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LARGEST ENTERPRISES IN THE CZECH REPUBLIC: A SPATIO-TEMPORAL PERSPECTIVE

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Abstract

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This article focuses on spatial structure of one hundred largest enterprises in the Czech Republic from evolutionary perspective. The location of large enterprise headquarters in the Czech Republic and its implications for country's economic spatial profile and unevenly distributed economic power is discussed thoroughly. The whole analysis is pragmatically accomplished at the level of self-governmental NUTS III regions. As it is shown, intense concentration processes in the location of largest enterprise headquarters were observed during the analyzed period between 1995 and 2010. The capital city with its surroundings proved to be the winners of this process. Currently, the spatial pattern of afore mentioned head offices is basically stabilized. On the other hand, weight of large enterprises of many regions is almost negligible and subsequently, rank of individual regions can be rather volatile. Generally speaking, economic map of the Czech Republic is not entirely in compliance with country's settlement system. Simultaneously, fundamental factors determining the location of large enterprise head offices are evaluated also from qualitative perspective. Traditional hard location factors, such as infrastructure, geographical location or agglomeration economies turned out to be decisive for location decision-making. Apart from Prague, headquarters of large enterprises tend to prefer other big towns in the country, such as Brno, Ostrava, Olomouc, Hradec Králové or Plzeň.

top 100 enterprises, headquarters, regional differentiation, location factors

1 INTRODUCTION

Economic and geographical worlds devote an increasing attention to organizations. Organizations and organizational structures substantially influence virtually all relevant developments. There are only little doubts that large enterprises represent one of the most exciting topics in this realm. Their relations with surrounding milieu are complex and abundant.

It is also widely acclaimed that there exist relations between the location of big enterprise headquarters and territorial development. This remains valid even more for post-transition economies, such as Czech Republic since the spatial distribution of head offices of largest enterprises demarcates socioeconomic relevance of particular regions on the one hand and draws a prospective socioeconomic map on the other hand. This is caused among others by clandestine but existing connections between economy and politics.

Large enterprises possess undoubted economic-political power and constitute one of the most important actors of territorial development at the local, regional as well as national levels. They represent both stabilizing and developmental components of economies. In contrast to small- and middle-sized firms, they are able to compete on European or even worldwide scale.

The aim of the paper is to analyze and interpret the geography of headquarters of one hundred largest Czech enterprises in 1995, 2000, 2005 and 2010. Size of enterprises will be measured by their turnover. The analysis will be accomplished from both quantitative and qualitative perspectives.

Great or even dominant importance of large enterprises in relation to territorial development was underlined by numerous economists and geographers (see for instance Massey, 1984 and 1995; Holland, 1976; Markusen, 1985; van Dijk and Pellenbarg, 1999; Vanhove and Klaasen, 1987, Frobel, Heinrichs and Kreye, 1980 or Dunning and Lundan, 1994).

Spatial division of labor (Massey, 1984) strives for the connection of industrial geography with the study of labor market in the context of wider socioeconomic structures. According to that concept, space is rather relative than absolute category and is penetrated by socioeconomic hierarchical relations. Massey (1984) asserts that management and R&D functions tend to concentrate mostly into metropolitan territories, while the other – mainly old industrial or underdeveloped regions – are 'sentenced' to manufacturing functions.

Maier and Tödtling (1997) stress that geography of enterprise or the spatial distribution of enterprise structures and functions becomes increasingly important element as there exist systematic relations between the regional hierarchy and the hierarchy of particular branches in big enterprises. It is natural that territories, in which headquarters functions are concentrated, occupy the best position on the socioeconomic ladder.

Moreover, Massey (1984) or Fothergill and Guy (1990) found that the closure of enterprise branch is very often not based on its productivity but rather on its position in enterprise organizational hierarchy. Naturally, manufacturing branches are the most vulnerable ones. Massey (1984) suggests that manufacturing functions within the enterprise should not be divided from headquarters functions. Moreover, the whole hierarchy of working positions should be kept in one region since management decisions that concern affiliates in geographically or functionally distant regions typically do not take into account specific local/regional circumstances. Economies of numerous regions are thus actually controlled externally. Indeed, the problem of 'external control' became rather important territorial phenomenon (see also Sucháček, 2008).

Regions, where management is located, offer jobs for highly qualified labor and enjoy also higher average wages (see Maier and Tödtling, 1997). The problem of centralization of economic power in enterprises, which subsequently affects the economic destiny of whole regions, thus creates a parallel towards political-administrative centralization of power in particular countries.

Maier and Tödtling (1997) also confirm the complexity of relations between an enterprise and its surroundings and show that 'external control' in regions, where firm branches are located may lead towards their general retardation, while the power of headquarters typically manifests itself mainly in metropolitan areas, in which they are located.

As mentioned, mutual relations between large enterprises and national/regional/local economies are of complex character. In relation to national economies, big enterprises influence mainly the balance of payments, employment, technological level, level of competition etc. In relation to regional/local economies, they influence mainly regional/local employment and can create important relations with regional/local suppliers, which further raises the employment.

In the Czech Republic, location of largest enterprises had profound impacts on country's regional differentiation during the whole transition and post-transition periods. Spatial organization of largest enterprises does not necessarily follow settlement structure of the country, which is partly also the case of the Czech Republic and exacerbates the stimulating factors and mechanisms of spatial differentiation.

2 MATERIALS AND METHODS

2.1 Quantitative approach to the largest enterprises in the Czech Republic from spatio-temporal perspective

In the eminent world literature, the spatial distribution of headquarters of five hundred biggest firms in the country's territory is perceived as the indicator of the concentration of economic power (see for instance Lyons, 1994). Size of the enterprise is most commonly measured by its turnover. Regarding the small availability of relevant data as well as the size of the Czech Republic, this research will focus on the spatial distribution of one hundred biggest (in terms of their turnover) enterprises in the Czech Republic.

Time series can be created from 1995 due to the non-existence of data for previous years. Location of one hundred largest Czech enterprises will be evaluated at the level of self-governmental NUTS III regions. In this context, the absolute number of enterprise head offices localized in the given territory is relevant indicator, which provides us with essential facts about enterprise economic power of the territory in question. Relative weight of the given territory in the framework of the Czech Republic will be evaluated by means of the share of aggregate turnover of enterprises seating in the given territory on the total turnover of one hundred biggest Czech firms in the given period. The analysis itself is based upon annually published top 100 databases. However, taking into account the scope of this paper, we will discuss the above mentioned indicators in the years 1995, 2000, 2005 and 2010.

2.2 Largest enterprises from the perspective of the survey with qualitative components

The principal objective of the survey was the analysis of those variables and factors which affect enterprise head offices location. The whole survey was accomplished by means of exploratory research in 2010. While individual enterprises can be characterized by specific demand for location factors, regions on the contrary constitute a specific supply side of these factors.

On the basis of above-mentioned facts, the following hypotheses have been formulated.

H1: The main motive for enterprise headquarters location is infrastructure.

H2: Satisfaction with head office location is influenced by the surrounding stimulative milieu.

The research was designed as quantitative survey with dominant share of qualitative components, when perception and attitudes towards individual variables and factors were measured. The data collection method was designed as electronic questioning in combination with telephone questioning. The survey itself was accomplished by means of structured questionnaire. Likert scale ranging from −3 to +3 turned out to be the most pertinent one for such kind of research (the higher number, the higher intensity of the phenomenon concerned, where −3 means full disagreement and +3 full agreement). This scale was used in the majority of questions. Moreover, Chi-square dependence test was utilized too.

Basic sample for qualitative part of this research consisted of 190 companies. This was caused by their repeated occurrence in top 100 databases as well as by liquidation of some of them. Altogether 53 valid questionnaires returned to the researchers, which means that rate of return reached approximately 28%. The questionnaire first reached top managers of individual enterprises via e-mail. In case, the manager of enterprise did not respond, he or she was contacted through phone call and after an explanation of the research purpose he or she received questionnaire via e-mail again.

3 RESULTS AND DISCUSSION

3.1 Development of regional dimension of large enterprises from quantitative point of view

In the first analyzed year, i.e. 1995, the spatial pattern of country's biggest enterprises was still considerably influenced by previous central planning as economic-spatial structures tend to be partly inertial and the results of intense transformational processes haven't been tangible till that time.

As it can be seen in table I, in 1995 Prague comprised over one third of biggest Czech enterprises and its share on the entire turnover of 100 Czech biggest companies reached 46.99%. So at that time there already existed a concentration of important headquarters into the capital city, which confirms that communist equalization policy was not performed as intensely as usually claimed. This becomes more visible especially in view of the fact that Prague's share on the Czech population reaches some 11%.

Prague's position was so strong not for the sake of the secondary sector so accentuated by communist regimes but rather due to the presence of headquarters of big national enterprises or foreign trade companies. This was not unusual that many firms had their seat in the capital city, while their production took place elsewhere. Put succinctly, there already existed quite visible spatial division of labor that was further fortified in coming years.

I: *Regional differentiation of 100 largest companies in 1995*

Region	Number of firms	% share on the aggregate turnover of 100 largest firms
Prague	39	46.99
Central Bohemia	6	9.09
South Bohemia	4	1.82
Plzeň	4	4.51
Karlovy Vary	2	1.08
Ústí	9	8.23
Liberec	2	0.75
Hradec Králové	2	1.69
Pardubice	4	1.81
Vysočina	1	0.35
South Moravia	7	4.16
Olomouc	1	0.38
Zlín	5	2.60
Moravian-Silesian	14	16.54

Source: *Top 100 and authors' calculations*

At the same time, one could contemplate also rather strong position of densely populated traditional industrial regions of Ústí and Moravia-Silesia. One-sided emphasis on metallurgy or coal mining caused that these regions were economically important but at the same time became rather sensitive under the strike of new economic conditions because of their sector monoculture. In these regions both headquarters and manufacturing functions were located, which is in compliance with Massey's recommendations (see Massey, 1984 or 1995) that emphasize the advantages of situations when all enterprises functions are located in one spot or at least in mutual proximity.

On the lower territorial scale, in 1995 the headquarters of largest firms were concentrated primarily into four biggest towns (i.e. Prague, Brno, Ostrava and Plzeň) and further also into smaller regional metropolises, such as Ústí nad Labem.

Examination of trends in time shows relevant tendencies that determine the emerging regional pattern of 100 largest enterprises in the Czech Republic. Table II proves that certain projection of transformational and privatization results after first transition decade happened.

Between 1995 and 2000, the share of Prague on the total turnover of 100 largest enterprises increased from 46.99% to 47.14%. At the same time, the number of Czech top 100 located in the capital city augmented from 39 to 46. Moreover, Prague strengthened its position also as the primary center of the Czech tertiary sector.

Other regions, in which big towns are located, such as West Bohemia, South Moravia or Moravian-Silesian region were stagnating or decreasing in both the number of representatives among Czech

II: *Regional differentiation of 100 largest companies in 2000*

Region	Number of firms	% share on the aggregate turnover of 100 largest firms
Prague	46	47.14
Central Bohemia	9	16.63
South Bohemia	5	1.85
Plzeň	4	2.56
Karlovy Vary	1	0.39
Ústí	8	8.45
Liberec	1	0.56
Hradec Králové	3	1.96
Pardubice	2	0.88
Vysočina	1	0.33
South Moravia	5	5.26
Olomouc	1	0.33
Zlín	2	1.28
Moravian-Silesian	12	12.38

Source: *Top 100 and authors' calculations*

top 100 as well as their shares on the aggregate turnovers of this top 100. It was palpable namely in old industrial regions, such as Moravian-Silesian or Ústí regions and did not avoid Plzeň nor South Moravian regions. On the contrary, position of Central Bohemian region, which surrounds capital city of Prague improved substantially, but it can be accounted for by the presence of large car manufacturer Škoda Auto.

Between 2000 and 2005, the position of the capital city improved again. And the next important feature of regional differentiation of 100 largest enterprises appeared: decreasing number of headquarters of large companies in majority of regions. Naturally, this leads to the growing volatility in terms of their rank. The only exceptions were Moravian-Silesian region, one of the most populated and industrial NUTS III territories in the country and Central Bohemia, which forms compact vicinity around the capital city.

Last developments show that spatial pattern of largest enterprises in the country entered the phase of a certain stabilization, which was confirmed also by qualitative research (see chapter 3.2). Although the map of biggest firms differs from existing settlement system, all regions have at least one representative in this group embodying spatial distribution of economic power in the country. Decisive economic nodes of the country are usually encapsulated by aggregate macroeconomic indicators but on the basis of previous analysis we are able to determine them.

III: *Regional differentiation of 100 largest companies in 2005*

Region	Number of firms	% share on the aggregate turnover of 100 largest firms
Prague	51	56.37
Central Bohemia	9	12.51
South Bohemia	3	2.63
Plzeň	2	1.73
Karlovy Vary	1	0.39
Ústí	7	3.68
Liberec	1	0.36
Hradec Králové	2	0.84
Pardubice	2	2.63
Vysočina	2	1.14
South Moravia	3	2.23
Olomouc	0	0.00
Zlín	1	0.34
Moravian-Silesian	16	15.15

Source: *Top 100 and authors' calculations*

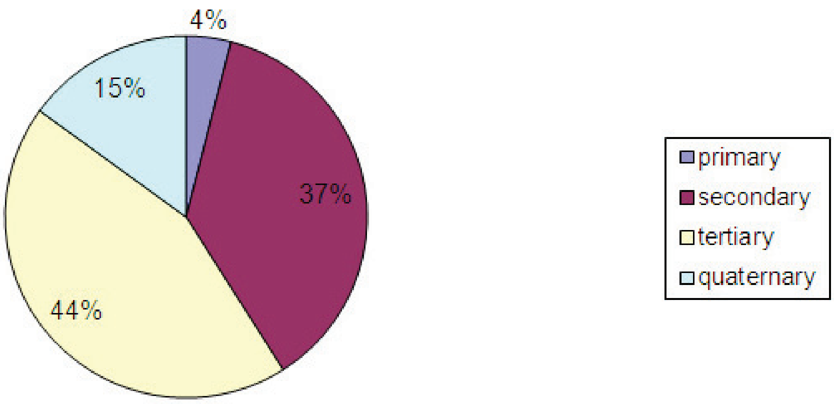
IV: *Regional differentiation of 100 largest companies in 2010*

Region	Number of firms	% share on the aggregate turnover of 100 largest firms
Prague	48	56.75
Central Bohemia	5	12.39
South Bohemia	1	0.36
Plzeň	4	3.07
Karlovy Vary	2	0.57
Ústí	4	1.69
Liberec	3	1.03
Hradec Králové	2	0.62
Pardubice	3	5.32
Vysočina	3	1.17
South Moravia	6	3.99
Olomouc	1	0.36
Zlín	4	1.04
Moravian-Silesian	14	11.64

Source: *Top 100 and authors' calculations*

3.2 Evaluation of regional dimension of large enterprises from qualitative perspective

It became apparent that the most important elements influencing the location of large enterprise headquarters are infrastructure and geographical location. Apparently, traditional hard location factors are still rather relevant for both domestic and foreign companies. This is not in compliance with the concept of 'ubiquitification' of these traditional location factors that abound in spatial sciences of advanced western economies. In the Czech Republic, many of these factors are spatially strongly differentiated yet. Moreover, headquarters of largest companies do not seem to devote a great attention to soft location factors, which are getting increasingly important for instance in the realm of producer services. Taking into account the differentiation of



1: *Sample structure according to enterprise economic sector*
Source: *authors' research*

largest enterprises according to economic sector, this fact seems to be quite surprising.

It is also worth noticing that domestic and foreign companies evaluate the conditions for the location of their head offices in more or less similar way. Incidentally, while 76% of these enterprises had foreign owners, remaining 24% were kept by Czech owners. This confirms that previously mentioned phenomenon of regional 'external control' appears also at the national scale.

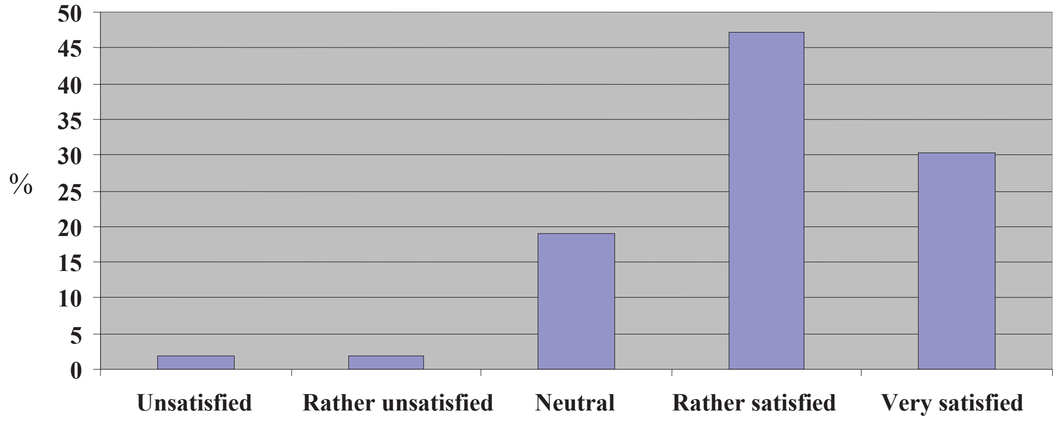
As for perspective towns for head office location out of Prague, there is rather limited number of towns and/or agglomerations. According to our research, low purchasing power and lack of infrastructure out of the capital city are perceived as the principal shortcomings of other territories in the Czech Republic.

As to the promising territories, Brno is the most perspective town for possible location of head office out of Prague for 31.2% of companies. Ostrava is

V: *Decisive factors influencing the location of headquarters*

Average % evaluation and rank according to Czech companies		**Factors influencing headquarters' location according to Czech and foreign companies**	**Average % evaluation and rank according to foreign companies**	
1.	88.8	Infrastructure	88.2	1.
2.	83.3	Geographical location	86.3	2.
3.	77.8	Agglomeration economies/advantages	80.6	3.
4.	76.8	Proximity of customers	78.0	5.
5.	76.3	Proximity of suppliers	79.6	4.
	76.3	Quality of entrepreneurial milieu	76.8	6.
6.	73.6	Availability/quantity of work force	74.8	7.
7.	69.5	Availability of raw materials	73.6	8.
	69.5	Local work force quality	73,6	
8.	68.0	Low wage demand	72,8	9.
9.	66.6	Closeness/concentration of related industries	72.8	
	66.6	Price of land	72.0	10.
10.	65.3	National policies	71.5	11.
11.	63.8	Image/prestige of the place	71.5	
	63.8	Proximity of competitors	70.2	12.
	63.8	Willingness of managers to move	67.5	13.
12.	59.6	Quality of environment	67.5	
13.	58.3	Nearness of decisive authorities	66.6	14.
	58.3	Public administration system	57.8	15.
14.	52.8	Determined historically	57.0	16.
15.	41.6	Sport facilities	47.3	17.
	41.6	Cultural facilities	44.2	18.

Source: *authors' research*



2: *Satisfaction with headquarters' location*
Source: *authors' research*

VI: *Satisfaction with head office location according to the owner's seat and economic sector (in %)*

Domestic firms	Foreign firms	Satisfaction with head office location	Primary sector	Secondary sector	Tertiary sector	Quaternary sector
83.3	82.5		88.3	83.3	82.6	81.3
		Thinking about change of enterprise location				
13.8	19.6		21.8	17.4	21.1	19.8

Source: *authors' research*

perceived as a right place for the performance of central functions by 23.5% of these largest firms. Next position is occupied by Hradec Králové that reached 17.6% and Olomouc, which was suitable place for 11.8% of these enterprises. Surprisingly, Plzeň reached mere 5.9% mainly for the sake of town's non-central geographical location.

Picture 2. shows largely positive approach of individual enterprises towards their headquarters' locations. This is proven by the average 83% satisfaction. 30% of enterprises expressed the highest level of satisfaction with their location. Thus, the spatial pattern of the location of largest enterprise headquarters seems to be relatively stabilized.

As to the sector and ownership differentiation of large enterprises, we get further interesting results concerning satisfaction with current location as well as the realm of thinking about change of enterprise location. Among all economic sectors analyzed there are minimal differences in the question of satisfaction with headquarters location. A little higher level can be contemplated among enterprises belonging to the primary economic sector.

Thinking about the change of enterprise location looks quite similar among both domestic and foreign companies. Still, the foreign enterprises reached 6% higher score. Hence, their willingness to move can be considered a little higher.

3.3 Hypotheses evaluation

Hypothesis H1 evaluation

„The main motive for enterprise headquarters location is infrastructure."

There are no doubts that infrastructure is an important part of entrepreneurial milieu and affects also headquarters' operations. This was also proven by our survey, see Table V. Infrastructure, which represents traditional hard location factor, reached the highest average value among all examined location factors. Thus, it can be treated as the main motive for headquarters location.

Hypothesis H2 evaluation

„Satisfaction with head office location is influenced by the surrounding stimulative milieu."

In this dependence test we used chi-square test and got the value 0.221, which is higher than comparative value 0.05. It means that we refuse the hypothesis H2. According to the accomplished chi-square test, satisfaction with headquarters location is not dependent on stimulative influence of milieu.

There is the high complexity of factors affecting the location of individual enterprises. Enterprises tend to prefer rather tangible factors and milieu is perceived as an abstract notion, in a way. This also constitutes sui generis parallel towards the preference of hard location factors.

VII: *Contingency table – Satisfaction with headquarters location and influence of milieu on headquarters*

		Q 11. Stimulative influence of milieu on headquarters				Total
		Rather disagree (−1)	Do not know (0)	Rather agree (+1)	Agree (+2)	
Q 2. Headquarters location satisfaction	Rather dissatisfied (−1)	0	0	1	0	1
	Rather satisfied (+1)	1	3	5	1	10
	Satisfied (+2)	0	1	13	11	25
	Very satisfied (+3)	0	2	9	5	16
Total		1	6	28	17	52

Source: *authors' research (SPSS+)*

VIII: *Chi-square test*

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	11.859	9	.221
Likelihood Ratio	11.323	9	.254
Linear-by-Linear Association	2.417	1	.120
N of Valid Cases	52		

Source: *authors' research (SPSS+)*

4 CONCLUSIONS

Intense concentration process related to the regional distribution of largest enterprises was symptomatic for the Czech Republic. As for the attractiveness of individual territories, Prague and its surroundings proved to be the winners. Since we could contemplate decreasing number of large enterprises in majority of regions, the volatility in terms of their rank appeared. Nonetheless, in recent years, the spatial pattern of largest firms seems to be more stable. From synthetic perspective, economic hierarchy of the country is deeper than its settlement hierarchy. From qualitative point of view, economies of many regions are increasingly controlled by external actors and this problem concerns also the national level. Infrastructure, geographical location, agglomeration economies or proximity of customers and suppliers and the whole spectrum of other traditional hard factors are perceived as the most important determinants of spatial distribution of large enterprises in the Czech Republic. It also turned out that enterprises tend to prefer tangible location factors rather than abstract ones. In the future, only selected urban nodes will arguably attract headquarters of largest enterprises.

SUMMARY

The objective of the study was to analyze and interpret regional distribution of headquarters of one hundred largest Czech enterprises in terms of their turnover. The analysis was accomplished from both quantitative and qualitative perspectives. The whole study was conducted at the level of 14 self-governing NUTS III regions in the Czech Republic. The time period was between 1995 and 2010.

From quantitative point of view, the number of headquarters of large enterprises in the given region was taken as a point of departure. Further, relative weight of the region in the framework of the Czech Republic was evaluated by means of the share of aggregate turnover of enterprises seating in the given territory on the total turnover of 100 largest enterprises in the country. The analysis was based upon annually published top 100 databases.

As to the attractiveness of individual territories, Prague and its surroundings turned out to be prime locations. Since we could contemplate decreasing number of large enterprises in majority of regions, the volatility in terms of their rank appeared. However, in recent years the spatial pattern of largest enterprises seems to be more formed and economic hierarchy of the country is more intense than its settlement hierarchy.

Basic sample for qualitative part of this research consisted of 190 companies. Altogether 53 enterprises answered the questionnaire, which makes the return rate approximately 28%. Qualitative research disclosed decisive factors influencing the location of large enterprise headquarters, level of satisfaction with head office location or promising territories where these headquarters could be located. Infrastructure, geographical location, agglomeration economies as well as proximity of customers and suppliers proved to be decisive factors influencing the location of both Czech and foreign companies (76% of largest enterprises in the country has foreign owner). As to the promising territories for the possible location of analyzed head offices, out of specific position of the capital city, large towns, such

as Brno, Ostrava, Olomouc, Hradec Králové or Plzeň enjoyed the highest preferences. On the other hand, economies of many regions in the country already suffer from 'external control', which further undermines their economic prospects.

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