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Inward FDIS and Employment Relationship at The Peak of Globalization: An Analysis on Developing Countries

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Abstract

Globalization and its developments are changing countries' economic problems, and it is necessary to reconsider many economic phenomena that have been stabilized before. One of these economic phenomena is employment. Employment draws attention as one of the crucial issues associated with the welfare of the people in national economies. However, global developments affect people's ability to have a job or keep their current job, as well as other economic phenomena. One way of creating employment, especially for the economies of developing countries, is through inward foreign direct investment (FDI). FDI is the money flows that come to the fore in the literature with their direct and indirect impact on employment. Today, it is known that there are employment discussions in developing countries, especially with the covid-19 pandemic. Based on this information, this study aims to examine the effect of FDI on employment in developing countries, especially in the 2000-2019 period when globalization reached its peak. In the study, the effect of foreign direct investments on unemployment rates in 20 developing countries that are in the middle-income group was analyzed by the panel regression method. According to the estimation results, foreign direct investments in developing countries reduce unemployment rates.

Key words: Foreign Direct Investment, Developing Countries, Employment

JEL Code: E22, E24, F21

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1. Introduction

Today, the word "globe" refers to a smaller shape than ever. Naturally, people feel the world is smaller because people from different cultures and countries have become more connected to each other with technological developments and economic integration. In furtherance, the connections between people are not just at the individual level; mobility in global money transfers also climbs to high levels. International money flows, an essential element of economic globalization, one of the factors that shape the world economy. It would be correct to say that these flows can be classified as portfolio investments, foreign direct investments, and other flows. Among these monetary flows, it can be stated that foreign direct investments (FDI) contribute most to developing countries in different aspects. FDI can be defined as an investment made by a Multinational Corporation (MNC) through a firm/affiliate in another country to gain permanent interest (OECD, 2003:3). Although finding money to invest in production is a big problem for underdeveloped and developing countries, the need for money is not a problem for only these countries. Current events, especially the covid-19 pandemic, bring money to an important position for all countries. Therefore, it is possible to talk about a period when all countries need more money than in the past. Let alone problems such as inflation caused by the money supply, reaching the money to be transferred to production has become a severe issue for developing countries. In all this global turmoil, the value of FDI flows has become better understood.

Due to the pandemic, the money supply provided by the governments created an inflationary environment and brought the global inflation level to the highest point in recent years. In addition, the problems experienced by businesses at the micro level due to restrictions, part-time work, working from home, and other work environment disruptions lead to macro results. Large companies worldwide have begun to shut down production, give workers unpaid take-offs, and even terminate their employment contracts. All these processes bring along the unemployment problem in addition to inflation. Although pandemic conditions seem to be getting better today, uncertainty persists.

While the subject of inflation is the focus of other studies, the issue of employment is one of the main variables in this study. Employment is an economic problem for most developing countries because unemployment is on the other side of the coin. As emphasized before, with the globalization of human connections, it is possible to observe worldwide travel in the movement of labor, which draws attention as one of the current issues affecting the situation of the workforce. Besides, human rights and other changes occurring at the global level have begun to affect business life and employment concepts. One can count some examples of these changes: innovations such as reducing working days and hours in some countries, increasing occupational health and safety standards, and introducing environmental and climatic interventions. Thus, the issue of employment, which is already a complex concept economically, has begun to be shaken by the wind of

deeper problems. In fact, it is possible to summarize these winds as changes in the employment structure that emerged with the effect of globalization. Of course, it is understandable to see these outlined changes also affect the employment structures of developing countries. Consequently, developing countries want to take advantage of any opportunity that can positively impact their employment. At this point, FDIs draw attention as a great advantage.

FDIs are of great importance for many developing countries because these investments contribute to the financially deficient aspects of the nations. It is assumed that money will be transferred to production with the inflow of FDIs into the countries. FDIs can offer direct employment opportunities by establishing a manufacturing facility. In addition, they can indirectly employ the sub-industry created by the facilities they have found. FDIs that come as an investment in an existing business can maintain or increase existing employment by improving the processes of that business. Based on all these, indeed, because FDIs express production-oriented money flows, their relationship with jobs creation an opportunity for scientific research. The contribution of studies with different samples and data sets to the literature is undeniable, especially considering the crises and changing world structure in many respects.

This study examines the effects of FDIs in developing countries on employment. To achieve this aim, firstly, the theoretical framework of the research was created throughout the study. Afterward, a literature review including similar and related studies was conducted. Before analyzes are made, the theoretical and bibliographical foundations have strengthened the research. Then, the panel regression data analysis tested the effect of FDIs on employment in developing countries, and the findings were interpreted. Finally, the similarities and differences between the results, theories, and previous research are discussed. Thus, the basis for the suggestions presented for future scientific research was established. In addition, not only scientific but also practical recommendations are shown in the results.

2. Theoretical Framework

By their very nature, FDIs are monetary flows that have different sides and can be viewed from many angles. Therefore, FDI concept can be associated with different foundations theoretically. Theories relevant to this research will be discussed under this heading. But first, it is helpful to examine the theories about FDIs in general.

One of the oldest theories to explain FDI is the neo-classical Return on Investment (ROI) theory. The theory assumes that the most critical reason to invest directly abroad is the positive differences in the rate of return on investments between different countries. The theory introduced by Hymer (1976) assumes that all other economic indicators being equal, capital tends to flow from low-earning countries to high-yielding countries to get the best returns (Marandu and Ditshweu,

2018: 31). This theory can be seen just as the homo economicus perspective mutated to a macro level. Indeed, expecting a maximum return from money is not limited to the capital itself. This brings this study to the theory of product cycles since investments generally turn into products.

Vernon (1966) suggested that product cycles consist of four stages. A product's innovation, growth, maturity, and decline phases form a product cycle. According to this theory, when companies in a country produce a highly innovative product, an increase in demand for this product abroad will be expected. However, as other countries want to produce this product themselves, sales and profitability may decrease over time. As a result, this situation will push businesses to establish production facilities in countries where they want to sell their products (Denisia, 2010: 55). Also, they bring their other production capabilities to different target countries. This process partially explains the FDI concept itself.

In any case, "location" is a valuable concept for economics and business scientists, whether providing maximum return on capital or producing and selling their products in the right places. Alfred Marshall has stated that once a location begins to receive investment, it begins to experience "agglomeration economies" (Marshall, 1898). That means investment locations become centers of urban development, productivity, and investment. It can be called the location theory of FDI, which assumes that multinational companies decide on specific locations where they can easily access the market or raw materials they need. It is quite understandable that companies operating on an international scale want to move specific or all stages of production to locations they find advantageous and want to be close to the market. Many developing countries are eager to meet their demand and thus aim to increase their economic growth and development. In addition, it would be correct to say that the general focus of these countries is to attract capital investments to their countries by adopting open industrialization policies.

It is accepted that FDI feeds economic growth by increasing the usage of resources from the host country, necessary and proper infrastructure investments, and providing advanced technological inputs, especially in developing countries (Yılmazer, 2010). In this context, general acceptance in economic theory is found that there is a positive correlation between FDI and economic growth. According to the neo-classical theory, FDI contributes to the economic development of countries by increasing the amount and efficiency of total investments positively (UNCTAD, 1999). The cause of this is stated as the importance of direct investments that will lead to capital formation and an increase in employment. Also, FDIs might increase the export of capital goods, bring resources such as capital, knowledge, and experienced managers, and contribute to the advancement and dissemination of technology. Thus, both an increase in productivity and economic growth would be achieved.

One of the economic effects of FDI is its effect on the volume of employment. In the next theory explaining FDI, it can be predicted that an increase in employment may occur due to foreign investments. OLI theory, also known as the "Eclectic Paradigm," emphasizes location advantage, ownership advantage, and internalization advantage must coexist for a multinational company to make a foreign investment (Dunning, 1977). According to this theory, FDI can create new employment facilities in host countries and be more prosperous than other firms in creating more employment than local firms.

Several approaches may explain the relationship between FDIs and employment, including export-led growth, technology and skills transfer, linkages with local suppliers, and the balance of payment impact. According to the export-led growth approach, FDIs can lead to increased export, which in turn can lead to employment growth in the host country. Fu and Balasubramanyam (2005), in their research, the authors also empirically tested this issue in China. Some other studies also found similar significant effects of FDIs on employment through exports (Santiago, 1987; Athukorala and Menon, 1996). Regarding the technology and skill transfer perspective, FDIs can bring new technologies, skills, and expertise to the host country, improving local firms' productivity and creating new employment opportunities. Maskus (2004) emphasizes technology diffusion through FDIs and focuses on how it creates new job opportunities. Lewis (1958) and Caves (1974) mainly discuss the transfer of technology's interaction with different variables, including employment. On the other approach, FDIs create linkages with local suppliers, leading to the development of new industries and new jobs in the host country. This summarizes a fact that is also related to the two previous approaches. After all, with the increase in exports and technology transfer, companies with different raw materials and semi-finished product needs will emerge, and sub-industries may arise in these areas. Finally, FDIs can help to improve the balance of payments in the host country, which can lead to increased economic growth and employment. The presence of foreign investment will ultimately signal a positive inflow in a country's balance of payments. (Lipsey, 2007). Aside from the possible adverse effects, these capital inflows will positively impact economic growth through the jobs they create by channeling the money into productive areas or infrastructure spending. Of course, some studies draw attention to the export characteristics of a country in the balance of payments when economic growth is the issue. (Thirlwall, 1997; Gouvea and Lima, 2014).

As can be understood from these theories and as mentioned before, it is possible to see different foundations regarding the inflow of FDIs to countries and what they provide to countries. However, it is essential to state that the product cycle theory and the eclectic paradigm are the most important pillars within the theoretical framework of the research. This study has a unique value with the created link between different approaches and the theoretical framework it discusses.

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2. Literature Review

As mentioned in the theoretical framework, the conceptual foundations of FDIs are based on old studies and critical scientists. This feature makes FDIs one of the most exciting subjects to work on. It should also be mentioned that the studies on FDI are generally on the determinants of FDI, which also points to the scarcity of empirical studies on the effects of FDI. In this chapter of the research, the literature on developing countries, which is also the focus of this study, examining FDI and its relationship with employment, will be included. In this context, it is also focused on reviewing scientific works that attracted attention from the 2000s to the 2020s, which this study takes as a sample period.

Rong, Liu, Huang, and Zhang (2020) examined FDIs' effect on employment by adding the labor market flexibility variable as a moderator. In their study, where they found that a 1% increase in FDI inflows increases employment %0,2, researchers empirically observed 15 regions of China between 2000 and 2015 with panel data analysis. Research conducted for Mexico, Waldkirch, Nunnenkamp, and Bremont (2009) revealed that FDI affects employment significantly. What distinguishes this study from the Chinese example is the sectoral distinction between labor-intensive and capital-intensive. Therefore, the difference in the impact of FDIs on the employment of labor-intensive and capital-intensive sectors is also emphasized in the study. There is a study performed on Turkey. Oğuz's (2017) research employed data from 1990 to 2016 and used it for time series analysis. According to the findings, it is indicated that there is a significant long-term correlation between FDI and employment. Wong and Tang (2010) found that FDIs are associated with employment both in the long run and in the short run in a study that worked on Asian countries using the ARDL approach.

Yaylı and Değer (2012) measured the interaction between FDI and employment with a dynamic panel causality analysis by considering the period of 1991-2008 in developing countries. According to their test results, FDIs are a strong inducer for employment in developing countries. Onanuga and Onanuga (2018) used panel regression analysis to examine the relationship between FDIs and unemployment in 23 emerging market economies between 1991 and 2016. As a result of their studies, they determined that FDIs have a negative effect on unemployment. In a study conducted on E7 countries with a smaller sample but a more extended period (1993-2017), Bayraktar and Soyyiğit (2020) discovered that FDIs affect employment in the long run. Moving into a more extensive sample study from a smaller one, Altuntaş and Altuntaş (2020) studied both developed and developing countries to understand the employment effects of FDI. According to the results of this research, when the data set between 2000 and 2017 is considered, it is seen that FDI created causality on employment when the Granger Causality test findings approached. Strat, Davidescu, and Paul (2015) empirically revealed that FDIs decrease unemployment rates in some countries. However, they also showed that high unemployment rates induce FDI inflow, meaning investors might seek

accessible employment opportunities. Inekwe (2013) found empirically that FDI in manufacturing-oriented sectors increases employment in Nigeria.

Ernst (2005), in his research on Latin American countries, including Brazil, Argentina, and Mexico, examined the sectoral effects of FDIs. Unlike the others, according to the findings of this study, it was not seen that FDIs have a significant effect on employment. Similarly, Golejewska (2001) has tried to understand the effects of FDIs on the sectoral level, and the researcher found that FDIs could increase employment, but this effect differs among sectors. Another study about the sectoral effects of FDI has been conducted by Bekhet and Mugableh (2016). Researchers analyzed the time-series data of Malaysia between 1972-2012 time periods. Their econometric model consisted of co-integration and causality tests. After analysis, findings show that FDIs' effects on employment could change from one sector to another. Mishra and Palit (2020) examined whether the concept of employment, which they consider direct job creation, was affected by FDI. In the study, it was emphasized that FDIs do not have a significant effect on employment in India. The reason for the research findings, which were concluded with the interpretation of secondary data, is that the incoming FDI is directed towards technology-intensive sectors, and this situation has no effect on job creation. Another study handled by Skare, Franc-Dabrowska, and Cvek (2020) demonstrates the FDI and employment relationship with the utilization of the vector correction auto-regression model. This study also contains no effect from FDIs on employment in Croatia for the 2002-2017 time period. Peric (2020) analyzed FDIs' effect on average wage and employment in Serbia by using a lineer regression model in IBM SPSS software. According to the findings, FDIs have no significant effect on both variable.

Zdravkovic, Dukic and Bradic-Martinovic. (2017) examined the relationship between FDI and unemployment in 17 transition economies in the period 2000-2014 using panel co-integration analysis. As a result of their studies, they concluded that there is generally no significant relationship between foreign direct investment and unemployment. Ciftcioglu, Fethi, and Begovic (2007) investigated the economic effects of FDI in 9 Central and Eastern European countries from 1995 to 2003 using regression analysis. As a result of their studies, they determined that FDIs increase unemployment. In another study that included a three-country comparison, Göçer and Peker (2014) examined the impact of FDI on employment in China, India, and Turkey. According to the results of this research, the employment contribution created by FDIs may vary from country to country. Additively, it seems that FDIs cause employment to decrease in Turkey and increase in China and India. Bilgin's (2004) study also revealed a similar result for Turkey in previous years. Accordingly, when the period between 1991 and 2002 is taken for Turkey, it is seen that FDIs do not significantly affect employment. The same results for Turkey have been presented in Aktar, Demirci, and Ozturk's (2009) study, which reveals that there is no significant effect of FDIs on unemployment rates in Turkey. On the other hand, Mucuk and Demirsel (2013) investigated seven developing countries, revealing that FDIs' effect on employment differs from

country to country. Rizvi and Nishat (2009) emphasize that FDIs' effect on employment needs some boosts from policies to increase employment opportunities so that without any policies towards employment, there is no direct effect of FDIs on employment. This makes the study of Ardiyono and Patunru (2021) more important for research. Because according to this study, for FDI to be effective, there needs to be a proper hiring and firing law.

Jenkins (2006) studied Viet Nam to understand the effect of FDIs on employment. According to his research, FDIs do not directly impact employment due to the sectors in which Viet Nam is concentrated. In particular, the intensive agricultural sector has been stated to have a significant subsidy. It was also found that local producers were insufficient in establishing links with new sectors. In another study where sectors are also included in the model, Bailey and Driffield (2006) emphasize that the effect of FDIs is to lead to more employment in high-technology sectors, while it does not have the power to create jobs for unskilled workers in the United Kingdom. Radosevic, Varblane, and Mickiewicz (2003) examined the impact of FDI on employment in central Europe. According to the study, differences from country to country have been revealed. While it is seen that countries with production-intensive sectors tend to create more jobs and retain existing jobs with FDI, it is emphasized that this effect may vary according to the distribution of sectors.

To mention earlier, some of the following studies may also shed light on the relationship between FDI and employment. Davidson, Matusz, and Kreinin (1985) found the employment-creation effects of FDIs in the host country to be minimal. The empirical studies on this subject show a significant relationship between FDI inflows to the host country and employment. However, it is not easy to come to a definite conclusion (with available data) on the relationship between whether FDI increases employment or not. Feldstein (1994:4) argued in his study that in countries with intense competition and well-functioning market mechanisms, the quality or size of FDI will not affect employment, but this will only increase investments. Similarly, Baldwin (1995:51) stated that the discussions on this issue revolve around three main issues: how much of the FDI reaches local investments, how much it contributes to increases in exports, intermediate and capital goods, and how much is in the form of purchasing existing facilities. All these can also be considered as proofs once again showing the importance of the sectors that foreign direct investments will enter in the host country.

Looking at the literature in general, it is understood that studies show that FDIs increase employment or have no adverse effect. Remarked on the fact that the literature discussed in this study is especially on developing countries and focuses on the periods after the 2000s. Considering the theoretical framework of the research, it is possible to say that the effect of FDI on employment is still a very open-ended subject, theoretically and empirically. It is believed that this study will make a valuable contribution to the empirical literature.

3. Methodology, Empirical Model and Dataset

In this study, the effect of FDIs on unemployment rates is empirically analyzed in 20 developing countries in the middle-income group. IMF classification is considered when determining the middle-income group (IMF, 2022). These countries have been in a very appealing position in terms of FDIs since the 1990s and have attracted FDI. The 20 countries are as follows: Argentina, Bulgaria, Brazil, China, Costa Rica, Croatia, Egypt, Arab Republic, Hungary, India, Indonesia, Malaysia, Mexico, Philippines, Poland, Romania, Russian Federation, Thailand, Turkey, Ukraine, and Uruguay. The analysis includes the period of 2000-2019. The country group and the analysis period are formed according to the availability of data.

Methodology and Empirical Model

Panel data methodology is used for empirical estimations. Panel data analysis is the most appropriate method because the study's sample group has cross-section and time-series characteristics. In addition, since the panel data method allows performing with cross-section and time-series dimensions, a high number of observations can be acquired. Thus, highly reliable predictions can be obtained. Secondly, the independent variables differ in cross-section and size, so the probability of the problem of multi-collinearity decreases.

$$unemployment_{it} = \beta_0 + \beta_1 fdi_{it} + \beta_2 X_{it} + u_{it} \quad (1)$$

$$u_{it} = \mu_i + v_{it} \quad (2)$$

i : 1, 2, …… , 20 countries
t : 2000, 2002, …. , 2019 periods

Equation (1) shows the econometric model. The model is established to estimate the effect of foreign direct investments and the other control variables on unemployment. In the model, $unemployment_{it}$ is the dependent variable fdi_{it} and X_{it} are the independent variables. Also, i and t denote countries and time, respectively. X_{it} is the vector of other independent variables that affect the unemployment rate, and it contains the variables education expenditure, government expenditure, population, gross capital formation and economic growth. In equation (2), u_{it} is the unobserved individual effect, and v_{it} is also the error term. On the other hand, μ_i defines individual effects that are time-invariant and are not included in the regression (Baltagi, 2005: 11).

The fact that the panel data method has both cross-section and time-series dimensions raises two critical problems. These are cross-section dependence and stationarity. The estimation performed with series has these statistical problems that

need more consistency and reliability. Therefore, these two problems should be carefully examined. Firstly, the problem of cross-section dependence investigates since the unit root tests are used the determine stationarity choices depending on the cross-section dependence problem. Pesaran's (2004) CD test is used for this purpose. Secondly, the stationarity of the series is investigated by using unit root tests. If the series does not have cross-sectional dependency problems, first-generation panel unit root tests should be used.

In contrast, if the series has a cross-sectional dependency problem, second-generation panel unit root tests should be preferred. Pesaran's (2007) CADF (Cross-Sectional Augmented Dickey-Fuller) test considers the cross-sectional dependence of the series used in this study. After checking over the series in terms of the two conditions mentioned, equation (1) is estimated by the panel regression method. Panel regression estimation can be performed by using pooled OLS (Ordinary Least Squares), fixed-effects, or random-effects approaches. It is used the Hausman, Breusch-Pagan LM, and F tests to determine which of these three approaches will be preferred. Finally, it is tested whether the analyses contain statistical problems such as autocorrelation, heteroscedasticity, and cross-section dependency.

Dataset

Analyses are carried out using annual frequency data. Table 1 presents the explanations for the variables in the model used in the empirical estimation. The dependent variable in the model is unemployment. It shows the unemployment rate of people aged between 15 and 64 in the countries. The primary independent variable of the model is fdi. It shows the ratio of inward net FDI to the country's GDP. As its theoretical explanations have been mentioned above, fdi is expected to have a negative impact on unemployment.

In the empirical model, some control variables are expected to affect unemployment rates based on economic theory. One of them is edu. It is the ratio of total education expenditures in the country to its GNI. The effect of human capital level on productivity explains the relationship between education and unemployment. Accordingly, firms are reluctant to lay off their highly productive employees. In other words, they tend to reduce unemployment, as they will increase the level of production and want to employ more productive labor (Núñez and Livanos, 2010: 477). However, unemployment rates among highly educated people have been relatively high in recent years. Teichler (1999) explains the high unemployment rate in highly educated people with imbalances in the labor markets. Mismatches between labor demand and labor supply lead to high unemployment rates. It is eventually predicted that the coefficient of edu can be positive or negative within the framework of economic theory.

The second control variable is gov. It is the ratio of government expenditures to the country's GDP. The classical economic theory argues that the economy will

be at full employment if there is no government interventionism in the economy. On the other hand, Keynesian theory suggests expansionary fiscal policy to overcome the underemployment in the 1929 economic crisis. There is significant literature about the effect of government expenditures on employment in recent periods. The view that argues that expansionary government expenditure will raise unemployment mainly focuses on two mechanisms. The first of them is the crowding-out effect. This effect argues that an increase in government expenditures raises misallocation in the economies, and this misallocation decreases private investments. The second is related to the budget deficit caused by increased government expenditures. High budget deficits negatively affect macroeconomic stability in the long run. The view that argues that increasing government expenditures will reduce unemployment focuses mainly on short-term effects. Accordingly, it argues that expansionary fiscal policy, especially in economic depression periods, will reduce underemployment (Durkaya and Ceylan, 2016: 27). In this context, the coefficient of gov can be positive or negative.

The other control variable is pop, which shows the country's population growth rate. Since the increase in population will induce a labor surplus, it is a significant factor in growing unemployment. Therefore, it is thought that the coefficient of the pop will be positive.

The other control variable is investment, which is the country's gross capital formation ratio to its GDP. One of the crucial causes of high unemployment in developing countries is a capital shortage. Therefore, the increase in investments will employ more labor force. Accordingly, it is expected that investments will reduce the unemployment rate. Thus, the coefficient of investment will be negative.

Table 1 shows explanations for the data. The datasets are obtained from the Worldbank database.

Table 1. Definition of variables

Variables	Explanation	Coefficient Expectation	Data Source
unemployment	Unemploymeny Rate (%)		Worldbank
fdi	Foreign Direct Investment (% GDP)	-	Worldbank
edu	Education Expenditure (% GNI)	+/-	Worldbank
gov	Government Expenditure (% GDP)	+/-	Worldbank
pop	Population Growth (%)	+	Worldbank
investment	Gross Capital Formation (% GDP)	-	Worldbank
gdp	Economic Growth (%)	-	Worldbank

The last control variable is gdp, which is the gross domestic product growth in the country. In economic theory, the relationship between economic growth and unemployment is interpreted within the framework of Okun Law. Okun (1962) modeled the relationship between unemployment and economic growth in the US economy and concluded that there is a negative relationship between the two

variables. In this framework, it is expected that economic growth will decrease the unemployment rate, and its coefficient will be negative.

Table 2 shows descriptive statistics. Accordingly, the number of observations is 400. The small standard deviations of the series, except for fdi, indicate that the countries have close data distribution.

Table 2. Descriptive Statistics

Variables	Obs.	Mean	Std. Dev.	Min	Max
unemployment	400	7.420	3.860	0.21	19.92
fdi	400	3.614	6.291	-40.29	56.36
edu	400	3.982	1.206	1.53	7.36
gov	400	15.00	3.672	6.53	23.01
pop	400	0.629	0.942	-3.85	2.32
investment	400	23.746	6.657	10.85	46.66
gdp	400	3.998	3.655	-15.13	14.23

Source: Authors' calculations

4. Findings

In this section, the findings of the econometric analysis in which the effect of foreign direct investments on unemployment rates are estimated. Table 3 indicates the Pearson correlation coefficients for all variables. The coefficients show that there is no correlation problem between the variables.

Table 3. Correlation matrix

Variables	unemployment	fdi	edu	gov	pop	investment	gdp
unemployment	1						
fdi	0.01	1					
edu	0.16	0.12	1				
gov	0.34	0.20	0.40	1			
pop	-0.38	0.05	-0.46	-0.13	1		
investment	-0.29	-0.17	-0.04	-0.67	-0.00	1	
gdp	-0.25	0.02	-0.34	-0.25	0.47	0.11	1

Source: Authors' calculations

Table 4 shows the Pesaran CD-test results. In the table, CD-test indicates the test statistics. The p-value represents probability values. The null hypothesis is that there is no cross-section dependency. It is rejected for all variables, and the alternative hypothesis is accepted. Thus, it can be said that all series have cross-section dependency problems.

Table 4. Pesaran's cross-sectional dependence test

Variables	CD-test	p-value	corr	abs(corr)
unemployment	6.24	0.000	0.101	0.419
fdi	12.08	0.000	0.196	0.320
edu	41.25	0.000	0.690	0.712
gov	8.55	0.000	0.139	0.461
pop	7.44	0.000	0.121	0.869
investment	12.06	0.000	0.196	0.461
gdp	20.54	0.000	0.333	0.367

Notes: The CD test of Pesaran (2004) is defined under the null hypothesis of no cross-sectional dependence.

Source: Authors' calculations

Table 5. Pesaran's CADF unit root test

	constant				constant+trend			
	t-bar	**cv5**	**Z[t-bar]**	**p-value**	**t-bar**	**cv5**	**Z[t-bar]**	**p-value**
unemployment	-1.924	-2.210	-0.848	0.198	-1.957	-2.730	1.432	0.924
Δunemployment	-2.466	-2.210	-3.229	0.001	-3.236	-2.730	-4.234	0.000
fdi	-2.065	-2.210	-1.471	0.070	-2.507	-2.730	-1.006	0.157
Δfdi	-3.457	-2.210	-7.574	0.000	-3.514	-2.730	-5.465	0.000
edu	-2.000	-2.210	-1.186	0.118	-2.742	-2.730	-2.046	0.020
Δedu	-2.535	-2.210	-3.529	0.000	-2.867	-2.730	-2.600	0.005
gov	-2.158	-2.210	-1.877	0.030	-2.218	-2.730	0.275	0.608
Δgov	-2.465	-2.210	-3.222	0.001	-2.661	-2.730	-1.688	0.046
pop	-2.343	-2.210	-2.690	0.004	-3.393	-2.730	-4.929	0.000
investment	-2.195	-2.210	-2.040	0.021	-2.343	-2.730	-0.277	0.391
Δinvestment	-2.708	-2.210	-4.289	0.000	-2.872	-2.730	-2.621	0.004
gdp	-3.097	-2.210	-5.993	0.000	-3.395	-2.730	-4.935	0.000

Notes: t-bar, cv5, and p-value show test statistics, critical values at 5% significance level and probability level, respectively.

Source: Authors' calculations

If there is a cross-section dependency in the series, second-generation unit root tests should be used to test the stationarity of the series. Pesaran's CADF test, among the second-generation unit root tests, is preferred because of cross-section dependence in all series. Pesaran (2007) states that the CADF unit root test performs well, even so, in the case of cross-section dependence. Table 5 shows the CADF test results. The CADF panel unit root test calculates statistical values by estimating

constant and constant+trend term models. If the statistical values are greater than the table values, it is decided that the series is stationary.

According to the test results, unemployment, fdi, edu, gov and investment have unit root at level. The series are stationary at the 5% statistical significance level at the first difference. The pop and gdp, on the other hand, are stationary at the 5% significance level at level. The series are made stationary by taking the difference according to the unit root test results.

Table 6 indicates the estimation results of the model in equation (1). The first stage investigates which model is a suitable approach for estimating among the pooled regression model, fixed effect, or random effect models. In the Hausman test, the null hypothesis is that there is no correlation between the explanatory variables and the individual effect. It states that the random effects approach will be used. If the null hypothesis is accepted, the random effects approach is preferred to the fixed effects approach. In the F test, the null hypothesis is that the observed and unobserved fixed effects are equal to zero. If the null hypothesis is accepted, the pooled OLS approach is preferred to the fixed effect approach. Thus, the Hausman test and the F test results indicate that the fixed effect approach should estimate the model in equation (1).

Subsequently, there should be no problems such as autocorrelation, heteroscedasticity, and cross-section dependency in the estimations, for the estimations must be reliable and consistent. Firstly, the modified Wald heteroscedasticity test is performed. The null hypothesis, which indicates constant variance, is rejected, and the alternative hypothesis is accepted. Therefore, there is a heteroscedasticity problem in estimation results. Later, the autocorrelation problem is explored by the modified Bhargava et al. and Baltagi-Wu LBI tests. Accordingly, the null hypothesis that no first-order autocorrelation is rejected, and it is decided that there is autocorrelation in the estimations. Lastly, Pesaran's test of cross-sectional independence is performed. The test result shows that the null hypothesis was not rejected, and it is decided that cross-section independence in estimations. Arellano (1987), Froot (1989), and Rogers (1989) suggest using robust standard errors in case of a problem of heteroscedasticity and autocorrelation in estimations. The estimations obtained using robust standard errors are in table 6.

The results indicate that fdi has a negative and statistically significant effect on unemployment. The effect of edu, gov, and pop that in control variables on unemployment is not statistically significant. Investment and gdp, other control variables, also negatively affect unemployment. Moreover, this result seems statistically significant.

Table 6. Model estimation results

Dependent Variable: unemployment				
Variables	**Coefficient**	**t-stat**	**Std. Err.**	**Robust Std. Err.**
fdi	-0.0057 [0.009]	-2.92	0.005	0.001
edu	0.0389 [0.850]	0.19	0.176	0.203
gov	-0.0512 [0.525]	-0.65	0.075	0.079
pop	-0.1380 [0.479]	-0.72	0.156	0.191
investment	-0.1030 [0.002]	-3.63	0.026	0.028
gdp	-0.1467 [0.000]	-7.09	0.017	0.020
constant	0.5547 [0.001]	4.14	0.132	0.134
F stat. = 11.72 [0.000]				
Diagnostic Tests				
Hausman test: χ^2 = 34.70 Prob: 0.000				
F test: χ^2 = 2.77 Prob: 0.000				
Modified Wald test for heteroscedasticity: F stat = 1994.19 Prob: 0.0000 H_0 = Constant variance				
Modified Bhargava et al. Durbin Watson test for autocorrelation in panel data: Test stat = 1.421 H_0 = No first order autocorrelation **Baltagi-Wu LBI test for autocorrelation in panel data:** Test stat = 1.571 H_0 = No first order autocorrelation				
Pesaran's test of cross sectional independence: CD test stat = 0.901 Prob: 0.3674 H_0 = Croos-sectional Independence				

Source: Authors' calculations

Although the results show that foreign direct investments have a reducing effect on unemployment, the magnitude of the effect is quite limited. When this situation is compared with the studies in the literature (see; Jenkins, 2006; Radosevic et al., 2003; Goçer and Peker, 2014; Golojewska, 2001; Rizvi and Nishat, 2009), one can say that the findings are consistent with both theory and empirical research. On the other hand, the coefficients of the control variables used in the empirical model are also compatible with the theoretical expectations. Accordingly, education expenditures, government expenditures, and population do not have a statistically significant effect on unemployment. It can be said that the main factors affecting the employment markets in developing countries are economic growth and fixed capital investments, based on the results of the analysis. It is an acceptable situation that employment markets are under the influence of capital factors rather than labor and human capital factors, considering the country group discussed. These countries mainly adopt a capital-intensive production approach instead of high-skilled labor-intensive jobs. The unemployment-reducing effect of foreign direct investments can also be associated with the shifting of

capital-intensive and low-skilled labor-intensive sectors from advanced countries to emerging countries.

5. Conclusion

As mentioned before and as evidenced by various studies in the literature, FDIs create various effects on the economies of many countries. As an expected result, the countries' capital inflow will likely create employment. However, empirical testing of these expectations leads to the continuous emergence of separate scientific curiosities. In this respect, examining the interaction of inward FDI in these countries with employment was seen as a valuable research opportunity in the research conducted on middle-income developing countries. This study is attentive to putting this valuable research opportunity to good use by selecting the sample (countries) and empirical method that differs from previous studies in the literature.

In the study, the effect of foreign direct investment on employment is estimated in 20 developing countries between the periods of 2000-2019. The econometric model of the study is created to analyze the effect of foreign direct investments on the unemployment rates of the countries. In the model, control variables such as education expenditure, government expenditure, population, gross capital formation, and economic growth are also included as independent variables. The econometric model is estimated by the panel regression method. According to the results, foreign direct investments have a decreasing effect on unemployment rates. In addition, while gross capital formations and economic growth reduce unemployment rates, education expenditure, government expenditure, and population do not affect unemployment rates. The negative effect of domestic investments and economic growth on unemployment is greater than the effect of foreign direct investments. These findings can be explained by the FDIs' characteristics since their allocations matter, as Baldwin (1995) emphasized.

Considering the studies conducted with panel data analysis in the literature, the research results are like the positive effect observed in 15 regions in China examined by Rong et al. (2020). Of the same stripe even more, it can be said that these results show parallelism with Yaylı and Değer's (2012) study. Another of these similarities can be regained by comparing these results with Onanuga and Onanuga's (2018) research which found FDIs' negative effect on unemployment in emerging markets. In the context of positive impact, it is possible to say that the findings of Altuntaş and Altuntaş's (2020) research have reached a similar conclusion to this research. When compared with the previous studies that support the theoretical framework of the research, it is seen that they are not only backing up the theory but also showing parallelism with the empirical results. On the other hand, different studies from the literature review were discussed below.

When looking at the research conducted on different country groups that have resulted in negative results, Zdravkovic et al. (2017) study can be a debating table. As mentioned in the literature review, their results showed no significant relationship between FDI and unemployment for 17 transition economies. In the study of Çiftçioğlu et al. (2007), which found an even more opposite result, it was determined that FDIs affect employment negatively. Of course, looking at studies that reach complex results is also necessary. Göçer and Peker's (2014) research shows that while FDI decreases employment in some countries, it increases it in others. All these studies differ from this study's theoretical framework and empirical findings, some completely and some partially.

These discussions have led to valuable results in seeing that scientific knowledge must be tested to reach the most up-to-date and correct one, as well as demonstrating the verifiability and falsifiability of scientific knowledge. Thus, it becomes possible to offer suggestions for future research. It is seen that different countries, different data sets, and different models using different control variables cause different results. At the same time, the theoretical framework is pointed out as narrow in research on the field of FDI, and discussions are avoided in the conclusion sections of the studies conducted in this context. Based on both the empirical findings obtained in the study and the discussions in the literature, it is recommended that researchers who will study these issues in the future should research comprehensive country groups in more extensive periods and in which they will apply control variables within the framework of economic theory. Thus, it may be possible to carry out more comprehensive research that includes evaluating past studies, including this study.

On the other hand, the importance established in this research contains noteworthy findings, especially for policymakers of developing countries. It is understood that foreign direct investments have a direct effect on employment by decreasing unemployment. For this reason, it is of great importance to attract foreign capital, especially foreign capital with employment creation capacity for developing countries. Developing countries should take various steps to attract this capital within their barriers.

REFERENCES

Aktar, İ., Demirci, N., & Öztürk, L. (2009). Can unemployment be cured by economic growth and foreign direct investment? *Sosyal Ekonomik Araştırmalar Dergisi,* 9(17), 452-467.

Altuntaş, M., & Altuntaş, R. A. S. (2020). Doğrudan yabancı yatırımların istihdama olan etkisi: gelişmiş ve gelişmekte olan ülkeler üzerine ekonometrik analiz. In Karadal, H., Efe, M. E., Abubakar, A. M., & Karadal K, (Eds.) *International Communication Economics Organization Social Sciences Congress Proceedings E-Book*, 553-567.

Ardiyono, S. K., & Patunru, A. A. (2022). The impact of employment protection on FDI at different stages of economic development. The World Economy, 45(12), 3679-3714.

Arellano, M., (1987). Computing robust standard errors for within-groups estimators, *Oxford Bulletin of Economics and Statistics,* 49 (4), 431-434.

Athukorala, P., & Menon, J. (1996). Foreign investment and industrialization in Malaysia: exports, employment and spillovers. *Asian Economic Journal*, 10(1), 29-44.

Bailey, D., & Driffield, N. (2007). Industrial policy, FDI and employment: still 'missing a strategy'. *Journal Of Industry, Competition And Trade*, 7, 189-211.

Baldwin, R. E. (1995), The effect of trade and foreign direct investment on employment and relative wages, *NBER Discussion Paper, 5037, National Bureau of Economic Research, Cambridge, Mass*.

Baltagi, B. H. (2005). *Econometric analysis of panel data*. 3rd Edition, John WileyandSons, Ltd. New York.

Bayrakdar, S., & Soyyiğit, S. (2020). Yapısal kırılmalar altında ticari açıklığın ve doğrudan yabancı sermaye yatırımlarının istihdam üzerindeki etkisinin incelenmesi: e7 ülkeleri örneği. *Atatürk Üniversitesi İktisadi ve İdari Bilimler Dergisi, 34(1),* 39-59.

Bekhet, H. A., & Mugableh, M. I. (2016). Blueprinting the equilibrium relationships between inward FDI and employment in the Malaysian economic sectors: time series models approach. *Global Business and Economics Review,* 18(2), 136-150.

Bilgin, M. H. (2004). Türkiye'ye yönelik doğrudan yabanci sermaye yatirimlarinin istihdama etkisi. *Öneri Dergisi, 6(22),* 251-258.

Ciftcioglu, S., Fethi, S., & Begovic, N. (2007). The impact of net inflows of foreign direct investment on economic growth, unemployment, and openness: a panel data analysis of nine central and east European countries. *The Journal of Global Business Management,* 3(2), 89-94.

Davidson, C., Matusz, S.J. & Kreinin, E.M. (1985). Analysis of performance standards for direct foreign investments, *The Canadian Journal of Economics,* 18(4), 876-90.

Denisia, V. (2010). Foreign direct investment theories: An overview of the main FDI theories. *European journal of interdisciplinary studies*, (3), 53-59.

Dunning, J. F. (1977). Trade location of economic activity and the MNE: A search of an eclectic approach. (*B. Ohlin,P. O. Hesselborn, and P. J. Wijkman, Eds.) The International Allocation of Economic Activity.*

Durkaya, M. & Ceylan, S. (2016). İşsizliğin azaltılmasında kamu kesimi büyüklüğünün rolü. *Finans Politik and Ekonomik Yorumlar*, 53(615), 23-40.

Ernst, C. (2005) The FDI-employment link in a globalizing world: the case of Argentina, Brazil and Mexico. *International Labour Office, Employment Strategy Paper* 2005/17, Geneva.

Feldstein, M. (1994). Taxes, Leverage and the National Return on Outbound Foreign Direct Investment, *NBER Discussion Paper, 4689, National Bureau of Economic Research,* Cambridge, Mass.

Froot, K. A., (1989). Consistent covariance matrix estimation with crosssectional dependence and heteroskedasticity in financial data, *Journal of Financial and Quantitative Analysis*, 24 (3), 333-355.

Fu, X., & Balasubramanyam, V. N. (2005). Exports, foreign direct investment and employment: The case of China. *World Economy,* 28(4), 607-625.

Göçer, İ., & Peker, O. (2014). Yabancı doğrudan yatırımların istihdam üzerindeki etkisi: türkiye, çin ve hindistan örneğinde çoklu yapısal kırılmalı eşbütünleşme analizi. *Yönetim Ve Ekonomi: Celal Bayar Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi*, 21(1), 107-123.

Golejewska, A. (2001). Foreign direct investment and employment in a host country: the case of polish manufacturing. *Yearbook Of Polish European Studies,* No.5/2001, 97-114.

Gouvêa, R. R., & Lima, G. T. (2010). Structural change, balance-of-payments constraint, and economic growth: evidence from the multisectoral Thirlwall's law. *Journal of Post Keynesian Economics*, 33(1), 169-204.

Hymer, S. H. (1976). The International Operations of National Firms: A Study of Direct Foreign Investment. PhD Dissertation. Published posthumously. Cambridge, Mass, Mass: The MIT Press, 1976

IMF (2023, January, 19). Datamapper, Web: https://www.imf.org/external/datamapper/FMEconGroup.xlsx.

Inekwe, J. N. (2013). FDI, employment and economic growth in Nigeria. *African Development Review*, 25(4), 421-433.

Jenkins, R. (2006). Globalization, FDI and employment in Viet Nam. *Transnational corporations*, 15(1), 115.

Lewis, A.W. (1958). Economic Development with Unlimited Supplies of Labor, In *A.M. Agarwala and S.P. Singh (eds.), The Economics of Underdevelopment* Oxford University Press, London.

Lipsey, E. R. (2006). Measuring the impacts of FDI in Central and Eastern Europe. *Foreign Direct Investment in Europe*, 37.

Marandu, E. E., & Ditshweu, T. (2018). An overview of the key theories of foreign direct investment: The way forward. *Advances in Social Sciences Research Journal*, 5(12), 30-39.

Marshall, A. (1898). Principles of Economics (Vol. 1). London: Macmillan.

Maskus, K. E. (2004). Encouraging international technology transfer. *In UNCTAD-ICTSD Project on IPRs and Sustainable Development*, 7

Mishra, R., & Palit, S. (2020). Role of FDI on employment scenario in India. *International Journal of Recent Technological Engineering*, 8(6), 1481-1489.

Mucuk, M., & Demirsel, M. T. (2013). The effect of foreign direct investments on unemployment: Evidence from panel data for seven developing countries. *Journal of Business Economics and Finance*, 2(3), 53-66.

Núñez, I. & Livanos, I. (2010). Higher education and unemployment in Europe: An analysis of the academic subject and national effects. *Higher Education,* 59(4), 475-487. https://doi.org/10.1007/s10734-009-9260-7

Nyen Wong, K., & Cheong Tang, T. (2011). Foreign direct investment and employment in manufacturing and services sectors: Fresh empirical evidence from Singapore. *Journal of Economic Studies*, 38(3), 313-330.

OECD; (2003), (2022, February, 15) Foreign Direct Investment Statistics, How Countries Measure FDI 2001, *Organisation for Economic, Cooperation and Development.* https://www.google.com/search?q=OECD%3B+(2003)%2C+Foreign+Direct+Investment+Statistics%2C+How+Countries+Measure+FDI+2001%2C+Organisation+for+Economic%2C+Cooperation+and+Development.&rlz=1C1GCEU_trTR1005TR1005&oq=OECD%3B+(2003)%2C+Foreign+Direct+Investment+Statistics%2C+How+Countries+Measure+FDI+2001%2C+Organisation+for+Economic%2C+Cooperation+and+Development.&aqs=chrome..69i57.255j0j4&sourceid=chrome&ie=UTF-8

Oğuz, A. (2018). makro ekonomi açısından doğrudan yabancı yatırımlar ve istihdam. *Itobiad: Journal of the Human and Social Science Researches*, 7(2), 671-683.

Okun, A.M. (1962). Potential GNP: its measurement and significance*, Reprinted as Cowles Foundation Paper*, 190.

Onanuga, A.T., & Onanuga, O.T. (2018). Government policy, foreign direct investment and unemployment in emerging economies. *AUDOE*, 14(2), 21-40.

Perić, M. (2020). Impact of FDI inflow on average wage and employment in Serbia. *Management: Journal of Sustainable Business and Management Solutions in Emerging Economies*, 25(1), 13-22.

Pesaran, M. H. (2004). General diagnostic tests for cross section dependence in panels, In *IZA Discussion Paper* (C. 1240).

Pesaran, M. H. (2007). A simple panel unit root test in the presence of cross-section dependence. *Journal of Applied Econometrics*, 22(2), 265-312. https://doi.org/10.1002/jae.951.

Radosevic, S., Varblane, U., & Mickiewicz, T. (2003). Foreign direct investment and its effect on employment in Central Europe. *Transnational Corporations*, 12(1), 53-90.

Richard Caves. Multinational firms, competition, and productivity in host-country industries, *Economica*. 41 (1974) 176-193.

Rizvi, S. Z. A., & Nishat, M. (2009). The impact of foreign direct investment on employment opportunities: Panel data analysis: Empirical evidence from Pakistan, India and China. *The Pakistan Development Review*, 841-851.

Rogers, W., (1993), Regression standard errors in clustered samples, *Stata Technical Bulletin,* 13, 19-23.

Rong, S., Liu, K., Huang, S., & Zhang, Q. (2020). FDI, labor market flexibility and employment in China. *China Economic Review*, 61, 101449.

Santiago, C. E. (1987). The impact of foreign direct investment on export structure and employment generation. *World development*, 15(3), 317-328.

Škare, M., Franc-Dąbrowska, J., & Cvek, D. (2020). Cointegration analysis and VECM of FDI, employment, export and GDP in Croatia (2002? 2017) with particular reference to the global crisis and poor macroeconomic governance. Equilibrium. *Quarterly Journal of Economics and Economic Policy*, 15(4), 761-783.

Strat, V. A., Davidescu, A., & Paul, A. M. (2015). FDI and the unemployment-a causality analysis for the latest EU members. *Procedia economics and finance*, 23, 635-643.

Teichler, U. (1999). Higher education policy and the world of work: Changing conditions and challenges. *Higher Education Policy*, 12, 285-312.

Thirlwall, A.P. (1979).The balance of payments constraint as an explanation of international growth rate differences, *Banca Nazionale del Lavoro Quarterly Review,* 128, 45–53

UNCTAD. (1999) (2022, February, 15) World Investment Report 1999 Foreign Direct Investment and the Challenge of Development. *United Nations Conferance on Trade and Development.*

Vernon, R. (1966). International investment and international trade in the product cycle. *Quarterly Journal ofEconomics,* 80(2).

Waldkirch, A., Nunnenkamp, P., & Alatorre Bremont, J. E. (2009). Employment effects of FDI in Mexico's non-maquiladora manufacturing. *The Journal of Development Studies,* 45(7), 1165-1183.

Worldbank (2021). Data Link: https://data.worldbank.org/

Yaylı, Ş. & Değer, M.K. (2012). Doğrudan yabancı yatırımlar ve istihdam arası ilişkiler: gelişmekte olan ülkeler üzerine dinamik panel veri nedensellik analizleri (1991-2008). *Finans Politik and Ekonomik Yorumlar*, 49(568), 43-52.

Yılmazer, M. (2010). Doğrudan yabancı yatırımlar, dış ticaret ve ekonomik büyüme ilişkisi: türkiye üzerine bir deneme, *Celal Bayar Üniversitesi SBE Dergisi,* 8 (1), 241-260.

Zdravković, A., Đukić, M., & Bradić-Martinović, A. (2017). Impact of FDI on unemployment in transition countries: panel cointegration approach. *Industrija*, 45(1), 161-174.