The impact of Foreign Direct Investments on employment: the case of the Macedonian manufacturing sector

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Abstract

As a less developed post-transition country, Macedonia has marked a moderate growing economic performance coupled with high and sustained unemployment during the past decade. In this context, fostering FDI has been promoted by the Macedonian government as one of the main instruments for generating employment and providing further economic development. The aim of this paper is to assess the impact of FDI on employment in Macedonian manufacturing sectors, which has been assessed by applying a single equation error correction model. The results indicate that FDI and personnel costs are statistically significant factors that positively affect employment in the manufacturing sub-sectors which, due to their interaction, might indicate higher productivity in the companies with FDI. In addition, the negative impact of the relative personnel cost per employee vis-à-vis Serbia in the short-run reaffirms the assertion that FDI in the Macedonian manufacturing sectors is mainly driven by efficiency seeking motives.

Keywords: FDI, employment, manufacturing

Introduction

Although the process of transition has been successfully completed, nowadays, Macedonia still struggles to achieve satisfactory economic performance. Following the strong economic growth during the period 2002-2008 averaging 4.3%, the average GDP growth has declined to 2.1% per year since 2009. The main drivers of growth since 2009 have been construction, manufacturing and wholesale and retail trade. In this context, it has been widely acknowledged that the country has made significant progress in terms of its economic development, but efforts are still needed across a range of areas to generate economic growth necessary to create jobs and improve living standard[1]. Moreover, the problem of high and sustained

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[1] Read more about at http://www.worldbank.org/en/country/macedonia/overview.

unemployment continues to be the most challenging issue which has been translated into substantial erosion of skills and motivation of unemployed workers.

In these circumstances, the Macedonian Government has promoted FDI as one of the main instruments for increasing employment and providing further economic development of the country. In this regard, a number of policy measures have been undertaken in order to attract FDI. For instance, the fiscal burden has been gradually alleviated by diminishing the corporate tax rate and social security contributions. Namely, the corporate tax rate has been reduced from 15% in 2006 to 12% in 2007 and further to 10% in 2008. Similarly, during the period 2008-2012, the contribution for Pension and Disability Insurance Fund has dropped from 21.2% to 15%. During the same period, the contribution for Health Insurance Fund has dropped from 9.2% to 6%, while the contribution for Employment fund dropped from 1.6% to 1%[2].

Moreover, in 2010, the Government established the Agency for Foreign Investments and Export Promotion of the Republic of Macedonia which *inter alia* is in charge of attracting new foreign investments in the country and of supporting the expansion of foreign companies with already established operations. In this context, the Government has designed and promoted the campaign 'Invest Macedonia' and has engaged a dozen of economic promoters in several developed countries[3].

In addition, the Macedonian Government has established several Technological Industrial Development Zones (TIDZs) as industrial free zones, whose primary goal is to assist in providing more efficient business climate in the country by attracting foreign and domestic capital, by improving competitiveness and by increasing employment. Besides the tax and customs incentives, normally associated with free economic zones, Macedonia offers additional investment incentives related to TIDZs. Moreover, TIDZs are considered as exterritorial and free of most national customs, trade and financial regulations which ease the processing and handling of goods to and from the TIDZs.

With respect to administrative procedures, the Government has introduced a 'One-Stop-Shop' System that enables investors to register their businesses within a couple of hours after submitting their application. In this context, one can register a company by visiting one office, obtaining the information from a single place, and addressing one employee, which significantly reduces administrative barriers and start-up costs.

Regarding labour legislation, it is worth mentioning that the recently enacted Labour Law provides increased flexibility of the labour market by offering and promoting flexible and different employment contracts and working time flexibility. On the other hand, attracting FDI has been criticised as a reason for government's engagement in a race to the bottom deregulation and worsening labour standards.

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[2] Source of data: Ministry of Finance of the Republic of Macedonia (www.finance.gov.mk)
[3] Source of data: Agency for Foreign Investments and Export Promotion of the Republic of Macedonia (www.investmacedonia.com);

Despite its relevance, the assessment of FDI effects on employment and human capital development in Macedonia has received little attention from researchers and policymakers. Besides the above listed government efforts to attract FDI in Macedonia, the FDI net inflows as a percent of GDP in 2016 was 5.3 which is close to the unweighted average for the Western Balkan countries (World Bank).[4]

In this context, a dilemma faced by developing countries, including Macedonia, is whether host authorities should expend public funds to attract FDI by offering special support and providing subsidies (Moran, 2007). According to the Balkan Investigative Reporting Network (BIRN), during the period 2007-2015, the Macedonian government spent about 150 million EUR for attracting FDI. However, the analysis of BIRN's database 'Foreign Investments Uncovered' points out that around one third of the announced investments have not been completed or have failed[5]. In addition, it shows that the number of workers employed as a result of these investments is three times lower than announced by the government spokespeople.

It has been generally recognised that the manufacturing sector is very important for every economy. This is particularly relevant with respect to the creation of economic value and supporting additional jobs. In addition, its importance is reflected in the multiplier effect, which justifies why a strong and healthy economy requires a vibrant and growing manufacturing sector. In addition, when assessing the size and impact of the manufacturing sector in developing countries, it is vital to recognise its capacity to attract FDI. Although FDI in the Macedonian manufacturing sector is important, there is an obvious gap in the analysis of its determinants as well as its employment implications.

Having in mind the above considerations, the aim of this paper is to assess the impact of FDI on employment in the Macedonian manufacturing sector. In particular, we would like to address the following research questions: What is the composition of FDI in the manufacturing sector in Macedonia? How did FDI in the manufacturing sector affect employment in the short and long run? What policy recommendations can be formulated in order to reshape the role of FDI towards improving employment generation in the manufacturing sector? Accordingly, the paper is structured as follows. In section 2 we provide the basic theoretical concepts related to FDI and their determinants with a stress on the FDI in the manufacturing sector. In this context, stylised facts about FDI flows to transition economies will be particularly emphasised. In section 3 we present the empirical analysis results. With this regard, separate sub-sections are devoted to explanation of variables, descriptive analysis and econometric analysis. Finally, in section 4 we convey concluding remarks and attempt to formulate recommendations for future policy reforms aiming to attract FDI in the manufacturing sector.

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[4] FDI inflows as a percent of GDP in Western Balkans: Albania (9.1%), Bosnia and Herzegovina (1.6%), Kosovo (3.6%), Montenegro (5.4%) and Serbia (6.1%).

[5] Read more about at: http://investicii.prizma.mk/mk

1. Theoretical background

FDI is defined as direct investment of a company in a facility to produce or market products in a foreign country. Since foreign investments mark continuous global increase, they have gradually become one of the central topics in academic and policy debates (UNCTAD, 2009). FDI can be viewed as a Greenfield investment which involves the establishment of a new plant in a foreign country or can occur by acquiring or merging with an existing firm in the foreign country. FDI potentially brings benefits and costs for both host and home country. The main benefits of inward FDI for a host country arise from resource transfer effects, employment effects, balance of payments effects, and effects on competition and economic growth. On the other hand, the costs of FDI which concern the host country are the following: adverse effect on competition, adverse effect on the balance of payment, and possible loss of national sovereignty and autonomy (Hill, 2013).

FDIs are expected to exert shifts in labour demand in receiving countries manifested by higher employment and wages at least in the short-run (Axarloglou and Pournarakis, 2006). However, the net effect of FDI on employment would depend on the type of investments and ultimately on the balance between job-creation and job-displacing forces. Horizontal FDIs are generally driven by market seeking motives and, in this case, there is a shift of production activities due to the replacement of exports with host country production. On the other hand, the aim of vertical FDI is to minimise production costs which improves the competitiveness of multinational companies and implies their larger market shares (Johnson, 2005; Brincikova and Darmo, 2014).

The beneficial employment effects of FDI for the host countries can be either direct or indirect. Job creation within the multinational subsidiaries in the receiving countries is considered a direct effect. Alongside with the direct effect, FDI can exert indirect effects through jobs created within local suppliers as a result of investment or of a higher level of consumption. For instance, by subcontracting a number of 'value chain' activities to local subcontractors who supply spare parts, components or semi-finished goods to the foreign company, the creation of extra jobs, which additionally increase the economic development of a host country, is expected (Dunning and Lundan, 2008). However, the theory is not decisive regarding the impact of FDI on the level of employment in the receiving countries. Namely, some authors point out that in the case of acquisitions, employment might be reduced due to the intentions of multinational companies to restructure operations in the acquired unit and to improve its operating efficiency.

Having in mind the above considerations, the reason why accurately measuring the economic impact of FDI including the effects on employment becomes a challenging task becomes obvious. In order to estimate the impact of FDI on employment, it is first necessary to assess the direct and indirect employment associated with the operation of foreign affiliates and second, to identify the next

best alternative to such investment, and to estimate the employment associated with this alternative. The difference between the two is the employment effect of inward investment.

Apart from the quantitative impact measured as net job creation, FDIs exert qualitative effects on wages, job security, level of skills and labour productivity in receiving countries. The empirical evidence shows that foreign affiliates generally pay higher wages than domestic firms in the same activities; they tend to offer greater job security than domestic firms; they upgrade employee skills by investing in training; and they generate technological spillovers for the local firms (Golejewska, 2001; Lipsey, 2004; OECD, 2008). The quality of jobs created by FDI might be considered from both worker's and country's perspective (Javorcik, 2013). From the worker's perspective, relevant characteristics of good jobs are the associated wages, promotion possibilities and job stability. From the country's perspective, the advantages brought about by FDI are the following: technology and knowledge spillovers, increased aggregate productivity and increased competitiveness.

The evidence of both cross-country and over-time heterogeneity of FDI suggests that government policy may play an important role in shaping the size and composition of inward FDI flows. In this context, there is an open debate on whether FDIs cause a race to the bottom by deregulating employment protection and worsening labour standards in less developed countries striving to attract FDI (Olney, 2013). Moreover, the race to the bottom has been criticised as a reason for increased elasticity of demand for labour, which pushes wages downward toward subsistence levels in the global labour market (Mehmet and Tavakoli, 2003). Hence, the challenging task of the policy reforms that tackle FDI in less developed countries will be the reconciliation of two opposed goals, *i.e.* attracting FDI by simultaneously maintaining a satisfactory level of labour standards (Agusti-Panareda and Puig, 2015).
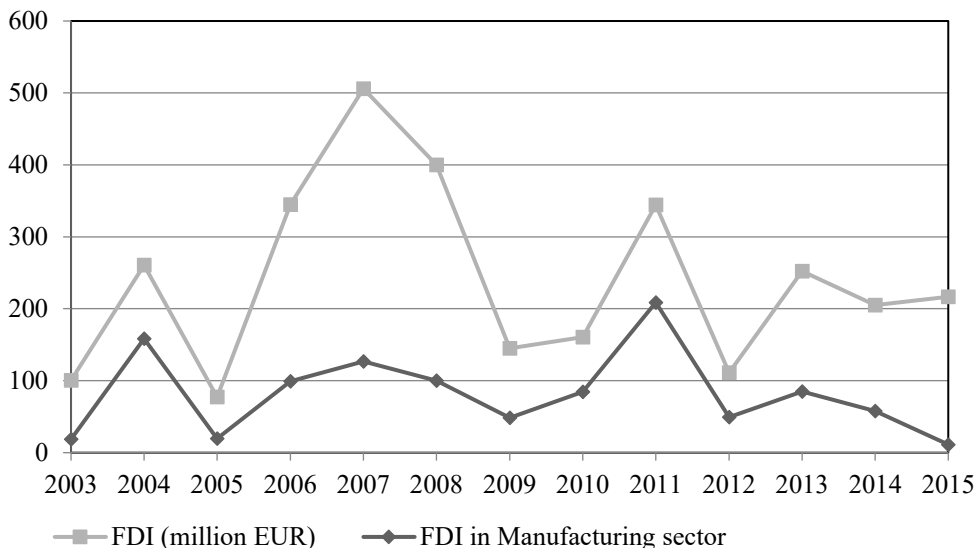
The stylised facts about transition countries show that FDIs have been considered as a significant source of development since the outset of transition. However, the transition world has not been homogenous and both the level and growth of FDI differ across countries. For instance, Central and Eastern European countries (CEECs) advanced earlier in the process of transitional reforms and consequently attracted substantial foreign capital. In contrast, South-Eastern European countries also known as 'lagging reformers' in the process of transition lag behind CEECs in attracting FDI. One of the main reasons for the low performance of the Balkan countries with respect to FDI inflows is the political instability which had negative economic implications for the whole region (Estrin and Uvalic, 2014). In addition, this group of countries lag behind in the process of EU integration which has been considered an important precondition for larger FDI inflows (Penev and Rojec, 2014). With respect to the above mentioned race to the bottom hypothesis, in the case of transition countries, some evidence shows that FDI flows are significantly higher in countries with relatively low unit labour cost, but a

statistically significant impact of employment protection legislation has not been found (Leibrecht and Scharler, 2009).

2. Empirical analysis

In spite of the heavily advertised campaign and the long list of incentives, Macedonia continues to score less FDI in comparison to other developing post-transition countries. For instance, the average FDI net inflows in Macedonia for the period 2007-2015 was around 4% of GDP, which is considerably lower compared to more advanced economies. The following have been identified as potential reasons why foreign investors are sensitive to investing in a small developing economy such as Macedonia: market size, economic development and general growth prospects, business climate, overall infrastructure, regulatory and administrative issues (Krstevska and Petrovska, 2012). The dynamics of total FDI inflows and FDI in the manufacturing sector in Macedonia during the period 2003-2015 is presented in Figure 1.

Figure 1. FDI net inflows in Macedonia 2003-2015 (million EUR)

Source: NBRM

From Figure 1, we can observe that the trend of FDI varies considerably from year to year with two noticeable declines from 2007 to 2009 and from 2013 to 2015. The former decline can be attributed to the effects of the global economic crisis, while the latter might be due to the recent political instability in the country. From

the macroeconomic perspective, FDI in Macedonia predominantly occurs in the tradable sector which contributes to increasing the export potential of the economy. For instance, 35 percent of the total export in 2011 was attributed to companies with FDI, whereas their participation in the total import was around 21 percent. Hence, one can argue that FDIs in Macedonia generally have a positive impact on the trade balance and increase the coverage of imports by exports.

The dynamics of the FDI in the manufacturing sector roughly follows the dynamics of the total FDI net inflows in the country. During the period 2003-2015, its average share in the total FDI inflows was around 38 percent, but in certain years (2004 and 2011), it reached 60 percent. In this regard, Macedonia shares similar characteristics with other Western Balkan countries in attracting FDI - relatively low labour cost complemented by relatively educated population (Sanfey *et al.*, 2016; Bitzenis *et al.*, 2007). In addition, it is worth mentioning that almost all countries in the region have set up favourable regulation and structural policies for investment promotion which to some extent, make them competitors in attracting FDI, particularly in the manufacturing sector (Gabrisch *et al.*, 2016). In this context, having in mind the structural characteristics and geographic proximity, Serbia can be considered a major regional competitor of Macedonia in attracting FDI in the manufacturing sector.

2.1. Variables under consideration

In our analysis, we pay attention to inward FDI in the manufacturing sector defined as investments of legal and natural persons from abroad in domestic business entities with whom long-term interest is acquired and where the foreign investor owns at least 10% of the total business entity's value. The long lasting interest implies the existence of a long-term relationship between the direct investor and the direct investment enterprise, as well as a significant degree of influence on the management of the enterprise. The direct or indirect ownership of 10% or more of the voting power of an enterprise resident in one economy by an investor resident in another economy is evidence of such a relationship. Since 2003, the National Bank of the Republic of Macedonia (NBRM) has been in charge of the statistics of FDI stocks and flows in Macedonia; it provides the decomposition of FDI into the following components: Equity, Reinvested earnings and Debt instruments. In addition, the FDI data are in accordance with the Balance of Payments and International Investment Position Manual (IMF, 2009; OECD, 2008).

As a source of data for employment and other control variables, we use the structural business statistics in the manufacturing sector provided by the National Statistical Office. These statistics describe the structure, conduct and performance of businesses according to the NACE rev.2 classification. More precisely, we consider the following variables: Number of employed persons (EMP), Personnel costs

(PER), Gross operating surplus (GOS), and Relative personnel cost between Macedonia and Serbia. In what follows, we briefly describe each of these variables.

Number of persons employed (EMP) is defined as a number of persons with an employment contract and a salary or other type of compensation paid by an employer. This variable represents the stock of employment in the given subsector and encompasses both domestic firms and foreign affiliates. By considering the entire number of employed in the manufacturing sector, we attempt to assess the direct and indirect effect of FDI on employment.

Personnel costs (PER) are defined as the total remuneration, in cash or in kind, payable by an employer to an employee in return for the work performed by the latter during the reference period. Personnel costs are made up of wages, salaries and employers' social security costs. They include taxes and employees' social security contributions retained by the employer, as well as the employer's compulsory and voluntary contributions.

Gross operating surplus (GOS) can be defined as a balancing item in the generation of income account representing the excess amount of money generated by incorporated enterprises' operating activities after paying labour input costs. In other words, it is the capital available to financial and non-financial corporations, which allows them to repay their creditors, to pay taxes and eventually, to finance all or part of their investment.

Relative personnel cost (MK/RS) represents the ratio between the personnel cost per employee in Macedonia vis-a-vis Serbia as a major regional competitor in attracting FDI in the manufacturing sector.

2.2. Descriptive analysis

The manufacturing sector comprises any industry that makes products from raw materials by the use of manual labour or machines and is engaged in the mechanical, physical or chemical transformation of materials, substances or components into new products. The manufacturing sector is very diverse, combining activities with different levels of labour productivity and average personnel costs. According to the NACE rev. 2 classification, the manufacturing sector comprises 24 different subsectors. In Macedonia, not all subsectors are equally relevant from the point of view of FDI inflows since in some of them, FDIs are either negligible or do not occur at all. In addition, the data on FDI in the manufacturing sector are available only on aggregate level for 13 groups of subsectors. The structure of the groups of subsectors used for this analysis is presented in Table 1.

Table 1. Structure of the groups of manufacturing subsectors

Group of subsectors	NACE rev.2 Divisions	
1. Food products, beverages and tobacco products	C10	Manufacture of food products
	C11	Manufacture of beverages
	C12	Manufacture of tobacco products
2. Textiles and wearing apparel	C13	Manufacture of textile
	C14	Manufacture of wearing apparel
3. Wood, paper, printing and reproduction	C16	Manufacture of wood an products of wood
	C17	Manufacture of paper and paper products
	C18	Printing and reproduction of recorded media
4. Coke and refined petroleum products	C19	Manufacture of coke and refined petroleum products
5. Chemicals and chemical products	C20	Manufacture of chemicals and chemical products
6. Basic pharmaceutical products and pharmaceutical preparations	C21	Manufacture of basic pharmaceutical products and pharmaceutical preparations
7. Rubber and plastic products	C22	Manufacture of rubber and plastic products
8. Basic metals and fabricated metal products	C24	Manufacture of basic metals
	C25	Manufacture of fabricated metal products
9. Computer, electronic and optical products	C26	Manufacture of computer, electronic and optical products
10. Machinery and equipment	C28	Manufacture of machinery and equipment
11. Motor vehicles, trailers and semitrailers	C29	Manufacture of motor vehicles, trailers and semitrailers
12. Other transport equipment	C30	Manufacture of other transport equipment
13. Total of other manufacturing	C15	Manufacture of leather and related products
	C23	Manuf. of other non-metallic mineral products
	C27	Manufacture of electrical equipment
	C31	Manufacture of furniture
	C32	Other manufacturing
	C33	Repair and installation of machinery and equip.

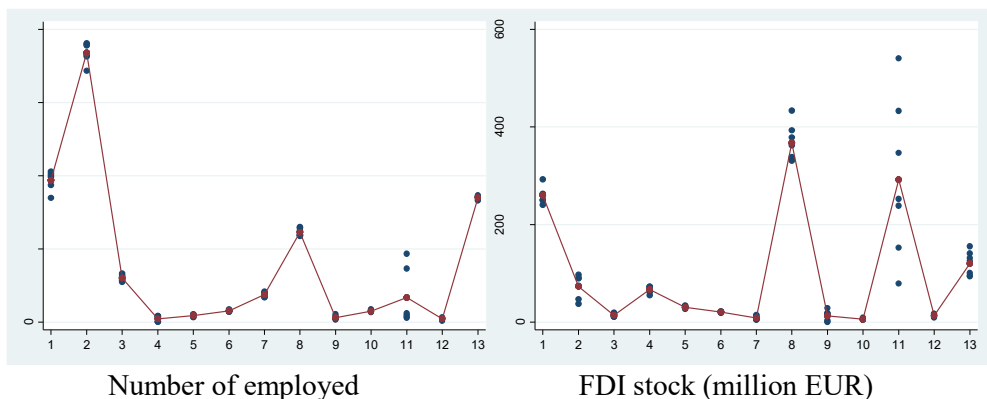Source: NACE Rev.2 Statistical classification of economic activities in the EC

Therefore, the empirical analysis will be based on a balanced panel of 13 groups of manufacturing subsectors over the period 2009-2015. The summary statistics of the variables under consideration are presented in Table 2. In Table 2, it can be observed that the average annual increase of FDI stock is 7.83 million EUR per group of manufacturing subsectors, while the average annual increase of employment is 113 employed per group of manufacturing subsectors. The average personnel cost is 32.92 million EUR, while the average Gross operating surplus is 36.57 million EUR, the latter being characterised with higher heterogeneity, since in some cases it takes negative values. The average relative personnel cost in

Macedonia with respect to Serbia is 0.74, which might indicate a regional advantage in attracting FDI in the manufacturing sector. In addition, we graphically present the stocks of FDI and the number of employed, as well as the change in the FDI stock and in the number of employed in each of the 13 groups of manufacturing subsectors for the period 2009-2015 (Figure 2)[6].
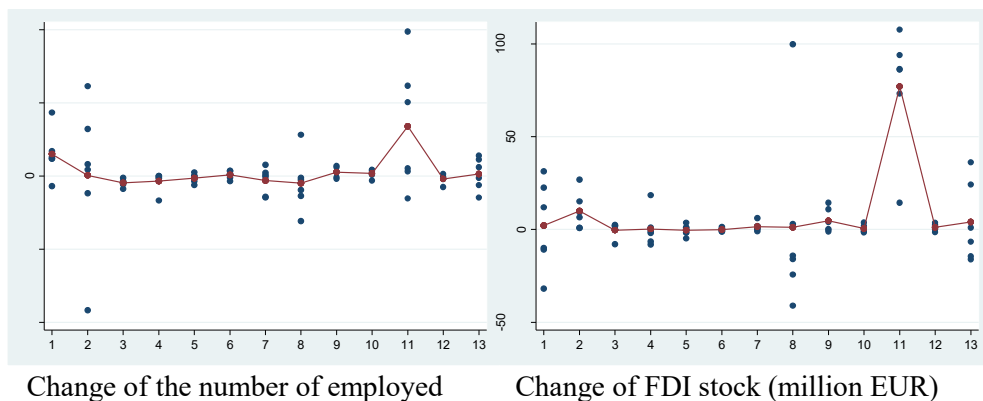
Table 2. Summary statistics

Variable		Mean	Std. Dev.	Min	Max	Obs.
EMP	overall	8004.297	10516.18	40	38105	N=91
	between		10829.24	450	36829.57	n=13
	within		1065.68	5216.725	13994.73	T=7
FDI stock (million EUR)	overall	98.74835	128.2952	0	540.9	N=91
	between		124.8384	6.228571	367.2571	n=13
	within		43.7493	-114.0802	347.7198	T=7
PER (million EUR)	overall	32.92415	36.16954	.1447154	133.4228	N=91
	between		36.65657	3.104065	111.4859	n=13
	within		7.35605	13.92275	66.06724	T=7
GOS (million EUR)	overall	36.57541	42.6561	-21.2374	199.5837	N=91
	between		39.4156	.3261324	129.8623	n=13
	within		19.2231	-27.47755	164.2639	T=7
PER(MK)/PER(RS)	overall	.7408669	.1952774	.1409755	1.392069	N=91
	between		.1713126	.3754406	1.048514	n=13
	within		.1036427	.407992	1.084422	T=7

Figure 2. FDI and Number of employed by groups of manuf. subsectors

Number of employed   FDI stock (million EUR)

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[6] The sub-sectors are presented on the horizontal axis in the same order as in Table1.

Change of the number of employed   Change of FDI stock (million EUR)

Source: own representation

The analysis of employment by groups of subsectors shows that the largest number of employees is absorbed by the subsector of Textiles and wearing apparel which represents about 44 percent of the total number of employees in the manufacturing sector, followed by the subsector of Food products, beverages and tobacco products; and Basic metals and fabricated metal products. Furthermore, in Figure 2, we observe significant FDI stocks in the following groups of manufacturing subsectors: Basic metals and fabricated metal products; Motor vehicles, trailers and semitrailers; Food products, beverages and tobacco products. However, the highest growth of employment as well as increase of FDI stock has been noticed in the automotive industry mainly due to the openings of a dozen foreign subsidiaries during the period 2007-2015[7].

2.3. Econometric analysis

Taking into account the Macedonian moderate resource endowments and its modest market size, we assume that FDIs in Macedonia mostly occur as a result of efficiency seeking motives *i.e.* a foreign investor would enter an industry where he anticipates comparative advantages and high returns. Firms will be most likely to invest in industries where labour cost is low relative to producing elsewhere. As elaborated above, we consider the relative personnel cost in Macedonia in comparison to Serbia as a major regional competitor in attracting FDI. It is argued that the unit labour cost is a combined influence of wages and productivity which matters for the competitiveness of industries based on high labour intensities. Hence,

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[7] This finding corroborates with the data gathered from BIRN database 'Foreign Investments Uncovered' according to which about one half of the greenfield FDI in Macedonia during the period 2007-2015 occurred in the automotive industry. Moreover, during the same period, more than two thirds of new job openings in the companies with greenfield FDI are attributed to this manufacturing subsector.
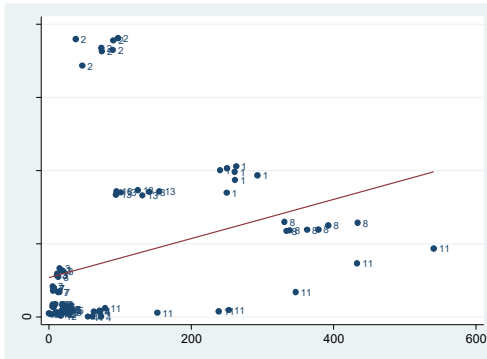
a relationship between labour cost and FDI induced employment is complex and needs to be assessed in absolute as well as in relative terms. On the other hand, profit can be considered as a proxy for general competitiveness. In this context, FDI should be attracted by more profitable firms or the presence of FDI can spill over to higher profits. The relationships between numbers of employed and change in the numbers of employed with respect to the control variables are visualised in Figure 3 by using scatter plots.

From the scatter diagrams in Figure 3, we can observe that there is no clear positive association between the level of employment and FDI stock in the groups of manufacturing subsectors, while a positive relationship is more evident between the net change of the number of employed and change of FDI stock. In this context, the automotive industry appears as the main generator of employment growth which might be attributed to the increase of FDI stock. In contrast, the relationship between the stock of employment and the value added components (Personnel cost and Gross operating surplus) is positive, while this cannot be observed when it comes to the relationship between the net change in employment and the value added components.
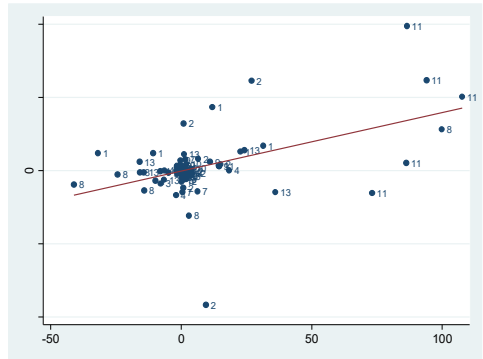
In order to assess the impact of FDI on employment in the manufacturing sector we further apply a dynamic specification by modelling the net change of the number of employed in subsector i in year t as a dependent variable of the amount of FDI and other control variables in the previous year. In this context, we account for the short-run as well as for the long-run effects of independent variables on the change of employment in the manufacturing sector. For this purpose, we apply a single equation error correction model, where the dependent variable is differenced once and independent variables are included both in one differenced and one lagged versions. The differenced independent variables pick up the immediate effects of their changes, while the lagged variables represent the long-run effects of independent variables on employment change.

In order to choose between models with fixed or random effects, we run the Hausman test where the null hypothesis states that the preferred specification is a model with random effects vs. the alternative model with fixed effects. It basically tests whether the unique errors are correlated with regressors and, according to the null hypothesis, they are not. Since the p-value of the Chi-square test-statistics is close to zero, we can reject the null hypothesis and conclude that the correct specification is a model with fixed effects. We use subsector fixed effects because there are unobserved peculiarities of each subsector that would distort the comparison between subsectors.
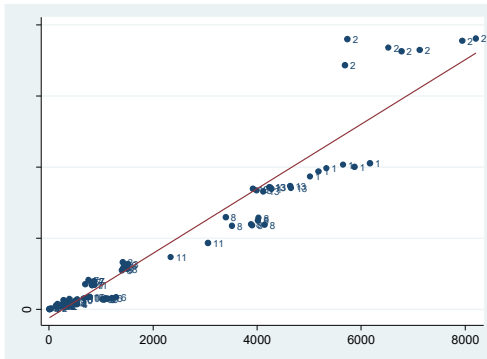
Figure 3. Scatter plots among the variables under consideration
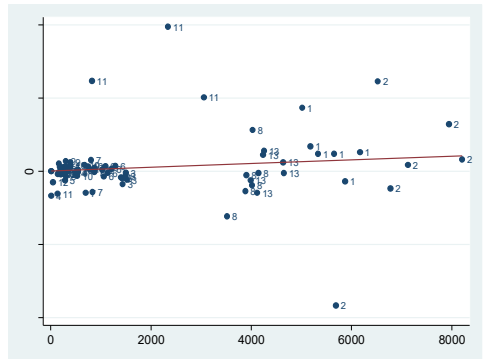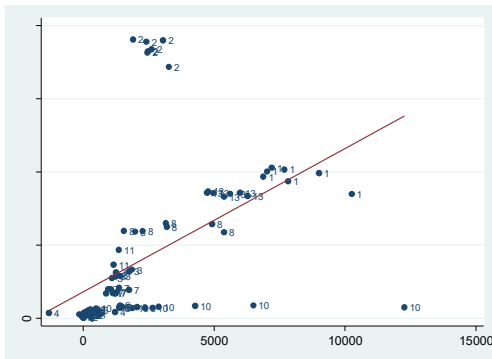

Number of employed vs. FDI stock

Change of employed vs. Change in FDI

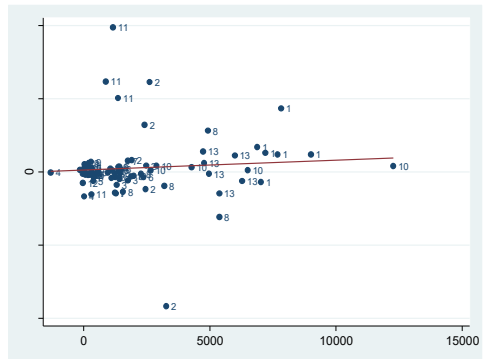Number of employed vs. Personnel cost

Change of employed vs. Personnel cost

Number of employed vs. Gross oper. surplus

Change of employed vs. Gross oper. surplus

Source: own representation

Hence, the specification of the model is as follows:

$$\Delta EMP_{i.t} = \alpha + \rho EMP_{i.t-1} + \beta_1 \Delta \mathbf{X}_{i,t} + \beta_2 \mathbf{X}_{i,t-1} + \theta_i + u_{i,t} \qquad (1)$$

where,

$EMP_{i.t}$ is the number of employees in subsector i in year t

$\mathbf{X}_{i,t}$ is a vector of control variables in subsector i in year t

θ_i are subsector fixed effects

$u_{i,t}$ is the error term

Besides the FDI, as independent variables for employment in the manufacturing sector will be considered Personnel costs (PER) and Gross operating surplus (GOS). The β_1 is a vector of coefficients for a short-run effects of changes on independent variables, while β_2 is a vector of coefficients for last year's values of the independent variables. In order to calculate the long-run effect of the independent variables, β_2 is divided by $-\rho$ (De Boef and Keele 2008). The estimation results are presented in Table 3.

From the estimated baseline specification of the error correction model we can draw several conclusions. As expected, the change in FDI stock has a positive and statistically significant impact on the change of the number of employed, which is observed on the short-run and the long-run as well. An increase of FDI stock by one million EUR in a given group of manufacturing subsectors would increase the number of employed by almost 9. By dividing β_2 coefficient with $-\rho$ we obtain the long-run effect of FDI, which is about 30 percent greater than the short-run effect on employment. Furthermore, the personnel cost exerts a positive and statistically significant impact on employment in both the short and long-run in all specifications. An increase of the personnel cost by one million EUR is associated with an increase of the number of employed by 126. The long-run effect of personnel cost on employment is around 30 percent lower than the estimated short-run effect. Besides the baseline model specification 1, in order to control for robustness, we run several other specifications by introducing as control variables Gross operating surplus (specification 2), interaction term (specification 3), relative personnel cost (specification 4) and time dummy variables (specifications 5-8).

From specification 2 of the estimated error correction model, we can notice that the gross operating surplus does not appear as a statistically significant explanatory variable of the change in the number of employees in the manufacturing sector. In addition, the impact of interaction terms between FDI and personnel cost as estimated in specification 3 is positive and statistically significant. This implies that higher wages are associated with stronger effects of FDI on employment, which might reflect greater productivity in the companies with FDI.

Table 3. OLS estimation (dependent variable ΔEMP)

Variable	1	2	3	4	5	6	7	8
Constant	2651.619***	2621.316**	3531.959***	2681.639***	2535.168***	2464.574***	3432.806***	2575.925***
	(0.005)	(0.020)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
EMP_{t-1}	-.7181924***	-.7442917***	-.7522358***	-.6794818***	-.7107404***	-.7124225***	-.7519195***	-.681818***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
ΔFDI_t	8.85344***	8.587094***	4.484242**	6.850085***	7.090634***	6.818921***	2.939784	5.178464**
	(0.000)	(0.000)	(0.043)	(0.001)	(0.002)	(0.002)	(0.655)	(0.019)
FDI_{t-1}	8.124826***	8.19364***	1.50279	7.37162***	7.489195***	7.314493***	.9973699	6.947294***
	(0.000)	(0.000)	(0.500)	(0.000)	(0.000)	(0.000)	(0.249)	(0.000)
ΔPER_t	126.2785***	124.2036***	102.577***	141.1209***	138.2789***	138.9494***	113.7918***	151.5776***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
PER_{t-1}	64.86235***	68.75065***	48.59789***	64.74174***	69.48838***	70.56776***	54.75499***	70.94192***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
ΔGOS_t		2.740638				2.112002		
		(0.169)				(0.319)		
GOS_{t-1}		3.066343				.9626744		
		(0.338)				(0.781)		
$\Delta FDI_t \times \Delta PER_t$			1.051727***				1.052945***	
			(0.000)				(0.000)	
$FDI_{t-1} \times PER_{t-1}$			.1055109***				.1037613***	
			(0.008)				(0.007)	
$\Delta[PER(MK)/PER(RS)]_t$				-927.0115**				-941.5749**
				(0.014)				(0.012)
$[PER(MK)/PER(RS)]_{t-1}$				-356.0465				-336.764
				(0.401)				(0.415)
2011					60.13628	116.6855	37.65171	52.22637
					(0.596)	(0.326)	(0.705)	(0.629)
2012					-18.24387	21.14363	-17.31719	-45.14885
					(0.875)	(0.862)	(0.864)	(0.684)
2013					12.68378	51.86778	-5.459008	-11.62874
					(0.915)	(0.681)	(0.958)	(0.918)
2014					-231.7025*	-202.304	-241.6953**	-242.2975**
					(0.053)	(0.113)	(0.022)	(0.035)
2015					-48.21212	-18.04917	-80.02694	-103.353
					(0.711)	(0.892)	(0.486)	(0.412)
R² within	0.9024	0.9059	0.9252	0.9132	0.9145	0.9185	0.9371	0.9255
R² between	0.0265	0.0263	0.0118	0.0280	0.0268	0.0268	0.0117	0.0286
R² overall	0.0380	0.0372	0.0252	0.0435	0.0410	0.0414	0.0268	0.0468

Note: p-values are in parentheses; *, **, *** indicate significance at 10/5/1 percent level respectively.

Moreover, from specification 4, the relative personnel cost in Macedonia with respect to Serbia, as expected, exerts a negative and statistically significant effect on employment in the short-run which confirms the assumption that FDIs in the Macedonian manufacturing sector are mainly driven by efficiency seeking motives. However, the relative personnel cost in the long-run does not appear as a statistically significant determinant of employment.

The explanatory power measured by the within coefficient of determination in all specifications is more than 0.9. In contrast, the between coefficient of determination is much smaller, which corroborates with the choice of the model with fixed effects. Due to this difference, the overall coefficient of determination is small and varies between 0.025 and 0.04. Moreover, the calculated F-statistics in all specifications point out to the overall statistical significance of the estimated error correction model.

In order to control for the time dimension, we estimate the model specifications 5-8 by including time dummy variables. The quantitative factors in the one-way fixed effects model retain their sign and significance in the two-way fixed effects model. In addition, the time effects are not jointly significant, suggesting that they should not be included in a properly specified model. Otherwise, the model specifications with time dummy variables are qualitatively similar to previous specifications with a sizable amount of variation explained by the individual fixed effect.

The criticism regarding our modelling approach, as stressed by Hale and Xu (2016) arises from the fact that the greater productivity in the sectors with higher FDI increase might be due to the so called 'cherry-picking effect'. Namely, foreign investors are expected to invest in those sectors that would be more productive regardless of foreign investment. This creates a positive association between FDI and post-FDI productivity without actually having any casual effect. The problem of cherry-picking further extends to the labour market effects of FDI because firms that are more productive also tend to have higher wages and grow faster relative to their peers. Moreover, the cherry-picking effect persists at more aggregate level if industries with faster growing firms are more likely to attract FDI, it would appear that these industries have higher employment and wages than others even if FDI does not have any impact.

Conclusions and policy recommendations

Taking into account the identified lack of research in the domain of FDI and its impact on the labour market outcomes in Macedonia, this research is intended to fill this gap by examining how FDI contributes to generating employment in manufacturing sub-sectors. By using the above outlined methodological approach, we come up with a clearer picture of the effects of FDI on the change of employment

in the manufacturing sector for the period 2009-2015. According to the analysis, the conclusions can be summarised as follows.

First, we have identified a considerable heterogeneity among various groups of manufacturing sub-sectors with respect to FDI attraction and employment generation. In this regard, the diversity of the Macedonian manufacturing sector offers a wide range of opportunities for investors and allows human capital development to expand in many different directions. On the other hand, the development of the so-called 'strategic' branches, such as the automotive industry, helps in building competitive advantage and getting momentum for accelerating FDI inflows.

Furthermore, FDI and personnel costs are statistically significant factors that positively affect employment in the manufacturing sector which, due to their interaction, might indicate higher productivity in FDI companies. Generally, manufacturing firms experience higher productivity growth than in the rest of the economy despite the fact that the Macedonian manufacturing sector is largely dominated by low-tech industries. In addition, the negative impact of the relative personnel cost per employee vis-à-vis Serbia in the short run reaffirms the assertion that FDI in the Macedonian manufacturing sectors is mainly driven by efficiency seeking motives. This is somewhat expected considering the labour intensive character of the Macedonian manufacturing sector. In contrast, the gross operating surplus does not appear as a statistically significant factor affecting employment in the manufacturing sector.

Although the Macedonian government has already undertaken significant policy reforms aimed to attract FDI, there is still room for making further improvements. In this context, we propose several policy recommendations that would improve the employment effects of the FDI inflows in the manufacturing sector. First, given that the relative personnel cost only has an impact in the short run and not in the long run, the government should aim for an income policy that tries to increase wages in line with productivity and inflation in order to keep competitiveness but also an acceptable level of income. Furthermore, we expect an increase of employment via income effect as a consequence of increased consumption. Taking into account that profits have no influence on employment change, we suggest a reconsideration of the actual taxation policy. In this context, a higher tax rate on profits might generate substantial revenues that can be used to subsidise FDI and to exert additional positive effects on employment. Hence, more efforts need to be made with respect to setting up the rules for providing equal treatment of domestic and foreign investors. FDI attraction has to be prudent with respect to their greater absorption potential for intellectual labour and greater complementarity with the domestic context.

In addition, we recommend that government policies aimed to attract FDI and increase employment should focus on the further improvement of the investment climate, but not at the expense of worsening labour standards. Namely, improving

the business climate alone is still not sufficient to attract more FDIs, which is corroborated by the fact that recent good ranking in the World Bank's Ease of Doing Business has not been associated with substantial FDI inflows. The policies on the supply side of the labour market should embrace appropriate reforms of the education system including both the vocational education and training and higher education that will anticipate the perspective demand for skills and potential skills shortages. By accounting that Macedonia has a small market potential and is not abundantly endowed with resources, the further advancement in the process of EU integration is expected to be the main driver of FDI inflows in the future. Moreover, the long-term prospect of EU membership generates substantial funding mainly in the form of the Instruments for Pre-Accession Assistance for supporting further reforms.

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