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THE COMPETITIVENESS INDEX OF CZECH REGIONS

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Abstract

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This paper deals with the competitiveness of regions and its possible measuring using composite indicators. Advantages of a composite index are that it summarizes more dimensions of competitiveness and the results can be comprehensibly interpreted for the public. The aims of this paper are to evaluate and compare the competitiveness of Czech regions based on the 3-Factor model. The evaluation is performed using a composite index which includes 14 partial indicators. These indicators are divided into three groups – input factors, output factors and outcome factors. Individual regions of the Czech Republic are thus first compared based on the factors and then based on the total score. The total score expresses the regional competitiveness in relation to the competitiveness of the Czech Republic as a whole. The main year evaluated is the year 2012. We also compared the results to the year 2008. The most competitive region is Prague (it does not do well in output factors only), but also the South Moravian, Central Bohemia and Pilsen regions are highly competitive. The least competitive regions are the Ústí, Karlovy Vary and Vysočina regions.

Keywords: competitiveness, composite indicator, Czech Republic, regional development, disparities, NUTS 3 regions

INTRODUCTION

Regional competitiveness is a topic that has been in the focus of regional economics only recently. Before, there were discussions on company competitiveness; also for this reason, regional economics first used the position of a company as an agent of regional economics (microeconomic approach to competitiveness). The subsequent approaches are based on the idea that the company concept cannot be simply applied to regional economies as regions do not struggle for economic prosperity only. The macroeconomic view of competitiveness reflects the fact that not only the ability of production factors to produce products and services efficiently but also the growth of the inhabitants' standard of living and the sustainability principle need to be considered. Defenders of the macroeconomic view express the opinion that the development of one region should not occur in expense of another region (Tvrdoň, Šuranová, 2007).

However, there is no agreement as to what exactly the term regional competitiveness means and whether and how regions compete with each other. Various theories and approaches offer different interpretations and emphasize different key processes and factors (Martin, 2005). Therefore, some authors prefer the term "competitive advantage" to the term "competitiveness" (Porter, 1998). The term competitiveness for countries or regions is also refused by Krugman, who argues that countries or regions do not compete at the market like companies and that regions and countries do not face the same consequences of failure as companies (Krugman, 1996). Still, most authors do not condemn the term and they agree that competitiveness of regions needs to be perceived in a different way than competitiveness of companies (the aforementioned macroeconomic approach). Huggins sees competitiveness as the ability of an economy to attract and retain companies with a stable or growing market share while maintaining or increasing the standard of living of its inhabitants

(Huggins, 2003). Competitiveness can also be understood as a relative term. In this case, not the absolute performance but how well the country (region) does in comparison with the others is important (e.g. Fagerberg, Srholec, Knell, 2007).

Competitiveness has been devoted a lot of attention by theoreticians and researchers as well as international associations and organizations, such as the European Union and OECD. The European Union states that "*an economy is competitive if its population can enjoy high and rising standards of living and high employment on a sustainable basis. More precisely, the level of economic activity should not cause an unsustainable external balance of the economy nor should it compromise the welfare of future generations*" (European Commission, 2000). The European Union first defined competitiveness at the regional level in the Sixth Periodical Report on the Regions (European Commission, 1999) as "*the ability to produce goods and services which meet the test of international markets, while at the same time maintaining high and sustainable levels of income*" or more generally as "*the ability of companies, industries, regions, nations and supra-national regions to generate, while being exposed to international competition, relatively high income and employment levels*". This approach to competitiveness emphasizes its two dimensions – productivity and employment rate.

The World Economic Forum defines competitiveness as *"the set of institutions, policies and factors that determine the level of productivity of a country"*. The prosperity achieved by a country depends on its productivity. It means that more competitive economies achieve a higher level of inhabitants' incomes. The level of prosperity determines the return on investments and the return affects the economic growth. I.e., more competitive countries achieve a higher growth in the medium and long term (Schwab, Sala-i-Martín, 2013).

Having defined competitiveness, the key question of how to measure it remains. The most frequent indicators used for the assessment of regions and their competitiveness include regional gross domestic product expressed in various forms (e.g. Blížkovský, 2012), most often per head. This indicator has a number of advantages; however, it may not provide sufficient information about the maturity of the region in the economic and social areas, e.g. about the quality of life (Horká, 2013b; Barna, 2007; Jindrová, 2013; Kožiak *et al*., 2012). Moreover, a competitive advantage can be understood as an outcome of multidimensional cooperation of market and social forces (Viturka, 2010). Therefore, summarizing indicators or indices are often used for the evaluation of differences between regions. Summarizing indicators contain the essential and typical features of individual components of regional development. They grasp the issue researched in its complex and with its associated relations. These indicators can serve as an information system reflecting the extent of the region's development, its ability to use means flowing into the region or those created in the region (Svatošová, 2004).

At the regional level, composite indicators mainly evaluate features such as regional competitiveness, innovative performance, knowledge-based economy or economic maturity. In most cases, a composite indicator is formed out of several indicators as the weighted sum of their values which are normalized to be mutually comparable (Horká, 2013a). In other words, a composite indicator can be defined as an aggregated index consisting of individual indicators and their significance weights that express their relative significance. However, the construction of a composite indicator is not simple; it is necessary to solve a number of methodical problems and to interpret the results correctly. The construction consists of several stages – the selection of suitable indicators, finding the missing data, the selection of the manner of aggregation, and the weight assignment to partial indicators (Nardo *et al*., 2005).

The advantages of composite indicators are that they summarize more dimensions of the issue evaluated and in comparison to separate indicators they are better interpretable and better presentable to the professional public and decision-makers as well as citizens. Moreover, composite indicators allow us to create the ranking of evaluated regions or countries and to follow changes in time. However, unless a composite indicator is formed correctly, it can lead to misinterpretation, misleading messages to politicians and decision makers, and can contribute to inappropriate political decisions (Nardo *et al*., 2005). The catches of composite indicators related to the selection of indicators, the establishment of their significance weights, and the calculation method have been dealt with by Grupp and Mogee (2004). They pointed out the fact that the manner of composite indicator formation can create space to manipulate political decisions.

The vital step that needs to be taken before forming a composite indicator is a conversion of all partial indicators to the same units. A suitable process is normalization. Basic methods of normalization are ranking of indicators across regions, standardization (standard deviation calculation), re-scaling (comparison with the minima and the maxima), distance to a reference region, categorical scales, comparison with the mean, methods for cyclical indicators, the percentage of annual differences over consecutive years, and logarithmic transformation (Nardo *et al*., 2005).

Competitiveness of countries and regions is very often compared using a composite indicator in the practice. This approach has been adopted to evaluate competitiveness by e.g. the World Economic Forum, the Institute for Management Development, the European Commission, R. Huggins, K. Barna and a number of other authors. The following text presents the methods of selected analyses in short.

The World Economic Forum (WEF) (Schwab, Sala-i-Martín, 2013) measures competitiveness using the Global Competitiveness Index (GCI), which is published in The Global Competitiveness Report every year. The GCI includes both microeconomic and macroeconomic aspects of national competitiveness. The latest report published evaluated the competitiveness of 148 countries using 118 indicators. The data came from various sources; they were e.g. statistical data, data of the World Economic Forum, and results of a survey conducted among entrepreneurs. The indicators were grouped in 12 pillars; the pillars were then grouped in three subindices: basic requirements subindex (four pillars), efficiency enhancers subindex (six pillars), and innovation and sophistication factor subindex (two pillars). The GCI expresses the summarizing outcome of the competitiveness. As different factors are significant for the competitiveness of differently developed countries, the weights of particular subindices were established in relation to the development level of a given country (the evaluated countries were divided into five groups based on their level of development).

The Institute for Management Development (IMD) creates the competitiveness ranking titled The World Competitiveness Scoreboard every year. The scoreboard is published in the IMD World Competitiveness Yearbook. The composite index measures the ability of countries to create and maintain the environment in which companies compete. In 2013, ranking of 60 countries was determined using 333 indicators. Some of these indicators came from statistical sources (two thirds of the data) and the others from their own surveys (a third of the data) and they were divided into four groups: economic performance, government efficiency, business efficiency, and infrastructure (IMD, 2013).

The European Union measures competitiveness of regions using the Regional Competitiveness Index, which is based on the methodology developed by the World Economic Forum. Regions at the NUTS 2 level are evaluated. The indicators are followed within 11 pillars that describe both inputs and outputs of territorial competitiveness. The 11 pillars are grouped in three subindices, which are basic (five pillars), efficiency (three pillars), and innovative (three pillars) factors of competitiveness. The data were normalized using the standardization method. The weights of the subindices were set in a way different from the WEF as most EU countries are in the group of the most developed countries. However, regions were also divided into five groups based on their GDP and different subindex weights were set for different groups (Annoni, Dijkstra, 2013).

The UK Competitiveness Index (UKCI) is regularly published by R. Huggins and P. Thompson. The index is used for the evaluation of 12 regions at the NUTS 1 level (Huggins, Thompson, 2010) and 379 locations (Huggins, Thompson, 2013). The evaluation of locations includes competitiveness evaluation of larger towns and the Local Enterprise Partnership Areas within the borders of England (artificially created 39 areas established recently with the purpose of a more efficient support for business in the regions). The Competitiveness Index is composed as a 3-Factor model that consists of input factors,

I: *3-Factor model of the UK regional competitiveness evaluation*

Indicator	Weight
INPUT FACTORS	**0.333**
R&D expenditure	1/7 × 0.333
Economic activity rate	1/7 × 0.333
Business start-up rate per 1,000 inhabitants	1/7 × 0.333
Number of business per 1,000 inhabitants	1/7 × 0.333
GCSE results – 5 or more grades A× to C	1/7 × 0.333
Proportion of working age population with NVQ level 4 or higher	1/7 × 0.333
Proportion of knowledge-based business	1/7 × 0.333
OUTPUT FACTORS	**0.333**
Gross value added per head at current basic prices	1/6 × 0.333
Exports per head of population	1/6 × 0.333
Imports per head of population	1/6 × 0.333
Proportion of exporting companies	1/6 × 0.333
Productivity – output per hour worked	1/6 × 0.333
Employment rates	1/6 × 0.333
OUTCOME FACTORS	**0.333**
Gross weekly pay	1/2 ×0.333
Unemployment rate	1/2 ×0.333

Source: authors based on Huggins, Thompson, 2010

output factors and outcome factors. When forming this composite competitiveness index, all the three types of factors were assigned with the same weights; it is based on the assumption that the factors are interrelated and linked together economically. Each of the factors contains several indicators, which are expressed in relation to the indicator value for the entire UK territory (UK = 100) and at the same time transformed into a logarithmic form. The methods for region and location evaluation are very similar; they only differ in the number of monitored indicators – it is smaller in the case of location as statistical data on all indicators are not available for lower territorial units. Tab. I presents indicators for the regional competitiveness evaluation because this methodology is important for our own empirical research presented here.

Bronisz *et al.* (2008) used the 3-Factor model published by R. Huggins (2003) for their formation of the competitiveness composite index of Polish voivodships (provinces). Their basic factors are inputs, outputs, and outcomes. The methodology used differs from the Huggins's slightly. The resulting composite index was first composed in nine versions that differed by assigning greater weight to some of the parts of the composite index. In this way, nine different indices were created for each voivodship (NUTS 2 regions) and the resulting index was composed of them.

The Hungarian regional competitiveness evaluation (Barna, 2007) was based on the idea that indicators characterizing the quality of life need to be involved. These indicators were selected from the list of indicators used by the government for the purpose of assigning subsidies for the development of microregions. The total competitiveness was evaluated using an aggregated regional competitiveness index (ARC), which was the sum of the objective (ORC) and subjective (SRC) regional competitiveness indices. The difference between the indices is that ORC sets the weights of particular indicators by correlation coefficients and the SRC sets the weights based on expert estimates.

The Lithuanian regional competitiveness index evaluated the competitiveness of ten NUTS 3 regions (Snieška, Bruneckiene, 2009). The model was based on the 'regional competitiveness diamond', which resembles the well-known Porter's diamond model for competitive advantage (Porter, 1998) and it consists of three parts: factors of production conditions, factors of demand conditions and factors increasing competitiveness of regional firms. The weights for particular factors and indicators were set based on expert estimates.

However, composite indicators are not used for the evaluation of competitiveness only. They are for example used for the evaluation of innovative performance (European Commission, 2013), knowledge economy (World Bank, 2011 or Huggins *et al.*, 2008), etc.

The aims of this paper are to apply the British methodology for competitiveness evaluation to Czech conditions and to evaluate and compare the competitiveness of Czech regions using a composite index. The evaluation focuses on inputs, outputs, outcomes, and the total competiveness.

METHODS AND MATERIALS

The methodology for the creation of the competitiveness index of Czech regions is based on the British 3-Factor model (Huggins, Thompson, 2010). We have slightly modified the 3-Factor model so that it better corresponds and is applicable to the conditions of the Czech Republic. Competitiveness can be evaluated either at the level of NUTS 2 regions (cohesion regions) or NUTS 3 (regions). Opting to evaluate competitiveness of cohesion regions, we would gain more statistical data and we could also make an international comparison. However, in the case of the Czech Republic, NUTS 2 regions are rather artificial units created for statistical and cohesion policy implementation purposes. Therefore, we decided to evaluate the 14 NUTS 3 regions, which much better correspond to natural development processes and relations.

Subsequently, the particular indicators to evaluate competitiveness were chosen. If possible, we respected the indicators from the original 3-Factor model. However, some of the data are not followed in the Czech Republic. Import is not monitored at the level of regions, and since 2010 neither total export. The data on knowledge-based companies (i.e. companies in the high-tech sector) are available with delay and they are only relevant for the NUTS 2 level. There are also differences in the education system. The missing indicators were replaced with others that most resembled the British model. Our model uses 14 indicators, which are divided into three factor groups: inputs, outputs, and outcomes. The summarizing regional competitiveness index (RCI) relates to the data of the year 2012, i.e. the latest data available. The RCI was also calculated for 2008 in order to evaluate the change of competitiveness in time. The data were gained from the Czech Statistical Office (CZSO, 2009, 2010, 2012, 2013a, 2013b). The weight of 1 was assigned to each group of the factors and all the indicators within a factor have the same weight. Tab. II shows the indicators used and their significance weights.

The gained statistical data were normalized. Logarithmic transformation was performed in the first step, i.e. natural logarithms were calculated. In this way the distributions that are closer to a normal curve were created and the extreme values of indicators were eliminated as they would distort the resulting composite index. In the second step, the indicator values were expressed in relation to the data value for the entire Czech Republic (i.e. CR = 100%). Subsequently, the composite index was calculated, separately for inputs, outputs, outcomes, and the total index. The RCI for k^{th} region was calculated as follows:

II: *3-Factor model of Czech regional competitiveness*

Indicator	Weight
INPUT FACTORS	**1**
Total R&D expenditure per head	1/6
Economic activity rate	1/6
Business start-up rate per 1,000 inhabitants	1/6
Number of business per 1,000 inhabitants	1/6
Proportion of college graduates in the workforce	1/6
Technically innovative companies	1/6
OUTPUT FACTORS	**1**
Gross value added per head	1/6
Productivity – gross domestic product per an employee	1/6
Employment rates	1/6
Industry export revenues per head	1/6
Industry export revenue proportion in total industry revenues	1/6
Employment rate in services	1/6
OUTCOME FACTORS	**1**
Average salary	1/2
Unemployment rate	1/2
COMPETITIVENESS Index	**3**

Source: authors

$$RCI_k = \frac{\sum_{i=1}^{n} w_i \times F_i}{\sum_{i=1}^{n} w_i},$$

where w_i is the weight of i^{th} indicator, F_i is the value of i^{th} indicator, and n is the number of indicators.

The calculated composite scores were finally "anti-logged" by exponential transformation (exponential function is an inverse function to natural logarithm). This step increased the differences in the value of composite indicators of particular regions, which better corresponds to interregional differences in the original quantities. The exponential transformation was done as follows:

$$anti\text{-}logged\ RCI_k = \frac{logged\ RCI_k^3}{100^2},$$

where logged RCI_k is the value of the composite indicator of k^{th} region before the exponential transformation, 100 is the value of the composite index for the Czech Republic.

RESULTS AND DISCUSSION

The composite index evaluating the position of regions as concerns the input factors shows that there are great differences among individual regions (standard deviation = 17.33), greater than in the cases of output factors and outcome factors. There is mainly a considerable gap between Prague and partially also the South Moravian region and the other regions. These two regions ahead are able to gain markedly more resources than the other regions, which is caused by the concentration of research, universities and companies in them. Compared to 2008, the disparities have increased slightly (the standard deviation in 2008 was 17.14); the ranking in the first three places have not changed. The competitiveness of the Liberec region has increased in the monitored period; the position of the Zlín region has considerably deteriorated. The ranking of the regions and the competitiveness index for input factors are presented in Tab. III.

The competitiveness evaluation based on output factors showed that the disparities among regions are not as large as in the case of input factors (standard deviation in 2012 was 3.11) and they have even decreased in the monitored period (standard deviation in 2008 was 3.72). This competitiveness component differs from the others as the ranking is not dominated by Prague. It is caused by the fact that Prague has not done well in the long term as concerns export revenues per head, both from the perspective of industrial export, which is monitored in this paper, and from the perspective of total export, which was monitored by the Czech Statistical Office until 2010. This deficiency was compensated by including the employment rate in services indicator, as this is the field where Prague dominates. Industrial companies prefer the Central Bohemia region as there are lower prices and the connection to Prague is still very good. Looking at Tab. IV, the position of the Pardubice region catches the eye as it has climbed 11 ranks since 2008. However, this result needs to be interpreted very cautiously. The Pardubice region has increased its position in the field of export, which is most likely caused by the presence and expansion of Foxconn,

III: *Index of Input (CR = 100)*

Region	Ranking 2012	Index 2012	Change in ranking comp. to 2008	Change in index comp. to 2008
Prague	1	147.58	0	1.11
South Moravian	2	107.38	0	3.81
Central Bohemia	3	95.24	0	–3.28
Liberec	4	92.16	–5	5.07
Pilsen	5	91.25	1	–4.64
South Bohemian	6	90.59	1	–1.58
Pardubice	7	89.70	–1	2.50
Hradec Králové	8	88.64	1	–0.75
Olomouc	9	88.17	–1	2.66
Zlín	10	86.63	4	–3.68
Moravian-Silesian	11	84.78	0	2.98
Vysočina	12	81.16	0	0.25
Ústí	13	74.26	–1	0.11
Karlovy Vary	14	74.01	1	–0.40

Source: authors

IV: *Index of Output (CR = 100)*

Region	Ranking 2012	Outputs 2012	Change in ranking comp. to 2008	Change in index comp. to 2008
Central Bohemia	1	102.41	0	–4.27
Pardubice	2	102.15	–11	8.81
Pilsen	3	102.04	1	–1.17
Hradec Králové	4	100.70	0	–0.23
Prague	5	100.58	2	–0.56
Moravian-Silesian	6	99.82	–3	3.88
Vysočina	7	98.60	2	–0.54
Liberec	8	98.34	2	–0.21
South Bohemian	9	98.22	1	1.72
Olomouc	10	97.19	3	–1.17
South Moravian	11	95.67	1	–0.05
Zlín	12	95.48	0	0.43
Karlovy Vary	13	94.98	2	–0.65
Ústí	14	91.25	0	–1.89

Source: authors

the Czech largest exporter in ICT and the second largest exporter in the Czech Republic generally after Škoda Auto (Střední podnikatelský stav, 2013). Foxconn has built its European Production Centre in Pardubice, where the final assembly of PCs of various brands takes place (Foxconn CZ, 2014); thus we can assume that this company is also a significant importer and the value of net exports will not be so significant.

Regional competitiveness in the field of outcome factors manifests relative stability. When looking at the ranking of regions in 2012 (Tab. V) and comparison with 2008, we can see nothing has changed in the first seven ranks and the last two ranks. This factor has the smallest differences between the regions (standard deviation in 2012 = 2.12) although the differences increase with time (the standard deviation in 2008 was 1.92). The increase in interregional disparities can be partially explained by the economic crisis, which significantly affected unemployment rates and the salaries, especially in regions with high unemployment rates.

The total regional competitiveness index shows that the most competitive regions are Prague and South Moravia. Compared to 2008, the South Moravian region has drawn ahead of the Pilsen and Central Bohemia regions. The difference between Prague and the other regions is highly obvious. The least competitive regions in the long term are the Ústí, Karlovy Vary and Vysočina regions. The Ústí region has had long-term economic troubles caused by the industrial transformation after 1989; its proportion of research and universities is very small. The weak presence of universities and research is also typical in the Vysočina region. There

V: *Index of Outcome (CR = 100)*

Region	Ranking 2012	Outcomes 2012	Change in ranking comp. to 2008	Change in index comp. to 2008
Prague	1	105.52	0	0.48
Central Bohemia	2	100.70	0	0.38
Pilsen	3	99.98	0	0.53
South Moravian	4	98.86	0	–0.31
South Bohemian	5	98.73	0	–0.22
Vysočina	6	98.60	0	–0.28
Hradec Králové	7	98.43	0	–0.29
Moravian-Silesian	8	98.06	–3	–0.07
Zlín	9	98.03	–1	–0.19
Olomouc	10	97.96	–2	0.38
Liberec	11	97.78	2	–0.61
Pardubice	12	97.77	4	–0.65
Ústí	13	97.13	0	–0.24
Karlovy Vary	14	96.41	0	–0.06

Source: authors

VI: *Regional competitiveness index (CR = 100)*

Region	Ranking 2012	In total	Change in ranking comp. to 2008	Change in index comp. to 2008
Prague	1	116.70	0	0.29
South Moravian	2	100.56	–2	1.10
Central Bohemia	3	99.42	1	–2.38
Pilsen	4	97.68	1	–1.81
Pardubice	5	96.45	–5	3.54
Liberec	6	96.06	–1	1.49
Hradec Králové	7	95.83	2	–0.43
South Bohemian	8	95.80	2	–0.05
Olomouc	9	94.37	0	0.68
Moravian-Silesian	10	94.06	–2	2.30
Zlín	11	93.29	3	–1.19
Vysočina	12	92.54	1	–0.17
Karlovy Vary	13	88.05	0	–0.37
Ústí	14	87.17	0	–0.64

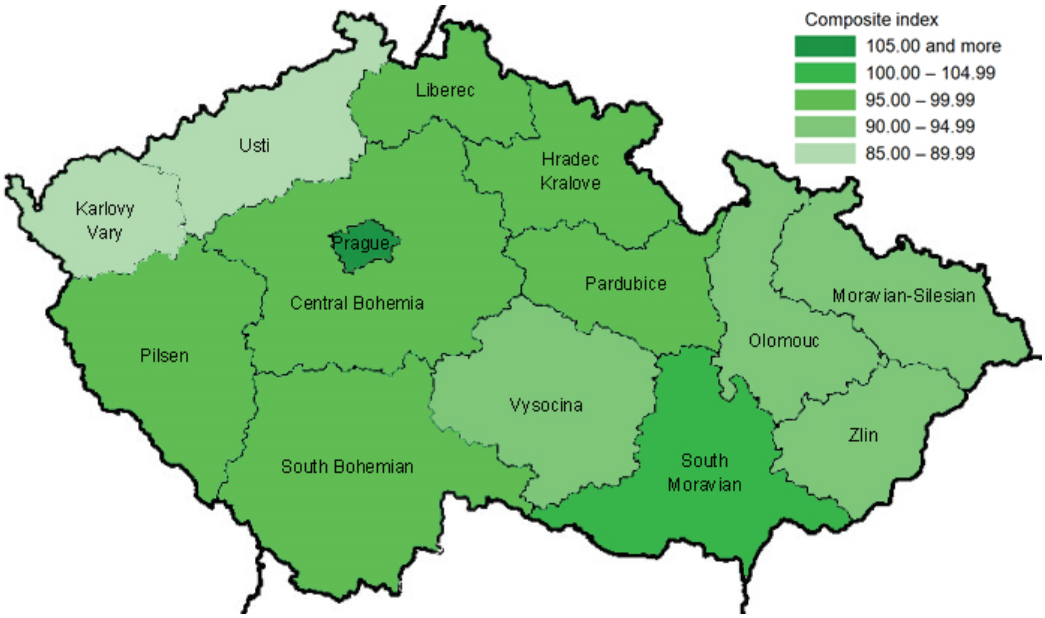
Source: authors

is no public university or college in the Karlovy Vary region. Similarly, there is no public university or college in the Central Bohemia region but there are a number of research institutes. Moreover, the Central Bohemia region has a very favourable position around the capital. This position attracts companies as well as research institutes as the expenses are lower than in Prague, but Prague is easily accessible as well as subsidies from structural funds. Compared to 2008, only the position of the Pardubice region has changed abruptly, as has been mentioned and explained above.

CONCLUSION

Competitiveness of a region expresses the ability of the region to produce economic goods and provide sustainable quality of life to its inhabitants. Regional competitiveness is usually measured using a composite index. The index needs to include characteristics that encompass all important aspects of competitiveness. Therefore, export, productivity and employment rate are most often evaluated. Should a region wish to maintain its competitiveness in the long term, it cannot look for a competitive advantage in the form of low costs but new knowledge and innovation need to be sought. The evaluation thus has to include aspects of knowledge-based economy, such as resources for R & D, inhabitant education and innovation-oriented companies.

Based on the evaluation conducted in this paper, the value of the Regional Competitiveness Index of Czech regions in 2012 ranges between 87.17 and 116.70 and the standard deviation is 6.71. In comparison to British regions, Czech disparities are slightly lower. The value of the competitiveness index of British regions in 2010 ranged from 83.9 to 110.5 and the standard deviation was 9.14 (Huggins, Thompson 2010). The competitiveness of Czech regions is illustrated in Fig. 1. We divided the regions into five groups by the value of the Regional Competitiveness Index. The figure shows that only the index of Prague and the South Moravian regions is above average. However, the Central Bohemia region approaches the value of 100 very closely and it even surpassed it in 2008. The evaluation conducted also confirmed that attention needs to be focused on a correct interpretation of a composite index and that broader context that is behind the achieved outcomes needs to be explored.



1: *Competitiveness of the regions in the Czech Republic*
Source: authors

REFERENCES

ANNONI, P. and DIJKSTRA, L. 2013. *EU Regional Competitiveness Index RCI 2013*. Luxembourg: Publications Office of the European Union.

BARNA, K. 2007. Measuring regional competitiveness. *Journal of Central European Agriculture*, 8(3): 343–356.

BLÍŽKOVSKÝ, P. 2012. Regional disparities and convergences in the European Union. *Acta Univ. Agric. et Silvic. Mendel. Brun.*, 60(4): 59–70.

BRONISZ, U., HEIJMAN, W. and MISZCZUK, A. 2008. Regional competitiveness in Poland: Creating and index. *Jahrbuch für Regionalwissenschaft*, 28(2): 133–143.

CZSO. ©2009. *Statistické ročenky krajů ČR 2009.* [online]. Available at: www.czso.cz. [Accessed: 2014, January 10].

CZSO. ©2010. *Inovační aktivity podniků v České republice 2006–2008*. [online]. Available at: www.czso.cz. [Accessed: 2014, January 10].

CZSO. ©2012. *Inovační aktivity podniků v České republice 2008–2010.* [online]. Available at: www.czso.cz. [Accessed: 2014, January 10].

CZSO. ©2013a. *Statistické ročenky krajů ČR 2013*. [online]. Available at: www.czso.cz. [Accessed: 2014, January 10].

CZSO. ©2013b. *Trh práce 2012 v Jihomoravském kraji 2012.* [online]. Available at: www.czso.cz. [Accessed: 2014, January 10]

EUROPEAN COMMISSION. 1999. *Sixth periodic report on the social and economic situation and development of the regions of the European Union.* Luxembourg: Office for Official Publications of the European Communities.

EUROPEAN COMMISSION. 2000. *European competitiveness report 2000*. Luxembourg: Office for Official Publications of the European Communities.

EUROPEAN COMMISSION. 2013. *Innovation Union Scoreboard 2013.* Luxembourg: Publications Office of the European Union.

FAGERBERG, J., SRHOLEC, M. and KNELL, M. 2007. The Competitiveness of Nations: Why Some Countries Prosper While Others Fall Behind? *World Development*, 35(10): 1595–1620.

FOXCONN CZ. ©2014. *Foxconn.* [online]. Available at: www.foxconn.cz. [Accessed: 2014, January 15].

GRUPP, H. and MOGEE, M. E. 2004. Indicators for national science and technological policy: how robust are composite indicators? *Research Policy,* 33(9): 1373–1384.

HORKÁ, L. 2013a. Faktory socioekonomické vyspělosti regionů: alternativní přístupy k hodnocení regionů. In: *XVI. mezinárodní kolokvium o regionálních vědách. Sborník příspěvků.* Valtice, 19–21 June. Brno: Masarykova univerzita, 51–59.

HORKÁ, L. 2013b. *Hodnocení socioekonomické vyspělosti regionů.* Diplomová práce. Brno: Masarykova univerzita.

HUGGINS, R. 2003. Creating a UK Competitiveness Index: Regional and Local Benchmarking. *Regional Studies*, 37(1): 89–96.

HUGGINS, R., IZUSHI, H., DAVIES, W. et al. 2008. *World Knowledge Competitiveness Index 2008.* Cardiff: University of Wales Institute.

HUGGINS, R. and THOMPSON, P. 2010. *UK Competitiveness Index 2010*. Cardiff: University of Wales Institute.

HUGGINS, R. and THOMPSON, P. 2013. *UK Competitiveness Index 2013.* Cardiff: Cardiff University.

IMD. ©2013. *IMD World Competitiveness Yearbook 2014.* [online]. Available at http://www.imd.org/wcc/wcy-world-competitiveness-yearbook/. [Accessed: 2014, January 5].

JINDROVÁ, A. 2013. Composite indicator in evaluation of the regional disparities in quality of life in the Czech Republic. *Acta Univ. Agric. et Silvic. Mendel. Brun.*, 61(7): 2239–2248.

KOŽIAK, R., KRÁĽ, P., FLAŠKA, F. et al. 2012. HDP ako jediný ukazovateľ regionálnej politiky EÚ? In: *XV. mezinárodní kolokvium o regionálních vědách. Sborník příspěvků.* Valtice, 20–22 June. Brno: Masarykova univerzita, 19–27.

KRUGMAN, P. 1996. Making sense of the competitiveness debate. *Oxford Review of Economic Policy*, 12(3): 17–25.

MARTIN, R. 2005. *Thinking About Regional Competitiveness: Critical Issues.* Cambridge: University of Cambridge.

NARDO, M., SAISANA, M., SALTELLI, A. et al. 2005. *Tools for Composite Indicators Building*. Ispra: European Comission.

PORTER, M. E. 1998. *The competitive advantage of nations*. New York: Free Press.

SCHWAB, K. and SALA-I-MARTÍN, X. 2013. *The Global Competitiveness Report 2013–2014*. Geneva: World Economic Forum.

SNIEŠKA, V. and BRUNECKIENE, J. 2009. Measurement of Lithuanian regions by Regional competitiveness index. *Engineering Economics*, 61(1): 45–57.

STŘEDNÍ PODNIKATELSKÝ STAV. ©2013. *Exportér roku.* [online]. Available at www.exporterroku.com. [Accessed: 2014, January 20].

SVATOŠOVÁ, L. ©2004. *Metodologická východiska analýz regionálního rozvoje*. [online]. Available at http://www.agris.cz/Content/files/main_files/61/139326/svatos.pdf. [Accessed: 2013, December 10].

TVRDOŇ, J. and ŠURANOVÁ, J. 2007. Teoretické a praktické otázky vyjadrenia regionálnej konkurencischopnosti v ekonomike Slovenska. In: *2nd Central European Conference in Regional Science*. Nový Smokovec, 10–13 October. Košice: Technická univerzita v Košiciach, 1089–1098.

VITURKA, M. 2010. Nový přístup k hodnocení disparit v regionálním rozvoji. In: *XIII. mezinárodní kolokvium o regionálních vědách. Sborník příspěvků.* Bořetice, 16–18 June. Brno: Masarykova univerzita, 25–32.

WORLD BANK. ©2011. *Knowledge Assessment Methodology 2012*. [online]. Available at: www.worldbank.org/kam. [Accessed: 2014, January 5].

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