COMPARISON OF REGIONAL COMPETITIVENESS INDEX AFTER EU ENLARGEMENT IN 2013

Bohdan Vahalík, Michaela Staníčková

Abstract: *The paper deals with the concept and evaluation of competitiveness in terms of the European Union (EU). The paper deals with an evaluation of EU competitiveness at regional level by multi-criteria approach called the EU Regional Competitiveness Index (RCI). The main purpose of this composite indicator is evaluation of EU NUTS 2 region competitiveness. The aim of this paper is to introduce the theoretical and methodological basis of the RCI and its usage on the example of evaluating the competitiveness of NUTS 2 regions in the group of Visegrad Group (V4) countries. The theoretical part of the paper defines concept of the RCI and methodological background of its creation. The empirical part of the paper deals with evaluation of the Visegrad group NUTS 2 region competitiveness before and after the EU 2013 enlargement, resp. comparison of RCI results in year 2010 and 2013 and evaluation of RCI changes in the case of V4 countries in reference years.*

Keywords: *Competitiveness, NUTS 2 region, European Union, Evaluation, Regional Competitiveness Index, Visegrad Group.*

JEL Classification*: R11, R58.*

Introduction

Nowadays, the concept of competitiveness is very popular expression of politicians, economists, media, academics and businesses. The concept of competitiveness originated in microeconomic aspects of national economy for several decades. However in the last few years, it is significantly coming to the fore at macroeconomic level. The European Union (EU) is currently in the biggest economic crisis since the World War II and it faces globalization pressures and increased economic, social and territorial disparities among all regions. Therefore, the need to increase competitiveness is mentioned in many speeches and strategies, such as e.g. the EU 2020 Strategy. The EU RCI was created to show economic, social and territorial gaps among the EU regions. For this reason, the classic competitiveness evaluation had to be modified and approximated to the regional level. The Regional Competitiveness Index (RCI) approach evaluates the regional performance and then compares the results of the EU regions. In the case of high efficiency usage of the regional potential, the regions are ranked on the highest levels of the regional competitiveness evaluation. The paper deals with an evaluation of the EU regional competitiveness by multi-criteria approach of the EU RCI. In 2013, the revision of the RCI was made in response to accession of Croatia to the EU which took place in mid-2013. Therefore, this paper compares RCI results of the NUTS 2 regions in 2010 and 2013 in the case of Visegrad Group (V4) group countries.

1 Definition and measurement of competitiveness

1.1 The Definition of Competitiveness

The definition of competitiveness is difficult because of the **lack of mainstream view** for understanding this term. Competitiveness remains a concept that is not well understood and that can be understood in different ways and levels despite widespread acceptance of its importance. The concept of competitiveness is distinguished at different levels **- microeconomic, macroeconomic and regional**. Anyway, there are some differences between these three approaches; see e.g. [5].

The widest explanation provides the World Economic Forum (WEF) when defines competitiveness as: the set of institutions, policies and factors that determine the level of productivity of the country [8]. It means that competitiveness of country is influenced by individual components of the economy. It is not just about economic performance, but also about living standards of inhabitants, social protection, state of environment, set of institutions and many others. Some organisations define competitiveness somewhat narrowly. The OECD describes it as: a measure of a country's advantage or disadvantage in selling its products in international markets [7]. Here, the definition is limited only to the economic aspect of country. The European Commission defined competitiveness in The Sixth Periodic Report on the Social and Economic Situation of Regions in the EU 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, the ability of (regions) to generate, while being exposé to external competition, relatively high income and employment levels [4]. The EU has been observing disparities among regions in the economic and social level under the Cohesion Policy framework. The territorial level was added to ensure sustainable territorial development at the beginning of the new millennium. That was the reason, why the EU decided to monitor competitiveness of their regions in order to target better a structural assistance and concentrate its support to underdeveloped regions. **The Regional Competitiveness Index** focuses on measuring competitiveness of territorial units that are lower than national level. Therefore the citation of Meyer-Stammer that defines competitiveness of a territory as: the ability of a locality or region to generate high and rising incomes and improve livelihoods of the people living there is more appropriate [1]. There are thus many ways to understand competitiveness. Therefore for further interpretation of the RCI can be used following definition of competitiveness as: the ability of territory, consisting of policies and factors, to offer a proper living standard to people who are connected to it**.** Each territory consisting of its natural factors and institutional framework determines the characteristics of living in the area. The living standard of people who live in this area is then given by ability to use a combination of these factors.

1.2 Theoretical Background of the Regional Competitiveness Index

The evaluation of competitiveness has become a focus of economic research in last decades. The best-known institution conducting competitiveness research is WEF which publishes the Global Competitiveness Report. Next very famous institution is the Institute for Management Development publishing the World Competitiveness Yearbook. The European Commission issues the European Competitiveness Report.

Nowadays, the echoes resound from many ways that the EU is losing its competitiveness and therefore it creates strategies for reversing this natural trend. The EU is not determined to strengthen its competitiveness only through investment in infrastructure and institutional environment, but also through innovation, education, labour market efficiency, etc. By implementing these objectives, employment and competitiveness should increase in terms of cohesion among countries and regions. Therefore, the EU prepares long-term strategies that should determine goals that should be achieved and perspective where the EU would like to be in competitiveness, standard of living, structure of economy etc., in the future. The first strategy was the Lisbon Strategy started in 2000. But this strategy failed for many reasons. The EU learned from its mistakes and published new Europe 2020 Strategy in 2010. This strategy should lead Europe the way for smart, sustainable and inclusive growth.

The national competitiveness is determined by competitiveness of its regions that consists of. The regional competitiveness is evaluated by indicators of both strategies. Unfortunately, there can be expected problems with the availability of data at regional level. Not all indicators are monitored at regional level, have a sufficiently long period or same data are missing in period line. There were introduced tree regional competitiveness indexes. It is the Regional Lisbon Index, the Synthetic Index and the Regional Competitiveness Index that will be further presented in the paper [6].

2 The EU RCI Approach for Measuring Regional Competitiveness

The EU consists of twenty eight member states and is constantly expanding to include new members. Large geographic, demographic and cultural diversity of the EU brings also differences in socio-economic position of the EU member states and their regions. Different results in economic performance and living standards of the population indicate the status of the competitiveness of every country or region. However, the competitiveness is always measured at the national level and thus did not distinguish individual differences among regions. The EU RCI is the first composite indicator that was created especially for monitoring the socio-economic performance development of the EU NUTS 2 level regions [2]. The purpose of the RCI is to create a benchmark of the regional competitiveness and identify the key factors that influence the socio-economic performance and get an overview about disparities among the EU NUTS 2 level regions. The EU RCI was composed by 69 indicators in 2010, but the RCI includes 73 indicators since revision in 2013.

The original RCI 2010 was upgraded to RCI 2013 for **several reasons** [3]:

1. The RCI 2010 was indeed the first attempt to identify regional competitiveness;
2. extending the number of indicators and new methodology;
3. modification of the NUTS classification;
4. Croatia´s entering to the European Union in July 2013.

The second edition of the RCI brought undated index that includes more data and method refinements. That new release enriched the level of regional description from lessons learnt from the previous RCI 2010. There were selected 73 indicators out of 80 candidate indicators using multivariate analysis according to whether they are relevant to that dimension, which constitutes the final form of the RCI. The weighting system was also a little modified. The European Commission replaced the original three groups of the

regional development, as measured by GDP per capita, by five new upgraded groups. Also the weighting system was slightly modified in innovation group for the lowest developed regions.

The biggest changes were made in the distribution of NUTS 2 regions. As the Tab. 1 shows, some of the capitals were merged with their surrounding regions mainly because of the data correction caused by the commuting issue. The original NUTS 2 regions were created as administrative units without any functional economic links. This caused distortions in the form of exclusion of people´s qualification or GDP per capita. The goal of this new approach is to achieve a similar size of some regions. Therefore, there were some capital region merged with one or more of their neighboring regions as Wien, Brussels, Prague, Berlin, Amsterdam and London. In addition to these merges were adjusted NUTS classification in other regions of Germany and Finland [3]. Last reason for new RCI 2013 was the Croatia´s joining the EU. Therefore, regional competitiveness measure includes also two new NUTS 2 regions of Croatia: Jadranska Hrvatska and Kontinentalna Hrvatska. **A total number of regions included in RCI 2013 reached 262**.

Tab. 1: NUTS 2 classifications adopted for RCI 2013

Merged regions due to commuting patterns	**Official NUTS 2 regions**	**New merged regions**
Wien	AT12: Niederösterreich AT13: Wien	AT00
Brussels	BE10: Rég. Bruxelles/ Brussels Gewest BE24: Prov. Vlaams-Brabant BE31:Prov. Brabant-Wallon	BE00
Praha	CZ01: Praha CZ02: Střední Čechy	CZ00
Berlin	DE30: Berlin DE40: Brandenburg (former DE41 + DE42)	DE00
Amsterdam	NL23: Flevoland NL32: Noord-Holland	NL00
London	UKI1: Inner London UKI2: Outer London UKH2: Bedfordshire and Hertfordshire UKH3: Essex	UK00
Merged regions due to revised NUTS 2 classification	**Old NUTS 2 classification**	**New NUTS 2 classification**
	FI1A: Pohjois-Suomi FI13: Itä-Suomi	FI1D: Pohjois- ja Itä-Suomi

Source: [3]; Own elaboration, 2013

The roots of the Regional Competitiveness Index lay in the most known competitiveness indicator: The Global Competitiveness Index (GCI) reported by the WEF. The RCI partially takes its methodology from the WEF and its pillars are focused into three major groups: Basic (I), Efficiency (II) and Innovation (III). A region must always meet the requirements

of the lower group to be included into the higher one. The basic group contains indicators concentrated into five pillars as Institutions, Macroeconomic Stability, Infrastructure, Health and Quality of Primary and Secondary Education. These pillars represent the basic assumptions that the economy must achieve in order to be competitive. If any region is supposed to reach higher level of competitiveness, it has to dispose of resources included in the Higher Education/Training and Lifelong Learning pillar, Labour Market Efficiency pillar and Market Size pillar which are part of the Efficiency group of indicators. The fulfilment of these pillars leads primarily through higher productivity and efficiency use of resources. The highest level of the state or regional competitiveness is symbolized by ability to provide new or unique products and services. This Innovation group contains the Technological Readiness, Business Sophistication and Innovation pillar. The country, that has passed two previous stages of development, is now mature enough to compete on the world market with the most sophisticated products and services. Further development of the innovation driven economics depends on its ability to innovate and create new products and services. But they also must take care of maintaining its position in other economic and non-economic aspects. It is important to recall that all these aspects are primarily determined by natural conditions of the country and its historical development [8].

The EU RCI was especially created for observation of the regional competitiveness of the EU NUTS 2 level regions. The RCI follows the WEF framework, but modify it to be convenient to the regional dimension of the EU. There are three **main differences between the EU RCI and the WEF GCI** [2]:

1. focus on the regional level instead of national level;
2. internal structure of the pillars;
3. concentration on quantitative data.

3 Methodology of the RCI

The Regional Competitiveness Index presents a metric composite indicator that quantifies comprehensive view of the regional competitiveness into a single number. This indicator is intrinsically multidimensional because it combines a large set of indicators. The design of such multidimensional indicator requires professional grief for his compilation using various statistical methods and procedures. The assembly consists of several steps: observing, statistical treating, weighing and aggregating.

3.1 Statistical Assessment

Statistical evaluation involves two phases. The first stage is to assess the quality indicators and missing data. For the purposes of the RCI is a limit rate of 10 – 15 % of missing data. This phase includes unvariate analysis that is performed for each indicator. Missing data will be calculated from the NUTS 1 level values because there are usually available at this level. Next method is an imputation method. This method is used for calculating the missing data using statistical estimates and available data. The Box-Cox transformation is used for the treatment of outliers. It uses a logarithmic transformation which depends on a power parameter l that contract the high values for $l < 1$ or a stretches of high values for $l > 1$. The second step is to verify internal data consistency within each dimension (the dimension is meant here as one of major groups). In this case, there is uses Principal Component Analysis (PCA). It is a multivariate method which concentrates a large amount of data in a small number of transformed dimensions. The RCI consist of indicators grouping into eleven pillars. Because competitiveness is a very abstract

concept that has no precise definition, the RCI is equipped with a number of observable indicators. The PCA helps to clear framework for RCI and its pillars contain a clear and balanced set of indicators [1].

3.2 Aggregation and Weighing Scheme

The process of aggregation begins by counting simple arithmetic average of indicators. Further, it is computing the scores for three groups of indicators – Basic, Efficiency, and Innovation – as arithmetic average of the dimension scores. Each region *i* have its sub-score associated to the dimension groups, which are:

$$RCI_{basic}\,(i) = \frac{1}{5}\sum_{j=1}^{5} score\,(i,j) \quad (1)$$

$$RCI_{efficiency}\,(i) = \frac{1}{3}\sum_{j=6}^{8} score\,(i,j) \quad (2)$$

$$RCI_{innovation}\,(i) = \frac{1}{3}\sum_{j=9}^{11} score\,(i,j) \quad (3)$$

when score (*i,j*) is the score assigned to the region *i* for dimension *j,j*= 1,.....11. The last step counts the weighted average of the three sub-scores:

$$RCI(i) = w_{basic}RCI_{basic}(i) + w_{efficiency}RCI_{efficiency}(i) + w_{innovation}RCI_{innovation}(i) \quad (4)$$

$$w_{basic} + w_{efficiency} + w_{innovation} = 1 \quad (5)$$

The set of weighs for RCI 2010 was chosen according to development stage of each region by GDP measured as PPP as percentage of the EU average per capita. For the RCI, there were chosen another development stages then the WEF GCI consists of. The RCI classifies EU regions in three categories – medium, intermediate and high as Tab. 2 shows.

Tab. 2: RCI 2010 weighting system

Stage of development	GDP per capita (PPP) as % of EU	Basic	Efficiency	Innovation
Medium	< 75 %	40 %	50 %	10 %
Intermediate	≥ 75 % and < 100 %	30 %	50 %	20 %
High	≥ 100 %	20 %	50 %	30 %

Source: [1]; Own elaboration, 2013

The lowest threshold (e.g., GDP below 75 % of the EU average) was chosen because this value identifies regions eligible for funding under the Convergence objective of the EU Cohesion policy 2007 – 2013. The medium stage of development is usually driven by factors of the basic group of indicators. It means good governance, quality of health, infrastructure, lower skilled labour force etc. Intermediate stage is associated with the factors of efficiency group of indicators. The high development stage works with factors that are important to innovation-driven regions as it is innovation, business sophistication and technological readiness. The set of weighs was created just by classification of the development stages of the regions. The weights are selected by their region ability to accept growing relevance of innovation dimensions. It means that the innovation pillar group has bigger weight in the high stage of development and vice versa, the factors of the basic pillar group in the medium development stage have the highest weight. Distribution of weights is shown in Tab. 2.

The regions classification into development stages and weighting system was modified in the RCI 2013 revision. The regions classification was enriched by 2 extra stages of development to attain smoother change of weighting values across development stages. This system provides a more accurate assessment of the regional competitiveness.

Creating of two transition stages reduces strong variability of regional development within country. Economic policy can then precisely target its development assistance. The weighting system was changed in favor of the lowest developed regions as a reward for progress in innovation policy so that more weight were given in the innovation group to these regions. Development of most European regions is currently based on increasing efficiency of the economy and therefore the greatest weights are assigned to groups of efficiency indicators. Less developed regions have more weight in the basic group of indicators. The higher level of regional development the lower weight of basic group of indicators and vice versa, the higher level of regional development the higher weight of indicators in the innovation group of indicators (see Tab. 3).

Tab. 3: RCI 2013 weighting system

Stage of development	GDP per capita (PPP) as % of EU	Basic	Efficiency	Innovation
Medium	< 50 %	35,00 %	50,00 %	15,00 %
Transition 1	[50 % - 75 %)	31,25 %	50,00 %	18,75 %
Intermediate	[75 % - 90 %)	27,50 %	50,00 %	22,50 %
Transition 2	[90 % - 110 %)	23,75 %	50,00 %	26,25 %
High	≥ 110 %	20,00 %	50,00 %	30,00 %

Source: [3]; Own elaboration, 2013

The robustness analysis responds to question: how sensitive does a small input change affects the output? If the output variance is small, the design solution is robust and insensitive and conversely. For robustness assessment, there must be created an uncertainty analysis and evaluation of compensability. Uncertainty analysis expects to uniformly vary in the interval (e.g. 95, 105) reference value 100 as the second threshold for the definition of the development stage. There are two presumptions: insurance a wide enough rate of uncertainty but no interference with the rationale of the composite weighing scheme needed to account for the intrinsic differences among regions. Thus, set of uncertain interval was created.

4 Comparison of RCI results after EU 2013 Enlargement: case of Visegrad group

The European Commission, immediately after new adjustment of the RCI, used proposed new methodology for evaluating the competitiveness of EU regions. In the report EU Regional Competitiveness Index 2013 is compared to the results and improvement or descent of each region in terms of competitiveness or each dimension period of three years. This paper compares results of the old RCI 2010 and new RCI 2013 in the case of the Visegrad Group regions.

The Annex 1 shows values for RCI 2010 sub-indices and for new RCI 2013 sub-indices of the V4 NUTS 2 level regions. The regions with the capital of country reach the best sub-indices results. The Praha NUTS 2 region (CZ01) gained the highest values of RCI 2010. It is followed by Bratislavský kraj (SK01), Mazowieckie region (PL12) and as the last one was Közép-Magyarország (HU10). On the other hand, Moravskoslezsko (CZ08) a Severozápad region (CZ04), Eszak-Magyarorzság (HU31) and Észak-Alföld region (HU32), Podlaskie (PL34) and Warminsko-Mazurskie region (PL62) and Východné Slovensko region (S04K) reached the worst values of RCI 2010 sub-indexes. The best values of RCI 2013 sub-indices got regions with capital again. However, some changes were occurred in the case of worst results. The worst values of sub-indices reached the Severozápad (CZ04) and Střední Morava (CZ07), Észak-Alföld (HU32) and Dél-Alföld

(HU33), Warminsko-Mazurskie (PL62) and Podkarpadskie (PL32). The worst values of the RCI 2013 sub-indices in Slovakia reached the Východné Slovensko region (SK04).

Among the various regions is observed large variability of RCI sub-indices in both observed years not only within each country but also across the surveyed countries. The neighboring regions close to the capital, or other large economic centers, reach higher values in individual sub-indices, especially in efficiency and innovation sub-index. Peripheral regions reach much worse values. In the case of the Czech Republic took place the Praha (CZ01) and Střední Čechy (CZ02) NUTS 2 level region joining in 2013. This merger caused steep decline in all RCI 2013 sub-indices when the negative values of the RCI 2013 sub-indeces of the Střední Čechy region turned down the positive values of the Praha region. In case of differences among the values of the RCI 2010 sub-indices and the new RCI 2013 sub-indices is not so clear that there would be a general improvement or deterioration. Each region developed specifically and therefore no general trend was observed.

The Annex 2 shows values of the RCI 2010 and new RCI 2013 as well as the rank of the Visegrad group regions. The regions that reached the best results of RCI 2010 were: Praha (1.-CZ01), Bratislavský kraj (2.-SK01), Közép-Magyarország (3.-HU10) and Mazowieckie (4.-PL12). The best values of RCI 2013 reached the same regions. Only the Bratislavský kraj region (SK01) skipped the Praha region (CZ01). However, this change was due to decrease of the index value of the Praha region because of its association with the Střední Čechy region as it was already said. The last position of each country came in Severozápad (CZ04), Észak-Alföld (HU32) and Dél-Alföld (HU33), Warminsko-Mazurskie (PL62) and Východní Slovensko (SK04) regions. However, there is consideragle varionce among the worst regions of the Visegrad group countries. While the worst region of the Czech Republic is ranked between the 12th and 13th position on average in both reporting years, the worst regions in other countries amounted to 33rd, 32nd and 31st place. Both ranks show that the regions of the Czech Republic ranked immediately after the capitals. However, most regions of Hungary and Slovakia occupied last places.

The best move forward was made by Hungarian region Nyugat-Dunántúl (HU22) which occupied 13th place in the RCI 2013 instead of 23rd place in 2010. Other regions, such as Moravskoslezsko (CZ08), Podlaskie (PL34) and Lubuskie (PL43) made also big steps forward in the RCI 2013 rank. At the same positions in both periods remained regions Közép- Magyarország (HU31), Mazowieckie (PL12), Zachodniopomorskie (PL42) and Swietokrzyskie (PL33). The largest drop in the RCI ranking between the two reference years experienced Polish regions Wielkopolskie (PL41) (from 17th to 23rd place), Podkarpatskie (PL32) (from 21st to 26th place), Lódskie (PL11) (from 15th to 19th place) and Západné Slovensko region (SK02) (from 11th to 15th place) in Slovakia. However, due to the RCI 2010 and the new RCI 2013 results comparison can be concluded that **most regions of the Czech Republic, Slovakia and Poland deteriorated their RCI values**. **Only most of Hungarian regions improved their RCI values.** But it should be noted that the Hungarian regions still continue to reach worst places.

Conclusion

The Regional Competitiveness Index provides a new innovation method of the overall performance level of each EU region. The advantage of this approach lies in the capture of many economic, social and territorial characteristics of each region in a single number. This approach will help to take the appropriate action of national and regional stakeholders to

improve the situation in problematic issues and thus help to increase the standard of living in each region. The RCI represents approach for the comprehensive evaluation of the competitiveness of the EU regions. With respect to other indices of regional competitiveness (mentioned in chapter 1.2), the main advantage of RCI approach lies in its focus on the regional level instead of national level; also in internal structure of the pillars and last but not least in its concentration on quantitative data. Through RCI eleven pillars and more than 70 aggregated indicators into one number, it gives information about strengths and weaknesses of each region. The RCI takes wider approach in looking at the performance of the region, because it does not include only economic aspects, but also social and territorial characteristics of the region. Using different weights depending on the degree of development of the region creates a fair basis for regional competitiveness evaluation. In 2013, the revision of the RCI was made as a reaction to EU enlargement and to improve its methodology to increase the information value of this index. The RCI should help to European policy makers to target better the measures to solve different needs of each region. A new approach based on an evaluation by RCI may provide the potential for its further use in economic research. Its theoretical framework may be used through specific methods of multi-criteria decision making such as factor and cluster analysis, Data Envelopment Analysis or the construction of an econometric model of panel data. Based on application of the RCI on NUTS 2 regions level in the Visegrad Group, there has been found a huge gap among the best and the worst regions.

Acknowledgement

This paper was created under SGS project (SP2013/45) of Faculty of Economics, VŠB - TU Ostrava and Operational Programme Education for Competitiveness – Project CZ.1.07/2.3.00/20.0296.

References

[1] EUROPEAN COMMISSION. *A New Regional Competitiveness Index: Theory, Methods and Findings*. 2011. [cit. 2013-12-12]. Available from WWW: <http://ec.europa.eu/regional_policy/sources/docgener/work/2011_02_competitiveness.pdf>.

[2] EUROPEAN COMMISSION. *EU Regional Competitiveness Index 2010*. 2010. [cit. 2013-12-16]. Available from WWW: <http://bookshop.europa.eu/en/eu-regional-competitiveness-Index-2010-pbLBNA24346/>.

[3] EUROPEAN COMMISSION. *EU Regional Competitiveness Index 2013*. 2013. [cit. 2013-12-16]. Available from WWW: <http://ec.europa.eu/regional_policy/sources/docgener/studies/pdf/6th_report/rci_2013_report_final.pdf>.

[4] EUROPEAN COMMISSION. *Sixth Periodic Report on the Social and Economic Situation of Regions in the EU*. 1999. [2013-12-12]. Available from WWW: <http://ec.europa.eu/regional_policy/sources/docgener/informat/irmo_en.pdf>.

[5] KRUGMAN, P. Competitiveness: A Dangerous Obsession, *Foreign Affairs,* vol. 73, no.2, 1994, pp. 28-44.

[6] MELECKÝ, L., M. STANÍČKOVÁ a E. POLEDNÍKOVÁ. Data Base Analysis for Exploration of EU Cohesion and Competitiveness. In: *IMEA 2011*. Sborník

příspěvků z XI. Mezinárodní konference. [CD-ROM]. Liberec: Technická univerzita v Liberci, 2011, s. 279-288. ISBN 978-80-7372-720-8.

[7] ORGANIZATION FOR ECONOMIC CO-OPERATION DEVELOPMENT. Competitiveness. 2013. [2013-12-15]. Available from WWW: <http://stats.oecd.org/glossary/detail.asp?ID=399>.

[8] VAHALÍK, B., M. STANÍČKOVÁ. The EU Regional Competitiveness Index. In: *IMEA 2013*. Conference Proceedings. [CD-ROM]. Pardubice: University of Pardubice, 2013, s. 337-345. ISBN 978-80-7395-696-7.

[9] WORLD ECONOMIC FORUM. *The Global Competitiveness Report 2012 – 2013*. 2012. [cit. 2013-12-10]. Available from WWW: <http://www3.weforum.org/docs/WEF_GlobalCompetitivenessReport_2012-13.pdf>.

Contact Address

Ing. Bohdan Vahalík
VŠB - TU Ostrava, Faculty of Economics, Department of European Integration
Sokolská třída 33, 701 21 Ostrava, Czech Republic
Email: bohdan.vahalik.st@vsb.cz
Tel. number: 597 322 237

Ing. Michaela Staníčková
VŠB - TU Ostrava, Faculty of Economics, Department of European Integration
Sokolská třída 33, 701 21 Ostrava, Czech Republic
Email: michaela.stanickova@vsb.cz
Tel. number: 597 322 230

Received: 28. 12. 2013
Reviewed: 30. 01. 2014, 08. 07. 2014
Approved for publication: 19. 08. 2014

Annex 1: The EU RCI evaluation of the V4 NUTS 2 regions

Code	NUTS 2 level region	2010			2013		
		sub-index 1	sub-index 2	sub-index 3	sub-index 1	sub-index 2	sub-index 3
CZ01	Praha	0,118	0,767	0,533	-0,132	0,282	0,328
CZ02	Střední Čechy	-0,096	-0,160	-0,648			
CZ03	Jihozápad	-0,098	-0,210	-0,677	-0,227	-0,275	-0,638
CZ04	Severozápad	-0,192	-0,640	-0,940	-0,341	-0,404	-0,728
CZ05	Severovýchod	-0,144	-0,270	-0,687	-0,193	-0,246	-0,602
CZ06	Jihovýchod	-0,092	-0,260	-0,542	-0,164	-0,420	-0,408
CZ07	Střední Morava	-0,288	-0,410	-0,857	-0,302	-0,421	-0,742
CZ08	Moravskoslezsko	-0,830	-0,523	-0,890	-0,294	-0,345	-0,797
HU10	Közép-Magyarország	-0,748	-0,177	0,015	-0,487	-0,229	0,312
HU21	Közép-Donántúl	-0,814	-0,440	-0,825	-0,568	-0,501	-0,754
HU22	Nyugat-Dunántúl	-0,790	-0,503	-0,902	-0,496	-0,446	-0,852
HU23	Dél-Dunántúl	-0,988	-0,870	-0,932	-0,730	-0,859	-0,668
HU31	Eszak-Magyarorzság	-0,942	-0,830	-1,130	-0,691	-0,822	-0,846
HU32	Észak-Alföld	-0,990	-0,867	-1,073	-0,806	-0,904	-0,950
HU33	Dél-Alföld	-0,944	-0,783	-1,048	-0,707	-0,821	-0,862
PL11	Lódskie	-0,488	-0,453	-0,730	-0,434	-0,558	-0,904
PL12	Mazowieckie	-0,532	0,207	-0,070	-0,348	-0,089	-0,201
PL21	Malopolskie	-0,356	-0,240	-0,627	-0,300	-0,507	-0,750
PL22	Slaskie	-0,346	-0,047	-0,683	-0,341	-0,278	-0,853
PL31	Lubelskie	-0,698	-0,603	-0,982	-0,451	-0,685	-1,103
PL32	Podkarpatskie	-0,598	-0,637	-0,942	-0,378	-0,872	-1,166
PL33	Swietokrzyskie	-0,608	-0,643	-1,188	-0,461	-0,748	-1,319
PL34	Podlaskie	-0,816	-0,787	-1,035	-0,455	-0,784	-1,185
PL41	Wielkopolskie	-0,492	-0,487	-0,712	-0,422	-0,801	-1,042
PL42	Zachodniopomorskie	-0,472	-0,790	-0,702	-0,434	-0,821	-0,885
PL43	Lubuskie	-0,542	-0,843	-0,798	-0,449	-0,788	-1,021
PL51	Dolnoslaskie	-0,438	-0,427	-0,595	-0,452	-0,503	-0,806
PL52	Opolskie	-0,376	-0,663	-0,858	-0,325	-0,634	-1,020
PL61	Kujawsko-Pomorskie	-0,612	-0,780	-0,912	-0,472	-0,847	-1,037
PL62	Warminsko-Mazurskie	-0,648	-1,027	-0,938	-0,473	-1,081	-1,098
PL63	Pomorskie	-0,538	-0,527	-0,645	-0,388	-0,627	-0,783
SK01	Bratislavský kraj	-0,186	0,560	0,420	-0,215	0,432	0,685
SK02	Západné Slovensko	-0,354	-0,330	-0,545	-0,445	-0,556	-0,774
SK03	Stredné Slovensko	-0,540	-0,810	-0,792	-0,564	-0,833	-0,831
SK04	Východné Slovensko	-0,580	-1,047	-0,735	-0,617	-1,052	-0,859

Source: [3]; Own elaboration, 2013

Annex 2: The EU RCI evaluation of the V4 NUTS 2 regions

Code	NUTS 2 level region	RCI score 2010	RCI score 2013	RCI rank 2010	RCI rank 2013	Character of RCI level change
CZ01	Praha	0,561	0,213	1	2	-1
CZ02	Střední Čechy	-0,238		8		6
CZ03	Jihozápad	-0,212	-0,328	5	6	-1
CZ04	Severozápad	-0,491	-0,445	14	11	3
CZ05	Severovýchod	-0,261	-0,296	9	5	4
CZ06	Jihovýchod	-0,221	-0,338	6	7	-1
CZ07	Střední Morava	-0,406	-0,444	12	10	2
CZ08	Moravskoslezsko	-0,503	-0,414	16	9	7
HU10	Közép-Magyarország	-0,057	-0,148	3	3	0
HU21	Közép-Dunántúl	-0,628	-0,569	20	16	4
HU22	Nyugat-Dunántúl	-0,658	-0,538	23	13	10
HU23	Dél-Dunántúl	-0,923	-0,785	34	30	4
HU31	Eszak-Magyarorzság	-0,905	-0,780	33	29	4
HU32	Észak-Alföld	-0,937	-0,877	35	31	4
HU33	Dél-Alföld	-0,874	-0,787	32	34	-2
PL11	Lódskie	-0,495	-0,584	15	19	-4
PL12	Mazowieckie	-0,070	-0,180	4	4	0
PL21	Malopolskie	-0,325	-0,471	10	12	-2
PL22	Slaskie	-0,230	-0,406	7	8	-1
PL31	Lubelskie	-0,679	-0,666	24	20	4
PL32	Podkarpatskie	-0,652	-0,743	21	26	-5
PL33	Swietokrzyskie	-0,684	-0,733	25	25	0
PL34	Podlaskie	-0,823	-0,729	29	24	5
PL41	Wielkopolskie	-0,511	-0,728	17	23	-6
PL42	Zachodniopomorskie	-0,654	-0,712	22	22	0
PL43	Lubuskie	-0,718	-0,704	27	21	6
PL51	Dolnoslaskie	-0,448	-0,544	13	14	-1
PL52	Opolskie	-0,568	-0,584	19	18	1
PL61	Kujawsko-Pomorskie	-0,726	-0,744	28	27	1
PL62	Warminsko-Mazurskie	-0,866	-0,781	31	33	-2
PL63	Pomorskie	-0,543	-0,582	18	17	1
SK01	Bratislavský kraj	0,366	0,378	2	1	1
SK02	Západné Slovensko	-0,361	-0,562	11	15	-4
SK03	Stredné Slovensko	-0,700	-0,749	26	28	-2
SK04	Východné Slovensko	-0,829	-0,871	30	32	-2

Source: [3]; Own elaboration, 2013