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9. Measurement Approaches of the Competitiveness of the Hungarian "City-Region" by International Attempts

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In recent decades, thanks to the strengthening of globalization the economic and social procedures have been transforming. The local economic development theories came to the front pointing to the fact that city-regions have decisive role in the increase of competitiveness. Therefore, numerous researchers aim to elaborate such analysis methods by which the competitiveness of a certain territorial unit can be measured. In this way they can facilitate and raise the competitiveness of territorial units by the elaboration of strategic steps based on their competitive advantages.

This study[1] *investigates those methodological approaches by which the competitiveness of city-regions can be determined. The competitiveness of city-regions can be measured by different indicators. In this study, we will overview six internationally recognized index systems with benchmarking method. Then we will try to adapt and evaluate them for Hungarian circumstances.*

Keywords: "city-region", urban development, competitiveness, measurement approaches

1. Introduction

In recent decades, thanks to the strengthening of globalization the economic and social procedures have been transforming. The strongest process in the transitional economy is the local level coming to the front. The local economic development theories have came to the front pointing to the fact that cities and city-regions have decisive role in the increase of competitiveness.

The OECD and European Commission have adopted the following approach to defining city regions (EC 2011): (1) a city consists of one or more municipalities, (2) at least half of the city residents live in an urban centre, (3) an urban centre has at least 50,000 inhabitants, it consists of a high-density cluster of contiguous grid cells of 1km^2 with a density of at least 1,500 inhabitants per km^2 as well as filled gaps, (4) if 15% of employed people living in one city work in another city, these cities are combined into a single destination, (5) all municipalities with at least 15% of their employed residents working in a city are identified, (6) municipalities sharing at least 50% of their border with the functional area are included.

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Using the latest definition of OECD-EC once all cities have been set, a commuting zone can be determined based on commuting patterns using the following steps (Dijsktra – Poelman 2012): (1) if 15% of employed people living in one city work in another city, these cities are handled as a single city, (2) all municipalities with at least 15% of their employed residents working in a city are referred, (3)municipalities surrounded by a single functional area are included and non-contiguous municipalities are dropped.

Seeing the similarities between the definitions we conclude that the larger urban zone consists of the city and its commuting zone.

The differences between the state of economic development of city-regions in terms of welfare and living standards are well known. The population and economic position of some cities are increasing in the context of global competition while other cities are suffering from economic decline. Therefore, one of the most important research fields in the frame of regional studies is the elaboration of such analytical methods by which the competitiveness performance of city-regions can be measured and compared. That is why in recent years several decision-makers and analysts have tried to develop such indices, which join the outstanding indicators as a comprehensive measurement. These indicators could quantify the performance of the given territory, facilitating as well as raising their closing up and competitiveness by elaboration of strategic steps based on the competitive advantages of the given territory.

This study analyses those methodological approaches through which the competitiveness of city-regions can be determined. We have overviewed six internationally recognized index systems with benchmarking method paying special attention to those indicators, which are crucial for determination of the overall competitiveness of the given city-region. Then we have tried to adapt and evaluate them for Hungarian circumstances. We are investigating those drivers such as population, productivity, employment, unemployment, qualification, connectivity and innovation. To sum up we will underpin with some remarks the usefulness and role of the measurement of competitiveness.

2. Measurement approaches of the aompetitiveness of city regions

In this chapter, those methodological approaches are examined by which the competitiveness of city regions can be determined. Using the most significant international index systems special attention is devoted to the indicators which vitally determine the whole competitiveness of the given city region. Despite the relative popularity of the term, there is,

surprisingly, a lack of consensus about what is meant by the competitiveness of regions and cities.

According to Parkinson and his co-authors (2003, p. 19.) follows Michael Storper's (1997) definition that, urban competitiveness can be determined as "*the ability of an economy to attract and maintain firms with stable or rising market shares in an activity, while maintaining stable or increasing standards of living for those who participate in it. The competitiveness of cities is not just about the income of firms but also about how that income goes to residents. And competitiveness is different from competition. Competition can be a zero-sum game, in which if one city wins another loses. By contrast cities can all increase their competitiveness at the same time, so that all cities and the national economy can simultaneously grow and benefit*".

They explore and assess ten potential characteristics of a competitive city as follows: *strategic transport and connectivity, a city centre of European distinctiveness, facilities for events, development and innovation, effective governance, cultural infrastructure, high quality residential choices, environmental responsibility, diverse society, and highly skilled workforce.*

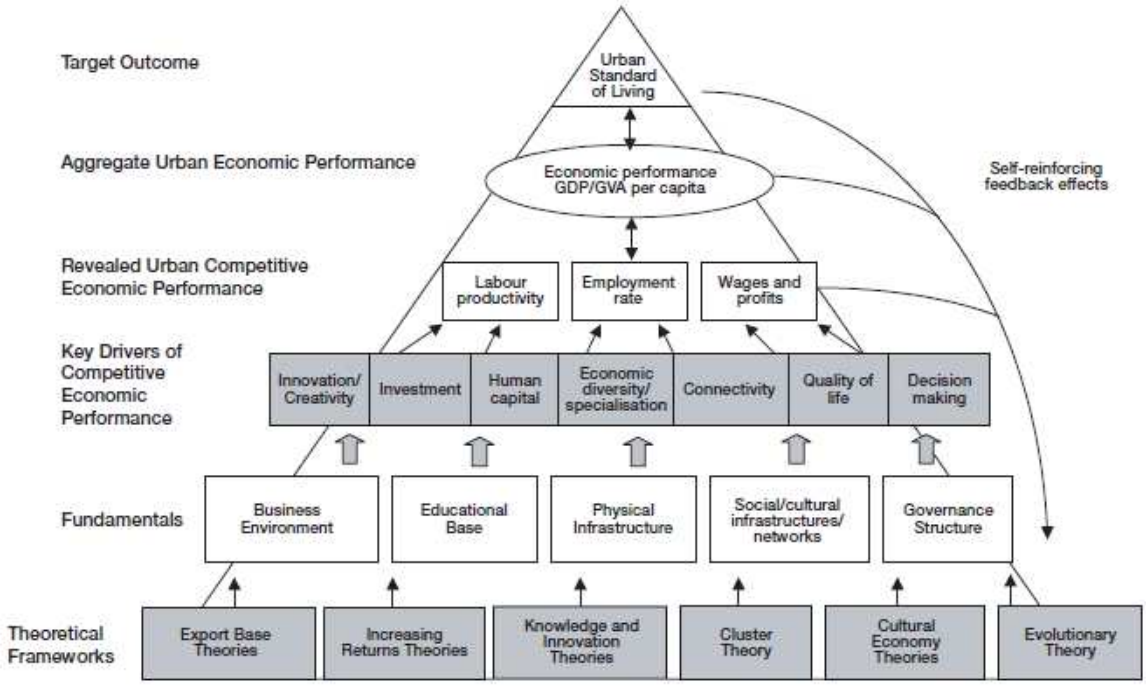
According to the bibliography a couple of methods have been elaborated for measuring the competitiveness of city-regions (Gardiner et al. 2004, Lengyel 2004, Lukovics 2008). Experts say that the best model is Lengyel's (2000, 2004) pyramid model that reclines the development of the regions using the experiences of successful regions.

In the field of regional science many known researchers have taken and have built on the logics of the model (Berumen 2008, Gardiner et al. 2004, Resch 2008, Snieska − Bruneckiené 2009).

Using the logic of the pyramid model and taking in consideration the characteristics of the cities, Parkinson (2006) has analyzed the competitiveness of the cities in the United Kingdom (Figure 1).

Porter also underlines that wealth is created at the microeconomic level and it is in the ability of firms to create goods and services using productive methods. The sound fiscal system, the good monetary policy, an efficient legal system can help greatly in creating wealth but they do not create wealth in themselves (Porter 2004).

Figure 1 Conceptualising urban competitive performance



Source: Parkinson (2006, p. 67.)

Global Urban Competitiveness Report has been launching since 2004. Those are empirical studies of the competitiveness of 500 cities around the world. It ranks cities in the given countries by their size and economic significance. The report is useful by itself but especially for the decision-makers who are leading cities over the world as it can show direction in the field of strategic economic planning and realization. The data have been collected by the assistance of UN, World Bank, IMF, OECD as well as national statistical offices. The need for having comparative data was given while indices had to be restricted to nine areas, which are related to GDP, prices, growth, patents and employment. A theoretical analysis has been made in the frame of GUCR (2010) which looks at drivers such as *population, productivity, employment, qualifications and certain other social indices.*

Urban Audit is a joint effort by the Directorate-General for Regional Policy and Eurostat to provide reliable and comparative information on selected urban areas in Member States of the European Union and the Candidate Countries. In the mid-nineties, the need for comparable information on European Agglomerations was formulated which led to the implementation of the so-called Urban Audit Pilot Phase, targeted to measure the quality of life in towns and cities through the use of a simple set of urban indicators and a common methodology, in May 1998. Urban Audit includes very wide range fields of competitiveness

indicators such as *demography, social aspects, economic aspects, civic involvement, training and education, environment, travel and transport, information society, culture* and *recreation, perception indicators*.

The OECD (2006) report studies the 78 largest metro-regions with more than 1.5 million inhabitants and more. According to OECD successful cities attract talented young well-skilled workers, are centres of innovation and entrepreneurship and are competitive locations for global and regional headquarters. The proximity of universities to research and production facilities mean that cities are where new products are developed and commercialised.

Simmie and Carpenter (2008) argue that a combination of evolutionary economic and endogenous growth theory provides a convincing explanation for the judgement of city-region competitiveness. Evolutionary economic theory identifies the adaptive and innovative capacity of urban and regional economies. Endogenous growth theory focuses in particular on the elements needed to adapt in such an economy. These include investment in human capital and the innovative milieu.

Since 2001 the Beacon Hill Institute publishes yearly its report that examines the competitiveness of 50 states of the United States and 48 metropolitan regions, with given indicators (BHI 2011). The BHI competitiveness index is ground for a set of 44 indicators divided into eight sub-indexes as the follows: "*governmental and fiscal policy, security, infrastructure, human resources, technology, business incubation, openness and environmental policy*" (BHI 2011, p. 8-9.). As a result we can see an order of rank between these states and metropolitan regions, based on the competitiveness of the indexes.

In Table 1 we compare the internationally acknowledged competitiveness index systems, which were presented formerly, and we also sign those indicators which appear in the given index systems. In this way, we can see which are the indices most frequently appeared, assuming that those can express the competitiveness of city regions supremely. Most of the indicators and indicator-groups presented in Table 3 could be used in Hungarian circumstances as well.

In the last years there have been numerous attempts for measuring and comparing the performance of the competitiveness of city-regions. "*Efforts have increasingly focused on the development of composite indices, which combine relevant indicators into one overarching measure. Such indices and rankings attract widespread attention in the media and could be regarded as a potentially useful means of helping firms, policy-makers and institutions to*

assess the performance of their economies in comparable (i.e. numerical) terms, and to undertake appropriate remedial strategies" (Berger 2011, p. 17.).

Table 1 Occurrence of competitiveness indices in different sources

Index Denomination	BHI (2011)	OECD (2006)	GUCR (2010)	Simmie – Carpenter (2008)	Parkinson (2003)	Urban audit (2004)
Governmental and Fiscal Indices						
GDP (total, per capita, per km^2)	+	+	+	+	+	+
Increase of productivity	+	+	+	+	+	+
Safety						
Number of crimes per 100.000 inhabitants	+	+	+			+
Infrastructure						
Number of air passengers per inhabitants	+		+		+	+
Transport, connections, average commuting time, tourism	+				+	+
Households, average rental of a flat/office	+		+			+
Human Resource						
Rate of population growth, gender balance	+	+	+			+
Proportion of ISCED 5-6 degree in the population above 25 years old (%)	+		+	+	+	+
Unemployment rate (%)	+	+	+	+	+	+
Number of students in higher education per 1000 inhabitants	+				+	+
Postnatal mortality per 1000 births, life expectancy	+		+			+
Technology						
Innovation, number of patents per 100.000 inhabitants	+	+	+	+	+	
Business Incubation						
Number of firm establishment per 100.000 inhabitants, bankrupts	+	+			+	+
Openness						
Per capita domestic/foreign direct investment (R&D)	+		+	+	+	
Nationalities, proportion of population born abroad (%)	+	+	+			+
Environmental Policy						
Waste management, energy use, emission of greenhouse gases (million ton carbon equivalent/1000 km^2)	+		+		+	+

Source: author's own construction

According to Gordon (2011, p. 36.) "*one factor in the eventual rise of territorial competition here seems to have been recognition that within a Single European Market where urban services became freely tradable urban competitiveness became a matter of national*

economic interest". Within Hungarian circumstances, GUC and Urban Audit systems could be used perhaps in the most appropriate way. They contain almost all indicators appearing in other examined methods as well as apply special indices to express the territorial uniqueness. The other methods are used for states or special regions which could not be easily adapted to Hungarian conditions.

3. Settlement particularities in Hungary

In this chapter we present that taking in consideration the special space structure of Hungary, which are those areas that could be defined as "city-regions", based on the internationally accepted terms. After we try to adapt to these settlement groups the competitiveness indicators, taken from the internationally recognized methods.

After the World War I. the geographical realignment caused by the Trianon Peace Treaty as well as significant changes in farming systems during the twentieth century were affecting the network of Hungarian settlements. Some settlements were developing towards while others were stagnating. Some areas have been remaining without towns. Therefore, neither core cities nor larger urban zones exist in most of the territory of Hungary unlike in Western Europe or in the United States. Budapest is approximately ten times bigger than the average size of the 23 municipal towns. Besides those, there are more than 200 middle-sized and some hundreds of small towns and settlements, altogether 3154 in Hungary. In total, 328 settlements have the legal status of a town and 2826 have that of a village. Together 1097 settlements (34.8%) have less than 5000 while 675 (21.4%) have less than 1000 inhabitants. In Hungarian circumstances, those settlements can be considered as cities whose population exceed the 50 thousand people (HCSO 2012).

Table 2 represents the distribution of Hungarian cities from the viewpoint of their population size. As it can be seen there are only ten cities in Hungary which have more than 50.000 inhabitants, this is the 29% of the total population. If we add the inhabitants of the commuting zones to the cities it results 49% in total. That is 21% less than the EU average.

The current demarcation of urban settlement-groups was realized by the Hungarian Central Statistical Office in August 2003 (Figure 2). According to that, there are 21 urban settlement- groups in the area of the country. The urban settlement groups can be ranged into three types: agglomerations, agglomerating areas and settlement groups. These denominations refer to the degree of interconnections among the settlements involved.

Table 2 The distribution of Hungarian cities in terms of their size

	S (50.000-100.000)	M (100.000-250.000)	L (250.000-500.000)	XL (500.000-1.000.000)	XXL (1.000.000-5.000.000)	Global city (5000.000-…)	All cities	Commuting zone	Larger urban zone
	Number of cities according to the size of their urban centre								
	Cities by urban centre size in population								
Hungary	5	4	0	0	1	0			
EU	410	261	71	38	24	2			
	Share of population per country per city size and commuting zone, 2006								
Hungary	5,3	6,9	0	0	16,8	0	29	20	49
EU	7,6	9,4	5,1	5,7	9,6	2,8	40	22	62

Source: author's own construction based on Dijsktra – Poelman (2012)

The cities of Hungary are incorporated in agglomerations, agglomerating areas and settlement groups. There are 4 agglomerations, 4 agglomerating areas and 13 settlement groups. Hungarian Central Statistical Office gathers different kinds of territorial indicators in reference to these urban micro-regions in each year. The most relevant and internationally recognized competitiveness indicators have been selected.

Figure 2 Agglomerations, Agglomerating regions and Settlement-groups in Hungary

Source: www.ksh.hu

Table 3 represents the data compiled from the latest regional statistical information of Hungarian Central Statistical Office. In the database, there are much more indices which, due to their high number, could not be shown totally in the frame of present study.

Table 3 Selected competitiveness indicators of Hungarian urban micro-regions in 2011

Denomination	Natural increase or decrease per thousand inhabitants	Rate of job-seekers registered over 180 days	Number of tax-payers per 1000 inhabitants, 2006	Dwellings built per ten thousand inhabitants	Higher educational institutions students	Discovered publicly indicted crimes	Registered corporations and unincorporated enterprises	Catering units per ten thousand inhabitants	tourism nights	Passenger cars
		in population of working age, %			per thousand inhabitants	number	per thousand inhabitants		thousand	per thousand inhabitants
AGGLOMERATIONS										
Budapest Centre	-3,4	2,1	433	18	80	6 194	220	62	191 122	326
Budapest agglomeration, total	-2,3	2,1	436	23	60	5 336	198	56	239 896	337
Győr agglomeration, total	-2,0	1,7	492	11	71	5 333	160	56	12 565	315
Miskolc agglomeration, total	-4,5	5,7	425	5	58	4 400	129	56	28 058	264
Pécs agglomeration, total	-3,6	3,7	435	16	115	4 788	164	55	38 080	301
AGGLOMERATING AREAS										
Balaton Agglomerating area, total	-5,5	2,4	470	33	8	8 472	245	219	1 177 277	386
Eger Agglomerating area, total	-2,7	4,2	476	12	97	5 444	192	79	90 420	307
Szombathely Agglomerating area, total	-4,7	1,7	495	12	30	4 080	154	53	17 343	340
Zalaegerszeg Agglomerating area, total	-3,8	2,3	501	9	13	5 158	169	65	11 446	324
SETTLEMENT-GROUPS OF LARGE TOWNS										
Békéscsaba Settlement-group, total	-6,1	5,2	438	10	11	3 008	160	82	39 229	284
Debrecen Settlement-group, total	-1,5	5,1	447	11	112	9 471	167	52	18 478	290
Kaposvár Settlement-group, total	-3,5	4,4	451	4	34	4 800	167	57	3 670	317
Kecskemét Settlement-group, total	-1,8	3,6	454	20	29	4 675	170	59	4 298	335
Nyíregyháza Settlement-group, total	-1,1	4,8	464	18	60	4 709	197	71	6 307	309
Salgótarján Settlement-group, total	-9,6	9,2	420	3	5	5 300	112	61	5 124	277
Sopron Settlement-group, total	-1,7	0,6	452	26	47	2 701	141	63	35 054	364
Szeged Settlement-group, total	-2,3	2,7	445	19	114	6 763	164	61	31 426	279
Szekszárd Settlement-group, total	-3,5	3,5	459	6	17	4 698	174	53	6 797	345
Székesfehérvár Settlement-group, total	-2,2	3,1	496	9	16	9 496	167	50	3 054	341
Szolnok Settlement-group, total	-3,8	4,4	469	7	24	5 474	144	57	3 071	276
Tatabánya Settlement-group, total	-3,9	2,4	465	7	5	4 311	135	46	18 521	305
Veszprém Settlement-group, total	-1,0	2,3	512	19	83	4 433	154	56	4 423	305
Settlement-groups, total	-2,8	2,9	448	18	58	5 502	181	62	1 794 537	323
National total	-4,1	4,1	436	13	32	4 524	165	56	3 264 140	298

Source: author's own construction based on HCSO (2012)

That is why I have chosen those indicators which are the most suitable to characterize the competitiveness of Hungarian urban micro-regions. In the meantime, the indicators in Table 3 are also presented in Table 1 in some form. However, the internationally recognized indicators cannot always be appeared in the same form in the Hungarian regional statistical system. In these cases, I tried to find the most similar as well as the most appropriate index. For instance, several indicators present unemployment rate in Hungarian system. I chose the

rate of job-seekers registered over 180 days which is one of the most characteristic unemployment indices.

Lengyel and Szakálné Kanó (2012) determine four types of Hungarian micro-regions in terms of their specific developmental phases such as Budapest and micro-regions around it, manufacturing micro-regions, university towns and stagnated urban micro-regions. The Budapest Metropolitan Region is the economically most advanced area of the country, offering wide range of urbanization advantages. Since the change of the political system, the capital city managed to keep its leading position in the economic development and modernisation of the country in most respects (Kovács et al. 2011, Lengyel – Szakálné Kanó 2012). The suburban area around Budapest has received people moving out of the city. The weight of Budapest is disproportionately large in terms of the number of firms, as well as regarding the number of employees and the revenues generated by enterprises. It must be emphasized that following the turn of the millennium the weight of Budapest steadily increased.

Although, according to the classification of Lengyel and Szakálné Kanó (2012) the manufacturing micro-regions have significant FDI and export performance as well as it can be characterized by high employment but the labour productivity is quite low and foreign-owned companies do not provide a broad supply base. University towns have excellent human capital but they have not any remarkable export-oriented enterprise. The least competitive stagnated urban micro-regions are surrounded by rural settlements in most of the cases having low-level economic performance thus being quite vulnerable (Lengyel – Szakálné Kanó 2012).

4. Conclusion

The growing significance of city-regions originates in an ongoing process of globalization, which puts considerable pressures on national economies and local political - administrative systems to improve their position in a highly competitive international context. Under the globalization and localization, the development of economy and technology has not only enhanced the roles of cities in global activities and local affairs, but also intensified competition among cities. In the context of global competition, some cities are increasing in population and economic position, while some cities are suffering economic decline.

The competitiveness and development of city regions have been analysed from different scientific perspectives, in order to give an answer to the following questions: How does one city region create more economic activity and hence more income for its citizens than others?

What special characteristics or attributes lead to generating this higher income? What standard should be employed to determine whether a city region is competitive or not? Indeed why is it even interesting to measure competitiveness? How does economic competitiveness differ from intercity competition for workers, firms and capital? These kinds of issues are arisen when one tries to find the answer to the question how could urban competitiveness be measured?

A city region can be considered to be competitive if it has in place the policies and conditions that ensure and sustain a high level of per capita income and its continued growth. To achieve this, a city region should be able equally to attract and incubate new businesses and provide an environment that is conducive to the growth of existing firms.

Taking into account some internationally recognized index systems as well as by selected competitiveness indicators from Hungarian regional statistical system, we can measure the competitiveness of urban micro-regions.

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