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CONSTRUCTING REGIONAL ADVANTAGE: DOES IT MATTER FOR CZECH REGIONS?

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Abstract

Innovation and competitiveness are two concepts which govern the national and regional policies throughout the world. Innovation is the key driver of global economic competitiveness. Regions are considered a key level where innovation processes are shaped, coordinated and governed through localized capabilities. While until recently competitiveness of economies was developed from comparative or competitive advantages, in the era of knowledge economy the new theory of constructed advantage allows for more attention to the role and impact of the public sector and public-private partnership in the economy, based upon the dimensions related and unrelated variety and differentiated knowledge bases. The key to the constructed advantage is regional innovation systems approach. The introduction to the new theory is explained in the paper in the view of European collaborative research project and the first assessment of how policies for constructing regional advantage can work within the environment of specific regions of the Czech Republic is proposed.

Key words: regional innovation system, comparative, competitive and constructed advantage, related and unrelated varieties, differentiated knowledge bases.

JEL Classification: D38, O31, R11

1. Introduction

In current European policy debates regional economic development is a prime policy issue. It touches upon two of the major policy goals defined across the continent: cohesion and competitiveness. The main objective of the EU cohesion policy is to accelerate the process of reducing the gap between the poor and the rich regions of the EU (in other words to reduce economic, social and territorial disparities), to enhance employment and social inclusion (Molle, 2007).

The term of 'regional competitiveness' has gained a special status as main policy-defining framework, without any clear scientific definition of its nature and determinants. In the new global economy, competitiveness depends on ability to exploit to the full all resources of knowledge, skill and entrepreneurial creativity. Regions play a vital role in mobilization of these resources since they understand the strength and weaknesses of their local industry and can best identify the needs and opportunities. In this sense the regional competitiveness is understood as (Martin, 2004) "a regional economy's ability to optimise its indigenous assets in order to compete and prosper in national and global markets and to adapt to change in these markets".

Regional economic policy has gradually shifted since the 1960s. Focusing on regional competitiveness it becomes clear that it differs from both national competitiveness and competitiveness at the level of the firm. Instead of exogenous development policies, efforts are concentrated on the regional competitiveness, mainly through the valorisation of the

region's endogenous growth potentials. Thus, instruments shifted from direct business aid to business environment upgrading, from 'hard' infrastructures to 'soft infrastructures' (ESPON, 2006a).

Current economic theories offer several explanations for regional competitiveness. Each recognises that policies have to be adapted to the actual situation within each region. Key arguments are (ESPON, 2006b):

- The drivers for economic development and success are traditionally seen as economic diversity / specialisation, accessibility / connectivity and human capital.
- Regional innovation systems and clusters are a core aspect of more recent regional theories, which emphasise synergy, a creative milieu, innovation, systemic approach and quality of life and urban environment for attracting highly skilled labour.
- Governance-oriented theories focus on aspects such as vision, inclusion and implementation capabilities.

These factors point to conditions that influence a region's competitiveness. Each region or city will have a more or less unique combination of them, and can focus on its potential comparative advantages or competitive advantage in relation to other regions. However, in generating innovation, tacit knowledge, mutual confidence and trust between the actors involved are important. Camagni (2002) points to the fact that if a region displays a higher competitiveness on a longer term basis then it is most likely based upon absolute competitive advantages rather than comparative advantages.

The new approach to the development of endogenous capacity of the regions to innovate and capitalise on their strengths, to create wealth and jobs was proposed by the Expert Group on Constructing regional advantage chaired by Professor Phil Cooke and organised by European Commission's DG Research in 2004 to 2005 (EC, 2006). This approach can be described by the concept of creating a new competitive advantage in knowledge economy in a globalised world. "The theory of *constructed advantage* allows for more attention to the role and impact of the public sector in the economy. It also highlights policy support, preferably in public-private partnerships, by acknowledging to a greater extent the importance of institutional and economic complementarities in knowledge economies than do theories of *comparative* and *competitive advantage*."

The objective of the paper is to familiarize with the new concept of constructing regional advantage, which has further been developed and elaborated in the contemporary works of Cooke, Leydesdorff (2006), Asheim, Boschma, Cooke (2007), Boschma, Iammarino (2007) and others. The paper provides the partial analysis for the European collaborative research project in social sciences ECRP II titled "Constructing Regional Advantage: Towards State-of-the-Art Regional Innovation System Policies in Europe?"

2. Constructing regional advantage

Constructed advantage has lately appeared in the regional literature discussing how to achieve and promote regional competitiveness in the knowledge based economy. De La Mothe and Mallory (2004), Cooke and Leydesdorff (2006) devoted more attention to it in a comparison to other well-known forms of economic advantages – comparative and competitive ones.

Comparative advantage. Until the early 1980s, discussions about development economics were often embedded within a larger macro framework of comparative advantage. This idea, associated most often with David Ricardo and trade theory, essentially said that the trade and production profiles or performances of nations could be explained based on 'what they had'.

Thus, notions of value added and thus domestic productivity linked trade with the internal operations of a national economy. Even if one country was more efficient than another country in the production of all goods, Ricardo showed that it could still gain by specializing in those goods in which its relative efficiency was greatest. It was said to have a comparative advantage in such goods. According to the principle of comparative advantage, the gains from trade follow from allowing an economy to specialise (Fojtiková, 2007). A country does not have to be best at anything to gain from trade. The gains follow from specializing in those activities which, at world prices, the country is *relatively* better at, even though it may not have an absolute advantage in them.

Competitive advantage. In the mid-1970s, new approaches appeared in the economic models and frameworks that characterize pure comparative advantage of economies as the consequences of globalisation. Porter (1990, 1998) noted the *competitive* advantage of firms in which distributed supply chains and the role of large domestic markets became accepted. For Porter firms are not the sources of competitiveness. Instead, firms derive their competitive advantage from their home base environment, which is shaped by four determinants of national (or regional) advantage. Porter himself based his theory on so called Porter's diamond, according to which the competitive advantage is dependent upon the presence of four groups of factors in the region or a nation: factor conditions, related and supporting industries, demand conditions and strategy structure, and rivalry. Porter developed the idea of industry clusters as a building block for economic development based on the *external economies* created by interacting businesses in competing and collaborating supply chains.

These ideas were carried forward by others leading to the notion of innovation systems, involving a large list of networking partners including universities, research laboratories, government agencies and firms. The literature on 'regional systems of innovation' has grown rapidly since the middle of the nineties (Maskell, Malmberg, 1997). Some of the crucial ideas inherent in the innovation system concept on (vertical interaction and innovation as an interactive process) appear in Porter's industrial clusters as well as in Triple Helix-concept (Etzkowitz, Leydesdorff, 2000) based on interactions between business, universities and governments forming a knowledge-based economy and society. This idea has now been further refined into the notion of *constructed advantage* (Cooke, Leydesdorff, 2006).

Constructed advantage. The analytic observations of the two preceding perspectives do not embrace the new dynamics of innovation and the capacity to exploit them which are essential to growth. The 'new competitive advantage' highlights regional development economics, the dynamic of which draws upon *constructed advantage*. (Best, 2001). This knowledge-based construction requires interfacing developments in various directions (Cooke, Leydesdorff, 2005):

- *Economy* – regionalization of economic development; 'open systems' inter-firm interactions; integration of knowledge generation and commercialization; smart infrastructures; strong local and global business networks.
- *Governance* – multi-level governance of associational and stakeholder interests; strong policy-support for innovators; enhanced budgets for research; vision-led policy leadership; global positioning of local assets.
- *Knowledge Infrastructure* – universities, public sector research, mediating agencies, professional consultancy, etc. have to be actively involved as structural puzzle-solving capacities.
- *Community and culture* – cosmopolitanism; sustainability; talented human capital; creative cultural environments; social tolerance. This public factor provides a

background for the dynamics in a Triple Helix of university-industry-government relations (Etzkowitz, Leydesdorff 2000).

By the theory of *constructed advantage* instead of market failure, the rationale for policy intervention is the reduction of interaction or connectivity deficits. A regional innovation systems approach, which is key to *constructed advantage*, sees such deficits as the core problem of innovation in the EU. *Regional advantage* may be consciously and pro-actively *constructed*. This involves a new and more dynamic role for the public sector, for example universities, and the wider economic governance system, specifically in interaction with the private sector.”

3. Content of policies for constructing regional advantage

A focus on *constructing regional advantage* requires an ‘unpacking’ of key elements of the regional economic and governance mosaic (Asheim et al., 2007). The key notions are *related variety*, *differentiated knowledge bases* and *distributed knowledge networks*.

Related variety is defined as a diversity of firms and sectors in a region that complement each other. They are related in terms of shared or complementary competences. In other words, there is some degree of cognitive proximity required to ensure that effective communication and interactive learning take place, though not too extreme, in order to avoid cognitive lock-in. This is expected to have a positive effect on regional development, because knowledge is likely to spill over and create novelty between complementary firms and sectors. The relevance of related variety is also shown in old sectors giving birth to new sectors. When new sectors are rooted in related sectors, their survival is likely to increase.

Secondly, differentiating between *industrial knowledge bases* represents another dimension of such an ‘unpacking’ strategy (Asheim et al., 2007). The innovation process of firms and industries is strongly shaped by their specific knowledge base and they distinguish between three types of knowledge base: ‘analytical’, ‘synthetic’ and ‘symbolic’. These types indicate different mixes of tacit and codified knowledge, codification possibilities and limits, qualifications and skills required by organisations and institutions involved, as well as specific innovation challenges and pressures. The key features of the three knowledge bases are given in Table 1.

Table 1: Industrial knowledge bases

Analytical (science based)	Synthetic (engineering based)	Symbolic (artistic based)
Developing new knowledge about natural systems by applying scientific laws; <i>know why</i>	Applying or combining (in novel ways) existing knowledge; <i>know how</i>	Creating meaning, aesthetic qualities, affect; <i>know who</i> critical
Scientific knowledge, models, deductive	Problem-solving, inductive, custom production	Creative process
Collaboration within and between research units	Interactive learning with customers and suppliers	Learning-by-doing in studio, project teams
Strong codified knowledge content, highly abstract,	Partially codified knowledge, strong tacitness,	Strong semiotic knowledge content, some forms highly context-specific
Drug development	Mechanical engineering	Advertising

Source: Asheim, Boschma, Cooke (2007)

When we assign the specific knowledge basis to the specific industry in the region we can describe the region from the point of view of these bases. The idea of this approach is to

characterise the nature of specific knowledge necessary to innovation activities in the region and to find the means for their development. As knowledge becomes an increasingly important part of innovation, the university and other research institutes as knowledge-producing and disseminating institutions play a larger role in industrial innovation.

Distributed knowledge bases as the third component of the new theory manifest the fact that knowledge is acquired by collaborating with external firms through cooperation in R&D, outsourcing it in research institutes and universities etc. This means there is a shift from internal knowledge in the firm to external and with the multinational firms present in the region to globally distributed knowledge network.

Finally there is the *platform concept* which has so far been used mostly either to describe generic technologies such as software and biotechnology, that have potential applications across a wide range of industries, or modular developments in automotives, where a limited number of platforms can be used to build a large variety of car models (Asheim, Boschma, Cooke, 2007). The new understanding is that platforms are to provide a framework for stakeholders, led by industry, to define research and development priorities, timeframes and action plans on a number of strategically important issues where achieving Europe's future growth, competitiveness and sustainability objectives is dependent upon major research and technological advances in the medium to long term. A platform approach rather than a sectoral one might generate a context better equipped to exploit multipurpose and generic technologies (EC, 2006).

Regional innovation policy has typically been derived from sectoral or more recently cluster basis which seems to be inappropriate for future developments in knowledge based environment. Approach of constructed advantage offers deeper interaction of public and private economic forces than predominantly private ones as it was emphasised in comparative or competitive advantage. The new platform policy represents a strategy based on related variety, which is defined on the basis of shared and complementary knowledge bases and competences (Asheim, Boschma, Cooke, 2007).

4. Constructing regional advantage for Czech regions

Regional policy in the Czech Republic until the early nineties was associated only with massive redistribution and reallocation of resources. Since 2000, the Czech Republic is divided into thirteen regions and the Capital City of Prague. Each region has its own elected Regional Assembly and governor (translated as hetman or "president"). In Prague, their powers are executed by the city council and the mayor of Prague. According to EU NUTS Classification the regions and Prague correspond to the NUTS 3 level and they are 14 in total. The development in the last fifteen years has caused the huge regional disparities mostly between the capital city of Prague and other regions so we can see a strong dichotomy between Prague and the rest of the territory of the Czech Republic. The clear dominance in economic maturity of the regional structure is represented by the Prague region, which is considerably above the EU25 average (GDP/per capita) with the value 145.9% (2005). Further Czech regions NUTS 3 fluctuate between 55.3-68.3% of the EU 25 average. In this regard there is an economic balance in the regional structure on the remaining part of Czech state.

Due to the EU admission of the Czech Republic in 2004 the new tendencies have appeared also in the Czech regional policy driven more by own regional initiatives than by concentrated governmental focus. The preliminary analysis in next paragraphs indicates how the regional advantage can be constructed in the Czech regions based on assessment of Triple Helix

concept being implemented in the regions and regional innovation strategies. The preliminary results of Triple Helix components are given in Table 2.

Table 2: Triple Helix indicators in Czech regions

Triple Helix Region NUTS 3	Governance		Academia	Industry		
	Program or Strategy	Regional Innovation Strategy	HEI	Dominant industry	Industry Clusters	GERD % (2005)
Jihočeský	Programme	+	+	construction, foods, automotive	2	0,99
Jihomoravský	Strategy	++	++++	services, R&D, construction, machinery	7	1,54
Karlovarský	Programme	+	-	Coal, glass, ceramics, spas- tourism	1	0,11
Královéhradecký	Strategy	-	+	automotive, metal processing	3	0,82
Liberecký	Strategy	-	++	automotive, glass, toys, furniture	2	1,12
Moravskoslezský	Programme	+	+++	metal processing, mining, automotive	6	0,73
Olomoucký	Programme	-	+	foods, machinery, agriculture, textile,	2	0,95
Pardubický	Programme	++	++	machinery, electrical, chemistry	3	1,35
Plzeňský	Programme	++	++	construction, foods, machinery, electrical	2	0,74
Praha	Strategy	++	+++++	services, R&D, finance, wholesale, tourism	-	2,22
Středočeský	Programme	-	-	automotive, R&D, construction	1	2,76
Ústecký	Strategy	+	+	coal mining, electricity, chemistry	-	0,30
Vysočina	Programme	-	(+)	automotive, agriculture, rural	2	0,57
Zlínský	Programme	+	++	plastics, rubber, machinery	3	1,14

Source: Czech Statistical Office, CzechInvest, own processing

From the point of view of governance the level of strategic planning and regional innovation strategy RIS is assessed, the higher level and detailed elaboration of RIS is marked (++) . The presence of universities in the region is another feature taken into account which can contribute to constructing the regional advantage based on knowledge flows and databases. The presence of technical university is marked (++) , more universities in the region (+++). For description of industries there were used at least three dominant regional industries, the number of established clusters and the expenditures for research and development (GERD). In self-governing regions the regional developments strategies or programmes were developed accompanied by Regional Innovation Strategies in most regions. All of them except one

(Ústecký region) comprise the special measures to regional clusters development, as is shown in the table. The development of innovation clusters and their support are in focus of all regional authorities, even though they are still at their initiation stage in some regions. However the ultimate objective is to organise truly innovative clusters capable to engage in long-term cooperation with the research establishments and universities and to reach world competitiveness.

Based upon the analysis of specific regions we can formulate the hypothesis about knowledge bases in regions which is summarised in Table 3. It is based upon prevailing industries, regional systems of innovation, knowledge flows and systems of governance in the regions.

Table 3: Czech regions for constructing regional advantage

Regions NUTS 3	Type of knowledge base		
	<i>Analytical</i>	<i>Synthetic</i>	<i>Symbolic</i>
Related variety	Praha Středočeský Jihomoravský	Praha Středočeský	Praha
Unrelated variety ???		Jihočeský Karlovarský Královéhradecký Liberecký Olomoucký Pardubický Plzeňský Vysočina Zlínský	
Specialisation		Moravskoslezský Ústecký	

This hypothesis can be proved or rejected in more detailed research of regional industries. However the identification of knowledge bases in the region is an effective tool for support of innovation processes within regional systems of innovation which can contribute to constructed advantage of the region.

4. Conclusions

Constructing regional advantage is a new theoretical concept with a high impact upon regional policies in nations which development is strongly affected by the processes of knowledge based economy. The key notions of related variety and differentiated knowledge bases enable to understand the knowledge flows between industries in the innovation processes. Also in Czech regions we can observe the shift to new endogenous regional policy based on innovation and knowledge and the application of constructed advantage principles will deserve more attention in further regional research.

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