into whether FDI's impact on domestic investment is consistent across diverse institutional environments or if it varies based on the strength of the institutional framework.

Additionally, this segmentation addresses potential heterogeneity within the sample, ensuring that the analysis captures the diverse economic realities across countries with varying levels of institutional development. By isolating the influence of institutional quality, we gain a deeper understanding of the mechanisms through which FDI affects domestic investment and identify the factors that either facilitate or impede this relationship. Ultimately, this approach enables us to draw targeted conclusions and formulate relevant policy recommendations, as the findings revealed specific conditions under which FDI is most likely to contribute positively to domestic investment.

In both subgroups, the lagged GFCF variable is positively and significantly associated with the current level of domestic investment. This suggests that previous investment levels significantly impact current investment in both contexts, with a slightly stronger effect observed in settings with weaker institutions. The higher coefficient within the group countries with lower institutional quality implies the likelihood of firms in these environments relying more heavily on past investments, possibly due to greater uncertainty or less supportive institutional frameworks, leading them to pursue more cautious investment strategies.

In analysing the impact of FDI, it is apparent that both subsamples demonstrate positive and significant coefficients. These findings suggest that FDI positively influences domestic investment in both scenarios. Nonetheless, the coefficients remain below one in both subsamples, indicating that FDI does not lead to a crowding-in effect where it stimulates more than its direct contribution to domestic investment. The close resemblance between the coefficients across subsamples implies that institutional quality does not significantly modify the fundamental relationship between FDI and domestic investment. However, it may impact the wider economic environment in which this relationship operates (Borensztein et al., 1998; Jude, 2019).

The results of the Wald test indicate significant $p$-values for the hypothesis testing the long-run elasticity of investment with respect to FDI being equal to 1 in both subsamples. The $p$-values were 0.0015 in the lower institutional quality subsample and 0.0000 in the higher institutional quality subsample. Therefore, we can reject the null hypothesis that the long-run elasticity of investment to FDI is equal to 1 with high confidence in both contexts. This rejection suggests that FDI does not lead to a crowding-in effect in either subsample, as the long-run elasticity is likely less than one. These findings support the conclusion that while FDI positively impacts domestic investment, its effect does not exceed its direct contribution, and therefore does not induce additional domestic investment beyond what is accounted for by the FDI itself (Jude, 2019).

**Table 5.** Fixed-effects results for the different subsamples

| Variables | Lower institutional quality | Higher institutional quality |
|---|---|---|
| | GFCF | GFCF |
| L.GFCF | 0.6157222*** | 0.5159134*** |
| | (0.1119229) | (0.085501) |
| FDI | 0.1597811** | 0.1520221** |
| | (0.0685585) | (0.0698879) |
| L.GDPG | 0.2374272*** | 0.2757489*** |
| | (0.0572507) | (0.0659486) |
| RIR | 0.0857821* | -0.0338258 |
| | (0.0507473) | (0.0872063) |
| GDS | 0.0665036 | 0.017409 |
| | (0.0458637) | (0.052208) |
| Constant | 7.907748*** | 10.10299*** |
| | (3.043331) | (2.022832) |
| Observations | 208 | 182 |
| Adj. R-squared | 0.6637 | 0.6391 |
| F statistic | 39.06 | 47.51 |
| $p$ > F | 0.0000 | 0.0000 |
| Ramsey RESET test | 0.56 | 0.59 |
| $p$ > Ramsey RESET | 0.6414 | 0.6200 |
| Breusch-Pagan LM test | 44.007 | 25.916 |
| $p$> Breusch-Pagan LM test | 0.0277 | 0.2097 |
| Wald test: $\beta_L$(FDI) = 1 ($p$-value) | 0.0015 | 0.0000 |

**Notes:** Robust standard errors in parentheses; *** $p$<0.01, ** $p$<0.05, * $p$<0.1.

**Source:** Authors' calculations.

The variable representing lagged GDP growth demonstrates a positive and significant impact on domestic investment in both subsamples. This outcome aligns with the accelerator theory of investment, which posits that past economic growth leads to increased current investment as firms expand their capacity to meet future demand. The marginally higher coefficient in the high institutional quality subsample suggests that firms may be better positioned in these environments to take advantage of past economic growth, possibly due to more efficient markets, better governance, and easier access to finance. This discovery underscores the role of institutional quality in strengthening the responsiveness of investment to economic conditions.

Real interest rates (RIR) have varying impacts across different subsamples. The coefficient is positive and marginally significant in the lower institutional quality subsample, suggesting that higher interest rates might be associated with increased investment. This could indicate higher returns on investment or more stable economic conditions where firms are willing to invest despite higher borrowing costs. Conversely, the coefficient for real interest rates in the higher institutional quality subsample is negative and insignificant, implying that the cost of capital may be less of a concern in these contexts, possibly due to better access to financing and more stable economic environments. The difference in significance and direction between the two subsamples highlights how institutional quality can influence the sensitivity of investment decisions to financing conditions.

The data show that gross domestic savings have a positive, yet not statistically significant, impact on domestic investment in both subsets. This suggests that while savings contribute to investment, their influence is relatively modest and does not vary significantly depending on institutional contexts. The lack of statistical significance may indicate that other factors, such as external financing or investment incentives, are more crucial in driving domestic investment decisions in both subsets.

In the subsample with lower institutional quality, the Ramsey RESET test indicates a $p$-value of 0.6414, suggesting no evidence of model misspecification. This implies that the model's functional form is suitable for the data and adequately captures key variable relationships. Similarly, in the subsample with higher institutional quality, the Ramsey RESET test shows no evidence of model misspecification, with a *p*-value of 0.6200. This confirms that the model is correctly specified and accurately represents the relationships between the variables within the chosen functional form.

## 6. CONCLUSION

This study investigates the relationship between domestic investment and foreign direct investment in 15 Central, Eastern, and South-Eastern European countries between 1995 and 2021. The research findings indicate that FDI has a positive impact on domestic investment, suggesting that an increase in FDI is linked to a corresponding rise in total investment. However, the estimated coefficients on FDI, in both the fixed-effects and GMM models, consistently remain below one. This implies that although FDI contributes to higher overall investment levels, it does not lead to a crowding-in effect where the increase in total investment surpasses the amount of FDI inflows. The Wald test supports this finding by rejecting the null hypothesis that the long-run elasticity of investment to FDI is equal to one. This indicates that the elasticity is likely to be less than one, emphasising the idea that FDI, while beneficial, does not significantly stimulate domestic investment beyond its direct impact.

In terms of the impact of institutional quality, the findings indicate that FDI has a positive effect on domestic investment in both high- and low-institutional-quality settings. However, the coefficients remain below one in both scenarios, suggesting that institutional quality does not significantly alter the core relationship between FDI and domestic investment. The minor variations in coefficients between the scenarios suggest that although institutional quality may influence the broader economic environment, it does not substantially change the direct impact of FDI on domestic investment.

The analysis included several control variables such as lagged GDP growth, real interest rates, and gross domestic savings. These variables shed light on the factors influencing domestic investment. Lagged GDP growth consistently revealed a positive and statistically significant relationship with domestic investment, indicating the accelerator effect, where past economic performance influences future investment. The real interest rate, however, showed a more intricate relationship, displaying positive and marginal significance in lower institutional quality contexts, while being insignificant in higher institutional quality contexts. This suggests that the cost of capital plays a varying role depending on the financial and institutional environment. Lastly, gross domestic savings, while positively associated with investment, did not exhibit statistical significance in either model.

The results suggest that while the quality of institutions does not significantly affect the relationship between FDI and domestic investment in the analysed sample, FDI consistently positively impacts domestic investment. However, the coefficients indicate that FDI does not lead to a crowding-in effect, where domestic investment increases by more than the amount of FDI inflows. This means that while FDI contributes to higher total investment, its impact is more of an addition than a multiplication.

Policymakers must acknowledge that while FDI can boost domestic investment, it may not always result in substantial additional domestic investment beyond its direct impact. To promote a crowding-in effect, it is crucial to enact policies that attract FDI and establish an environment where local companies can capitalise on foreign investments to expand their operations. This may involve enhancing access to financing, encouraging innovation, and facilitating connections between foreign and domestic firms.

Our study has some key limitations, primarily related to the scarcity of data from the selected Central, Eastern, and South-Eastern European countries. The limited availability of comprehensive data in these regions restricts the depth and robustness of our analysis. Furthermore, our data is collected on an annual basis instead of quarterly, which limits the number of observations and may require us to reassess whether the results might be affected by structural breaks. Additionally, our empirical analysis does not consider the financing methods for foreign investment, nor does it differentiate between various financing sources or strategies employed by foreign investors. This could potentially influence the nature and impact of foreign direct investment on domestic investment. Addressing these limitations in future research could offer a more comprehensive understanding of the relationships under investigation.

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