

# Innovative Potential Regional Evaluation in the Czech Republic

Milan Viturka

*Masaryk University, Faculty of Economics and Administration  
Lipová 41 a, Brno, 602 00, Czech Republic, viturka@econ.muni.cz*

## 1. Introduction

It is the main purpose of this entry to present a methodology for the regional evaluation of the innovative potential and its application to the mezzo-regional level of the Czech Republic, comprising 15 regions (NUTS 3 according to the EU classification). The below described methodology is user-oriented to a long-term period, since it recognizes a strong inertia in the spatial organization of the society. At the beginning it is necessary to pay some attention to the basic, theoretical framing of the investigated problems – the innovative potential

Economic development is necessarily related to competitiveness, which is a basic measure of success for businesses and countries, including their administrative units, i.e. regions. Especially in developed countries the competitiveness is related to the creation of innovations, which are considered to be a decisive prerequisite for acquiring long-term competitive advantages. The competitiveness term has been mostly shaped by the author of the new economic growth theory R. Solow whose basic macroeconomic model contained the key element of technical progress and by R. Lucas and P. Romer who investigated the role of human/knowledge capital in the endogenous models of economic growth<sup>1</sup>. There are also other theories, such as the M. Porter's theory with the so-called diamante model.

The Lucas's model is based on the assumption that there are two kinds of capital in a closed economic system with an external population growth factor: physical capital, accumulated during goods production, according to the neoclassic productivity function and human capital, being accumulated within the particular technology with a constant rate of return. Human capital is characterized by two effects here. The internal effect reflects the fact that each person's income positively depends on his/her skills (including the means of dividing his/her available time between work and training) and the external effect reflects the fact that the average level of human capital influences efficiency of all production characteristics. The production function is defined as follows (simplified):

$$Y = A \cdot f(K, He, Ha)$$

Y = level of production (output)

A = autonomous variable (technical level of development, or rather general productivity)

K = physical capital volume

He = efficient work, i.e. amount of time spent by personnel on production multiplied by the skill level of each person

Ha = average level of human capital for the particular population.

The Romer's model is based on the assumption that the effort of the individual companies to innovate increases the total volume of knowledge within the society. This model emphasizes that the technical and technology development is determined by science and research that develop rather independently, yet the commercial utilization of their products requires private investment increasing efficiency of all production characteristics. The model

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<sup>1</sup> Endogenous (internal) growth models strive for the accumulation internalization of the basic influencing factors and they are characterized by a certain form of effect spillover assuring individual and social return of the invested means.

expects a continual growth of output per capita, whose critical resource is based in the introduction of additional innovations. Application of this model is conditioned by the following question: is knowledge a competitive (assumed by the model) or a non-competitive factor? The corresponding production function has the following form:

$$Y = A \cdot f(R, K, L)$$

Y, K, A have the same meanings as in the previous model

L = labor volume

R = company expense volume for research and development.

For the purpose of the regional competitiveness methodology establishment it is also suitable to consider the above-mentioned Porter's microeconomic competitiveness theory, whose primary components consist in the performance levels and qualities of companies and in the business environment quality, interpreted within the mutual interaction with the general framework of the economic development (Skokan, 2003)<sup>2</sup>. Four essential factor groups determine competitiveness in the Porter's model: input factors (production factor supply), demand factors (emphasis on the signal significance of the domestic demand), factors related to the presence of related and support lines of business (related to labor division and economy integration level) and factors generated by strategies and competition characteristics among companies (related to the general business climate). Government and coincidence impacts are considered to be additional factors.

In harmony with knowledge contained especially in the above-mentioned economic growth models and also in harmony with the established research goals the production function, emphasizing the essential significance of the education, science, research and innovation development for the maintenance and strengthening of competitiveness, was modified into the following form (Viturka, 2005):

$$Y = A [t, e_a, e_b] \cdot f(I, K, L)$$

Y, K, L have the same meanings as in the previous model

A = a multi-factor autonomous variable with factor components t – technical development level (expressed by selected macroeconomic indicators),  $e_a$  – macroeconomic (territorially independent) quality of the business environment and  $e_b$  – regional (territorially fixed) quality of the business environment

I = company innovative potential.

It is necessary to note that this model, just like the other models (see e.g. the impossibility of an objective aggregate quantification of the technical development factor), is also mostly of an explanation value. Yet its benefits consist in defining the decisive factors, or rather groups of factors, determining the economic growth in the knowledge-oriented economies. This entry will focus on the innovation-oriented regional evaluation of the business environment and on the regional evaluation of the company innovative potentials.

Business environment quality evaluation significance for regional competitiveness is based on an empirically verified fact that an adequate supply is the main field where regions can compete in their efforts to establish the best possible conditions for the development of business activities. High-quality business environment also stimulates competition and the corresponding increases in company productivity. Company innovative potential evaluation, combining both principal factors influencing their innovative performance, is then a logical second component of the innovative potential regional analyses. The particular aggregations represent a basic indicator of the general regional innovative performance including the prerequisites for achieving long-term competitive advantages (considering this it is possible to declare that competitive advantages are very strongly localized in the global economy and

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<sup>2</sup> Porter's theory corresponds to the systematic understanding of competitiveness within the meaning of the participative model.

they arise from a presence of highly specialized knowledge, institutions, particular companies and customers).

At the end of this chapter it is possible to make a short statement about the differences in understanding company and state competitiveness. The main cause of these differences rests in the difference of impacts of adverse competitiveness development trajectories; unsuccessful companies are pushed out of the market while long-term competitiveness decrease in states or regions results in the corresponding decrease in the population's quality of life. This implies that the national or regional competitiveness features a much higher degree of inertia and it cannot be understood as a plain competitiveness aggregation of the relevant business subjects which is often modified by a higher-level factor operation (e.g. a hierarchic structure of multi-national companies).

## **2. Innovative Potential Regional Evaluation**

As we have stated at the beginning, innovative potential regional evaluation includes two basic components. The first of them is represented by an innovation-oriented evaluation of the business environment quality, which is aimed at the interpretation of regional conditions for the development and transfer of innovations. The other component is then aimed at the evaluation of the innovative potential of companies – the main subjects of the innovation creation process. This approach corresponds to a systematic understanding of competitiveness as a part of the so-called participation model, where competitive advantages of companies are understood to be the results of a multi-dimensional cooperation between market and social (political) forces.

### ***2.1. Innovation-oriented evaluation of the business environment quality***

Business environment quality evaluation is methodically based on the identification of selected factors, defined according to the investment and development preferences of companies operating in national-economy significant branches of the processing industry and the so-called productive services<sup>3</sup>. These preferences, including selected-factor significances, were determined from the analyses of potential, especially multi-national investor surveys, which were consequently verified and adapted for the conditions of the Czech Republic by means of statistical analyses (Viturka 1998, 2000, 2003). This procedure included in the research also other types of investments (acquisitions, joint-ventures, etc.) besides brand new investments. It should be noted here that the original analyses were aimed at the current stage of the Czech Republic's economic development characterized by the cost-based competitiveness. Innovation oriented evaluation of the business environment quality accentuates the future need for a transition to a knowledge-based economy with competitiveness based on the intense utilization of research and development results and therefore it calls for the research expansion with preferences derived from the innovative companies and also for the resulting synthesis of results acquired from both analyses (the same division of factors into business, labor, infrastructure, regional/local, price and environmental factors).

The realized analysis (input data acquired from various sources, including our own surveys, come mostly from the 2000-2002 period) implies that the structural changes in the demand of innovation-oriented companies, aimed at the business environment quality, may be characterized predominantly by a weakening of the infrastructure factor significance (especially those of an airport proximity and road and railroad qualities) and also of partial factors financing assistance and, to a smaller extent, supporting services. On the other hand there is a clear growth of the labor (the absolutely highest growth was recorded for the labor

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<sup>3</sup> Banking, insurance, telecommunications, information services, science and research and other business services.

force quality) and environmental factors including partial factors of market proximity and business and knowledge base <sup>4</sup>. These structural changes suggest a need for relevant changes in determining future public program priorities aimed at enhancing the business environment quality.

**Table No. 1: Business environment quality factors and their significance sequencing**

<b>Factor</b>	<b>Factor Type Groups</b>
<b><i>Factors of the greatest significance:</i></b>	
business and knowledge base	regional and local factors
market proximity	business factors
availability of labor forces	labor factors
large company proximity (large customers)	business factors
quality of labor forces	labor factors
<b><i>Factors of medium significance:</i></b>	
real-estate prices	price factors
road and railroad quality	infrastructure factors
labor price	price factors
information and communication technologies	infrastructure factors
supporting services	business factors
urban and natural attraction of the territory	environmental factors
<b><i>Factors of low significance:::</i></b>	
foreign company presence	business factors
environmental quality of the territory	environmental factors
financial assistance	regional and local factors
international airport proximity	infrastructure factors
labor flexibility	labor factors

As mentioned above, regions were selected to be the main entities for the business environment quality regional evaluation, since in the conditions of the Czech Republic they play a significant part in the processes of product and service market establishment and especially in the processes related to the territorial division of labor (economic specialization of regions). Basic information about the territorial differentiation in the business environment quality by individual regions was acquired by aggregating values concerning of the primary network of more than 200 micro regions (territorial districts of the authorized communities of the 3<sup>rd</sup> degree) whose characteristics are rather similar to the so-called nodal regions where an absolute majority of daily population transfers are realized <sup>5</sup>. The methodology procedure for the region evaluation is based on statistical analyses of the aggregated factor value variability weighted by the numbers of inhabitants of the particular micro regions (grouped according to

<sup>4</sup> Financial assistance factor interprets the potential possibilities of regional financial assistance for improving the business environment quality, primarily determined by the amount of micro regional center tax income per one resident. The business and knowledge base factor includes the so-called business infrastructure (represented mostly by industrial zones) and also institutions with decisive roles in the knowledge base development (universities, scientific institutes and industrial parks). Support service factor interprets the significance of the supply of common services for businesses (e.g. business, financial and information services), provided mostly by small, specialized companies.

<sup>5</sup> Business environment quality shows significant dependence, in harmony with the central location theory, on the population size of micro-regional centers and the greatest differences were discovered between the established first (centers with over 100 000 inhabitants) and the second (centers with over 50 000 inhabitants) size groups. Significant influences generated by processes of economic integration, spatially specified by the development axis system, shouldn't be underestimated at the lower hierarchical levels (for details see Viturka 2003).

the standard, 5-degree classification scheme). Except for the Prague Region, encompassing just the territory of the Capital City, the differences among the remaining thirteen regions are not really significant. Little urbanized, “rural” micro-regions, with very low levels of the business environment, constitute significant fractions of these regions. In this sense there are more distinct differences among the individual regional centers, which have the highest business environment quality (this general dominance of the regional cities implies their decisive significance for the establishment of positive conditions for the further development and expansion of innovations, corresponding to their roles of development poles). After taking into consideration the above-described facts the Czech and Moravian regions were sorted into the following three basic groups: Only Prague Region makes the first group, the majority of nine regions comprise the average group and the below average group contains the remaining regions: Zlínský, Ústecký, Moravskoslezský and Karlovarský regions. Among the regional centers there is the highest business environment quality (similarly to most West-European countries) in the Capital City, followed in distance by Brno, Plzeň and Pardubice. Ústí n. L., Zlín and Karlovy Vary are on the other side of the scale. The highest internal differences in the business environment quality between regional cities and the remaining regional territories were discovered in the Jihomoravský, Plzeňský and Pardubický regions. These currently growing differences could constitute certain barriers to the economic integration of regions in future yet these are usually surpassed to a certain extent by the spontaneous processes of the development axes establishments (all of the above-stated regions are rather strongly integrated by a system of secondary or primary development axes of national significance). Finally we can note that in comparison to the innovative potential of companies the business environment quality represents a rather stable component in the regional development, and therefore the realization of the required changes should be based on long-term focused programs, drafted according to detailed and professionally processed analyses.

**Table No. 2: Business environment quality (BEQ) values in the individual regions**

Region	Population in thousands	BEQ of the whole region	BEQ of the center
Pražský	1169	1,31	1,31
Středočeský	1205	2,90	2,28
Jihočeský	625	3,00	2,12
Plzeňský	551	2,79	1,69
Karlovarský	304	3,20	2,42
Ústecký	820	3,32	2,70
Liberecký	428	3,02	2,34
Královéhradecký	551	3,01	2,08
Pardubický	508	3,06	1,91
Vysočina	519	3,18	2,30
Jihomoravský	1128	2,74	1,61
Olomoucký	639	3,19	2,36
Zlínský	595	3,27	2,54
Moravskoslezský	1270	3,34	2,25
Czech Republic	10312	2,90	1,31 (Capital City)

Note: In the Středočeský Region, with its centre in Prague, the regional centre values are identical with the values of the Mladá Boleslav micro-region.

## **2.2. Company innovative potential evaluation**

Innovative abilities of companies logically represent a decisive component determining the real innovative potential development in the individual regions of the

particular country. Nevertheless its evaluation is rather difficult considering both the initial partiality of our theoretical-methodological knowledge and the incompleteness of the available information sources. Publishing of the so-called Oslo manuals (a part of the Fractal manual series) focused on product and a process innovation in the private sector is considered to be the most significant international activity aimed at dealing with these problems. In this particular case there was used the information collected in the second special selective survey performed by the CSI and based on this manual (recently, the third survey, observing the Eurostat methodology has been started).

The above-mentioned survey is related to years 2002-2003 and it collected data from about 6.200 companies, including local units with the minimum of 10 employees, included in the RES and operating in NACE branches no. 10 to 37, 40 to 41, 51, 60 to 67 and 72 to 74 (fields 74.2 and 74.3) <sup>6</sup>. About 26% of the total numbers of companies were innovative companies (about 57% introduced just product innovations, 42% introduced product and process innovations and 18% introduced just process innovations). The highest numbers of innovative companies appeared in case of chemical industry, vehicle manufacturing and machinery manufacturing (on the other hand the lowest numbers appeared in the textile and leather industries, furniture manufacturing and wood-processing, paper and printing industries) and in case of services in data processing, research and development (on the other side appears transportation, storage and telecommunications, architectural and advisory services). According to the acquired data the innovation abilities significantly increase with the sizes of companies while the innovation performance of foreign companies (40% share among the innovative companies) was almost 1.7 times higher than that of domestic companies. This conclusion corresponds to the significantly lower numbers of innovative companies in the Czech Republic when compared to the former EU-15 member countries. Considering innovation costs the biggest sums were spent for machinery purchases, internal research and development and introducing the innovations into the market (total innovation cost reached about CZK 46 billion in 2003). Sales revenue share from innovated products reached about 19% from total company revenues (industry 22%, services 14%). Improving product quality and product line expansion was considered to be the most significant innovation benefits. Considering the process of creating innovations itself, 45% of companies believed information resources to be the most important factors and 40% of companies believed in incentives from their customers (only 4% believed universities to be a significant resource of such information). The greatest barriers of innovation development are believed to be especially the lack of financial resources together with high costs of innovation realization (it is rather surprising that there is quite a small emphasis placed on the lack of information about relevant markets and technologies).

From the spatial point of view it is possible to declare that innovating companies, in comparison to the non-innovating ones, much better assert themselves at international markets (mutual ratio between international, national and regional markets was about 1 : 0.6 : 0.2 for innovating companies and 1 : 1.1 : 0.7 for non-innovating companies) <sup>7</sup>. As far as regional distribution is concerned, the highest number of innovating companies was found in the Prague Region (31% share) and the absolutely lowest number was found in Karlovarský Region (about 14% share). Besides the Prague Region, above-average share of industrial innovative companies was found to be in Pardubický, Liberecký, Vysočina, Královéhradecký and Zlínský regions and as far as innovative companies operating in higher market services only in the Jihomoravský Region (conditioned by a the high degree of their concentration in the Capital City).

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<sup>6</sup> CSI – Czech Statistical Institute, RES – Register of Economic Subjects.

<sup>7</sup> Area within 50 km is considered to be a regional market while area surpassing a circle of 50 km and within the Czech Republic is considered to be a national market.

Due to the fact that the information value of the above-presented regional data is (besides well-known problems concerning validity of information acquired from surveys) negatively influenced by many other factors, such as influences of various sizes of the companies, the information base was further supplied with additional information. Information collected in the Association for Innovative Entrepreneurship (AIE) database was used as a data source. In contrast to the companies included in the selective surveys of the CSI these are firms, which have declared their interest in the problems of innovation before by means of their membership and participation in the AIE.

**Table No. 3: Number and percentage share of innovating companies by regions**

Region	Total estimated number of companies		Total number of innovating companies		% of innovating companies	
	I	S	I	S	I	S
Pražský	1137	3087	437	885	38,4	28,7
Středočeský	1593	1124	358	250	22,4	22,2
Jihočeský	950	348	244	86	25,7	24,8
Plzeňský	807	310	169	77	20,9	24,9
Karlovarský	523	77	82	1	15,6	1,3
Ústecký	806	388	240	34	29,8	8,7
Liberecký	801	318	265	35	33,1	11,0
Královéhradecký	1032	457	328	82	31,7	17,9
Pardubický	708	491	243	114	34,3	23,2
Vysočina	828	266	266	44	32,2	16,5
Jihomoravský	1592	1117	318	281	30,0	25,2
Olomoucký	962	479	273	89	28,4	18,5
Zlínský	1150	489	363	116	31,5	23,6
Moravskoslezský	1326	763	403	120	30,4	15,8
Czech Republic	14215	9714	3989	2214	28,1	22,8

Source: CSI, I = industry, S = services.

From the AIE database we have selected, for further analysis, companies with employees operating in processing industry branches (NACE no. 15 to 37) and also in selected branches of business services (data processing and related activities, research and development and other business activities, i.e. NACE no. 72, 73 and 74.1 to 74.4). These selected branches undoubtedly represent an absolutely dominating field of product innovation origination and a decisive field of process innovation origination, inducing their establishment also in other branches (wholesale, transportation, financial services). Data from this database were verified in the RES and compared with other data, acquired mostly from selective labor force surveys (data on labor force numbers actually allocated in the particular regions) and from annual reports of companies (especially data on precise employee numbers in large companies) and from other resources. The collected data are from 2004 or rather from between 2004/2005. The final file included about 1.800 units (29% of the Czech Statistical Institute selective file) with app. 446.000 employees.

Considering the innovative company employment share, above-average values were found in Středočeský (app 36% percentage share, conditioned by the presence of the largest Czech company Škoda Auto), Vysočina, Královéhradecký and Moravskoslezský regions. On the other end of the row you will find Jihomoravský (22 %) and Karlovarský regions, followed by Jihočeský, Zlínský and Plzeňský regions. Regional cities are naturally the most significant centers for innovating companies (except for Karlovy Vary) joined by some other larger cities with significant industrial traditions (e.g. Mladá Boleslav, Jablonec n. N.).

Corresponding share of the innovation company employees in the total number of employees working in these branches is almost 29% and this value is not much different from the above-presented share resulting from the CSI survey. Should we consider selected service branches then innovating companies assert themselves, besides the Prague Region, only in Jihomoravský (Brno) Region.

**Table No. 4: Number and percentage share of innovating companies in selected branches of industry by regions**

<b>Region</b>	<b>Total number of companies</b>	<b>Percentage employment share I+S in %</b>	<b>Percentage I share in the innovating company number</b>
Pražský	385	27,8	42,6
Středočeský	145	36,1	78,6
Jihočeský	85	24,1	78,8
Plzeňský	68	25,3	80,9
Karlovarský	37	23,2	91,9
Ústecký	112	30,4	85,7
Liberecký	85	28,2	90,6
Královéhradecký	87	32,8	84,3
Pardubický	95	29,0	78,9
Vysočina	77	33,7	84,4
Jihomoravský	216	22,2	65,3
Olomoucký	95	26,8	81,1
Zlínský	128	25,2	75,8
Moravskoslezský	159	31,8	69,2
Czech Republic	1774	28,7	71,2

Based on the synthesis of results from both of the above-described partial, regionally-oriented evaluations of the company innovation potential the following regions were placed into the first group defined by the highest values of the innovation potential: Prague, Středočeský, Královéhradecký, Pardubický and Vysočina, the following into the second group with medium innovation potential: Jihočeský, Plzeňský, Ústecký, Liberecký, Jihomoravský, Olomoucký, Zlínský and Moravskoslezský and only one region fell into the third group with the lowest innovation potential – Karlovarský Region.

### **2.3. Synthesis**

According to the above-presented results of the realized analyses of the business environment quality and the company (private sector) innovation potential, we can make a generalized evaluation of the regional innovation potential for the individual regions of the Czech Republic. According to the information contained in the following table it is possible to say that the Prague Region and to a smaller extent also Středočeský, Královéhradecký, Pardubický and Vysočina regions have a generally above-average innovation potential (considered with an emphasis on long-term processes). In these regions there were discovered above-average innovation potentials of companies, operating under average business environment quality conditions. Within the spatial context of the Czech Republic this is a central development area, whose economic development is positively influenced by the proximity of the Capital City (strong integration of the whole area by means of the nationally-significant development axes). It is apparent that the decisive activities and processes determining the competitive state of the Czech Republic will be allocated in this area even in the future. The average innovation potential group contains the following regions: Jihočeský, Plzeňský, Liberecký, Jihomoravský and Olomoucký. Except for the Olomoucký Region, the



centers of these regions, i.e. Plzeň, Liberec, Brno and České Budějovice, as decisive development poles of national significance, are directly connected to the central development area by means of the principal and auxiliary development axes. The remaining regions, i.e. Karlovarský, Ústecký, Zlínský and Moravskoslezský were included into the group of regions with a below-average level of the innovation potential. These are structurally or geopolitically afflicted regions (peripheral location within the Czech Republic), whose position is positively influenced by the company innovation performance comparable to the previous group. There is just one exception – Karlovarský Region, with a low share of innovating companies. Among regional centers of this group, Ostrava has the best business environment quality, accompanied by one of the highest concentrations of innovating companies.

**Table No. 5: Innovative Potential of Regions**

Company Innovative Potential	Business Environment Quality		
	<i>High</i>	<i>Medium</i>	<i>Low</i>
<i>High</i>	PR	STČ, HK, PU, VY	
<i>Medium</i>		JČ, PL, LB, JM, OL	UL, ZL, MS
<i>Low</i>			KV

Abbreviations of regions: PR - Prague, STČ - Středočeský, JČ - Jihočeský, PL - Plzeňský, KV - Karlovarský, ÚL - Ústecký, LB - Liberecký, HK - Královéhradecký, PU - Pardubický, VY - Vysočina, JM - Jihomoravský, OL - Olomoucký, ZL - Zlínský, MS - Moravskoslezský.

Finally it must be noted that the company innovation performance is generally considered to be the decisive dynamics bearer in both evaluation components. By means of this it is, to a certain extent, possible to overcome the limitations determined by the lower quality of the business environment. From the long-term viewpoint we believe it logical to find the level of both components in an approximate equilibrium.

### 3. Conclusion

The final part of this article is devoted to the current system of innovation policy in the Czech Republic and to recommendations concerning its optimization. „National Innovation Strategy of the CR” document, related to the EU Lisbon Strategy (approved by the Government in 2004) can be considered to be the first step towards the establishment of a national innovation policy. “National Innovation Policy for 2005-2010” was processed according to this document. A national innovation policy describes conceptual resources, analyzes advantages and disadvantages of innovation processes, describes its relationships to existing strategic documents and defines the main goals and tools for its realization. The following were established to be the principal goals:

- Support research and development as innovation resources
- Establish a functional cooperation between the public and private sectors
- Assure human resources for innovations
- Improve civil service performance in research, development and innovations.

There are two related documents – two prepared national research policies which were the bases for the National Research Programs I and II. The first one (processed for the period 2004-2008) is focused on key research streams with high potentials to contribute to the economic development and fulfillment of social needs of the society while optimally using public resources designated for research and development. The other program (processed for the period of 2006-2011) is focused mostly on applied research and deals with the problems of regional research and development aspects.

Two programs supporting innovative entrepreneurship are currently being realized in the Czech Republic <sup>8</sup>. The Innovation Program realizes measure 2.2 (Support of product, technology and service innovations) of priority 2 (company competitiveness development) of the Industry and Business Operation Program, co-financed by the EU as a part of its structural policy. It is aimed at the support of projects focused on increasing technical and utility values of products and services or on increasing manufacturing process and service provision efficiencies or on the establishment of non-technical innovations (new management methods, significant organization or strategic changes strengthening long-term company competitiveness). The Prosperity Program realizes measure 1.1 (Infrastructure for industrial research, development and innovation) of priority 1 (Business environment development) of the above-mentioned Operation Program. It is aimed at supporting infrastructure for industrial research (industrial parks, technology transfer centers, business incubators), technical development and innovation creation.

Innovation development support is undoubtedly a complicated affair. Its efficiency is influenced by many factors; establishment of relevant goals and the optimum timing and coordination of the innovation policy with other policies are considered to be the key factors. Here we should note that most branches of the Czech industry belong, by their characteristics, into a “middle” stream group, connected with low-tech branches, wielding much lower innovation potential in comparison to the high-tech branches. Therefore we recommend, in the first stages, to place the strongest emphasis on the transfer and acquisition of modern technologies within private sector as the key elements of a dynamic improvement in the company innovation performance and consider the support of intensity and efficiency of relationships between public scientific institutions and the private sector to be a rather long-term goal of the innovation policy realization. As far as the relationship with other policies is concerned, the following could be designated as not really consistent: the apparent preference of transportation infrastructure development support in comparison to human resource development support, bringing about rather conservation of the current state and not a decisive change in the above-described situation (non material investments grow much faster than material investments in the developed countries).

Support at regional levels is also an important factor for the innovation development. The individual regions prepare their individual Regional Innovation Strategies to cope with this problem. The level of their establishment is rather diverse, some regions have just started the preparation works and some regions have already finished its processing (Prague, Jihomoravský, Plzeňský, Ústecký, Karlovarský and Moravskoslezský regions). The individual Regional Innovation Strategies are united mostly in the definitions of problem areas and principal goals, such as:

- Financial support of the SME innovation projects
- Increased cooperation between the innovation and R&D subjects (regional and mezzo-regional)
- Transfer of research and development results into commercial (business) reality
- Innovation infrastructure development.

As far as the significance position of innovation support regional systems is concerned, you can see gradual increases in their significance, reflecting the essential function of personal information transfers or mutual relationships between innovation-oriented subjects which significantly influence innovation origination sites within company networks. Correct setting of these systems logically requires a full understanding of the specific conditions of the individual regions and especially the general level and structure of the innovation creation

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<sup>8</sup> Public support in this field can be justified by the fact that knowledge can hardly be fully appropriated since often it is of common character and there occurs a market failure.

and spreading processes. Besides a versatile support for the human resource development taking into accounts the perspective trends in the supply and demand development in regional labor markets, it is also necessary to optimize the relevant development programs focused on the business sphere. The microeconomic principle of the innovation processes implies that the decisive focal spots of innovations are created by spontaneously or in an organized way established clusters of innovating companies, reproducing themselves in a system of bidirectional endogenous (company ↔ company) and exogenous (company ↔ surroundings) relationships. The following program fields can be recommended as priorities according to the current results of this research: support of increasing pro-innovative quality of the business environment at regional levels (indirect support forms, stimulating e.g. the establishment of generally and selectively available external savings in the business sphere) and support of growth in the innovation quality and performance of companies (direct support of economic development focused on the small and medium innovating companies).

Considering compliance with the traditional goals of macroeconomic regional policy focused on lowering differences in economic development levels, it is necessary to note that even innovation-oriented industrial companies may be located in economically less-developed regions, where they represent the so-called “islands of positive deviations”. In harmony with the objective fact that higher market services (especially the so-called quaternary services including science and research) are more concentrated in urban areas, the support of innovation-oriented industrial companies could be applied as a tool for stimulating economic development in “rural” regions (nevertheless in these regions with a low supply of investment opportunities, it is first necessary to suitably stimulate competitiveness quality increases in local markets (e.g. opening of new markets or utilization of new raw material or input resources).

The above-stated recommendations must be understood in the context of the post-industrial stage of the economic development, characterized by a transfer from the extensive forms (connected with local concentration of features under the conditions of a clear dominance of the competitiveness principle) to the intensive forms (connected mostly with local concentration of significances under the conditions of an efficient establishment of a relationship between the competitiveness principle and the cooperation principle – cooptation). This general development trend should be taken into account in a modern regional policy whose priority should be a support for a spatial integration of the economy while taking into account development specifics of the individual regions.

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