Changing Cities and Regions by the Knowledge and Innovation Based Economy

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Abstract

The attitudes of modern regional development policies in last few years have putted the emphasis to the strategic regional policy. Together with idea of knowledge based and innovative economy the public support was focused to the research and development and it´s transfer to practical life. In the Czech Republic wide spectrum of R&D programs were established. There were built technological parks, entrepreneur and business incubators and other infrastructure transferring knowledge from universities and R&D companies to praxis established. This paper presents results of almost 10 years of this attitude to regions in the Czech Republic. It summarizes impacts to the economic and social life of regions and to regional disparities.

Key words: region, regional policy, R&D, technological center, business incubator.

JEL Classification: R53, O33

1 Introduction

The term development could be defined in many ways and also its interpretation could be different. Originally, it represented economic growth as a synthesis of growth of production, property and number of employees. As the ideas of social and environmental aspects of growth has been implemented to the theory and praxis of regional development during the 2nd half of 20th century, today is the regional development understood as a sustainable development of states and regions.

The topic of regional policy is a continuously developing theme. In the last decade many countries changed their traditional attitudes and decided to use strategic regional policy that is focused to definition of goals and aims. Although the original idea of equal development of all regions is still on, the regional policy of equilibration has been replaced by the strategic policy of equal chances. (Skokan, 2004) brought in praxis by supporting local actors, local invention, cooperation between local actors (Etkowitz, Ranga, 2010).

As the attitudes to regional development changes also the main definitions of regional policy has been changed. For example in Czech Republic, the definition from the end of 90´s of 20th century: The collection of goals, proceeding and tools leading to reduction of too big differences in social-economic levels of regions. (Stejskal, Kováník, 2009) or Regional policy is a conception

work process of the state and regional and local governments focused to support of development activities in regions and to prevention of increasing of impacts of uneven spatial development.

There can be recognized two main streams of regional policies:
Traditional (exogenous) regional policies are oriented mainly to influence to mobility of production factor from the well-developed regions to the less developed ones. This regional policy was widely used across the Western Europe from 50´s to 70´s. The results of these policies were very weak and in mid-term and long-term period not successful.
Strategic (endogenous) regional policies are focused to strengthen of structures already existing in regions by the support of local invention and local action. (Stejskal, Kováník, 2009). Nowadays regional politics are based on institutional theories of regional development. They are focused to strengthen the interaction and learning of local actors and to prepare their resilience to upcoming social, economic and environmental challenges. They support cooperation between public and private sectors that can be represented by investing to R&D, education, or support of organizations providing communication links between companies and entrepreneurs. As the most effective are considered invests to human resources and to education and specialization of high qualified people.

During the ending EU-planning period there was a strong support of processes that create innovations, share knowledge and inventions and that implement new products and services into the praxis. Although the idea of importance of innovations in regional growth came from late 50´s when theory Growth Accounting theory was introduced (Solow, 1957), that was the beginning of new millennium when local innovations were in the centre of regional policy. That policy was inspired by the Lundvall (1992) and Nelson (1993) who were focused to the role of innovations on national level. Their concept was modified in the late 90´s of the 20th century.

The mentioned theories describe the science and technology parks as subjects that provide interlink between two subsystems – the one that creates innovations and the one that applies innovations. They are based on the physical nearness of research organisations and production companies. Their interaction create environment for high effective exchange of knowledge and ideas. The effectiveness of innovation process is based on the acceptation of surrounding environment combined with their own knowledge.

The science and technology parks (STP) are mentioned for the first time in the 50´s of the 20th century in the USA where the Stanford University provided part of their rooms for new companies. It was the starting mechanisms for the Silicon Valley development. It became to be a model for other countries that were inspired by the STP idea and that adopted them their way. Generally we can as a VTP pronounce the "institution oriented to the field of research, technology and innovation entrepreneurship. (Švejda, 2006)

2 The Role of Scientific and Technology Parks in Selected Regions of the Czech Republic

The term STP has been used in the Czech Republic since 1990 when the Science and Technology Parks Association Czech Republic was established. As the foundation of STP was subsided by EU and national programs, the main problem in the field is the missing system of financing and systematic cooperation between universities, academic institutes and companies that is necessary for innovative social and economic environment (Etkowitz, Ranga, 2010). Czech companies have no overview about the quality and focus of research and scientific centres.
(Švejda, 2006) divides STP in the Czech environment into three main groups:

- Scientific Park (Centre) – Complex of R&D, design, construction and production companies that take part in the innovation entrepreneurship. They are usually located by universities or the ofices of The Academy of Sciences of the Czech Republic.
- Technology Park (Centre) – its main aim is to support transfer of technologies and development of high-tech technologies.
- Entrepreneur and Innovation Centre – supports beginning entrepreneurs in application of innovative projects. They also help to create innovation projects, support cooperation between innovating companies, intermediation of entrance to foreign markets, contacts to domestic and foreign companies, helps with exhibitions organisation. They organise specialised seminars, courses, meetings, demands and offers of technologies…

The research work was focused to the STP located in the North-East part of the Czech Republic. The area consisted of following NUTS II (NUTSIII) units: Severovýchod (Pardubický region, Královéhradecký region, Liberecký region), Střední Morava (Olomoucký region, Zlínský region) and Moravskoslezsko (Moravskoslezský region). It followed previous work focused to the region Jižní Morava (Southern Moravia) (Suchánková, 2013) that proved positive impact to the regional growth but very negative impacts to disparities within the region.

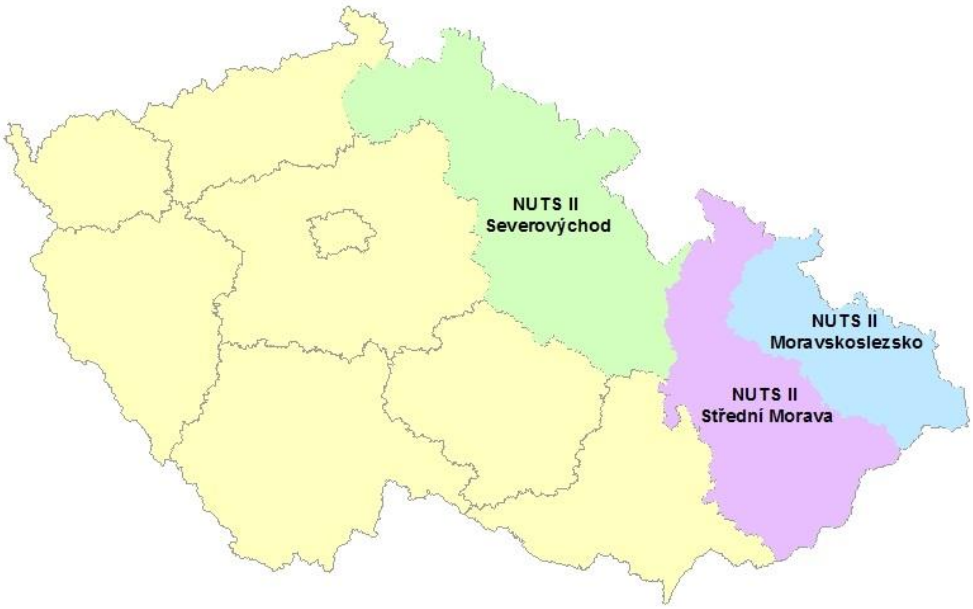


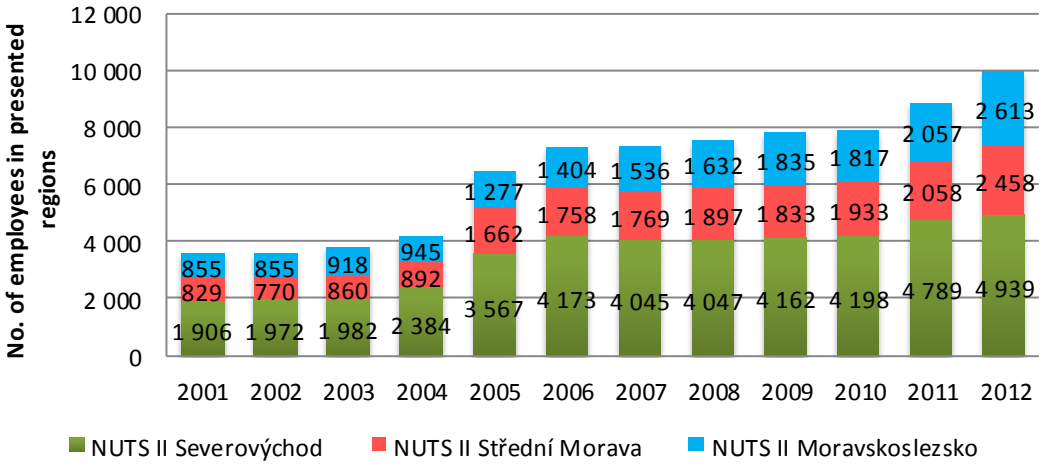
Illustration 1 Regions presented in STP research, Source: Own construction

The main goal of the research was to evaluate impact of STP to the regions. There were evaluated basic statistic data. As added data were taken information from the fieldwork. It means the way of presentation of parks to potential innovating companies and entrepreneurs, information for potential cooperation and starting entrepreneurs.

The Zlínský region was the region with the highest number of STP – 4, the area of park is the widest in the Moravskoslezský region (ca 132.000 sqm). The oldest STP was the Entrepreneur Innovation Centre Ostrava (Podnikatelské inovační centrum Ostrava) that was established on the 1st April 1994. The youngest was the technology park PROGRESS in Holešov (the 1st December 2012).

The first statistic data which relation to VTP had been qualified was the GDP. It was found that the direct impact to this indicator is not ascertained. The establishment of VTP and increase of number of employees in the R&D has no noticeable impact to GDP. It is more affected by other externalities as economic cycle (economic crisis 2008) and economic growth at main export markets of the Czech Republic.

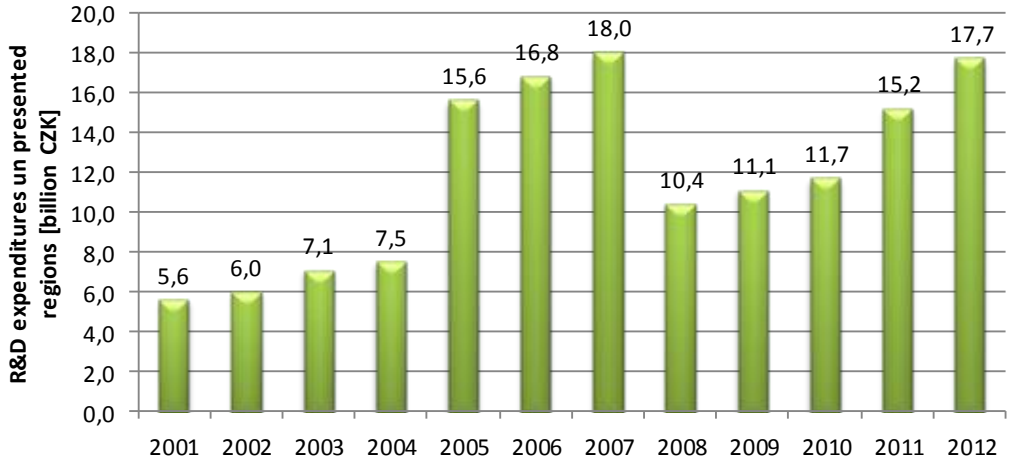
As the second indicator was used the number of R&D workers. The Czech Statistical Office provides data divided for this sector into three subsectors – private, public (government – universities) and private non-profit. The Czech Republic had at the beginning of the year 2012 in total 2578 workplaces in R&D (Czech Statistical Office, 2014). 938 of them is located in presented regions. Although the number of workplaces is increasing the growth is reduced during last few years. At these places were employed in the year 2012 10.010 workers. At the Graph 1, it is shown the increase of no. of R&D workers in the presented regions. The gap between years 2004 and 2005 in NUTS II Severovýchod is not caused with any establishment of STP. The main growth of the number of employees is in the education sector.



Graph 1 No. of employees in R&D in presented regions
Source: Own construction upon the Czech Statistical Office data.

There is a high number of graduating students in all of presented regions. In the 2012 it was 24.304 graduated. 83% of them graduated the one of the humane study programme. The lack of technic-educated students and workers is caused by the absented technical university and by the

low popularity of technical programmes among the young. It can cause future problems for the national industrial-oriented economy.



Graph 2 R&D expenditures in the presented regions
Source: Own construction upon the Czech Statistical Office data.

The last statistical indicator used in research, were the R&D expenditures in presented regions. In the year 2012 there was invested 17.679 million CZK. As shows the Graph 2, since the 2001 the expenditures were raising with a gap in the years 2004-2005. In the year 2008 there was a drop to almost a half caused by the world economic crises and following saving actions of the Czech government. Although since 2008 economy of the Czech Republic has been in recession, the R&D expenditures, as an investment into the long-term economic growth, increased. There is also the role of EU programs subsidies since 2011.

Except the statistical resources analyzes, there was also made a research of functioning of STP in praxis. The researches wanted to know basic information about the services provided STP in the regions. They were looking for the main aim of the STP and the information how it could help with starting the innovative entrepreneurship or company. There were analysed web pages of all STP, all available year reports and in case that other information were needed the contact persons in the parks were asked. The following Table 1 summarizes the results of the work.

The marketing of many STP is very weak. They do not provide information about their services and possibilities and do not seem to be am open society for new innovative companies and researchers. Although the research did not involve the satisfaction of the companies already existing in STP, there could be suggested to many parks to work on their promotion. The units that do not communicate with their surroundings does not fulfill the idea of creating new connections and sharing knowledge in regions.

Tab. 1 Overview of STP in the regions in North-West Czech Republic, Source: Own construction.

Name	Estab.	Function	No. of Comp.	No. of Empl.	Area (sqm)	Information provided by		
						Web	Report	Query
CRSV Liberec	14.2.2013	- new designs of machines and devices - tool, textile, jewelry and automotive industry	–	195	9 500	□/□	□/□	□/□
CTTV – INOTEX Dvůr Králové n. L.	1.7.1992	- textile technology - transfer of perspective technologies - consultancy in engineering and technical fields	8	48	6 050	□	□	□
TC Hradec Králové	1.7.2008	- IT technologies - university cooperation - consultancy for new companies - rent office - light production spaces	29	90	2 817	□/□	□/□	□/□
TechnoPark Pardubice	3.9.2008	- research - production of prototypes - realization of technologies	–	–	10 600	□	□	□
Argitec, Šumperk	1.6.1996	- research in agriculture, food and environment - consultant and advisory services	15	32	3 629	□	□	□
VTP UP, Olomouc	21.1.2002	- rent of office and production spaces - consultant services - using of machines and know-how UP	27	63	2 747	□	□/□	□
CITAI	3.11.2010	- providing services - specialization to IT technologies	–	–	–	□/□	□	□
Technologické inovační centrum Zlín	2.5.2005	- support of birth and development of innovative companies - invention of tools for support of innovative companies	22	115	5 527	□	□	□
Technologický park PROGRESS, Holešov	1.12.2012	- rent of production, laboratory and office spaces - IT services - financial advisory	–	200	5 958	□	□	□
Vědeckotechnický park při UTB, Zlín	1.3.2008	- support of innovative entrepreneurship - services od R&D specialists	7?	56?	5600?	□	□	□
BIC Ostrava	1.4.1994	- creation of environment for birth and development of innovative companies - transfer of technologies	40?	761?	23 531	□	□/□	□

Name	Estab.	Function	No. of Comp.	No. of Empl.	Area (sqm)	Information provided by		
						Web	Report	Query
Vědecko-technický park Ostrava	1.10.1997	- support od entrepreneurs focused to progressive technologies - support of innovative projects	22?	667?	100 000	□/□	□/□	□

□□□Information provided
□/□□Not all information provided
□□□No inormation provided
? Information from the Science and Technology Parks Association CR web site
− unavailable information

3 Conclusions

Research and development has very important role in creating new innovative knowledge, technological proceedings and products that are significant part of the stabile and sustainable regional development. STP are the important part of economies of many countries, despite the fact that many non-insiders cannot appreciate their assets. In the Czech Republic their role of mediator between research and production sectors is very important but not fulfilled yet. And the role would be even stronger according to new theories that consider relationship between universities, local government and local entrepreneurs as the main engine of the regional growth (triple helix).

Although this paper criticizes some STP for their marketing and openness, there are STP that are playing their role in the regional development very well. In previous researches were proved positive impacts of STP to regional growth despite the fact that in short- and mid-term view they can cause regional disparities (Suchánková, 2013). The presented regions have not followed the example of Southern Moravian region that was able establish the positive environment for sharing knowledge and spreading innovations. Among the reasons of different development in presented regions could be also the inconvenient structure of universities. The traditional light-industrial production is not supported (especially in North-East and Middle Moravia regions) by technical universities. Established STP are not linked to universities and are not able to provide services on a level expected by companies.

Acknowledgements

This article was made thanks to the support of the student grant competition no. SGSFES-2014002 IGA, University of Pardubice, Czech Republic.

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