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Diaconu, Laura; Sterbuleac, Daniel

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# FDI and labour market: empirical evidence from the states that joined the European Union in 2004

Laura DIACONU (MAXIM)\*, Daniel ŞTERBULEAC\*\*

#### **Abstract**

The purpose of our study is to analyse the impact of FDI on the labour markets of the states that joined the EU in 2004, before and after the EU accession and in the context of the global economic crisis. To achieve this objective, we have investigated the literature and carried out a pooled OLS regression estimation. The analysis shows that, until 2003, FDI neither enhanced the labour force participation rate, nor reduced the youth unemployment in the analysed states. After EU adhesion, FDI had only one significant positive effect, exerted on real labour productivity, and negative effects on employment and labour force participation rate. In the context of the crisis, FDI had beneficial effects on the unemployment, but to a lesser extent on the youth unemployment. FDI did not have any significant effect on annual net earnings in none of the three periods.

**Keywords**: foreign direct investment, labour market, employment, net income, labour productivity **JEL Classification**: E24, J24, O19

### Introduction

Many researches have studied the impact that foreign direct investment (FDI) has on the labour market, the most cited ones being related to the increase in wages and decrease in unemployment (Feenstra and Hanson, 1997; Blonigen and Figlio, 2000; Lipsey and Sjöholm, 2002; Lipsey, 2004; Fazekas, 2005). However, no study has analysed the influence of FDI on all the labour markets of the ten countries that joined the EU in 2004: Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovak Republic and Slovenia. Considering the fact that, at the moment of adhesion, these ten new states (EU10) had a combined population of almost 75 million citizens, coming from different social, cultural, political and economic environments (including former Soviet republics, former satellites of the USSR, former Yugoslav Republic and Mediterranean islands), a study regarding the impact of the FDI on different aspects of the labour markets of these countries

<sup>\*\*</sup> PhD Student, Faculty of Biology, "Alexandru Ioan Cuza" University of Iasi, Romania; e-mail: daniel.sterbuleac@gmail.com.



<sup>\*</sup>Associate Professor, PhD., Faculty of Economics and Business Administration, "Alexandru Ioan Cuza" University of Iasi, Romania; e-mail: lauradiaconu\_07@yahoo.com.

would be very interesting from the perspective of the EU adhesion and in the context of the global economic crisis.

Therefore, the purpose of our study is to analyse the impact of the FDI on the labour markets of EU10 during the period 1993-2014, with a particular focus on wages, employment and productivity. The relevance of this study results from the fact that the research will underline the effects of FDI on EU10 labour markets before and after the EU adhesion and in the context of the global economic crisis. Considering that, during the recession period, the wages tend to fall and the unemployment raises, especially among the youth, it is important to see if FDI could represent a solution for these problems or if FDI could have had a buffering effect against the negative consequences of the crisis.

In order to achieve our research objective we have conducted both an investigation of the specialized literature and an econometric analysis, based on a pooled OLS regression, performed on each of the three mentioned periods, namely 1993-2003, 2004-2008 and 2009-2014. The results of the statistical analysis, which took into account six indicators – annual net earnings, youth and total unemployment, real labour productivity, labour force participation rate and employment to population rate – offer an interesting perspective of the impact of the FDI on the EU10 labour markets.

#### 1. Literature review

The benefits associated with the presence of foreign companies depend on a large category of factors, including the situation in which there are linkages with local firms and consumers or depending on the efficacy of foreign companies to limit potential losses towards local firms. Generally speaking, foreign firms are regarded as a means of strengthening the competition in the host countries, leading to an increased productivity, a reduction in prices and a better resource distribution, but they can also lead to market concentration or to a loss of local competition (Pessoa, 2007). However, local firms could be replaced, especially in developing countries, due to a wide range of advantages that foreign companies possess (Markusen and Venables, 1999). It is considered that, through the competition they generate, FDI-owned companies are usually leading to a decrease of outputs' prices, thus determining a substitution of local firms on consumer goods' market. Additionally, upward linkages facilitate the development of local firms that produce intermediary goods, thus also leading to an overall decrease in prices (Markusen and Venables, 1999; Iacovoiu, 2009). Rodriguez-Clare (1996) shows that an intensive use of local intermediary goods acquired by foreign firms generate an efficient raise of the host-country productivity. Although there are some

researches that demonstrate that FDI-owned companies could "disturb" the equilibrium of a local market, leading to a reduction of productivity (Aitken and Harrison, 1999), most of the studies show that foreign firms can raise the quality standards and improve the outputs of local firms (Matei, 2004).

FDI can increase the demand for skilled labour by expanding the production towards more sophisticated goods and by introducing more advanced technology. This will generate higher wages for the skilled persons, which may raise the wage inequality due to an increase in the so-called "skill premium" – the difference between wages of skilled and unskilled workers. Yet, this is not only a result of the fact that the multinational companies increase the demand for skilled workers in an industry or region, but also a consequence of the technology spillovers that occur from foreign to domestic firms (Driffield and Taylor, 2000). Due to these spillovers, the relative demand for skilled workers will also increase in the domestic firms, further contributing to aggregate wage inequality and skill upgrading.

Some studies show that the local firms will also increase the wages paid to their employees, after the entry of the multinationals on a market. For example, Feenstra and Hanson (1997) found out a close relation between FDI inflows and the increase in the wages of Mexican workers, during the 1990's. Actually, their study points out that the highest wage increases were in those states receiving the highest volumes of investments. Blonigen and Figlio (2000) also examined the effects of FDI on local wages in South Carolina and they found out that the entry of a single average sized foreign company increases the real wages of all workers from the plant's industry and county by 2.3%. The explanation offered by them for this wage raise is that the overall labour demand will increase. Other studies have considered that these increases in the wages paid by the domestic firms after the entrance of the multinationals occur only in the case of the skilled workers. However, it was noticed that FDI's effects on skilled labour wages are 50% to 70% above the skilled wages paid by the local firms (Berman, Bound, and Griliches, 1994; Lipsey and Sjöholm, 2002).

In the literature, there are some other studies that have analysed the impact of the FDI on the wages of the multinationals' unskilled workers. Most of them have found out that the wage premiums for the unskilled workers in the foreign-owned manufacturing firms range between 10% and 30% (Harrison, 1996; Lipsey and Sjöholm, 2002). However, comparing the skilled and unskilled wages in UK manufacturing industries, Griffith and Simpson (2001) found out that the wage premium paid by the multinationals is twice as large for the skilled workers compared to the unskilled ones. Once again, this proves that the premium wages could be related to higher labour productivity. A large range of studies confirm the fact that foreign-owned companies have increased more the productivity levels when compared to local companies. For example, by examining the productive sector in

Mexico, Blomström and Wolff (1994) show that both added value and raw output per person employed in foreign-owned companies are double than those found in local companies. Similar results are found for Uruguayan (Kokko, Zejan and Tansini, 2001) and Asian firms (Ramstetter, 1999). In the production sector of Indonesia, Okamoto and Sjöholm (1999) report a higher productivity of foreign-owned companies in almost all the analysed fields. In the Indian case, Kathuria (2000) notices that in 50% of the analysed work-fields, foreign-owned companies have the status of technological leader.

Regarding this increase in productivity generated by the foreign firms, an important aspect worth to be analysed is whether the FDI companies' activity leads to an increase in the overall productivity, not only by a simple higher productivity rate of the foreign firms, but also by the spillover effects they generate or due to the need of the local firms to "keep up" with the foreign ones (Lipsey, 2004). An approach of this aspect could be found in the study conducted by Kugler (2000), who notices three different channels by which FDI can increase local firms' productivity: knowledge spillovers, linkages with local companies and the competition associated with the presence of the foreign firms in a certain market. In fact, knowledge spillovers usually occur when FDI companies are involved in local economy, through upstream or downstream linkages (Lall, 1980). For example, local suppliers can receive assistance from the investing firms in optimizing the production, or local workers can get involved in training programmes (Chen et. al., 2004). Although there is evidence that spillovers are somehow limited (Blomström and Kokko, 1998; Görg and Greenaway, 2001) and that the foreign companies may also take over certain consumer markets from the local firms, leading to a decrease in their productivity, it is generally accepted that FDI-owned companies do possess higher knowledge and technologies and part of it does "leak" towards local firms (Lipsey, 2004), especially when the technology gap between host and home country is larger (Findlay, 1978). Aitken and Harrison (1999) show that, in Venezuela, foreign capital is negatively correlated with the productivity of local firms in certain fields, as foreign firms usually invest in sectors already developed, but Blomström and Persson (1983) notice that in the Mexican industrial sector there is a positive correlation between the presence of the foreign companies and the local firms' productivity. Buckley, Clegg and Wang (2002) confirm the same effect in China.

All these studies, underlying the idea that FDI increases the productivity of the developing countries' firms, lead to another positive effect of the multinational companies: increase in the number of jobs. Because of the market structure, higher productivity tends to be associated with larger firm size, leading to an increase in employment. However, this impact seems to be more pronounced in developing countries, where there is a clear positive effect of FDI on employment, noticeable at the

level of a firm (number of employees), industry (size or unemployment rate), region (unemployment rate) or country (unemployment rate). Meanwhile, in the case of the developed economies, the FDI effect on employment is more mixed, being possible to increase or decrease the number of jobs (Hale and Mingzhi, 2016).

A very suggestive example of the fact that the FDI leads to an increase in the employment in the host countries is brought by Fazekas (2005), on the case of Hungary. He concludes that, between 1993 and 2002, more than two thirds of the net job creation was generated by the presence of the foreign firms. During the analysed period, the number of multinationals' employees increased by 91.1%, while the number of the domestic companies' employees increased only by 8.8%. Since Hungary adhered to the EU in 2004, it is also included in our study. Hungary sets apart from other countries in our analysis, since FDI values were very high, with exceptionally high values between 2006 and 2008. In fact, as mentioned, our analysis is focused on a heterogeneous group of countries. However, all ten analysed states adhered to the EU in the same year. Thus, the 2004 adhesion could well serve as a control point in our analysis. We consider that the adhesion of EU10 countries, very different from each other in 2004, should have had a levelling effect in the following years, in terms of microeconomic, macroeconomic and foreign policies, as the countries have been following the common EU strategy. This also implies that accession to EU also leads to better financial inflows between member states, a better capital distribution and improved foreign capital efficiency.

A common strategy was also employed after the beginning of the economic and financial downturn. This crisis was marked by a global reduction of FDI inflows and a productivity drop, but a quick recovery followed. The same cannot be stated for wages, as there is a known gap between the productivity and the wages (at least in the long run), in most countries. Additionally, the crisis led to an increase in the worldwide savings, while the wages were lagging behind (Mistral, 2016). Nevertheless, the crisis also led to high unemployment levels, although most economic models explain a negative correlation between wage levels and employment. During the recession, employment and productivity were two trade-off variables in the EU countries, therefore a very intricate correlation exists between these various indicators and country-specific effects are well established (Meager and Speckesser, 2011).

According to some studies, the financial crises usually have a discouraging impact on FDI because of the increasing uncertainty in macro-economic performance that results during the recession period (Urata, 1999). Therefore, a crisis can negatively influence the companies' plans for future investments. A United Nations' survey, conducted in 2008, showed that the global downturn that started in the end of 2007 made the corporations more cautious, only 21% of the investigated

firms estimating an increase in their FDI expenditures over the next 3 years (UNCTAD, 2008). Even if the Asian experience showed that after the 2007 crisis the FDI inflows into these economies did not register a significant decrease, the Central and Eastern European (CEE) countries present a different reality. According to a report published by Hunya and Schwarzhappel (2009), if in 2008 FDI inflows into the CEE states stagnated, in 2009 these investments sharply declined. This negative trend was accompanied by an increase in unemployment (Jimborean and Kelber, 2017). Meanwhile, a study published by Popescu (2014) showed that, despite the FDI decline that occurred in the context of the economic downturn, these investments continued to have a positive impact on the productivity of the CEE states. In this context, Popescu (2014) assumes that FDI may be an essential factor for productivity convergence in CEE countries.

# 2. Research methodology

#### 2.1. Variables

Beside FDI inflows, we selected six different parameters which describe the labour market in EU10, focused on the role of the human capital, as the most important aspect of any labour market. The values for the seven indicators, analysed between 1993 and 2014, were retrieved from two widely used databases: the World Bank Indicators (2017) and Eurostat (2017). Five indicators were available on World Bank Indicators, namely the net inflows of FDI, calculated in billions USD and noted FDI, employment to population ratio, named EPR, labour force participation rate, abbreviated LFPR, youth unemployment, noted UY and the total unemployment rate, noted UT. These indicators only show some parameters of the labour market related to the total working force of a country and are not related to wages or productivity. The other two indicators which were retrieved from Eurostat are the annual net earnings, in Euros, noted ANE, and the real labour productivity per person employed, as a percentage of the indexed 2010, named RLPPPE. It was not possible to use only the Eurostat database, because it lacks some statistics, such as the data for ANE, which started being reported only since 2000 and RLPPLE, whose values were not recorded until 1995. Additionally, ANE was not recorded by Eurostat for Malta until 2005 and RLPPPE was also missing until 2000 for both Malta and Poland. All variables were subjected to a Box-Cox transformation using the formula new\_value=(old\_value^0.5-1)/05, except the values of FDI inflows after 2008, when FDI sometimes had negative values.

For our analysis, it is important to mention the difference between two related indicators. According to World Bank, the EPR is defined as the proportion of a country's population that is employed, while the LFPR is the proportion of the population that is economically active, defined as all people who supply labour for the production of goods and services during a specified period. As such, LFPR has higher values, as it also includes unemployed people actively looking for a workplace and should be analysed together with the unemployment rate.

## 2.2. Regression models

As mentioned before, we used seven different variables, each one having a time intercept and a country intercept, noted t and i, respectively. Three different models were analyzed, in order to compare the effect before and after the two important economic events, the adhesion of the ten countries to EU (2004) and the beginning of the economic crisis (2008). Therefore,  $N_i$ =10 (Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovak Republic and Slovenia) and  $N_t$  varied according to the three different constructed models, either  $N_{t1}$ =11,  $N_{t2}$ =5 or  $N_{t3}$ =6 for each of the three periods: 1993-2003, 2004-2008 and 2009-2014. Since two variables groups, namely, LFPR-EPR and UY-UT are prone to autocorrelation, we modelled them individually in each regression, such as the two variables from each group would never be included in the same regression.

# 2.3. Methodology's limits

Although the methodology used and the ideas underlining our objectives are straightforward, our study has some limitations. Firstly, our analysis is based on a very heterogeneous group of countries whose economies were not stable during the two major economic events. This leads to some extent to a dataset comprising divergent and highly variable parameters. In order to minimize the heteroscedasticity of our dataset, we performed a Box-Cox transformation using an arbitrary lambda constant of 0.5. However, since EU10 comprises ten largely different economies, in terms of size and with different strategies employed during the two economic shifts, it contained some outliers, which exert their effects even after the Box-Cox transformation, rendering our regression too sensitive to the rigour of post-estimation tests (results not shown). Nevertheless, we believe that finding a significant FDI effect on certain labour market parameters in most of these countries would be very consistent with the changes implied by the two main economic events.

Secondly, although the data seems specifically suited for panel data models, we chose not to perform such an analysis (such as fixed effects) because, in order to achieve the research objective and to compare three different results (hence three models), each of these models included too small sample (especially for models 2 and 3), with small N<sub>t</sub> to be appropriate in panel data specific models. However, even though individual specific effects could not be taken into account, the multiple different pooled ordinary least squares (OLS) regressions we use do include many different observations for each variable and the significant values obtained should accurately display an effect. In each of the equations of the three models, all parameters, except FDI, took turns to becoming a dependent variable, thus allowing us to observe other potential relations between specific variables which could better assess the overall effect of FDI on the labour market variables included in our three models.

#### 3. Results and discussions

## 3.1. Effects of FDI on the EU10 labour markets before accession (1993-2003)

Our analysis was focused on determining the impact of the FDI on four variables of the labour market, mentioned before: EPR, LFPR, UY and UT. As mentioned before, the variables retrieved from Eurostat, in this case ANE and RLPPPE, have missing values for this period and, therefore, these variables were not included. However, the results, presented in, show very low R-squared values to make any statements about the variables, but such results should be outlined and further developed in any future studies. When FDI is used as an independent variable, two different significant effects can be depicted from the results. A small but significant FDI effect can be noticed on the UY, when LFPR is the other independent variable, and FDI had negative effects on EPR and LFPR. Therefore, we may assume that the foreign investments made in the EU10 states before their accession neither enhanced the labour force participation rate, nor reduced the youth unemployment, as we should have expected. Actually, this result has to be analysed in the socio-economic and political context of the EU10. If we consider that, between 1993 and 2003, most of the EU10 states have passed through a transition period to a market economy, we may assume that most of the FDI were not greenfield investments, but brownfield ones. Consequently, during the privatization process, many people lost their jobs. However, a more general conclusion should be drawn only by including much more variables in such a model.

Table 1 – Some of the results obtained from the pooled OLS in the period 1993-2003, standard errors in parentheses with significance levels defined as \*\*\* (p<0.01), \*\* (p<0.05) and \* (p<0.1)

		( <b>p</b> (011)			
	DEPENDENT VARIABLES				
	EPR	LFPR	LFPR	UY	UY
FDI	-0.113***	-0.106***	-0.107***	-0.00505	0.230*
	(0.0345)	(0.0389)	(0.0400)	(0.122)	(0.127)
UT	-0.156***	0.129***	-	-	-
	(0.0362)	(0.0408)			
UY	-	-	0.0650**	-	-
			(0.0304)		
EPR	-	-	-	-1.384***	-
				(0.301)	
LFPR	-	-	-	-	0.636**
					(0.297)
Constant	13.03***	13.85***	13.95***	23.94***	-2.345
	(0.160)	(0.180)	(0.215)	(3.734)	(4.286)
R-squared	0.232	0.132	0.089	0.180	0.057

Source: own calculations

# 3.2. Effects of FDI on the EU10 labour markets between the EU adhesion and the beginning of the economic crisis (2004-2008)

According to the literature, during the period 2004-2008, FDI inflows attracted by the 2004 EU countries should have had a positive effect on all the labour market parameters taken into account in our analysis, respectively employment, wages and productivity. In this model we included 16 different regressions, which could be easily compared, since the same independent variables were accounted for different, but similar, regressions, and a consensus was noticed. For example, in all regression with RLPPPE as a dependent variable, FDI had a positive and significant effect. The R-squared values were larger and we focused mostly on the R-squared values over 0.7. Table 2 shows only one of these regressions, using RLPPPE as the dependent variable.

Table 2 – Some of the results obtained from the pooled OLS in the period 2004-2008, standard errors in parentheses with significance levels defined as \*\*\* (p<0.01), \*\* (p<0.05) and \* (p<0.1)

	DEPENDENT VARIABLES				
	RLPPPE	EPR	LFPR	UT	UY
FDI	0.0703***	-0.0710***	-0.0986***	0.120**	0.171**
	(0.0233)	(0.0171)	(0.0174)	(0.0512)	(0.0681)
EPR	-0.0839	-	-	-	-
	(0.211)				
UY	-0.284***	-0.182***	-	-	-
	(0.0521)	(0.0477)			
ANE	0.0168***	0.00805**	0.00323	0.00871	0.0261**
	(0.00337)	(0.00326)	(0.00355)	(0.00808)	(0.0107)
UT	-	-	0.00198	-	-
			(0.0740)		
LFPR	-	-	-	0.0103	-0.597
				(0.386)	(0.514)
RLPPPE	-	-0.0538	0.106	-1.500***	-2.106***
		(0.135)	(0.149)	(0.231)	(0.307)
Constant	17.84***	13.76***	12.56***	28.05***	47.66***
	(2.755)	(2.297)	(2.543)	(5.901)	(7.849)
R-squared	0.783	0.763	0.567	0.653	0.680

Source: own calculations

Another aspect worth mentioning is the direct negative effect of FDI on EPR and LFPR between 2004 and 2008. However, the results also show that FDI had significant positive effects on the unemployment, but this was noticeable only when LFPR, and not EPR, was another independent variable, therefore no statements should be made about this type of effect.

## 3.3. Effects of FDI on the EU10 labour markets in the context of the economic crisis (2009-2014)

The third model used in our study refers to the period 2009-2014, when the consequences of the economic crisis started to be felt in EU10. Since in this period the countries have struggled with serious economic issues, it is very important to evaluate whether they benefited from FDI inflows.

Considering the assessment of the literature and of the economic context, it is expected that FDI had a positive effect only on the productivity of the host economies, without being able to positively influence the unemployment or the paid wages in the ten countries. Unfortunately, most of the 16 regressions had very low R-squared values and, additionally, showed no effect whatsoever of FDI on labour market parameters. This is in agreement with the fact that the recession impacted each country differently.

However, an interesting result was observed when unemployment rates were selected as the dependent variables, showing that FDI would have had a beneficial effect on UT, but a smaller effect on UY (Table 3). Although the R-squared values are decent, this result cannot be confirmed by a visual analysis of a plot, but such a relationship should be taken into account in future studies involving other simple or compound variables, which must include unemployment rates.

Table 3 – Some of the results obtained from the pooled OLS in the period 2009-2014, standard errors in parentheses with significance levels defined as \*\*\* (p<0.01), \*\* (p<0.05) and \* (n<0.1)

	DEPENDENT VARIABLES		
	UY	UT	
FDI	-0.0340*	-0.0410**	
	(0.0203)	(0.0161)	
ANE	-0.0389***	-0.0241***	
	(0.00485)	(0.00385)	
LFPR	-0.100	0.271	
	(0.261)	(0.207)	
RLPPPE	-0.206	-0.116	
	(0.313)	(0.249)	
Constant	18.80***	6.331	
	(6.077)	(4.827)	
R-squared	0.594	0.547	

Source: own calculations

## **Conclusions**

From the results of our statistical analysis some conclusions can be depicted, even if, in some cases, more data is needed. It should be mentioned that, in this paper, we analysed a dataset comprising numbers from a very heterogeneous group of countries during two major economic shifts. Although such an approach is atypical, we believe that any result should weight much and its extrapolation to the entire EU or a generalization could be furthered in subsequent papers.

For the first analysed period, 1993-2003, we may notice an interesting result, which can further be developed by including much more variables. Thus, before the accession of the EU10 states, the foreign investments they attracted neither enhanced the labour force participation rate, nor reduced the youth unemployment. This aspect may be a consequence of the fact that, during the transition period of most of the EU10 states, FDI mainly consisted in brownfield investments.

The results obtained for the period 2004-2008 were contrary to our expectations and to the literature, according to which FDI should have had a pronounced positive impact on employment,

wages and productivity. We found that, during this period, FDI had significant positive effects only on the overall labour productivity of the EU10. Meanwhile, FDI had negative effects on EPR and LFPR, and on employment and wages it did not have any statistically significant impact.

During the third analysed period, FDI did not have any particular effect on neither indicator, but a statistically unsupported effect could be noticed on the unemployment rate. Considering these results, we may argue that the crisis had differently influenced the relationship between FDI and the labour markets of the EU10. This proves once again the heterogeneity of the member states and the fact that the EU is not always a shield for the external shocks.

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