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THE INTENSITY USAGE OF FOREIGN PRESENCE IN REGIONS IN THE CONTEXT OF INVESTMENT INCENTIVES

Intenzita využití zahraniční přítomnosti v regionech v kontextu investičních pobídek

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Annotation
The aim is to find out how the presence of multinational companies was able to show growth in the productivity of a group of selected regions. To achieve this goal, an indicator, to measure the intensity of foreign presences, was constructed. It gauged to which degree the capacity of the region exploited the activities of the companies. In this case, foreign direct investment was granted government support in the form of investment incentives. Based on the chosen criterion, conclusions can be made regarding the benefits of granting this kind of public support. To monitor the capacity of the region, in order to efficiently absorb the technological potential of foreign direct investment, the productivity shift in the region was investigated. This depended on the investor's technological advancement and the proportion of investments made in the region. The development was monitored in a series of thirteen years. The primary data source is the CzechInvest database, annual reports, OECD and statistics from the Czech Statistical Office. The results show the Carlsbad region's unfavourable position. This finding also highlights the weaknesses of the labour market and the non-use of the comparative advantage.

Key words
absorption capacity, foreign presence, productivity of labour

Anotace
Česká republika je úspěšným příjemcem zahraničního kapitálu, nabízí se otázka, zda dokáže vliv nadnárodních společností využít ve všech pozitivních funkcích. Cílem příspěvku je zjistit, jak se dokázala přítomnost nadnárodních firem projevit v růstu produktivity skupiny vybraných regionů České republiky (Karlovarský, Ústecký, Liberecký). Pro naplnění tohoto cíle byl zkonstruován ukazatel intenzity využití zahraniční přítomnosti, pomocí kterého je možné sledovat stupeň, resp. míru schopnosti regionu využít působení daných společností – v tomto případě přímých zahraničních investic, kterým byla udělena vládní podpora ve formě investičních pobídek. Na základě zvoleného kritéria mohou být učiněny závěry týkající se přínosnosti udělování tohoto druhu veřejné podpory. Pro sledování schopnosti regionu intenzivně využívat a účinně vstřebat přinášené technologické možnosti přímých zahraničních investic díky jejich lokalizaci, je zkoumáno, k jakému posunu produktivity v regionu došlo v závislosti na technologické vyspělosti investora a v jakém poměru byla investice v regionu provedena. Vývoj intenzity využití zahraniční přítomnosti je sledován v časové řadě třinácti let. Primárním zdrojem dat je databáze CzechInvestu, výroční zprávy analyzovaných firem, statistiky OECD a Českého statistického úřadu. Výsledky ukazují nelichotivou pozici Karlovarského kraje, schopnost vstřebat působení přímých zahraničních investic zde byla nejnižší. Toto zjištění zároveň podtrhuje slabé stránky trhu práce a zdůrazňuje nevyužívání komparativní výhody regionu.

Klíčová slova
absorpční kapacita, zahraniční přítomnost, produktivita práce

JEL classification: *F23, J24*

1. Introduction

A number of factors influences the occurrence of spillover effects. These include, in particular, the size of the host market and the level of competition therein, the absorption capacity of domestic firms, the adaptability of workers, the institutional environment and others (Szent-Invanyi, Vigvári, 2012).

Absorption capacity is defined as the ability to acquire knowledge created by someone else and to modify it for one's own business needs. It is also considered as another determinant of indirect FDI effects. Absorption capacity expresses the overall level of the region (Xu, 2000). It also coincides with the technological level of a given territory, infrastructure, cultural and social capital, financial institutions and other institutional factors that affects the business environment on a given market. However, the level of human capital is considered to be a key attribute, because the inflow of FDI creates the potential for technological transfer to the domestic business environment. Yet, at the same time, the level of human capital in the local labour market determines the amount of foreign companies and the structure the region is attracted to, and logically, to what extent homegrown businesses and home business environments absorb technology transfer. All this shows regional labour productivity (Griffiths, Sapsford, 2004).

Although the Czech Republic can be ranked among the successful recipients of foreign capital, the question is whether it can fully use it in all positive functions. Can the Czech business environment fully absorb the positive effects of successful foreign companies? The creation and absorption of these benefits is conditioned by the overall situation in the local business environment. This is created by the system of institutional conditions, including, among others, investment incentives.

Economists often disagree about whether investment incentives are positive and always necessary. Investment incentives can be considered beneficial if they attract some unique investor. This investor must differ from domestic producers, with specific know-how and management´s practices that, during that time, have so-called spillover into businesses in the host country (Pavlínek, Žížalová, 2016). On the other hand, investment incentives cause incentive redistribution from entities that do not draw on investment incentives and pay taxes to entities that benefit from an investment advantage (Čuhlová, Kotíková, 2015). The inconsistency of this type of public support is also that its value (expenditure side) is very easily quantifiable in contrast to the benefits that are not fully measurable for their character of externalities.

1.1 Aim and methodology

The paper aims to determine the level, and respectively, the capacity of the region to exploit the presence of foreign direct investment (FDI) attracted by public support grants. The research sample of companies is FDI, which has received an investment incentive from the Carlsbad, Ústí nad Labem and Liberec regions.

To increase productivity and grow economically, due to foreign presence, FDI must, first of all, prove its high openness abroad. The goals is to attract a sufficient number of high-productivity foreign companies that are willing to create as many new jobs as possible in the region. Secondly, the region must be able to exploit as much of the intensity as possible.

It is appropriate to monitor the level and capacity of the region to benefit from the foreign presence (FP). It would be interesting to look at the extent to which, ceteris paribus, the region from the average FP unit can extract productivity growth. The average FP unit is the average FDI productivity per FDI worker in the given year. Such an intensity indicator can be called "an indicator of the intensity of foreign presences in the analysed region", summarily an indicator of the intensity of the transfer (IT).

To monitor the capacity of the region, in order to use it intensively and to efficiently absorb the technological possibilities of FDI, it is possible to examine the shift in productivity in the surveyed region. This depends only on the technologically advanced country from which the FDI came (country productivity) and the proportion of investment in it (the number of jobs in the host region). If the region achieved relatively high productivity growth by participating with a small number of foreign firms (with a small number of jobs created), the region was more successful in the transfer of the technological level of foreign companies in the region (in absorbing this level). To monitor the absorption capacity of the usable technological level, for example, a share indicator should be constructed. The indicator should quantify the productivity of the region in the given year and the denominator will be the weighted average of the productivity of foreign companies. Weights represent the individual shares of employees of these companies for the analysed year.

The constructed indicator IT can be calculated using the following formula (1):

$$IT = \frac{AP_{Li}^{reg}}{\sum(AP_{Li}^{FDI} FP_i^{reg}) \sum FP_i^{reg}} \quad (1)$$

AP_{Li}^{reg} is the region's productivity in the given year n. AP_{Li}^{FDI} is productivity of the country's foreign firms, expressed as the productivity in the investor's country of origin (OECD, 2018), in the surveyed region in year n[5] (Czech National Bank, 2018). FP_i^{reg} is the share of the foreign companies' employees in the given country in the surveyed region in year n.

For a given indicator IT, the higher the value, the more the region has absorbed the experience and the possibilities for technological growth for companies from abroad.

The indicator evaluates the degree of utilisation (intensity) for the opportunity to take over the technological level from foreign companies, from individual regions. For best economic development in the region, leading to the region's productivity growth, the ideal state is a high level of intense growth. This means that it would be ideal if the indicator reaches high positive values in a given time (Čuhlová, Kotíková, 2017).

It is necessary to point out that the indicator has several assumptions that are necessary for interpretation. The main two are:

1) The indicator does not take into account other factors of regional productivity growth (i.e. growth factors, which can be caused by increased technological advancement of Czech companies without foreign influence; or external factors of economic growth - the growth or decline of macroeconomic indicators in the country, changes in institutional conditions, etc.)
2) Abstracts from interaction on productivity growth between regions. That is, one region is the technological "locomotive" of the other region or vice versa.

The assumption for achieving the defined aim of this paper is that a structured database of economic information about FDI located in the analysed regions must be compiled. The criterion of investment incentives should also be fulfilled, which will contain necessary and comparable data to assess, as accurately as possible, the impact of FDI in the analysed area of research between 2002 - 2014.

The main source of data was the statistics issued about investment incentives, published by CzechInvest (CzechInvest, 2018). A secondary source is the financial statements and annual reports from foreign companies that have received a promise of investment incentives (Ministry of Justice, 2018). A list of FDIs with information about regional location, the investor's country of origin, sector, investment incentives, promise of newly created jobs and other information was found in the CzechInvest records. Data about regional labour markets was obtained from Czech Statistical Office (2018).

2. Intensity of transfer in analysed regions

The research sample consisted of 11 FDIs, supported by an investment incentive in the Carlsbad region, 98 FDIs, supported by an investment incentive in the Ústí nad Labem Region and 25 FDIs in the Liberec region.
The investors' countries of origin are shown in table 1. The information clearly shows that Germany, the United Kingdom, Switzerland and Japan are the most represented countries. The table only gives an overview of the investors' countries of origin, in each region. It does not show the relevance of the country's presence rate. However, the relevant degree of the presence in individual countries is incorporated into the formula (1) by the weight FP_i^{FDI}.

The Carlsbad region has the smallest population in the Czech Republic. The region's economy is characterized by a large variety of goods. On the one hand, the traditional branches of the light industry are developing. On the other hand, the mechanical engineering sector is significant. The Carlsbad region, as a low FDI area, has the potential to obtain future investors due to their economic diversity. Limited transport connections are a disadvantage in the region, causing complications for non-mobile citizens to commute to work. This weakness is brought on by the low mobility of workers and unwillingness to commute to work (Czech Statistical Office, 2017).

[5] Represents the productivity of labour of FDI by the OECD data at constant prices in 2010. The rate of labour input is measured by the total number of hours worked. It is measured in USD. The Czech National Bank exchange rate, as of December 31, 2010: USD / CZK = 18.751.

Tab. 1: Overview of countries of FDI

Country of origin of FDI	Carlsbad	Ústí nad Labem	Liberec
Germany	X	X	X
France		X	X
Belgium			X
United Kingdom	X	X	X
Switzerland	X	X	X
Spain		X	X
Austria		X	
Italy		X	
Nederland	X	X	
Sweden	X	X	
Norway		X	
Luxemburg		X	
Denmark			X
Indie			
Israel		X	
Mexico		X	
Japan	X	X	X
USA		X	X
China		X	
Total number of represented countries:	6	16	9

Source: own processing based on data from CzechInvest database

The values for the intensity of transfer in the Carlsbad region are shown in Table 2. The dynamics of the development of this indicator is shown graphically in Figure 1.

Tab. 2:Values of the IT indicator in the analysed regions (%)

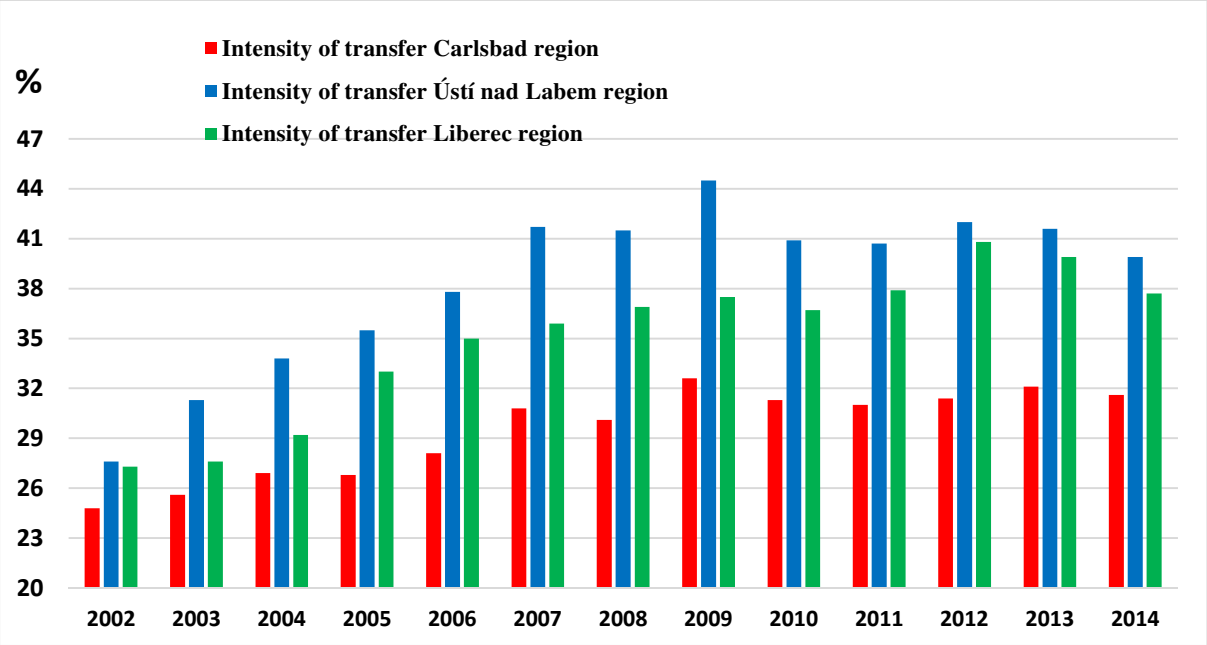
Year	Degree of foreign presence (FP) Carlsbad region	Intensity of transfer (IT) Carlsbad region	Degree of foreign presence (FP) Ústí nad Labem region	Intensity of transfer (IT) Ústí nad Labem region	Degree of foreign presence (FP) Liberec region	Intensity of transfer (IT) Liberec region
2002	0.885	24.8	3.028	27.6	1.191	27.3
2003	1.223	25.6	3.517	31.3	1.339	27.6
2004	1.564	26.9	4.209	33.8	1.523	29.2
2005	1.546	26.8	4.781	35.5	1.836	33
2006	1.551	28.1	5.573	37.8	2.036	35
2007	1.656	30.8	6.369	41.7	2.178	35.9
2008	1.679	30.1	6.696	41.5	2.29	36.9
2009	1.538	32.6	6.113	44.5	2.088	37.5
2010	1.643	31.3	6.438	40.9	2.635	36.7
2011	1.785	31	6.617	40.7	2.317	37.9
2012	1.956	31.4	6.613	42	2.621	40.8
2013	1.835	32.1	6.412	41.6	3.071	39.9
2014	2.34	31.6	3.64	39.9	3.908	37.7

Source: own processing based on own calculations from OECD, CZSO, CzechInvest data and data from annual reports of FDI

During the whole period, the region reached relatively low levels of utilisation of foreign presence – the worst of the monitored regions. It can be said that the region cannot exploit the potential technology transfer brought to it by foreign companies, and thus, is not able to expand extensively or intensively by using the foreign presence in the region. The unfavourable position is caused, both, by foreign presence and from the region's inability to adequately use the opportunity. This conclusion further underlines the weaknesses of the labour market. It also stresses the non-use of its potential and comparative advantage of the region - economic diversity, favourable geographic position, low cost of work towards Germany (Žížalová, Csank, 2009).

In spite of its negative media image and socio-economic problems, the Ústí nad Labem region managed to attract a relatively wide range of foreign companies in the period under review. This created a relatively high share of jobs in the region. In addition, the region is able to use the FP quite intensively, according to the results of the indicator IT. In fact, the indicator has been able to grow during the crisis period to one of the highest values among the surveyed regions (44%) and has continued to be above 40% since then - see Figure 1.

Fig. 1: Development of the indicator IT in analysed regions



Source: own processing based on own calculations from OECD, CZSO, CzechInvest data and data from FDI annual reports

If the values at the end of the reporting period were not in a declining phase, compared to other regions (loss of growth dynamics between 2010 and 2014), the region would be a clear leader among the surveyed regions. The high level of the indicator IT, given the low level of the educational structure in the region, is provided by the quality regional policy and the mutual consistency between domestic and foreign firms.

The values of the transfer intensity for the Liberec region are again shown in Table 1 and Figure 1. Looking at this data, it can be concluded, that in comparison with the other regions in the monitored set of regions, the Liberec region's transfer intensity was at an average level throughout the monitored period.

The region uses a relatively high FP for its economic growth. The region, however, cannot fully use this interest from FDI. This is reflected in the business environment by low cooperation between domestic firms in the region and incoming FDI. Foreign firms are not fully involved in the business life of the region, or they mainly orient their supply-chain chains outwardly and domestic businesses are only subcontracted to a lesser extent. The ability of domestic enterprises to engage in production networks of foreign firms is related to their absorption capacity - the ability to absorb technology transfer. The constructed IT indicator quantifies, given the simplified assumptions set out above, how much the regional business environment is capable of absorbing technology transfer – respectively it is a simplified relative indicator of absorption capacity.

In view of the fact that the region has experienced modest but steady productivity growth throughout the period, the indicator values are positive throughout the period, but they are relatively low. The value of this indicator never exceeded 35% over the whole surveyed period. Growth in regional productivity has to be pulled by domestic economic operators.

Conclusion

All regions have tended to increase their absorption capacity by using the technological capabilities from locating multinational companies. To a higher degree, the absorption capacity was logically identified in regions with a higher degree of foreign presence. On the other hand, even one of the three surveyed regions did not exceed the transfer intensity of 50%. This means that domestic productivity increases are more strongly contributed to by regions, and regions do not exploit the full potential of multinational companies. This may be linked to the size of the technology gap between local and foreign enterprises and, at the same time, to the unresolved problems of

local labour markets - namely the persistent disharmony between the spectrum of studied disciplines and the demands of employers.

The findings for the Carlsbad region correspond to the conclusions of Žížalová and Csank (2009), who draw attention to the handicap of the educational infrastructure of this region and the organisational narrowness of a regional innovation system, with low awareness, degree of cooperation and technological lock-in effect.
In future research, it would be appropriate to monitor the size of the technology gap between the regional business environment and the analysed direct foreign companies over the same period. This would provide other important information to determine conclusions regarding the identification of spillover effects in the Czech business environment, as well as the benefits from investment incentives. One of the goals of granting this type of public support is the creation of spillover effects.

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