EFFECT OF FOREIGN DIRECT INVESTMENT ON THE EMPLOYMENT RATE IN BOSNIA AND HERZEGOVINA

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Abstract

The main objective of this study was to explore the impact of foreign direct investment (FDI) on employment in the Western Balkans (WB), with a particular focus on Bosnia and Herzegovina (B&H). In the study, we used an econometric analysis of time series data, and multiple regression model. We analysed the time series data for B&H from 1998 to 2012. Based on our research, we found that the independent variables, such as FDI, household consumption, exports and unemployment are significant and have positive impact on employment growth in B&H, while in the case of government capital investment there is no significant effect.

Keywords: Transition, Employment, Labour Force, Unemployment, Labour Market.

JEL Classification: F2, F21

Introduction

FDI is an important driver of economic development in the WB. The WB countries include Albania, B&H, Croatia, Macedonia, Montenegro and Serbia. The fact is that the countries of the WB, in comparison with the countries of Central and Eastern Europe, have received less FDI during the 1990s. The main reason is that most of the Western Balkan countries were in transition or in war conflicts. Observed from 1989 to 2000, FDI in Western Balkan countries amounted to 15.3 billion dollars or 9.4% of total FDI in relation to 27 transition countries (Estrin and Uvalic, 2013). Out of the total dimensions of international investment in the period from 1997 to 2007, 68.32% was directed towards developed economies, 29.27% to developing countries, and only 2.39% to the countries of Eastern Europe and the WB (Josifidis et al. 2011). In the period from 1989 to 2006, foreign investors have invested about 31.2 billion dollars in the entire region of the WB, which was about 1.450 per capita, while for ten new EU member states it was about 4.700 dollars per capita. The largest percentage of investment or 44% is invested in Croatia, 32% in Serbia, and26% in the remaining four countries (Skuflic, 2010).

Based on census from 1991 B&H had population of 4.3 million. However, based on the last census from 2013, B&H had population of 3.8 million. Based on these data, we conclude that due to the war and post-war events the number of residents reduced for 700.000. Of course, this reflected in the share of working age population and its number from year to year decreases. Proportion of the working-age population by gender is also changed, i.e. in favour of men compared to women. Changes in the age structure of the population in B&H in the last few decades have shown a disturbing trend of rapid population aging. According to the Agency for Statistics, the population younger than 14 years accounted for half of the population, according to the census from 1971. The share of the working-age population was growing disproportionately slow, while the share of the elderly population has tripled over the period from 1971 to 2010, or from 4.7% to 22% (Anon, 2010). The unemployment rate in B&H is one of the highest rates in the region in 2012 and amounted to over 28%.LFS unemployment rate is 27.5% in 2013. The employment rate according to ILO definition (ARS) was 31.6% in 2013, and is one of the lowest rates in the region (Agencija za statistiku B&H, 2013).

In line with the defined problem, the main objective of this paper was to determine the effect of FDI on employment rates in the B&H. In order to increase the employment rate in B&Hnecessary reforms in the labour market and economic reforms that will make the country more efficient and productive must be implemented. It is necessary to implement the essential reforms to increase the employment rate and reduce the economic and social tensions. In the research we found that only FDI, exports, household consumption and unemployment significantly affect employment growth. On the other hand, government capital investments were negative, and did not have a significant impact on employment growth. Accordingly, the Council of Ministers and entity governments should undertake certain reforms of eliminating administrative barriers and facilitate FDI, apply foreign trade measures to stimulate trade export and encourage domestic consumption through the implementation of appropriate macroeconomic policies, and increase capital investment in infrastructure.

In our research, we start with H_0 hypothesis that independent variables, such as FDI, government capital investment, household consumption, exports and unemployment rate do not affect employment in B&H($H_0: B_1 = 1$). In addition, we set up an alternative H_1 hypothesis that the independent variables are affecting employment in B&H ($H_1: B_1 \neq 1$).

The paper consists of fourth parts: the introduction stating the subject and objectives of the research. The second section provides an overview of the literature, namely researches that are closely related to the topic. Thethird part presents the methodology of research and the database from which the figures were used. Fourth section presents empirical results of the research. At last, the fifth section gives the conclusion.

1. Literature review

In the last decade a few studies that focus on the impact of FDI on employment in transition and developing countries have been conducted. Apergis and Theodosiou (2008) explored the relationship between real wages and employment in the case of ten OECD countries in the period from 1950 to 2005. In their research they apply the panel cointegration analysis and causality methodology. They found that there is a long-term relationship between the observed phenomena, but there is no impact of employment on the employment rate in the short-run. In addition, they found that the reduction in wages does not lead to an increase in employment and output.Rizvi and Nishat (2009) scrutinized the impact of foreign direct investment on job creation in Pakistan, India and China in the period from 1985 to 2008. In their study they used a panel analysis and found that there is a positive statistical significance between employment and FDI.Jude and Pop Silaghi (2010) studied the impact of foreign direct investment on reduction of unemployment and fostering growth in Central and Eastern Europe. Specifically, they explored the effects of FDI on employment growth in the host countries, and determined the positive and negative effects. In addition, they explored the factors that determine the relationship between employment and foreign direct investments. Shahidan, et al. (2012) scrutinized the impact of FDI on employment rates and economic growth in Malaysia from 1980 to 2010. In their analysis they used the method of least squares (the ordinary least squares). They found that FDI serves to reduce the unemployment rate and GDP growth, i.e. there is significant positive correlation between FDI and employment. Mucuk and Demirsel (2013) scrutinized the relationship between FDI and employment in seven developing countries. They applied the panel unit root, cointegration and causality test using samples from 1981 to 2009. Research has shown that FDI leads to an increase in the employment rate in Turkey and Argentina, while in Thailand leads to the reduction. In fact, they found that there is a long-term causality between the observed phenomena.Stanila et al. (2013) considered the employment rate in the EU after the economic crisis that occurred in late 2008.In order to determine the influence of factors on employment in the EU-27 countries they have used panel data analysis. Most of the observed criteria that affect the employment rate were statistically significant, except for the openness of the economy.Stanila et al. (2014) examined the parameters that affect employment in the EU. The study used hierarchical clustering analysis to classify EU countries in the two clusters. In addition, they applied a panel data model for each cluster and identify indicators which influence the employment rate. They found a positive effect of wages on employment rates in both sectors. At last, they presented simulation forecasting employment rates scenario in EU. Sakuma (2014) scrutinized the impact of FDI on the WB. In his research he found that there is a strong connection between the economic indicators of FDI inflow in the countries concerned, and that there is a positive significant impact.

2. Methodology and date

This research deals with the empirical analysis of the measurement of FDI influence on the employment rate in B&H. The econometric analysis is based on time series data, and the application of multiple regression model. In our study we used Eviews 7 software package. Within time series multiple regression analysis, we used data for B&H on an annual basis, namely observing the period from 1998 to 2012. Data were taken from the database World Bank, Unctadstat, Agency for Statistics B&H, Eurostat, www.countre conomy.com and www.theglobaleconomy.com.

In our multiple regression model, we determined that the dependent variable is the employment rate, while the independent variables are gross domestic product, the total foreign direct investments, average wages, total government capital investment as a percentage of GDP, total exports as a percentage of GDP, household spending as a percentage of GDP, and the unemployment rate. We have chosen these variables, we decided based on prior researches and data availability. Within the multiple regression model, our empirical analysis consists of the following steps. First, we assessed the variables using correlations to make sure whether they can be included in our model for qualitative research. After that, we applied multiple regression method and found a positive effect of independent variables on the dependent variable.

Multiple linear regression model assumes a linear relationship between the dependent variable y_i and a set of independent variables $x'_i = x_{io}, x_{i1}, \dots, x_{ik}$. Also x_{ik} is called the independent variable, covariate or regressor. The first regressor $x_{i0} = 1$ is constant, if not otherwise specified (Schmidheiny, 2013). Multiple regression model provides the ability to control various factors that influence simultaneously the dependent variable. Multiple regression equation m + 1 creates a dimensional surface. The following equation represents the relation between y_i , $i x_{j,i}$ on the basis of a multiple linear regression that includes *m* independent variables

$$y_i = b_0 + b_{1x1,i} + b_{2x2,1} + \dots + b_{mxm,i} + \varepsilon_i$$
(1)

Coefficient B_0 is a vertical section just as in the simple OLS model. Coefficient m from b_1 to b_m are slope coefficients. Each coefficient B_j for $j > 0_j$ represent a change in Y_i resulting from a change in the variable $x_{i,j}$, while other variables are held constant.

Using the matrix, our OLS equation is written in the form $y = XB + \varepsilon$. Thus (n X 1) vectory contains *n* observations y_i on the dependent variable, (n X m + 1) matrix *X* represents *n* observations for each of *m* independent variables $x_{j,i}$, from set of columns of vector 1, (m + 1 X 1) vector *b* represents calculation of section B_0 and *m* inclination b_j for j = 1 tom, and (n X 1) vector ε represents *n* error or residual. According to that, our multiple OLS equation can be presented as follows

$$y_{1} \qquad 1 \qquad x_{1,1}x_{2,1} \dots \qquad x_{m,1} \qquad b_{0} \qquad \varepsilon_{1}$$

$$y_{2} \qquad 1 \qquad x_{1,2}x_{2,2} \dots \qquad x_{m,2} \qquad b_{1} \qquad \varepsilon_{2}$$

$$y_{3} = \qquad 1 \qquad x_{1,3}x_{2,3} \qquad \dots \qquad x_{m,3} \qquad b_{2} \qquad + \qquad \varepsilon_{3}$$

$$\vdots \qquad \vdots \qquad \vdots$$

$$y_{n} \qquad 1 \qquad x_{1,n}x_{2,n} \qquad \dots \qquad x_{m,n} \qquad b_{m} \qquad \varepsilon_{n}$$

$$y = Xb + \varepsilon$$

$$(2)$$

We can calculate the regression coefficient b_0 and b_1 to b_m through the coefficient vectors as follows

In vector equation 3 there are as many rows as there are observations, with the rows corresponding to the observations. For this reason, *yi* X are called the data vector, or the data matrix. Since the number of columns of X equals the number of rows of β , X and β are conformable and $X\beta$ is a $n \times 1$ vector. Its i - th element is $x_i'\beta$. Therefore, it can be written as (Hayashi, 2000)

$$y n x 1 = \frac{X B}{n x K K x 1} + \varepsilon (n x 1)$$

$$(4)$$

In order to find an estimation of the unknown parameters we will apply OLS model. With it we find that values $\beta_1, \beta_2, \beta_3$ minimize the sum of squared differences between the observed values of y_i and its expected value $E(y_i) = \beta_1 + x_{i2}, \beta_2 + x_{i3}\beta_3$. Mathematically, we minimize the sum of squares function $S \beta_1, \beta_2, \beta_3$, which is a function of unknown parameters, and obtain (Hill, et al. 2011)

$$S \ \beta_1, \beta_2, \beta_3 = {}^{N}_{i=1} (y_i - E(y_i))^2 = {}^{N}_{i=1} (y_i - \beta_1 - \beta_2 x_{i2} - \beta_3 x_{i3})^2$$
(5)

Thus, our model of multiple OLS regressions could be presented in the following equation

 $Empl = \beta_0 + \beta_1 GDP + \beta_2 FDI + \beta_3 Wage + \beta_4 Gcf + \beta_5 Export + \beta_6 Hconsumption + \beta_7 Uneployment +, ..., + \varepsilon.$

(6)

Where:

Empl – denotes the employment rate;GDP – gross domestic product;FDI - total foreign direct investments;Wage – average annual wages;Gcf – government capital investment;Export – total exports;Hconsumption – household consumption as a percentage of GDP;Unemployment – unemployment rate, and in the end ε - is residual or error.

3. The empirical results

Based on our research, we came up with the following results. After the analysis of correlation between the independent variables, which can be seen in Table 1, we found that there is a high correlation between the gross domestic product (GDP) and average total wages (Wage), and p - value is 0.981300%.

Also, we can see that there is a high correlation between FDI and Wage and p - value is 0.976143%. Based on the presented high correlations can be faced with the issue of multicollinearity, which occurs when some or all of the independent variables are highly correlated with each other. In the case of the presence of high correlation, regression model may have a problem to determine which independent variable affects the dependent variable.Issue of multi-collinearity is observed by t - statistic and high p - value under OLS model.

In some cases, we conclude that the coefficients are insignificant and should be eliminated from the OLS regression model. In an extreme case, we find that all coefficients are insignificant based on t - statistic, while R^2 is quite high and significant. This means that all the independent variables together affect the dependent variable and that multicollinearity doesn't allow us to observe which variables affect or explain the independent variable. Solving the problem of multi-collinearity is done by eliminating from the regression model those independent variables that are highly correlated with each other. In our case, based on high correlations, we eliminate the gross domestic product and average total wages.

	Gdp	Fdi	Wage	Gcf	Export	Hconsup	Unempl
Gdp	1.000000	0.965228	0.981300	-0.132179	0.678814	0.589764	0.191405
Fdi	0.965228	1.000000	0.976143	-0.097920	0.559763	0.441805	0.155954
Wage	0.981300	0.976143	1.000000	-0.254712	0.554267	0.575858	0.162614
Gcf	-0.132179	-0.097920	-0.254712	1.000000	0.240607	-0.389958	0.059448
Export	0.678814	0.559763	0.554267	0.240607	1.000000	0.399915	0.407295
Hconsup	0.589764	0.441805	0.575858	-0.389958	0.399915	1.000000	0.149822
Unempl	0.191405	0.155954	0.162614	0.059448	0.407295	0.149822	1.000000

Table no.1: Correlation between the independent variables

Source: Author's primary research

Based on the conducted analysis of correlation, we excluded from the OLS model those variables that are correlated highly with each other. In Table 2 you can see that out of seven of initial variables in our model, we excluded only GDP and Wage, due to the high correlation coefficients.

Dependent Variable: EMPL				
Method: Least Squares				
Sample: 1998 2012				
Included observations: 15				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
FDI	0.000131	3.56E-05	3.686435	0.0050
GCF	0.034919	0.016826	2.075287	0.0678
EXPORT	-0.050088	0.022142	-2.262106	0.0500
HCONSUP	-0.007876	0.002325	-3.388076	0.0080
UNEMPL	-0.509421	0.037548	-13.56733	0.0000
С	47.21724	0.954473	49.46943	0.0000
R-squared	0.970695	Mean dependent var		32.79333
Adjusted R-squared	0.954414	S.D. dependent var		1.308471
S.E. of regression	0.279370	Akaike info criterion		0.576614
Sum squared resid	0.702428	Schwarz criterion		0.859834
Log likelihood	1.675396	Hannan-Quinn criter.		0.573597
F-statistic	59.62242	Durbin-Watson stat		2.351958
Prob(F-statistic)	0.000001			

Table no.2: Effect on employment inB&H

Based on estimates of OLS models, we conclude that FDI has a p - value of 0.0050%, which is lower than the established value of 0.05%, which means that it is significant and has a positive effect on the employment rate in B&H, and based on that we can reject the null hypothesis. In the case of government capital investment or GCF, p - value is 0.0678%, which means that is higher value than the established value of 0.05%, and based on this, we conclude that it is not significant, i.e. does not affect positively the rate of employment and therefore we cannot reject the null hypothesis. In the case of Export,

p - value is 0.0500%, which represents a value that is equal to the determined value of 0.05%. Based on this, we conclude that is significant and has positive impact on the employment rate, and accordingly we reject the null hypothesis. Household consumption or *Hconsump* has p - value of 0.0080%, which is less than the determined value of 0.05%, and we conclude that is significant and reject the null hypothesis. Finally, the unemployment rate or *Unempl* has p - value of 0.0000%, which is very low, i.e. less than the determined value of 0.05%, which means that it is significant and has a positive effect on the employment rate, and accordingly we reject the null hypothesis. Looking at other statistics, such as R^2 (R-squared) and adjusted R^2 (Adjusted R-squared), we can see that they have a high value of 0.970695% and 0.954414%. F - statistics is very low and its p - value is 0.000001%, which indicates that is lower than the p - value of 0.05%, and that is significant and has a positive effect on the employment rate.

Conclusions

An increase in employment rate is one of the main priorities of the countries in transition, especially the Western Balkan countries that are faced with this issue in the last two decades. Low employment rate in B&H and other countries of the WB is the economic and social problem. It may be increased on a long-term basis through the stronger economic growth and better conditions for attracting foreign investment and the implementation of necessary reforms in the labour market. B&H is characterized by low levels of capital accumulation, which is insufficient to accelerate economic growth. Accordingly, B&H must attach greater importance to foreign direct investment through which it can achieve positive effects on the domestic economy. Effects are reflected in the growth of employment rate, the influx of technology, knowledge, skills and so on. In addition, it is important to highlight that not all forms of foreign direct investment have equal impact on economic growth and employment of a certain country. Greenfield investments are considered to be the most effective type of FDI, in terms of creating new jobs. In this paper, we obtained the following results which show that FDI has a positive effect on the growth of employment inB&H. Despite this, the inflow of FDI through greenfield investments, acquisitions and mergers, privatization and joint ventures is not sufficient to increase the employment rate. Therefore, the authorities in B&H must place greater emphasis on attracting greenfield investments which lead to a rise in employment. In the case of other variables, such as household consumption, exports and unemployment rate, the positive impact on employment growth was determined, while the government's capital investment is not don't have positive effect on the employment rate. This can be explained by the fact that the B&H capital investments didn't significantly increased, and this has a negative impact on the employment rate.

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