

DELOCATION OF ECONOMIC ACTIVITIES AND ITS IMPACTS ON REGIONAL ECONOMIC GROWTH: CASE STUDY PRAGUE AGGLOMERATION

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ABSTRACT

The aim of this paper is to assess impacts of de-location of economic activities on regional/local economic growth. De-location of economic activities is a dynamic phenomenon that has been taking place in parallel with the establishment of economic structures. Economic bodies tend to move in order to achieve better prosperity, profit or quality of life. Modern forms of de-location (suburbanisation of households) have been taking place first in North America's metropolitan areas since the early 30s and in western European urban areas, since the 50s. In post-soviet countries, including the Czech Republic, this phenomenon occurred during the 90s. In parallel with this, de-location of firms (commercial suburbanisation, among others) has been mostly influenced by actual trends of concentration or de-concentration of economic growth. Latest research has proved that de-location of companies depends on several factors, among which the accessibility plays the key role. Transport infrastructure thus determines the localisation of economic bodies to a great extent. Due to the technological and communication development, former cores of economic growth seem to be losing their unique position slowly in terms of their attractiveness for business and companies tend to move to a far-away distance following highways and major communication channels. How does this affect regional economic growth? This paper searches for an inter-dependence between de-location of firms and economic growth using mainly economic indicators available for selected NUTS 3 region, LAU 1 and municipalities with extended powers (MEP) in the Czech Republic.

YEL: O10, O18, O40

KEYWORDS: region, economic growth, gross domestic product, LAU1, NUTS III, MEP, economic structure, commercial suburbanisation, de-location, urban area

INTRODUCTION

The gradual growth of urban areas in Europe and the world has become a challenging issue for researchers, policy makers, urban planners and developers over the last decades. A large number of studies on the causes and consequences of the phenomenon of suburbanization has been provided with an emphasis on different perspectives, especially sociological, geographical and environmental. Relatively little attention, however, has been paid to economic impacts of suburbanization, especially the when it comes to de-location of firms known mostly as commercial suburbanisation. The economic structure of suburban areas is passing through continual changes that are currently most evident in metropolitan regions of Central and Eastern Europe, including the agglomeration of Prague. From former purely indigenous and rural holiday areas, they have been transformed into semi-urbanized residential or commercial locations sought after for their specific qualitative and quantitative advantages such as e.g. a healthier environment for residents, or larger layout area for economic activities as well as lower real estate prices [1]. Although most of the authors seem to provide rather negative judgements on suburbanization in general, e.g. [2] or [3], some studies have already pointed out some possible positive socio-economic benefits of this phenomenon for the concerned locations and regions [4] or [5]. These positives are presented in a rather more sophisticated way, when residential suburbanization is concerned, maybe because they are a much better conceivable methodically, but there are also some attempts to evaluate economic impacts of commercial suburbanization as well. Previous research provided by the author of this paper shows that it is possible to identify and assess certain socio-economic benefits of de-location of firms, mainly within a framework of local labour market [1]. It is necessary to point out, however, that the methodology in this case may be quite challenging to construct, especially due to the lack of available statistical data at the local level. Therefore, an empirical research is essential to obtain decent results. Once having a set of data collected from firms, it is possible to evaluate economic impacts on partial aspects of local economic growth. At this point, a question may be raised on whether it is possible to assess a direct impact of de-location of firms on the overall local or regional economic growth. Another question is what multiple effects do individual firms bring to the given local economy? To answer these questions, a proper empirical research would have to be carried out to find more about the benefits in the form of taxes paid to the municipality, their share in terms of the actual tax assignment set at the national level that belongs to municipalities, e.t.c.

The aim of this paper is to identify the inter-dependence between de-location of firms in the suburban area of Prague and the economic growth. This aim will be achieved with the use of relevant statistical methods, esp. correlation, and local/regional data available at the NUTS I, NUTS III, LAU1 (districts)

and MEP (Municipalities with extended powers) levels. Partial local and regional results will then be compared to values at the national level.

1 THEORETICAL BACKGROUND

From the general point of view, economists and other experts seem to remain rather silent when it comes to a concept of commercial suburbanisation and related de-location of economic entities. The first concept and evaluation of commercial suburbanisation ever is presented by Krejcová [1] following previous studies on localisation in the context of incoming foreign direct investment to states and regions and other sources, e.g. [6] or [7]. On the other hand, there is a great number of sources dealing with the evaluation of regional economic growth and its influencing factors. McGregor and Liner [8] presented their study using a sample of 597 municipalities across the U.S. to examine the effects of selected municipal characteristics in 1960 on municipal population and income growth over the subsequent three decades. The results suggest that the most important aspect of municipal economic growth is a human capital. Their work follows analyses of municipal economic growth presented by Glaeser, Scheinkman and Shleifer [9]. McGregor and Liner declare that U.S. municipalities provide wide sources of data in order to support the empirical work on local economic growth. This fact makes a huge difference for researchers when compared to the situation in the Czech Republic. Dejardin [10] also deals with possible factors of regional economic growth using data from districts in Belgium, focusing mainly on manufacturing and service sectors. Although there might be speculations on cautious interpretation, there is an evidence of positive impacts of net inputs at the district level on the regional economic growth evaluated at the NUTS III level.

Another correlation analysis of inter-dependence between local and regional variables is provided by Cravo, Gourlay and Becker [11]. Their aim was to evaluate the importance of numbers of on regional economic growth SMEs in selected locations of Brazil. The obtained results show that the size of businesses has only relative and negative importance for regional GDP and there are much stronger influencing factors such as the human capital embodied in SMEs within the observed locations.

The agglomeration of Prague was selected for purposes of this article due to its enormous attractiveness for both domestic and foreign investors when compared to the other regional centres across the Czech Republic. Previous studies demonstrate its high quality of business and social environment, especially in Prague-West and Prague-East [12]. Central Bohemia region is, in general, sought after mainly by foreign investors – big above-national corporations. [13] The reason for this is

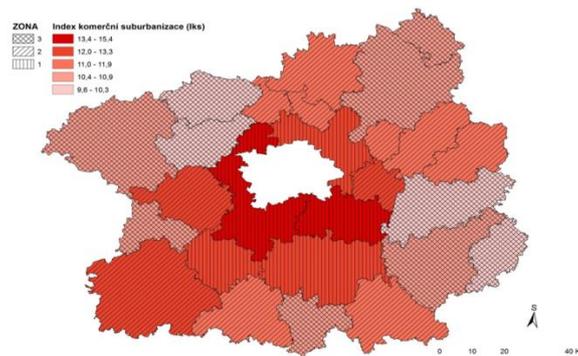
first of all very good equipment with transportation infrastructure and good access for business partners, both suppliers and customers [1]. Prague agglomeration is a specific region composed of several Municipalities with extended powers that create LAU1 spatial units [14]. The NUTS III Central Bohemia should not be considered as the hinterland of Prague as a whole as presented in following chapters.

2 SUBURBAN AREA OF PRAGUE

The suburban area of Prague is often determined by the area of two LAU 1 regions: Prague- East and Prague-West. Following results from the author's previous research, the suburban area border determination may differ depending on whether the object of consideration is residential or commercial type of suburbanisation. In case of residential suburbanisation, the affected area is represented by specifically limited rings around the capital of Prague. These rings differ from each other by the intensity of the phenomenon. Ring 1, with the highest intensity, includes MEPs such as Černošice, Říčany, Brandýs nad Labem- Stará Boleslav and Kralupy nad Vltavou, Ring 2 is represented by Benešov, Beroun, Dobříš, Mělník, Mladá Boleslav and Neratovice. Ring 3 may be introduced as the rest of the NUTS III Central Bohemia region with a significantly weaker level of residential suburbanisation [1].

The area affected by commercial suburbanisation seems to be rather different. It may be stated, according to the author's previous research, that concerned areas are mostly located near main transport communications (highways, motorways) and the Vaclav Havel airport. On the basis of the commercial suburbanisation index constructed previously by the author, the commercially-suburbanized area may also be divided into three parts (zones) varying according the level of the intensity but none of these are of a nature of ring. As shown in the Map 1, commercially suburbanized areas seem to create specific beams along highways.

Map 1 Commercial suburbanisation of Prague



Source: Krejčova, 2014 [1]

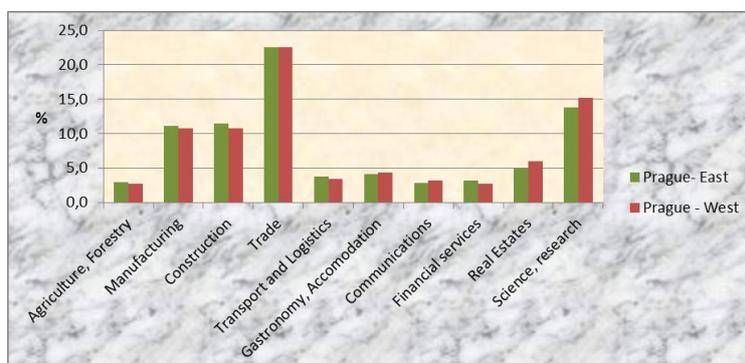
In relation to the description above, for the purposes of this article, the Prague suburb may be determined by Zones 1 and 2 as presented in the Map 1. These together include following MEPs: Benešov, Beroun, Brandýs nad Labem- Stará Boleslav, Černošice, Dobříš, Kralupy nad Vltavou, Kutná Hora, Mělník, Neratovice, Příbram, Poděbrady, Nymburk and Český Brod. At the LAU 1 level, it subsumes the whole area of Prague-West and Prague - East and parts of Benešov, Beroun, Kolín, Nymburk and Příbram. Following chapters of this article will therefore be focused on the mentioned LAU 1 units as those determine the area of Prague suburb for the purpose of this article.

3. ECONOMIC STRUCTURE OF THE COMMERCIAL SUBURB OF PRAGUE

LAU 1 Prague- East is one of the two most attractive locations for economic bodies in the Czech Republic. It is sought after by foreign and domestic investors due to its excellent connection to customers and suppliers. According to CZSO, in 2014, the number of registered economic bodies was 45.384 while it keeps growing constantly since 2000. The most significant increase took place in 2007. Individual entrepreneurs represent more than half of the amount. By 31th December 2014, the economic structure of LAU 1 Prague-East consisted of 3% agriculture and forestry, 11,1% manufacturing, 11,5 % construction, 22,53 % Trade, 3, 8% Transport and Logistics, 4,1% Gastronomy and Accommodation, 2,8% Communications, 3,1% Financial services 5,0% Real Estates and 13,8% Science, research.

LAU 1 Prague –West is the other one of the two most investment-attractive districts. High density of transport infrastructure which includes highways, motorways, development areas, industrial zones and the Vaclav Havel airport enables firms to get very well connected with their business partners. By 1st December 2014 there was an evidence of 39.766 registered economic bodies and the trend since 2000 remains growing with the only exception in 2012. Individual entrepreneurs represent approx. two quarters of the total amount. The economic structure of this unit is very similar to Prague-East with slightly higher share of economic bodies in trade, communications, gastronomy and real estates.

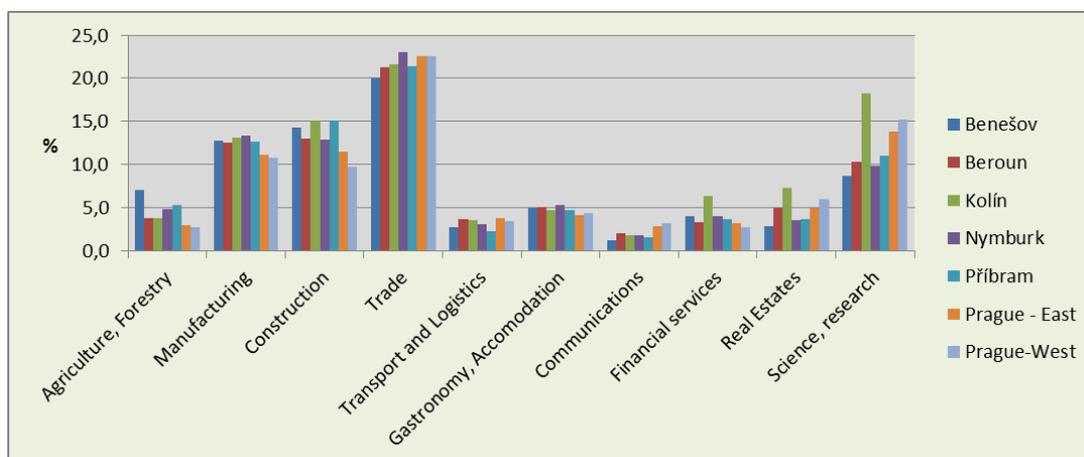
Figure 1 Economic structure in Prague-East and Prague- West (by December 2014)



Source: CZSO, 2016 [14], processed by the author

Comparing to the other LAU 1 units in NUTS III Central Bohemia, in terms of shares of activities classified by NACE on the total number of economic entities, there is not a significant difference among LAU 1 units as presented in Figure 2. Only Kolin seems to differ with significantly higher share of research, financial services and real estate activities.

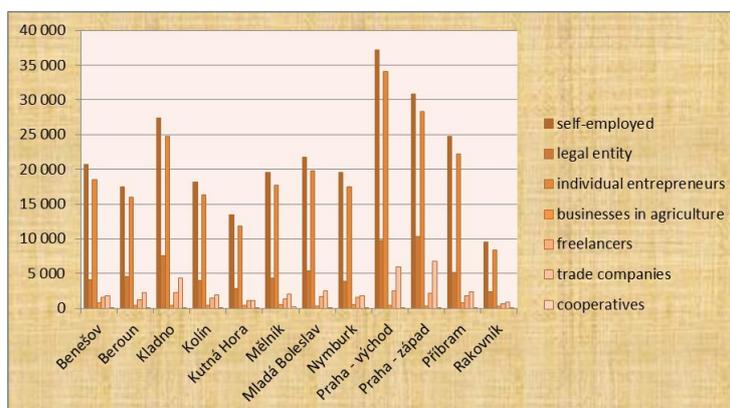
Figure 2 Economic structure in LAUs1 of NUTS III Central Bohemia



Source: CZSO, 2016 [14], processed by the author

As shown in Figure 3, Prague-East and Prague-West declare the highest share of economics bodies in total within NUTS III Central Bohemia but also the highest share of self-employed individuals, agricultural businesses as well as trade companies. LAUs 1 Kolín a Příbram follow in the rank in terms of the economic structure and also the number of entities.

Figure 3 Forms of economic bodies in NUTS III Central Bohemia (by Dec. 2015)

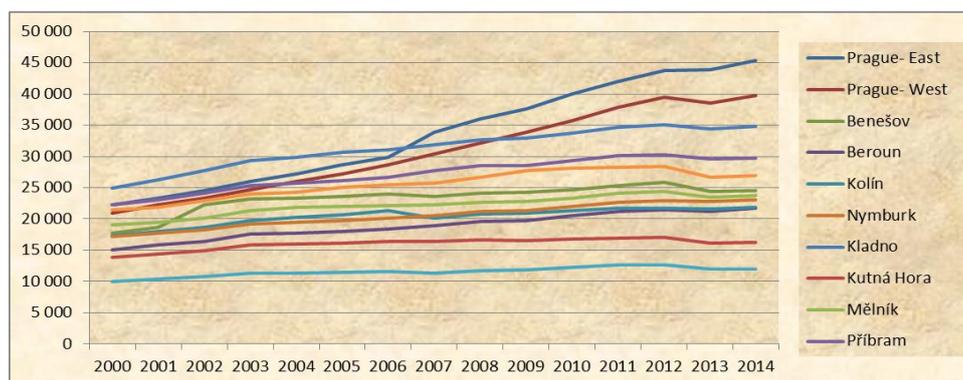


Source: CZSO, 2016 [14], processed by the author

LAUs 1 Benešov and Příbram also include MEPs that belong to the Zone 1 of the commercially suburbanized area of Prague. D1, D5 and R10 motorways are very important factors of attractiveness for not only logistically specialised firms. LAUs1 Beroun, Kolín and Nymburk represent rather less commercially suburbanized areas, some of their MEPs belong to the Zone 2.

Classification of economic bodies in relation to their size is not provided in this paper due to the fact that available statistical data and officially stated amounts of employees usually do not reflect the real situation in a given branch office. Therefore, sizes of economic entities are not included in the analysis.

Figure 4 Registered economic bodies in LAUs1 of Central Bohemia (2000-2014)

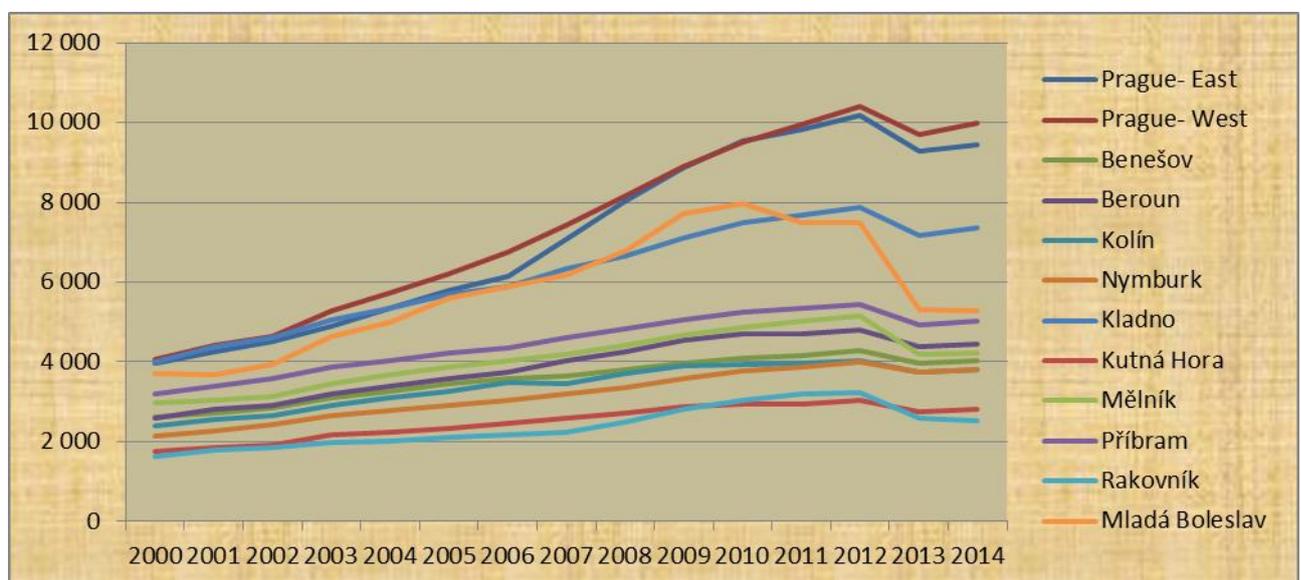


Source: CZSO, 2016 [14], processed by the author

Regarding the development of number of economic bodies in the observed spatial units, statistics provide data on registered economic bodies since 2000. It is clear that the sharpest increase may be

identified in Prague-East as well as Prague- West. Fluent but mild development upwards can be also seen in Příbram, Nymburk and Beroun. Stagnation is obvious in Kladno and Kutná Hora. Decline of a number of registered economic bodies has not been identified in any unit in a given period. Figure 4 shows total amounts of registered economic bodies including self-employed individuals. According to the data presented in Figure 3, after exclusion of those individual entities there might be slightly different relations among units, especially between LAUs 1 units such as Prague –East and Prague – West and the rest of the NUTS III region.

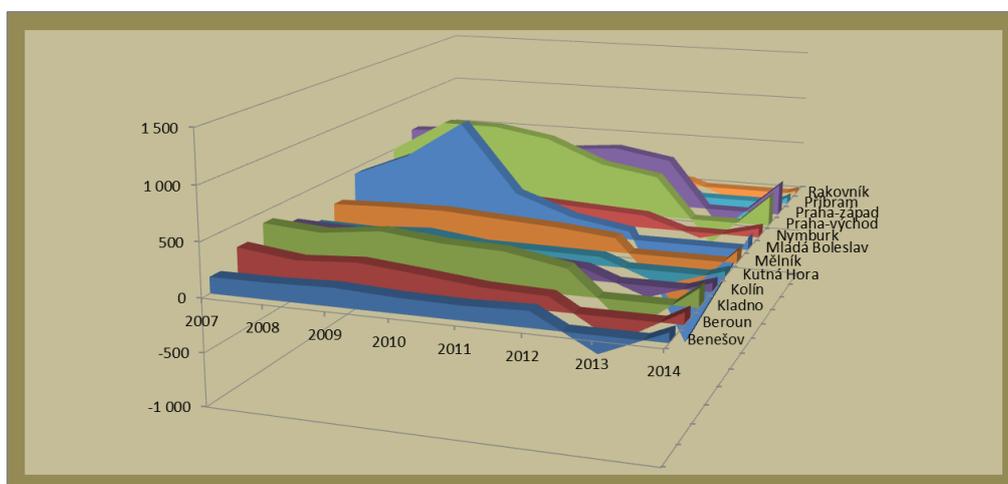
Figure 5 Registered economic bodies excluding individual businesses in LAUs1 of Central Bohemia (2000-2014)



Source: CZSO, 2016 [14], processed by the author

Concerning the total number of registered economic bodies when individual businesses are excluded, Figure 5 demonstrates similar trends in all LAUs1 but much sharper disparity between Prague-East, Prague-West, Kladno, Mladá Boleslav and the rest of the region. It seems that larger companies were the ones who located massively to these micro-regions especially between 2004- 2012 and represent an increasing share on the economic structure in the top LAUs. This means that these types of economic bodies may play the key role on the regional GDP creation. Specific development features can be identified in Mladá Boleslav. There is a significant drop of the number of registered entities when individuals are excluded. That may be explained by either simple gradual closing of companies or administrative changes of registration when companies' headquarters are concerned.

Figure 6 Increase of economic bodies (excluding individual businesses, absolute values)



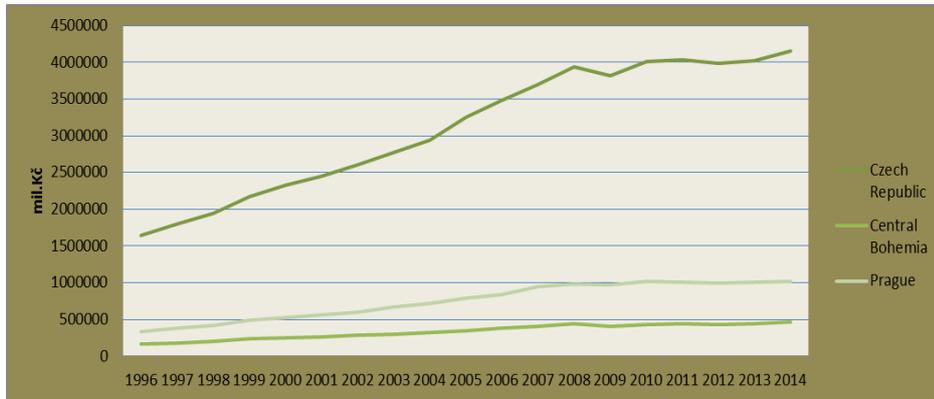
Source: CZSO, 2016 [14], processed by the author

The Figure 6 shows the balance between opened and closed companies in the observed spatial units between 2007 and 2014. The highest increases can be seen in Prague- East and Prague-West, especially between 2007 and 2012. In 2013, there is a significant decline in all the observed spatial units, the highest decline can be identified in Mladá Boleslav, most likely due to the reasons mentioned above. This general drop in can be explained as one of the impacts of previous economic recession which started in 2008. According to CZSO, there was a clear drop in all NUTS III and LAU 1 units across the Czech Republic in 2013. In both previous and following years, there were no signs of such a dominance of closed businesses on the newly opened. Another explanation may relate to a new methodology of data collection or proceedings used by the Czech Statistical Office (CZSO). The author, however, had no information on such a change from the CZSO while writing this article.

4. REGIONAL ECONOMIC GROWTH AND REGISTERED ECONOMIC BODIES

Gross domestic product in Central Bohemia has been growing continuously since the 90s. Only two exceptions can be identified in 2009 and then on 2012-2013. Regarding to the findings above, this drop may be related to the development of the economic structures in micro-regions.

Figure 7 Gross domestic product in the Czech Republic, NUTS III Central Bohemia and Prague (in prices of previous year)



Source: CZSO, 2016 [14], processed by the author

Comparing the GDP values between the Czech Republic, Prague and the Central Bohemia region, it can be stated that the regional economies of both the NUTS III units grew less sharply to the national trend. Both regions are very attractive for investors and the increase in the total number of registered companies may strongly correlate with their GDP values. Using correlation analysis, it seems to be quite clear that number of economic bodies both with and without individual traders and farmers show very strong inter-dependence with the GDP values at both national and regional (NUTS III) levels. Findings are presented in Table 1. Data used for the analysis included times series for the period 2000- 2014 and were available at the CZSO website.

Table 1: Inter-dependence between GDP and number of registered economic bodies: Pearson's correlation coefficient

Spatial unit	Correlation	Correlation
	without individual businesses	including individual businesses
Czech Republic	0,807	0,788
Central Bohemia	0,965	0,965
Prague	0,898	0,918

Source: author

At the national level, however, there might be other important factors of the GDP creation such as, e.g. government spendings that may weaken the inter-dependence between the two observed indicators as shown in the Table 1.

How significant can be de-location of economic bodies to particular micro-regions for the economic performance at the LAU 1 level? To obtain results, another correlation analyses would have to be carried out, specifically between the amounts of registered economic bodies and the GDP in the observed LAU 1 spatial units. Although the local production may be possibly replaced by other indicators reflecting the economic progress such as the added value, paid wages or total revenues, these were, however, available for manufacturing and construction sectors only. To obtain a proper knowledge, it would be necessary to use these indicators mainly for the sector of services which represents the majority of most of the local economic structures of Central Bohemia and, in particular, the suburban area as presented in previous chapters. Due to the lack of available data on local production, GDP at the NUTS III level will be used instead to find out how strongly the regional economy depends on de-location of firms to the observed locations represented by LAU 1 units.

The analysis proved that there is a relatively strong inter-dependence between values of regional GDP and the number of economic entities in the monitored units LAU1. The values of the coefficients are in the range from 0.84 to 0.96 in the case of inclusion of individual businesses, and from 0.79 to 0, 96 excluding these subjects. This means, in fact, that regional and national economies live on the increasing number of firms, even if only two of the concerned LAUs 1 units are concerned. Precise values of the Pearson’s correlation coefficient are presented in Table 2.

Table 2 Inter-dependence between number of economic bodies in LAUs1 and regional GDP in Central Bohemia

Correlation coefficient (individual traders and farmers are included)		Correlation coefficient (individual traders and farmers are excluded)	
LAU 1	C.C.	LAU 1	C. C.
Příbram	0,9698	Kolín	0,9608
Kladno	0,9630	Benešov	0,9587
Nymburk	0,9571	Kladno	0,9578
Beroun	0,9540	Kutná Hora	0,9573
Prague-West	0,9474	Beroun	0,9567
Prague- East	0,9467	Nymburk	0,9559

Mladá Boleslav	0,9358	Prague-West	0,9558
Mělník	0,9327	Příbram	0,9524
Kolín	0,9002	Prague-East	0,9440
Rakovník	0,8821	Mělník	0,8967
Kutná Hora	0,8652	Rakovník	0,8503
Benešov	0,8390	Mladá Boleslav	0,7938

Source: author

With a few exceptions, the observed LAUs1, at least partially belonging to Zones 1 and 2 of commercially suburbanized area, present more that less the highest values of Pearson's correlation coefficient which means that there is an above-average inter-dependence between their numbers of registered economic bodies and regional GDP. Kladno's high position may be explained by its location near one of the key communication channel and the airport which is also a frequently suburbanized LAU1, in particular in some locations. The above presented values, however, are not as high as the value of correlation coefficient for the NUTS III Central Bohemia as a whole in relation to the regional GDP as presented in Table 1. This fact may rather weaken potential resonant conclusions on the strong influence of commercial suburbanization on regional product. Comparing to the national values, the inter-dependence is much stronger at the regional level.

The role of individuals may also be considered significant but not clear in terms of the regional GDP creation. After neglecting individuals, some of the observed LAUs1 lost their high position in the rank, as presented in Table 2, some, however, gained better position. Neither a distance from the capital, nor the fact of being a part of Zones 1 or 2, seem to answer the question on how important is the increasing numbers of individual traders or farmers in the context of the increase of regional GDP. There might be a considerable influence of a share of individual traders and farmers on the local economic structure but this aspect has not been analyzed in this article.

CONCLUSION

De-location of economic activities is greatly pursued phenomenon for experts, politicians, municipal and regional representatives. There is a general aim to figure out how the newly allocated activities contribute to the overall socio-economic development of the territory. In the Czech Republic, de-location may be identified specifically in areas near the capital of Prague, in the hinterland of Prague agglomeration. The commercially suburbanized area was first defined and divided into several zones by the author of this article within the context of her previous research. The aim of this article was to assess

the impact of de-location of economic activities on regional/local economic growth. Due the lack of available data on local productivity, the author analysed the impact of increasing number of registered economic entities in LAU 1 spatial units in Central Bohemia on the creation of regional GDP. Correlation analysis is then provided with a final ranking of spatial units at the LAU 1 level according to the value of Pearson's Correlation Coefficient. The results show that there is a strong inter-dependence between numbers of economic subjects in the observe LAUs1 and regional GDP at the NUTS III level. It is also evident that de-location of economic bodies to the nearest hinterland of Prague plays an important role in the regional GDP creation. The obtained values, however, are not as high as the value of correlation coefficient for the NUTS III Central Bohemia as a whole in relation to the regional GDP which may rather weaken the author's potential conclusions on the strong influence of commercial suburbanization on regional product. Comparing to the correlation values provided at the NUTS III level in Central Bohemia, the inter-dependence between the observed indicators is slightly weaker but still stronger when compared to the ones at the national level. It may be stated that de-location of economic activities to the most commercially suburbanized areas of Prague agglomeration contribute to the regional economic growth significantly. On the other hand, de-location within a frame of commercial suburbanisation does not seem to be the only crucial aspect of regional economic performance. Important role is also taken by smaller regional centers such as Kladno, Beroun or Mladá Boleslav with more than less separate and stable local markets and increasing numbers of registered economic entities. These findings may question the author's evaluation but it is more than evident that the increasing number of registered economic units does contribute to the fast economic growth of the NUTS 3 Central Bohemia region. To obtain an overall evaluation of how economic entities perform at the local level in the sense of their socio-economic influence would, however, require another research based on detailed individual input and output data. Therefore, collecting data at the local level is essential for further economic analyses if this kind. The author thus recommends to monitor closely the impacts of businesses and then to make wise choices about the incentives and support of entrepreneurship in the territory at the local, regional and national level. This paper aimed to demonstrate the impact of the growing amount of firms in the suburb of Prague on the regional GDP which may be the added value to the previous research. The weakness of this evaluation, however, surely lies in the imperfect structure of input data that doesn't enable the author to provide more sophisticated and detailed analysis of the observed firms and their economic performance. This shall not be done until the data for the local territorial units will be available in a much better structure and quantity in the Czech Republic.

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