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Foreign Direct Investment and Unemployment Patterns in Five South Eastern European Countries

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Abstract: Our study investigates the relationship between Foreign Direct Investment (FDI) and unemployment in Bulgaria, the Czech Republic, Poland, Hungary, and Romania. Utilizing quantitative analysis, it aims to uncover patterns and dynamics within each country's economic landscape. By employing polynomial regression and graphical representations, the study evaluates the extent to which FDI influences unemployment rates. The findings contribute to a nuanced understanding of the interplay between FDI and unemployment, offering insights for both all the persons interested in the evolution of Eastern Europe.

Keywords: Foreign Direct Investment; South Eastern Europe; Unemployment; Comparative analyses

1. Introduction

The relationship between Foreign Direct Investment (FDI) and unemployment is a subject of considerable interest and importance in the economic landscape of Bulgaria, the Czech Republic, Poland, Hungary, and Romania (Halmos, 2011; Vehorn, 2011; Jude & Silaghi, 2016; Popescu, 2014; Zoltán, & Gábor, 2022). While the literature offers insights into potential correlations between these two phenomena, the specific dynamics within each country warrant further investigation. This study aims to investigate the link between FDI and unemployment across these five countries, shedding light on their unique economic contexts and identifying potential patterns or trends.

The primary aim of this study is to explore the relationship between FDI and unemployment in Bulgaria, the Czech Republic, Poland, Hungary, and Romania. By conducting a comparative analysis, we seek to uncover any commonalities or divergences in the dynamics between these two economic indicators across the selected countries. Additionally, the study aims to contribute to the existing literature by providing insights into the potential factors driving unemployment rates in each country and how they may be influenced by FDI.

To achieve our research objectives, we will employ a quantitative research methodology, leveraging statistical analysis techniques to examine the relationship between FDI and unemployment. The primary

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data sources for this study will be reputable international databases, including but not limited to, the United Nations Conference on Trade and Development (UNCTAD) and the World Bank. These databases provide comprehensive and reliable data on FDI (% of GDP) and Unemployment (% of total labor force) for the selected countries over a specified time period (Tesliuc & all, 2014; Eisemon, 2014; Kapur et al, 2011).

Our approach will involve conducting polynomial regression analyses to assess the statistical dependence between FDI and unemployment in each country. By examining the coefficients of determination (R2) generated from these regression models, we will evaluate the extent to which FDI explains the variations in unemployment rates. Additionally, graphical representations of the data will be used to visually illustrate any trends or patterns observed.

Through this rigorous methodology, we aim to provide a nuanced understanding of the link between FDI and unemployment in Bulgaria, the Czech Republic, Poland, Hungary, and Romania, contributing valuable insights to both academia and policymaking circles.

2. Labor Marker and Unemployment

The concept of a labor market refers to the dynamic space where individuals seeking employment (workers) and employers seeking to fill job positions interact and engage with one another (Fowler & Jensen, 2020; Piore, 2018; Bălan, 2014).

Inside the labor market, employers utilize various strategies and incentives to attract top talent, by offering: competitive wages, benefits, career advancement opportunities, and a positive work environment (Bills et all, 2014; Alan, 2011; Dodini et all, 2022). In exchange, workers employ their skills, qualifications, and experiences to compete for desirable job positions, seeking opportunities that align with their career aspirations, job satisfaction, and personal satisfaction.

The labor market is characterized by the continuous exchange of supply and demand for labor. Employers evaluate the availability of workers and are making decisions based on the qualifications of candidates. In the same time, workers assess their job opportunities, taking into factors such as compensation, job security, work-life balance, and potential for growth and development (Maxwell, 2006; Hipp, 2016).

This interaction and competition inside the labor market contribute to the general well-being of the economy, drives productivity, and influences wage levels (Webber, 2022; Marinescu & Sirbu; 2022). The labor market plays also a crucial role in shaping employment dynamics and the overall economic landscape.

Effective communication within the labor market is paramount for facilitating smooth interactions between employers and job seekers, thereby fostering efficient employment processes (McCann et all, 2013; Tănase Popa, 2023). It serves as a bridge for conveying job opportunities, requirements, and expectations, ensuring alignment between employers' needs and workers' skills. Moreover, transparent communication helps mitigate information asymmetry, empowering individuals to make informed decisions about their career paths (Tănase Popa, 2022). Robust communication channels within the labor market contribute to enhancing productivity, promoting job satisfaction, and driving economic growth.

In the Eastern European Cluster, the labor market serves as a dynamic arena where job seekers and employers converge to address their respective needs, including combating unemployment (Zainea et all, 2020; Mihaela, 2020).

Within the competitive European landscape, employers vie to secure top talent by providing enticing compensation packages, benefits, and avenues for career advancement, thereby fostering a conducive work environment conducive to attracting and retaining skilled workers who can contribute to organizational success.

To reduce the unemployment, the employees compete also with each other to secure desirable positions that align with their qualifications and long term career aspirations in the companies.

The efficiency of the labor market is pivotal in shaping the European economy, including addressing the issue of unemployment. It not only impacts wage levels, productivity, and resource allocation but also plays a crucial role in facilitating job matching and economic growth (Feng et all, 2024; Bite et all, 2020). Within this dynamic space, firms and workers continually interact to fulfil their future expectations, fostering the exchange of skills, qualifications, and employment opportunities. This interaction is particularly vital in former communist states, where the labor market's performance directly influences their development trajectory.

The labor market operates based on the principles of supply and demand. Employers evaluate the supply of workers and make decisions based on their needs and the qualifications of potential candidates. Workers, are evaluating the demand for their skills and seek new job opportunities that offer the best outcome for their qualifications (Ahmad et all, 2021; Shappiro; 2022).

After 30 years of the fall of communism, the labor market within SEE involves the interaction between labor demand, which represents the needs of firms or employers for workers, and labor supply, which is representing the availability of workers seeking employment opportunities.

Labor demand is driven by various factors such as the growth of industries, technological advancements, and expansion of businesses Eastern European companies are assessing their labor requirements based on factors like production levels, expansion plans, and the need for specialized skills. They determine the quantity and quality of labor they require to meet their operational objectives (Brinca et al, 2021).

Labor supply represents the segment of persons who are willing to offer their services as qualified workers. It is influenced by various factors, including population size, demographic trends, educational levels, and labor force participation rates. Workers assess their skills, qualifications, and preferences to determine their availability for employment (Oh, 2023; Aaronson et all, 2021).

The interaction between labor demand and labor supply in the market is influenced by changes in negotiation process, known as bargaining power. Bargaining power refers to the relative strength and influence that employers and workers possess in negotiating employment terms, including wages, working conditions, and other aspects. Changes in bargaining power can stem from factors such as changes in labor laws, collective bargaining agreements, market competition, and economic conditions. When one party has a stronger bargaining position, it may exert more influence over wage levels, employment contracts, and other employment-related terms (Martin, 1992; Ahern, 2012; Michael; 2000; Baldenius, 2000).

The labor market in Southeast Europe can vary depending on the country and specific economic context. However, in general, there are several common characteristics of the labor market in this region:

- Economic situation: The region has achieved in the last years economic growth, leading to increased labor demand in different sectors.

- Diversity: Southeast Europe encompasses a range of sectors, including manufacturing, services, tourism, agriculture, and IT, offering a wide array of employment opportunities.

➢ Migration: Some countries experience labor emigration as individuals seek better prospects elsewhere, impacting the availability and distribution of the workforce within the region.

➢ Regional disparities: There are notable variations in economic development and labor market conditions across different areas within Southeast Europe, resulting in differing employment opportunities and challenges.

➢ Legislation: All the five countries of SEE Cluster has its own labor market legislation, covering areas such as employee protection, employment contracts, minimum wages, and workers' rights.

➢ Regional cooperation: Countries in Southeast Europe engage in regional cooperation efforts to address shared labor market challenges and promote economic development.

The labor market situation can differ among the five countries and is influenced by a variety of economic, political, and social factors.

The relationship between the labor market, wages, and unemployment is intricately interconnected. In our opinion the most important aspects of the relationship are:

➢ Supply and demand of labour: The level of wages and the unemployment rate are largely determined by the balance between labor supply and demand. If labor supply exceeds demand, it can lead to increased competition among workers for available jobs, resulting in lower wages and higher unemployment. In the same time, if labor demand surpasses supply, wages may increase, and unemployment rates may decrease.

➢ Productivity: The productivity of the workforce significantly impacts wages and the unemployment rate. A highly productive and skilled labor force can attract employers and contribute to wage growth and low productivity can lead to lower wages and unemployment.

➢ Public policies: Government policies, such as minimum wage laws, or employment stimulus programs, can have a significant impact on wages and the unemployment rate in Eastern Europe. These policies may aim to protect workers, promote job creation, or address unemployment challenges.

➢ Market dynamics: Economic fluctuations, technological changes, and other factors can influence wages and the unemployment rate. During periods of economic recession, as happened in tourism in the Covid pandemic period labor demand may decrease, leading to higher unemployment and downward pressure on wages.

All these relationships can vary depending on the specific economic, political, and social context of the five countries in the regional context. Interpreting these interconnections requires a detailed evaluation of data, and other relevant factors related to the labor market.

In summary, the labor market operates through the interaction between labor demand and labor supply, with unemployment serving as a crucial indicator of its health. Shifts in bargaining power can significantly impact wage levels, employment rates, and overall market performance. Therefore, grasping these dynamics is imperative for policymakers, businesses, and workers alike to navigate the labor market efficiently and foster a fair distribution of labor resources.

3. The Link between Foreign Direct Investment and Unemployment in SEE

In the next section we will analyze the possible links between FDI and the labor market for the states of the European Union.

3.1. The Impact of FDI on Unemployment in Bulgaria

After examining the graphical representation of data pertaining to FDI (% of GDP) and Unemployment (% of total labor force) as illustrated in the next figure, it can be deduced that there is no direct correlation between these two phenomena. Nevertheless, it is noteworthy that FDI generally falls within the range of 0.34% to 27.9%, whereas Unemployment spans across the range of 4.23% to 19.92% in most cases.

In the case of Bulgaria, a polynomial-type statistical dependence (with coefficient $R^2 = 0.4422$) can be tried, which means that the model explains only 44.22% of the evolution of unemployment. All other common regression types (linear, exponential, logarithmic, or power) provide very small values of R^2, so they are not valid for the model.

The polynomial regression graph shows that the level of unemployment as FDI decreases (as it should in principle, if foreign investment is effective) only for FDI intervals between: 0%-2%, 9%-18% or over 25%.

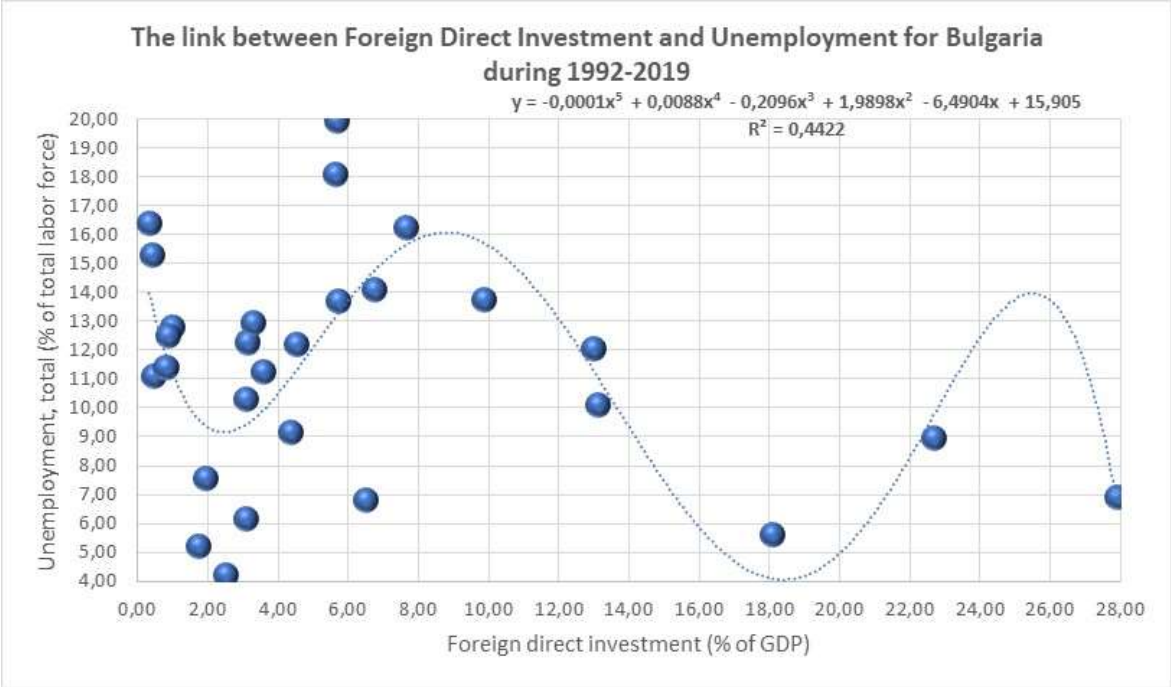

Figure 1 The link between FDI and Unemployment in Bulgaria (personal interpretation)

Based on our analysis, we believe that FDI has managed to reduce unemployment to a limited extent, but further efforts are needed to attract more of this type of investment, which should increase beyond the level of 25%.

3.2. The Situation of Unemployment in Czech Republic related to FDI

Analyzing the data on FDI (% of GDP) and those related to Unemployment, total (% of total labor force) presented graphically in the next figure, we conclude that there is no direct link between these two phenomena. It is noted, however, that FDI are (in most cases) in the range of: 0.25%-10.32% and Unemployment in the range of: 2.01%-8.76%.

In the case of Czech Republic, a polynomial-type statistical dependence (with coefficient $R^2 = 0.3731$) can be tried, which means that the model explains only 37.31% of the evolution of unemployment. All other common regression types (linear, exponential, logarithmic, or power) provide very small values of R^2, so they are not valid for the model.

The polynomial regression graph shows that the level of unemployment as FDI decreases (as it should in principle, if foreign investment is effective) only for FDI intervals between: 2%-5% or over 9%.

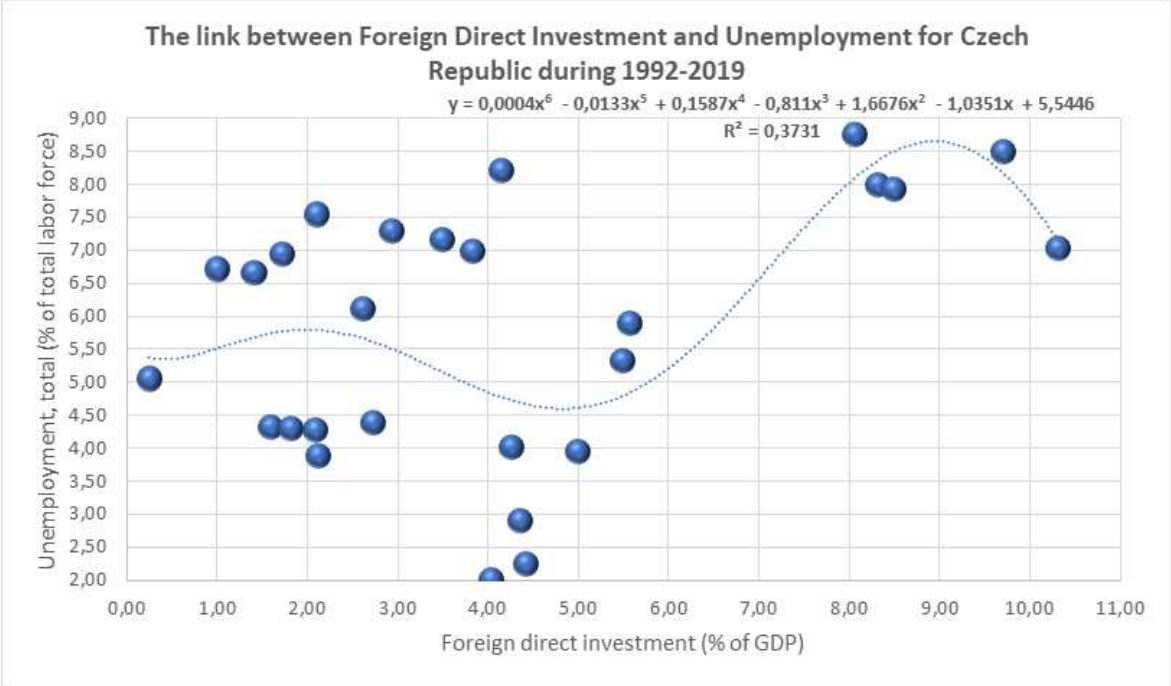

Figure 2 The link between FDI and Unemployment in Czech Republic (personal interpretation)

In the case of the Czech Republic, it is observed that maintaining FDI at a level above 9% would have a positive impact on reducing the national unemployment.

3.3. The Relation between FDI and Unemployment in Poland

Analyzing the available data on FDI (% of GDP) and those related to unemployment, total (% of total labor force) presented graphically in the next figure, we conclude that there is no direct link between these two phenomena. It is noted, however, that FDI are (in most cases) in the range of: 0.52%-5.48% and Unemployment in the range of: 3.28%-19.89%. We can observe that at various levels of FDI, there are very high limits of variation of unemployment which leads to the impossibility of generating a statistical dependence of the data.

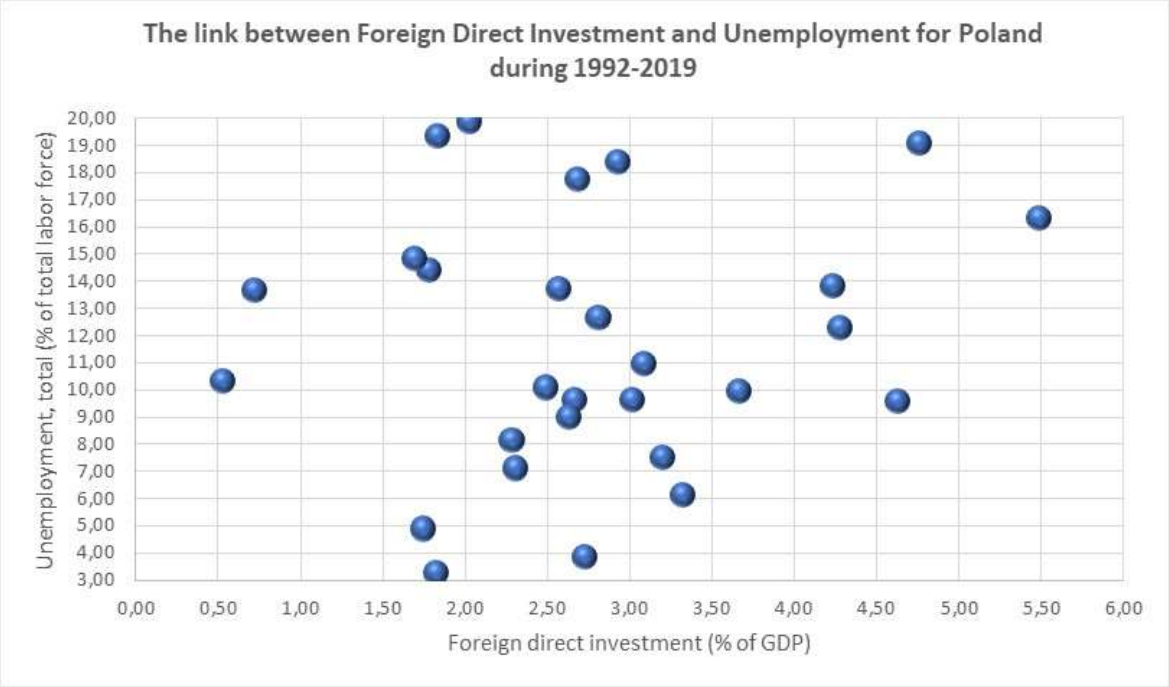

Figure 3. The Link between FDI and Unemployment in Poland (Personal Interpretation)

From the interpretation of the data, we cannot precisely establish a minimum threshold of FDI that, once surpassed, would lead to a decrease in unemployment in Poland. This implies that the relationship between FDI and unemployment is not easily quantifiable or predictable based only on the available data.

3.4. The Influence of FDI on Unemployment in Romania

Analyzing the data on FDI (% of GDP) and those related to unemployment, total (% of total labor force) presented graphically in the next, we conclude that there is no direct link between these two phenomena. It is noted, however, that FDI are (in most cases) in the range of: 0.34%-8.9% and Unemployment in the range of: 0%-8.26%.

In the case of Romania, a polynomial-type statistical dependence (with coefficient $R^2 = 0.3009$) can be tried, which means that the model explains only 30.09% of the evolution of unemployment. All other common regression types (linear, exponential, logarithmic, or power) provide very small values of R^2, so they are not valid for the model.

The polynomial regression graph shows that the level of unemployment as FDI decreases (as it should in principle, if foreign investment is effective) only for FDI intervals between: 1%-3%, 4.75%-6.5% and over 8.5%.

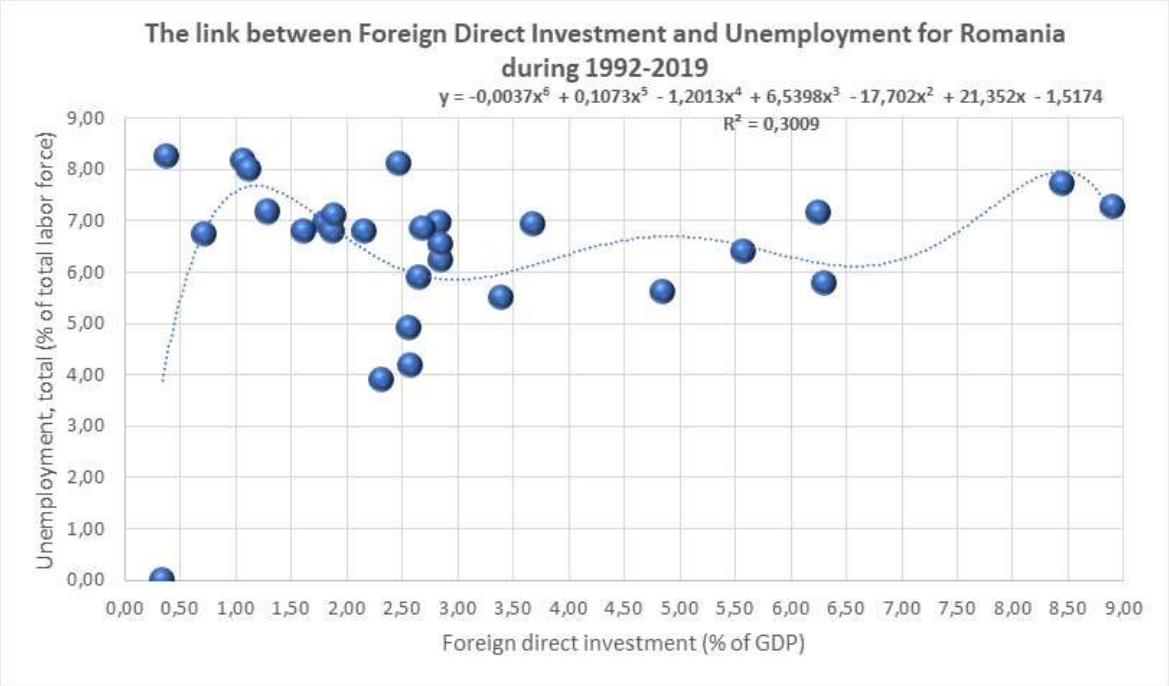

Figure 4 The link between FDI and Unemployment in Bulgaria (personal interpretation)

In the case of Romania, according to our analysis, it is observed that FDI needs to surpass the threshold of 8.5% in order to have a positive effect on the national unemployment.

3.5. The Situation on Hungary Related to the Link between FDI and Unemployment

Analyzing the data on FDI (% of GDP) and those related to Unemployment, total (% of total labor force) presented graphically in the figure 27, we conclude that there is no direct link between these two phenomena. It is noted, however, that FDI are (in most cases) in the range of: 1.66%-11.37% and Unemployment in the range of: 3.42%-12.1%. We can observe that at various levels of FDI, there are very high limits of variation of unemployment which leads to the impossibility of generating a statistical dependence of the data.

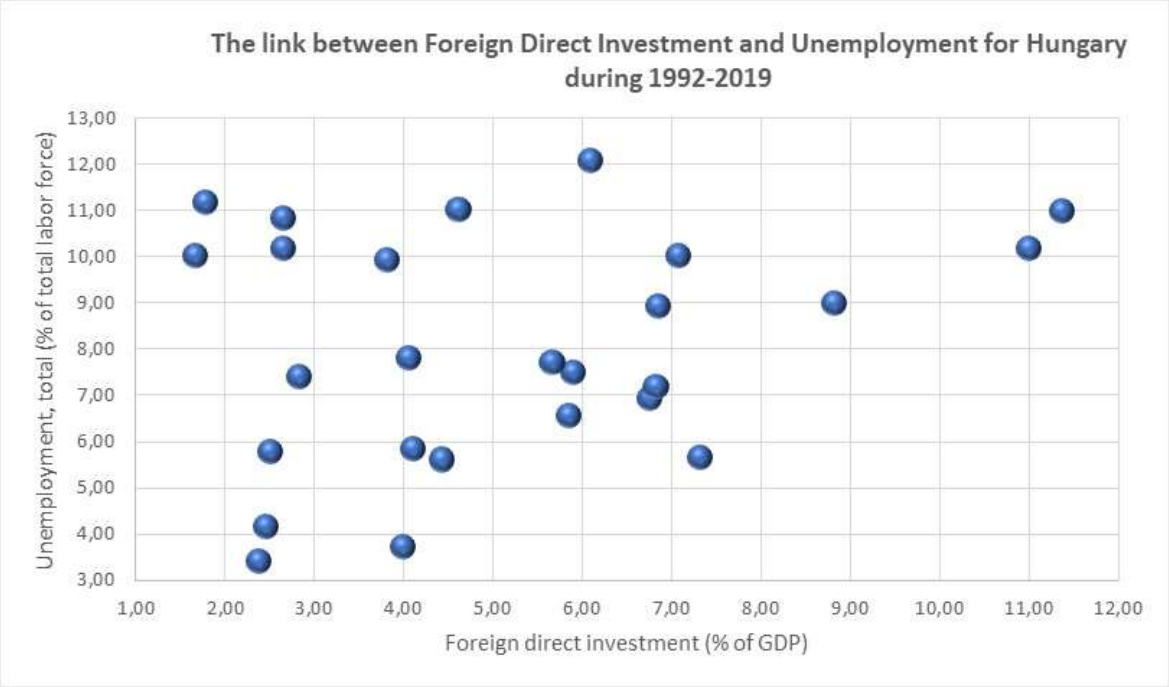

Figure 5 The link between FDI and Unemployment in Hungary (personal interpretation)

The situation in Hungary appears to be similar to that in Poland, as we cannot clearly observe the direct manner in which FDI influences the reduction of national unemployment.

5. Final Conclusions

Based on the comparative analysis of FDI (% of GDP) and Unemployment (% of total labor force) data for Bulgaria and the Czech Republic, several noteworthy observations emerge. Firstly, the graphical representation indicates that there is no direct correlation between these two phenomena in either country. However, it is essential to highlight the range within which FDI and Unemployment typically fluctuate. In Bulgaria, FDI tends to fall within the range of 0.34% to 27.9%, while Unemployment spans across 4.23% to 19.92%. Similarly, in the Czech Republic, FDI usually ranges from 0.25% to 10.32%, with Unemployment between 2.01% and 8.76%.

Upon conducting polynomial regression analyses, it becomes evident that the explanatory power of the models is limited. For Bulgaria, the polynomial-type statistical dependence explains only 44.22% of the evolution of unemployment, while for the Czech Republic, it accounts for 37.31%. Interestingly, the polynomial regression graphs for both countries reveal that unemployment tends to decrease as FDI decreases, particularly within specific FDI intervals. In Bulgaria, this effect is observed for FDI intervals between 0%-2%, 9%-18%, or over 25%. Conversely, in the Czech Republic, maintaining FDI above 9% appears to have a positive impact on reducing national unemployment.

After conducting a thorough analysis of the data on FDI (% of GDP) and Unemployment (% of total labor force) for Hungary, Poland, and Romania, several key findings emerge. Firstly, it is evident that there is no direct link between these two phenomena in any of the observed countries. Despite this lack of direct correlation, it is crucial to note the ranges within which FDI and Unemployment typically fluctuate.

In Hungary, FDI generally falls within the range of 1.66% to 11.37%, while Unemployment spans across 3.42% to 12.1%. Similarly, in Poland, FDI typically ranges from 0.34% to 8.9%, with Unemployment between 0% and 8.26%. In Romania, FDI are most commonly found within the range of 0.52% to 5.48%, while Unemployment varies from 3.28% to 19.89%.

Despite these variations, our analysis reveals significant limits of variation in unemployment at various levels of FDI, making it challenging to establish a statistical dependence between the two phenomena. Polynomial regression analyses suggest that the explanatory power of the models is limited, with coefficients of determination (R2) ranging from 0.3009 to 0.4422, indicating that these models explain only a portion of the evolution of unemployment.

Ultimately, while it may be tempting to seek a minimum threshold of FDI that would lead to a decrease in unemployment, our findings suggest that such relationships are not easily quantifiable or predictable based solely on the available data. Therefore, further research and nuanced analysis are warranted to better understand the complex dynamics between FDI and unemployment in these countries.

References

Aaronson, D.; Dehejia, R.; Jordan, A.; Pop-Eleches, C.; Samii, C. & Schulze, K. (2021). The effect of fertility on mothers' labor supply over the last two centuries. *The Economic Journal*, 131(633), pp. 1-32.

Ahern, K. R. (2012). Bargaining power and industry dependence in mergers. *Journal of Financial Economics*, 103(3), pp. 530-550.

Ahmad, A.; Abdullah, S. R. S.; Hasan, H. A.; Othman, A. R. & Ismail, N. I. (2021). Aquaculture industry: Supply and demand, best practices, effluent and its current issues and treatment technology. *Journal of Environmental Management*, 287, 112271.

Alan, M. (2011). Imperfect competition in the labor market. *Handbook of labor economics*, Vol. 4, pp. 973-1041. Elsevier.

Bălan, M. (2014). Youth labor market vulnerabilities: characteristics, dimensions and costs. *Procedia Economics and Finance*, 8, pp. 66-72.

Baldenius, T. (2000). Intrafirm trade, bargaining power, and specific investments. *Review of Accounting Studies*, 5, pp. 27-56.

Bills, D. B.; Di Stasio, V. & Gërxhani, K. (2017). The demand side of hiring: Employers in the labor market. *Annual Review of Sociology*, 43, pp. 291-310.

Bite, P.; Szombathelyi, M. K. & Vasa, L. (2020). The concept of labour migration from the perspective of Central and Eastern Europe. *Economics & Sociology*, 13(1), pp. 197-216.

Brinca, P.; Duarte, J. B. & Faria-e-Castro, M. (2021). Measuring labor supply and demand shocks during COVID-19. *European Economic Review*, 139, p. 103901.

Dodini, S.; Salvanes, K. G. & Willén, A. (2022). *The dynamics of power in labor markets: Monopolistic unions versus monopsonistic employers*. IZA-Institute of Labor Economics.

Eisemon, T. O. (2014). World Bank lending for higher education and research: Lessons and implications for Eastern Europe. *Science and Technology in Central and Eastern Europe*, pp. 191-205. Routledge.

Feng, Y.; Lagakos, D. & Rauch, J. E. (2024). Unemployment and development. *The Economic Journal*, 134(658), pp. 614-647.

Fowler, C. S. & Jensen, L. (2020). Bridging the gap between geographic concept and the data we have: The case of labor markets in the USA. *Environment and Planning A: Economy and Space*, 52(7), pp. 1395-1414.

Halmos, K. (2011). The effect of FDI, exports and GDP on income inequality in 15 Eastern European countries. *Acta Polytechnica Hungarica*, 8(1), pp. 123-136.

Hipp, L. (2016). Insecure times? Workers' perceived job and labor market security in 23 OECD countries. *Social Science Research*, 60, pp. 1-14.

Jude, C. & Silaghi, M. I. P. (2016). Employment effects of foreign direct investment: New evidence from Central and Eastern European countries. *International Economics*, 145, pp. 32-49.

Kapur, D.; Lewis, J. P. & Webb, R. C. (2011). *The World Bank: its first half century*, Vol. 1. Brookings Institution Press.

Marinescu, L. M. & Sirbu, G. E. (2022). Opinions Regarding Societal Resilience. *Acta Universitatis Danubius. Relationes Internationales*, 15(2).

Martin, R. (1992). *Bargaining power*. Oxford University Press.

Maxwell, N. L. (2006). *The working life: The labor market for workers in low-skilled jobs*. WE Upjohn Institute.

McCann, R. J.; Shi, X.; Siow, A. & Wolthoff, R. (2013). *The organization of the labor market with communication and cognitive skills*. Preprint at www. math. toronto. edu/mccann/publications.

Michael, S. C. (2000). Investments to create bargaining power: The case of franchising. *Strategic Management Journal*, 21(4), pp. 497-514.

Mihaela, S. (2020). Improving unemployment rate forecasts at regional level in Romania using Google Trends. *Technological Forecasting and Social Change*, 155, 120026.

Oh, S. (2023). Does identity affect labor supply? *American Economic Review*, 113(8), pp. 2055-2083.

Piore, M. J. (2018). The dual labor market: theory and implications. *Social Stratification*, pp. 629-640. Routledge.

Popescu, G. H. (2014). FDI and economic growth in Central and Eastern Europe. *Sustainability*, 6(11), pp. 8149-8163.

Shapiro, A. H. (2022). How much do supply and demand drive inflation? *FRBSF Economic Letter*, 15, pp. 1-6.

Tănase Popa, D. A. (2023). On Self-Esteem as a Predictor for a Future Profession in the Field of Communication. *Journal of Danubian Studies and Research*, Vol. 13 No. 2/2023. Galati: Danubius University Publishing House.

Tănase Popa, D.A. (2023). The Relationship between Job Satisfaction and Anger. *New Trends in Psychology* Vol. 4, No. 2/2022. Galati: Danubius University Publishing House.

Tesliuc, E.; Pop, L.; Grosh, M. & Yemtsov, R. (2014*). Income support for the poorest: A review of experience in Eastern Europe and Central Asia*.

Vehorn, C. (2011). FDI and macroeconomic policies in central and eastern European countries. *Zagreb International Review of Economics & Business*, 14(1), pp. 23-34.

Webber, D. A. (2022). Labor market competition and employment adjustment over the business cycle. *Journal of Human Resources*, 57(S), S87-S110.

Zainea, L. N.; Tomac, S. G.; Marinescu, P. & Chițimiea, A. (2020*). Combating unemployment through social entrepreneurship in the European context.*

Zoltán, G. & Gábor, L. (2022). FDI-based regional development in Central and Eastern Europe: A review and an agenda. *Tér és Társadalom*, 36(3), pp. 68-98.