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Original Scientific Article

Relationship between FDI Inflow and Unemployment in the Case of the Former Yugoslav Republics

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Abstract: *Foreign Direct Investments - FDIs are recognized in the economics literature as one of the vital determinants of economic growth. A particular interest of any host economy is to reach the employment effect of the FDIs. The purpose of the paper is to analyze the relationship between the inflow of the FDIs and the unemployment rate in the case of the former Yugoslav republics and to identify whether and how the new economies have benefited from the FDI inflow. The paper develops a model identifying the FDI as a determinant of the unemployment rate. A regression analysis is used to examine the correlation between the FDI inflow and the unemployment rate over the period of 30 years. The results show differences in FDIs inflow and huge individual variations in the unemployment rate in each country.*

Keywords: *FDI, Unemployment, Analysis.*

JEL Classification E24 · E22 · F21

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1. INTRODUCTION

Although foreign direct investment (FDI) trends in the last decade varied significantly (UNCTAD, 2021), they are examined and treated as a factor of economic growth for both developed and developing countries. The impact of FDIs on the host economy is an issue of continual theoretical and empirical interest of the scientific community on one hand, and on the other, it is an integral part of national development policies. The FDI's research interest could be equally focused on the quantitative and qualitative aspects and their interactions with the host environment through launching production facilities, hiring and training workers, establishing linkages with local suppliers, and affecting the export performances of the local economy. Especially, FDIs in developing and emerging economies and countries in transition are considered an essential source of modernization, employment, and development (OECD, 2002). Inward FDIs have played an important role in the transition process of developing countries. Foreign investors initially moved into the Central European Economies (CEE) region due to the cost advantages concerning labour, but over time many FDIs have upgraded their operations, as evidenced by the growth of high-technology industries and high technology exports (Narula & Guimon, 2010). At the same time, the experience of the former Yugoslav republics referring to the influence of FDI inflow and employment exercises different practices. The rationale for this paper is to analyse the tendencies in the FDI inflow and unemployment rate in order to reveal whether the former Yugoslav republics have reached the employment spill-over effect from the FDI inflow. The paper identifies very different tendencies suggesting the influence of the FDI on unemployment is more intensive in some countries, but less in others. The first part of the paper summarises the theoretical background on the linkages between FDI inflow and employment in the host economy as a research issue. The second part presents the methodology used in the analysis and determines the relationship between the FDI inflow and unemployment data in the analyzed economies. Finally, the paper is summarized with the derivation of conclusions based on the regression analysis with suggestions for further research.

2. LITERATURE REVIEW

There is always arguing about the influence of the FDI inflow on the labor market. The results of the empirical research are very divergent and ambiguous. The study performed by Dinga and Munich (2010) indicates a positive and statistically significant effect of large FDIs on unemployment. Tegep et al. (2019) studied the relationship between Foreign Direct Investment (FDI) and the unemployment rate in Indonesia. They concluded that FDI alone is insufficient to explain the unemployment rate fluctuations. Research conducted by Gökçeli (2023) examined the impact of total foreign direct investment (FDI) on the unemployment rate in Turkey from 1992 to 2020. The findings indicate no significant effect of FDI inflows on the employment rate. This lack of significant impact could be due to the fact that the influence of FDI on employment rates differs across various sectors. The findings of a study conducted by Alalawneh and Nessa (2020) in the Middle East and North Africa, spanning from 1990 to 2018, indicate that foreign direct investment (FDI) contributes to a decrease in the long-term unemployment rates for both men and women. Additionally, the study suggests that there is no causal relationship between FDI and unemployment in the short term. Wang and Choi (2021) analyzed panel data from 26 OECD countries spanning the years 2006 to 2018. Their findings show that foreign direct investment (FDI) inflow has a significant positive impact on domestic employment, albeit with a one-period time lag, suggesting that there is a delay in the effect of FDI on employment growth. Kwan and Tang (2020), through cross-sectional data analysis of 19 industries in Malaysia, identified a positive and long-term effect of foreign investment on employment. Bayar et al. (2020) conducted a study on the unemployment effects of greenfield and brownfield investments in 11 post-transition EU members from 2003 to 2017. The study's findings indicated that

brownfield investments contributed to long-term unemployment, whereas greenfield investments did not significantly impact overall unemployment in the long run.

Hunya and Geishecker (2005) referring to the employment effect of FDI suggest that job losses and job creation are appearing simultaneously. They summarized FDI's effect on employment as direct and indirect. Job loss through restructuring of formerly inefficient state-owned companies against the job creation through greenfield investment. Their research about the employment effects of FDI in Central and Eastern Europe (CEE) identified differences in employment opportunities and wages between young skilled workers employed by the FDI and less skilled and elder people. Brincikova and Darmo (2014) analyzing the impact of FDI inflow on employment in Visegrad group countries have revealed no significant impact of FDI on the unemployment rate. Research results by Jude and Pop Silaghi (2016) recognized a modest importance of FDI as a determinant of employment compared to economic restructuring and output growth. The influence of the FDI on increasing employment or diminishing the unemployment rate, Dicken (2015), has put in relation to the nature of the FDI inflow. Greenfield investment results in a higher positive employment effect, against the acquisitions or purchasing of privatized companies. Research by Estrin (2017) reveals very interesting findings about the relationship of FDI to unemployment in transition economies. In CEE countries, a pattern of inverse correlations between FDI and unemployment appears after the completion of enterprise restructuring. Against CEE countries, Estrin (2017) has identified different experiences in Balkan countries suggesting that the process of restructuring was longer and it was less dependent on FDI. So, the FDIs in this case, had less impact on the decrease in unemployment because the FDIs were more resource-oriented. Zdravkovic et al. (2017) have analysed the long-run impact of FDI on the unemployment rate in 17 transition countries and found out that it is very loose or does not exist and the impact of FDI on unemployment depends on its nature – greenfield and brownfield structure. Stepanok (2022) has developed a model in which is shown that the FDI increases unemployment. FDI in developing countries has resulted in the redistribution of employment, Bogliaccini and Egan (2017), influencing the unemployment rate positively or negatively.

The impact of foreign direct investment (FDI) inflows on unemployment is the subject of considerable debate within scholarly literature. While some contend that FDI leads to a significant decrease in unemployment rates, others argue that it brings about adverse effects. There is also a perspective suggesting an ambiguous or indeterminate effect of FDI on unemployment.

3. DATA AND METHODOLOGY

The model developed in this paper follows partially the regression model of the impact of FDIs on the accumulation of human capital within developing countries in the study of Gittens and Pilgrim (2013). We take this model since FDI has a human capital content through the processes of employment creation and employment redistribution in the host economies. Both of them influence directly the unemployment rate. The model relates the unemployment rate to the FDI inflow of the former Yugoslav republics. The proposed regression equation (1) links the dependent variable unemployment (Unemp) and FDI inflow.

$$Unemp = \beta_0 + \beta_1 FDI + u \tag{1}$$

The error term u in equation (1) accounts for the unobservable and omitted effects and if it takes 0 the function *f* looks:

$$f(Unemp) = \beta_0 + \beta_1 FDI \tag{2}$$

The change in the unemployment rate reflects the overall influence of the FDI inflow on the creation and redistribution of employment in the period of 30 years, from 1990 to 2021.

For the analysis, two sets of data were utilized. The first set pertains to the unemployment rate during the analyzed period, sourced from the World Bank database (worldbank.org). Notable disparities in the unemployment rate across the former Yugoslav republics were evident during the analyzed period (see Figure 1). The Macedonian economy, as well as Bosnia and Herzegovina and Montenegro, exhibit the highest rates of unemployment. Croatia and Serbia, on the other hand, demonstrate comparatively lower levels of unemployment, albeit marked by significant fluctuations. In contrast, Slovenia displays a notably stable trend characterized by very low unemployment rates.

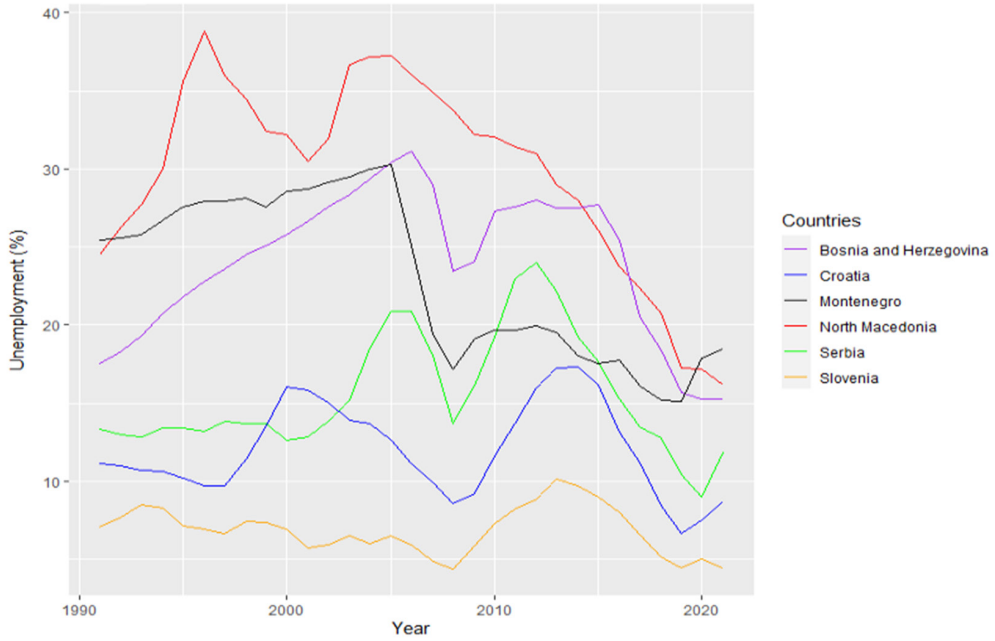

Figure 1. The unemployment rate in the Former Yugoslav economies in the period 1990-2021
Source: On the basis of data from https://data.worldbank.org/indicator/SL.UEM.TOTL.ZS

The second set of data pertains to the inflow of FDIs and is sourced from the UNCTAD World Investment Database for the period 1990-2021 (Figure 2). The data depicted in Figure 2 highlights the FDI inflow, revealing substantial discrepancies and similarities in the FDI trends across the former Yugoslav republics. Upon analysis, three main phases in the FDI inflow are discernible. The initial phase, corresponding to the first 10 years of independence, is characterized by a very low, almost negligible inflow of FDIs. Primarily, these inflows were in the form of acquisitions and privatizations of state-owned mining enterprises and raw materials facilities. The second period, spanning from 2001 to the global financial crisis in 2010, was marked by a focus on modernization, privatization, and restructuring in sectors such as finance, telecommunications, petroleum, metallurgy, electricity, and water distribution. Foreign Direct Investment (FDI) during this phase was primarily associated with the privatization and acquisition of existing enterprises. The third phase, following the global financial crisis in 2011, saw a shift in FDI inflow, particularly towards greenfield foreign investment. To attract more greenfield investments, several former Yugoslav republics pursued aggressive strategies to entice foreign investors through various benefits and incentives. As a result, there was a noticeable increase in both the quantity and quality of FDI inflow.

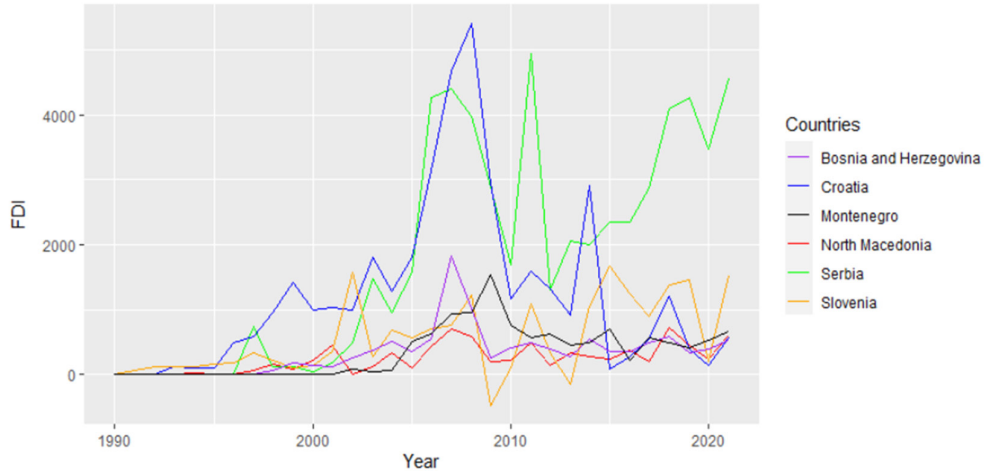

Figure 2. The FDI inflow in the Former Yugoslav Republics in the period 1990-2021
Source: On the basis of data from https://unctad.org/data-visualization/global-foreign-direct-investment-flows-over-last-30-years

4. RESULTS AND DISCUSSION

To investigate the relationship between the FDI inflow and unemployment regression equation 2 is used. The results are obtained using R as an open-source programming language and software environment for statistical computing and graphics. Findings summarised in Table 1 reveal diversity and no substantial correlation between the FDI inflow and unemployment rate in the case of the former Yugoslav republics. In the analyzed period, the R-squared values are very low, except for the Montenegro and Macedonian economies.

Table 1. Results of the Regression Analysis

Country	Intercept	FDI	R-squared	Adjusted R-squared	Correl. coeff. (r)	p-value	F-test
N. Macedonia	33.904878	-0.012844	0.1615	0.1279	-0.401853	0.03773	9.564833
Slovenia	7.2534170	-0.000697	0.0713	0.03927	-0.267018	0.1465	6.829826
Croatia	12.08	-0.000078	0.001156	-0.03452	-0.034005	0.8584	5.144272
Serbia	15.93	0.000032	0.0001589	-0.04331	0.012607	0.9523	6.702362
Montenegro	24.625198	-0.007091	0.2206	0.1773	-0.469702	0.03666	2.279017
B&H	24.578010	0.001048	0.006036	-0.03914	0.077689	0.7182	1.820535

Source: Author's calculations

Based on the analysis for Slovenia, the relationship between Foreign Direct Investment (FDI) inflow and the unemployment rate from 1990 to 2021 reveals a weak and not statistically significant correlation. The calculated correlation coefficient is -0.267, indicating a slight negative relationship between FDI and unemployment. However, this relationship is not strong. The regression analysis further supports this finding, with an R-squared value of 0.071, suggesting that only 7.13% of the variance in the unemployment rate is explained by FDI inflows. The slope of the regression line (Figure 3) is -0.0007, indicating a minor decrease in the unemployment rate with an increase in FDI, but this effect is not statistically significant (p-value = 0.146). Therefore, the analysis suggests that FDI inflows have minimal impact on the unemployment rate in Slovenia during the studied period.

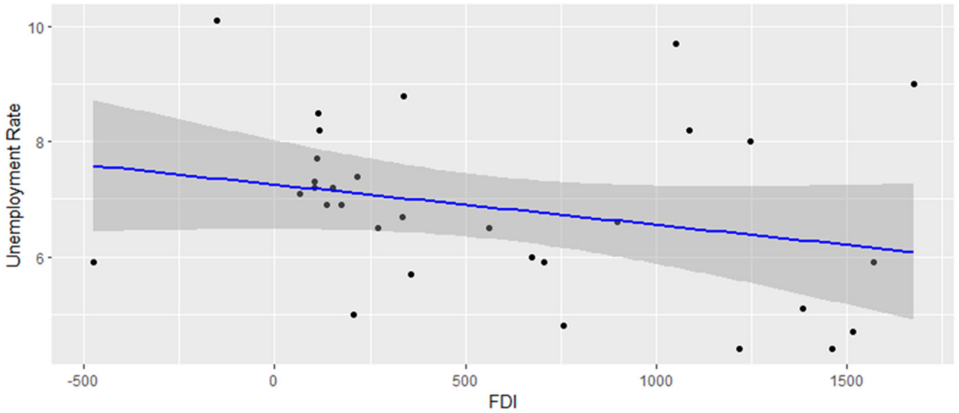

Figure 3. Slovenia's regression analysis between FDI and Unemployment (1990-2021)
Source: Author's calculation

The analysis for Croatia reveals no significant relationship between Foreign Direct Investment (FDI) inflows and the unemployment rate from 1990 to 2021. The correlation coefficient is -0.034, indicating a weak inverse relationship between FDI and unemployment. The regression analysis supports this finding, with an R-squared value of 0.001, suggesting that only 0.12% of the variance in the unemployment rate is explained by FDI inflows. The slope of the regression line is -0.000078, indicating a negligible change in the unemployment rate with an increase in FDI (Figure 4). The p-value of 0.858 suggests that the observed relationship lacks statistical significance. Thus, FDI inflows do not appear to have a meaningful impact on the unemployment rate in Croatia during the studied period.

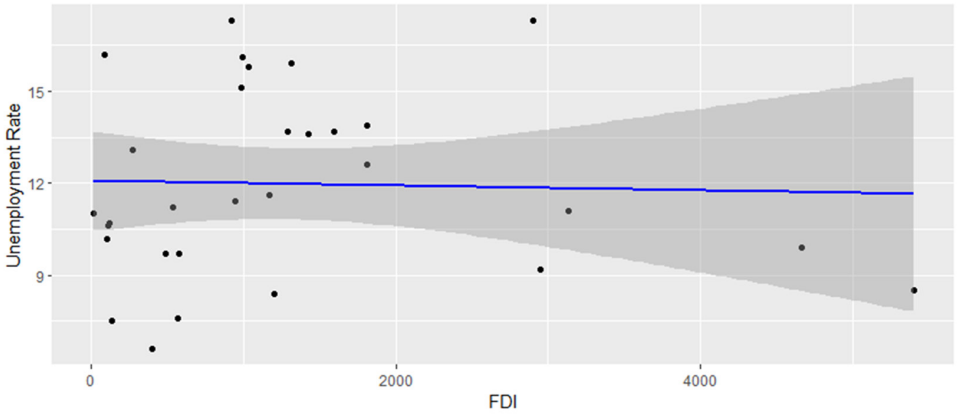

Figure 4. Croatia's regression analysis between FDI and Unemployment (1990-2021)
Source: Author's calculation

The analysis for Serbia indicates no significant relationship between Foreign Direct Investment (FDI) inflows and the unemployment rate from 1990 to 2021. The correlation coefficient is 0.0126, suggesting an extremely weak positive relationship. The regression analysis supports this finding with an R-squared value of 0.00016, meaning only 0.016% of the variance in the unemployment rate is explained by FDI inflows. The slope of the regression line is 0.0000326, indicating a negligible change in the unemployment rate with an increase in FDI (Figure 5). The p-value of 0.952 further indicates that this relationship is not statistically significant. Therefore, FDI inflows do not appear to have a meaningful impact on the unemployment rate in Serbia during the studied period.

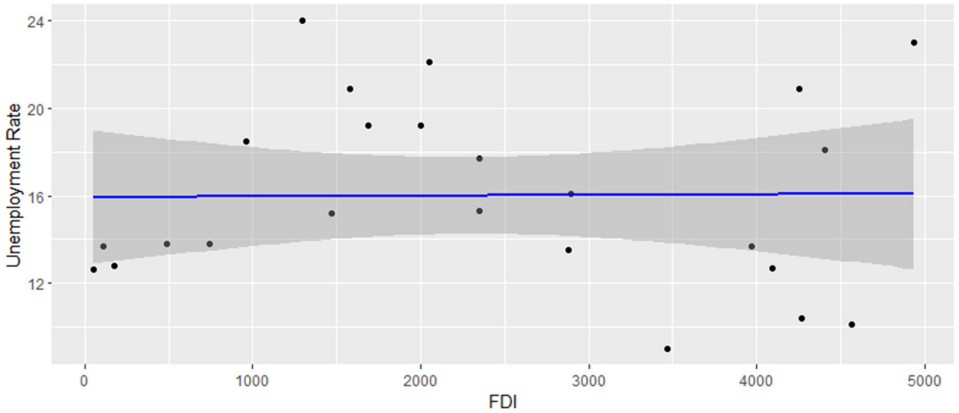

Figure 5. Serbia's Regression Analysis between FDI and Unemployment (1990-2021)
Source: Author's calculation

The analysis for Montenegro reveals a statistically significant relationship between Foreign Direct Investment (FDI) inflows and the unemployment rate from 1990 to 2021. The correlation coefficient is -0.470, indicating a moderate inverse relationship between FDI and unemployment. The regression analysis supports this finding, with an R-squared value of 0.221, suggesting that approximately 22% of the variance in the unemployment rate is explained by FDI inflows. The slope of the regression line is -0.007, indicating that for every unit increase in FDI, the unemployment rate decreases by 0.007 units. The p-value of 0.037 further confirms that this relationship is statistically significant. Thus, FDI inflows appear to have a meaningful impact on reducing the unemployment rate in Montenegro during the studied period (Figure 6).

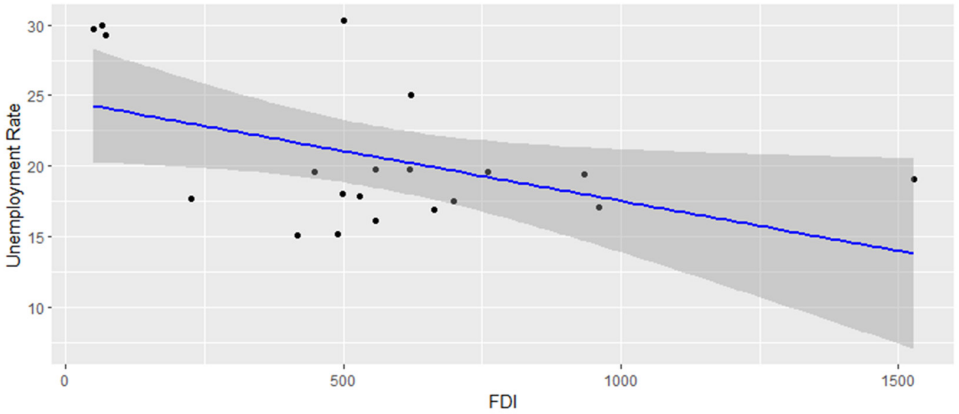

Figure 6. Montenegro's Regression Analysis between FDI and Unemployment (1990-2021)
Source: Author's calculations

The analysis for Bosnia and Herzegovina reveals that there is no significant relationship between Foreign Direct Investment (FDI) inflows and the unemployment rate from 1990 to 2021. The correlation coefficient is 0.078, indicating a very weak positive relationship between FDI and unemployment. The regression analysis supports this finding, with an R-squared value of 0.006, suggesting that only 0.60% of the variance in the unemployment rate is explained by FDI inflows. The slope of the regression line is 0.001, indicating a negligible change in the unemployment rate with an increase in FDI. The p-value of 0.718 further indicates that this relationship is not

statistically significant. Thus, FDI inflows do not appear to have a meaningful impact on the unemployment rate in Bosnia and Herzegovina during the studied period (Figure 7).

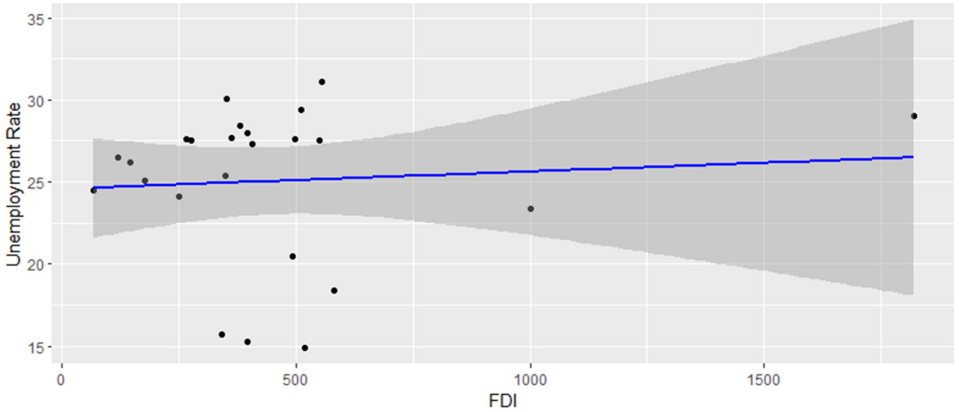

Figure 7. B&H's Regression Analysis between FDI and Unemployment (1990-2021)
Source: Author's calculations

The analysis of the relationship between Foreign Direct Investment (FDI) inflow and the unemployment rate in North Macedonia reveals a moderate inverse correlation, with an R-squared value of 0.161 indicating that changes in FDI explain 16.1% of the variance in the unemployment rate. The regression results show a statistically significant negative relationship, where an increase in FDI is associated with a decrease in the unemployment rate (Figure 8). Despite the significance of this relationship, the low R-squared value suggests that other factors also significantly influence unemployment. These findings support the notion that while attracting FDI can help reduce unemployment, comprehensive strategies addressing multiple economic factors are essential for achieving substantial and sustainable improvements in the labor market.

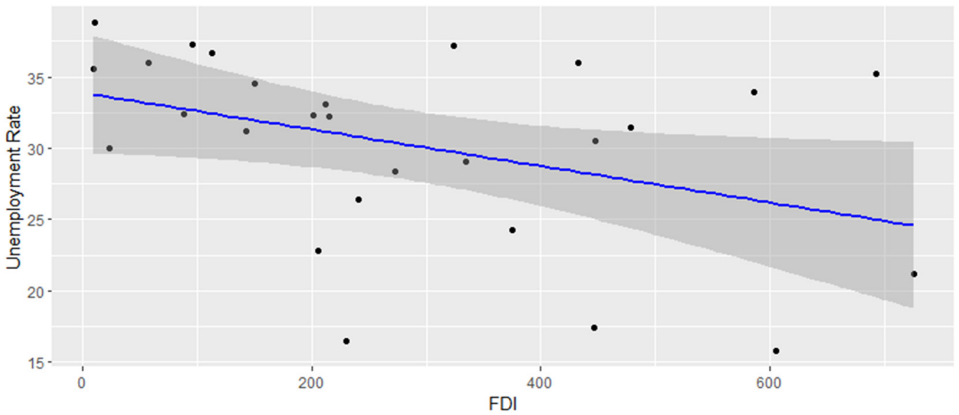

Figure 8. Macedonia's Regression Analysis between FDI and Unemployment (1990-2021)
Source: Author's calculations

Upon comparing the obtained p-values and regression lines, it becomes evident that there is a significant relationship between FDI and unemployment in the cases of Montenegro and the Macedonian economy. These nations display a pattern where an increase in FDI is linked to a decrease in unemployment. Conversely, the other economies exhibit weak or negligible evidence of such a relationship.

5. CONCLUSION

The main objective of this research is to examine the contribution of FDI inflow to the unemployment rate in the case of the former Yugoslav republics over the period ranging from 1990-2021.

Our regression model has revealed substantial differences in FDI inflows and significant individual variations in the unemployment rate across countries. The main finding suggests that FDI has no significant influence on the unemployment rate in most countries. However, individual analysis shows that only Montenegro and Macedonian economies exhibit a relationship between FDI inflow and a decreased unemployment rate. Initially, both countries had high unemployment rates. Nevertheless, as foreign direct investment (FDI) increased, the unemployment rates began to decline. This trend was particularly noticeable in Montenegro and Macedonian economies, as they faced significant unemployment and lacked FDI, especially greenfield FDI, during the transition period. The increased quantity and quality of FDI resulted in more apparent employment opportunities. The second group of countries comprises Serbia, Croatia, and Bosnia and Herzegovina. According to the regression analysis, there is a weak or non-significant relationship between FDI inflow and the unemployment rate in these countries. Over extended periods, it has been observed that FDI and unemployment move in the same direction, suggesting that an increase in FDI inflow is associated with a rise in the unemployment rate, and vice versa. In our analysis, Slovenia emerges as a distinct case with an impressively low and stable unemployment rate over the entire period under review. The regression trend analysis demonstrates a somewhat ambiguous impact of FDI on the unemployment rate, largely influenced by the nature of the FDI inflow. Predominantly, FDI inflows manifest as mergers and acquisitions, while greenfield investments, which are theoretically more conducive to job creation, are comparatively limited. Avsenik (2021) studying the effect of FDI in Slovenia found out that half of the surveyed companies reported an increase in employment due to FDI. However, the other half indicated no change or a decrease in employment as a result of FDI.

It is important to note that these conclusions are based solely on the p-values and regression lines obtained from the analysis. Further analysis and considerations, such as the strength of the relationship, effect sizes, and other contextual factors, are necessary for a comprehensive understanding of the FDI and unemployment dynamics in each country.

The relationship between FDI inflows and unemployment is complex and multifaceted. While FDI has the potential to reduce unemployment through job creation, skill enhancement, and economic growth, its impact can vary significantly depending on the host country's economic structure, sectoral distribution of FDI, and the nature of the labor market. Policymakers need to consider these factors to harness the full potential of FDI in reducing unemployment.

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