2nd International Symposium "NEW METROPOLITAN PERSPECTIVES" - Strategic planning, spatial planning, economic programs and decision support tools, through the implementation of Horizon/Europe2020. ISTH2020, Reggio Calabria (Italy), 18-20 May 2016

Competitiveness of Metropolitan Regions in Visegrad Counties

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Abstract

Nowadays competition between regions and consequently the examination of regional competitiveness has become a research question of outstanding importance. In our study we will first look at the definition of competitiveness and the frames of interpretation related to its definition. Afterwards we will proceed to analyse the competitiveness of 93 NUTS3 level regions of 4 East-Central European countries (Czech Republic, Hungary, Poland, Slovakia) with the help of an empirical data base, using principal component analysis method. Regional competitiveness studies tend to be relative, that is why we mostly compare the competitiveness of the metropolitan regions to each other.

Keywords: Regional competitiveness; metropolitan regions; visegrad counties; three factor model.

1. Introduction

For today competitiveness has become a popular concept, it signifies the inclination and skill to compete, the ability to gain and permanently maintain position in territorial competition, which is indicated primarily by successfulness (measured in some way) and the ability to succeed. In regional studies the competitiveness of regions and cities incorporates regional economic development, as a result of which the average standard of living in the region improves (Annoni & Dijkstra, 2013; Camagni & Capello, 2010; Huggins et al, 2014; Lengyel, 2004; Lengyel & Rechnitzer, 2013; Ženka et al, 2014). Competitiveness and its causes in transition economies have become a research question of outstanding importance in the four Central European post-socialist countries (Czech Republic,

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Hungary, Poland, Slovakia), because there is a considerable gap within the European Union between longer term members and those countries joining in 2004

Competitiveness of regions and cities may be well described by the widely recognized definition of Storper (1997, p. 20): 'The ability of an (urban) economy to attract and maintain firms with stable or rising market shares in an activity while maintaining or increasing standards of living for those who participate in it'. The European Competitiveness Reports also adopt this approach (EC, 2008, p. 15): 'competitiveness is understood to mean a sustained rise in the standards of living of a nation or region and as low a level of involuntary unemployment as possible'. Aiginger (2006) defines competitiveness as '…the ability of a country or location to create welfare' (p. 161). He classifies two types of approaches to the measurement and conceptualization of competitiveness: outcome (output) evaluation and process evaluation.

Huggins and Thompson (2013) compiled a Three Factor Model (TFM) to prepare the UK Local Competitiveness Index, which differentiates between input, output and outcome factors. *Input factors* include economic activity rates, business start-up rates, number of businesses per capita, proportion of working age population with NVQ level 4 or higher, proportion of knowledge-based businesses. *Output factors* relate to how these inputs are used to generate economic outputs captured by GVA per head at current basic prices, labour productivity and employment rates. The final group, *outcome factors*, are those associated with the standard of living measured by gross weekly pay and unemployment rates.

The paper analyses the competitiveness of 93 NUTS3 level regions of four Central European countries (Czech Republic, Hungary, Poland, and Slovakia) with the help of an empirical data base, using multivariable statistical methods. Regional competitiveness studies tend to be relative, that is why we mostly compare the competitiveness of the metropolitan regions to each other according to outcome and output factors of Three Factor Model.

2. Database and methodology

We have selected the county, that is the NUTS3 level as the territorial unit of our study. In the Eastern and Central European countries the NUTS3 territorial level is closer to the actual spatial structure of the economy than NUTS2 regions. In all four countries the capital cities constitute a separate county, which we handle collectively with the neighboring counties representing their agglomeration, but we also combined further seven metropolitan counties of Poland (Lengyel, 2016). Thus the study analyses 13 counties in the Czech Republic, 19 counties in Hungary, 54 counties in Poland, and seven counties in Slovakia, giving 93 counties in total, out of which 12 are metropolitan regions in focus at least million inhabitants. The average population of the examined territorial units is 690,000 people, the smallest county has a population of 200,000, while the largest has a population of 3,280,000.

We adopt the Three Factor Model regional competitiveness framework of Huggins and Thompson (2013). *Outcome* is measured utilizing three indicators:

- *Disposable income per capita* (DI): Real adjusted gross disposable income of households per capita (recalculated by wages of counties), PPS, 2013 (Statistical Office of V4 countries);
- *Unemployment rate* (UR): Registered unemployment rate of age group 15-64, %, 2013 (Statistical Office of V4 countries);
- *GDP per capita* (GP): GDP at current market prices by NUTS 3 regions [Eurostat nama_10r_3gdp], recalculated by PPS, 2012.

Output is also measured utilizing three following indicators:

- *Labour productivity* (LP): GDP at current market prices by NUTS 3 regions [Eurostat nama_10r_3gdp], millio euro, 2012 and employed persons;
- *Employment rate* (ER): Employment rate of age group 15-64, %, 2013 (Statistical Office of V4 countries);
- *Gross value added (GVA) per capita* (GA): Gross value added (GVA) at basic prices by NUTS 3 regions [Eurostat nama_10r_3gva], 2012, millio euro.

In order to define a *common outcomes competitiveness index* principal component analysis is utilized, differently from the original decomposition method. The common index contains 67.6 per cent of the information from the three indexes (KMO test 0.486; components: DI 0.83; UR -0.672; GP 0.942). Again principal component analysis is used to develop a *common output competitiveness index*. It contains 75 per cent of the information from the three indexes (KMO test 0.425; components: LP 0.851; ER 0.754; GA 0.977).

3. Empirical results

Out of the top 13 regions determined by the *outcomes competitiveness index* 10 are metropolitan regions, and only three non-metropolitan counties (Legnicko-Głogowski, Rybnicki, Plzeňský) could be included (Fig. 1.). The capital regions are in leading position (Bratislava, Warsawa, Praha), followed by two Polish regions and Budapest, the capital city of Hungary. Only two metropolitan regions (Moravskoslezský, Łódź) can be found in the middle of the competitiveness ranking. The outcome competitiveness correlates with the population of the region, although the strength of the relationship is only moderate (linear correlation +0.63). The metropolitan regions of the four countries are widely dispersed in terms of outcome competitiveness, while their non-metropolitan regions are more concentrated.
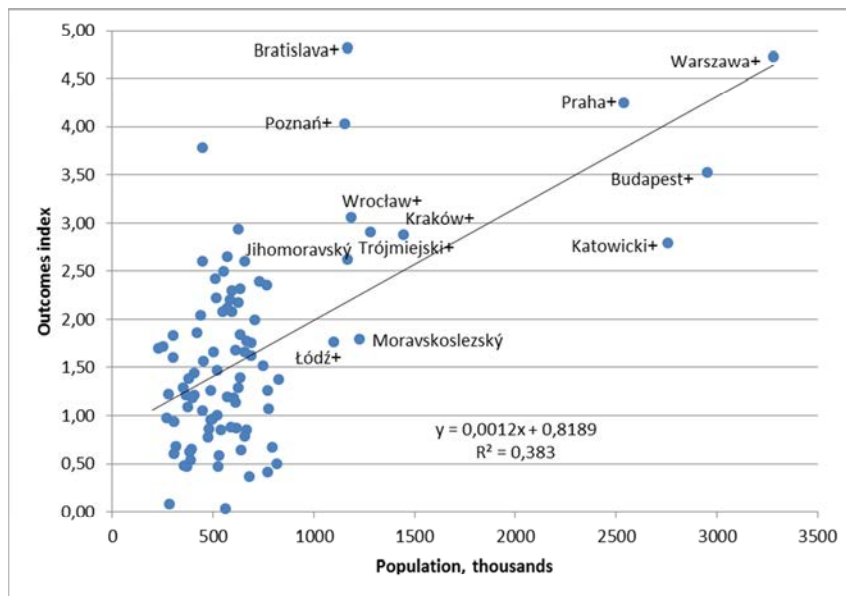

Fig. 1. Outcomes competitiveness index and population

Based on the outcomes competitiveness index, the regions have been categorized into 4 types: strong, rising, weak and uncompetitive regions (Fig. 2). The strong type consists of 13 regions, including 10 metropolitan and 3 non-metropolitan. The 29 rising type includes further two metropolitan regions. The strong and rising Czech, Slovak and Hungarian regions can be found near the Austrian border in one block, while the Polish regions are more dispersed in space in terms of competitiveness. The uncompetitive regions are located at the eastern border of the countries, as well as in the northern part of Poland.

The ranking based on the *output competitiveness index* is similar to the outcomes-type, the correlation between the two indexes is strong (linear correlation +0.91). Here too, out of the top 12 regions 8 are metropolitan regions (Fig. 3.). The capital regions are in the lead, but in a slightly different order (Bratislava, Praha, Warsawa), followed by one Polish and one Czech region, as well as Budapest. The output competitiveness also correlates with the population of the region, although the strength of the relationship is also only moderate here (linear correlation
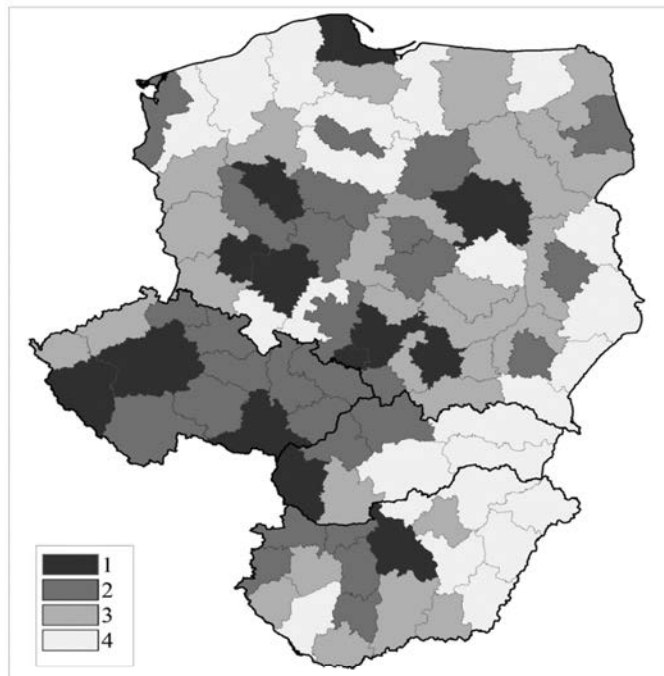
+0.61).

Fig. 2. Types of counties by outcomes competitiveness index
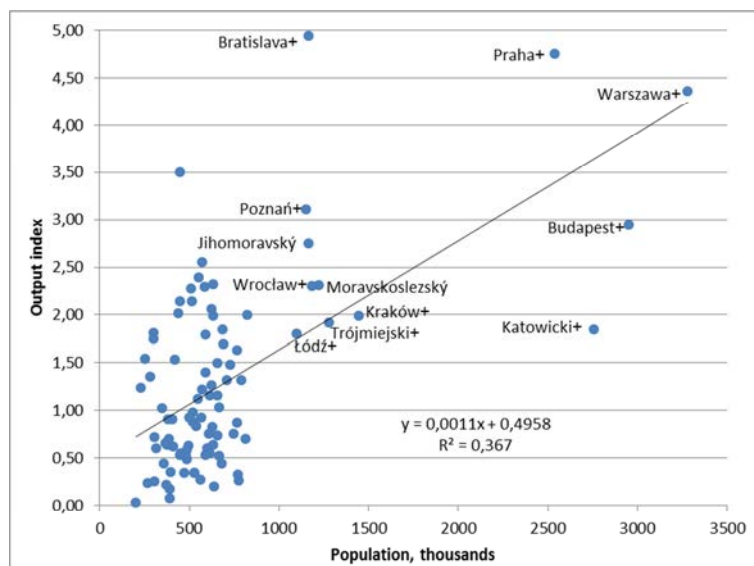Note: 1: strong; 2: rising; 3: weak, 4: uncompetitive.

Fig. 3. Output competitiveness index and population

Based on the output competitiveness we categorized the counties in four groups:

(1) *Strong competitive counties*, of which there are 14 such counties. These include 8 metropolitan regions (included 4 capital regions), as well as one Polish and 5 Czech counties, where the manufacturing industry has a key

role.

(2) *Rising competitive counties* are 4 metropolitan regions and 20 non-metropolitan counties, connected to metropolitan regions, close to the German and Austrian markets. There are 24 counties in this group of which five are Czech, four are Slovakian, five are Hungarian, and ten Polish.

(3) *Weak competitive counties* include two Slovakian, nine Hungarian and 20 Polish non-metropolitan counties.

(4) *Uncompetitive rural counties* account for the remaining four Hungarian and 20 Polish counties.
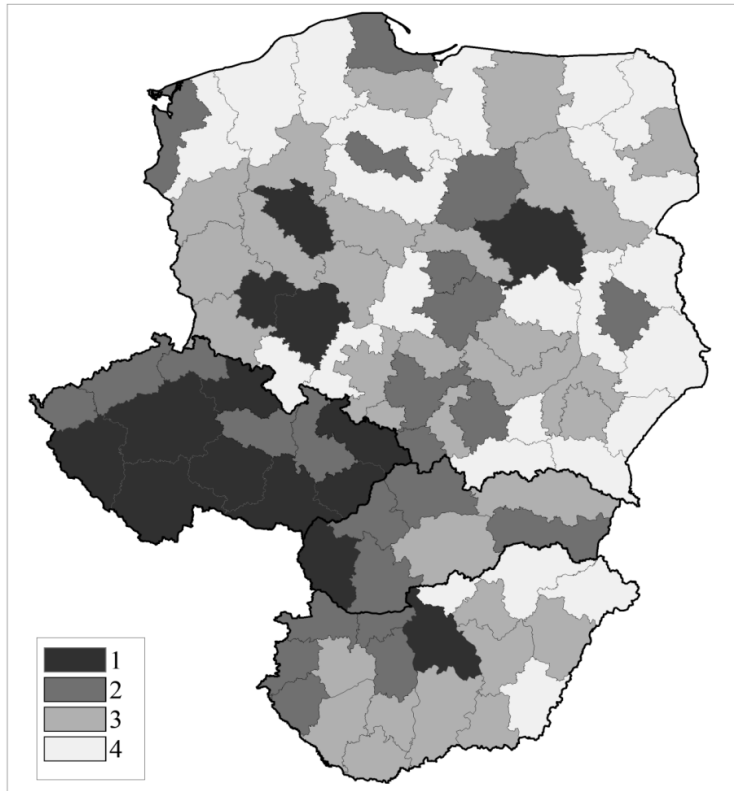

Fig. 4. Types of counties by output competitiveness index
Note: 1: strong; 2: rising; 3: weak, 4: uncompetitive.

Conclusion

We analyzed the competitiveness of the counties of 4 Visegrad countries based on the model of Huggins and Thompson (2013), separately calculating the outcomes and outputs competitiveness indexes. Out of the 93 counties, 12 have a population of at least 1 million, these were considered as metropolitan regions.

According to both competitiveness indexes, the metropolitan regions are in leading position, the capital cities in particular are characterized by strong competitiveness. There is a moderate correlation between the size of the population and the indexes in both cases. The metropolitan regions of the four countries are widely dispersed based on both competitiveness indexes, while the non-metropolitan regions are less dispersed. In the case of the output competitiveness index, the manufacturing Czech, Slovak and Hungarian counties were also included in the rising type. The counties with strong competitiveness are located in the western part of the counties, while the uncompetitive counties can mostly be found in the eastern and northern parts.

References

Aiginger, K. (2006). Competitiveness: from a dangerous obsession to a welfare creating ability with positive externalities. *Journal of Industry, Competition and Trade*, 6 (2), 161-177.

Annoni, P. & Dijkstra, L. (2013). *European Regional Competitiveness Index*. Luxembourg: Joint Research Centre, European Commission.

Camagni, R. & Capello, R. (2010). *Macroeconomic and territorial policies for regional competitiveness: an EU perspectives*. Regional Science Policy and Practise, 2 (1), 1-19.

EC (2008). *European Competitiveness Report 2008*. Brussels: European Commission.

Huggins, R. & Thompson, P. (2013). *UK Competitiveness Index 2013*. Cardiff: Centre for International Competitiveness.

Huggins, R., Izushi, H., Prokop, D. & Thompson, P. (2014). *The Global Competitiveness of Regions*. Abingdon: Routledge.

Lengyel, I. (2004). *The pyramid model: enhancing regional competitiveness in Hungary*. Acta Oeconomica, 54 (3), 323-342.

Lengyel, I. (2016). *Competitive and uncompetitive regions in transition economies: the case of the Visegrad post-socialist countries*. In Huggins, R. & Thompson, P. (eds). Handbook of Regions and Competitiveness. Cheltenham: Edward Elgar (forthcoming).

Lengyel, I. & Rechnitzer, J. (2013). *Drivers of regional competitiveness in the Central European countries.* Transition Studies Review, 20 (3), 421-435.

Storper, M. (1997). *The Regional World: Territorial Development in a Global Economy*. London: Guilford.

Ženka, J., Novotný, J. & Csank, P. (2014). *Regional competitiveness in central European countries: in search of a useful conceptual framework*. European Planning Studies, 22 (1), 164-183.