

Balázs Páger

Junior Research Fellow

Institute for Regional Studies Centre for Economic and Regional Studies

Hungarian Academy of Sciences

Pécs, Hungary

E-mail: pagerb@rkk.hu

ENTREPRENEURSHIP ECOSYSTEMS IN CENTRAL AND EASTERN EUROPEAN REGIONS ¹**ABSTRACT**

The importance of entrepreneurship and entrepreneurship research have been increasing over the last three decades. While early investigations focused on the personal characteristics of the entrepreneur and the entrepreneurial ventures, later, more attention has been paid to the socio-economic environment within entrepreneurs exist and firms operate. Most recently, the entrepreneurship ecosystem scholars highlight the co-existence of the institutional and individual factors that have crucial role in the emergence of new, innovative, productive high growth ventures. Relying on the Regional Entrepreneurship and Development Index dataset and methodology, this paper analyses the strengths and weaknesses of the entrepreneurship ecosystem in Central and Eastern European (CEE) regions. It can be observed that CEE regions have lower level of REDI scores much more weak pillars within entrepreneurship ecosystem as compared to Western European regions. One of the most important characteristics of the CEE regions is the huge difference between the capital city and the other regions. It could also mean that the economic weight and the entrepreneurial performance of the non-capital regions are relatively small.

Keywords: regional entrepreneurship, entrepreneurship ecosystem, REDI, Central and Eastern European regions

JEL Classification: L26, R10

1 INTRODUCTION

The paper is dealing with the entrepreneurship ecosystems of Central and Eastern European (CEE) regions. CEE regions are facing with challenges to find their own way of development. After the transition the regulations and economic environment changed favorable to provide good opportunities for individuals to start their own private business (Kornai, 2006). An “entrepreneurial boom” could be observed during the 1990s in all of the CEE countries. This process was stimulated by different factors like the high demand for normal consumer goods, the rising unemployment and the privatization of existing businesses (Kornai, 1992; Tyson et al., 1994). In the first period, the Czech Republic, Poland, Hungary and Slovenia were the leading nations in the transition process. Later, Slovakia and the three Baltic states caught up (Szerb and Trumbull, 2016). Changing institutions, private and public agencies also played a role in supporting de novo business start-ups (Bateman, 2000; Smallbone and Welter, 2001). However, innovative, productive entrepreneurship was lacking in all CEE countries (Smallbone and Welter 2001).

By the end of the 1990s the situation has changed. Business activity rates and the number of new firms decreased as privatization came to its end and competition became more intensive than before through the further opening of the domestic market for foreign businesses (Szerb and Trumbull, 2016). This change proceeded by EU Accession in 2004, as new member states opened their domestic markets for EU firms. The

¹ The research was supported by OTKA-K-120289 titled as „Entrepreneurship and competitiveness in Hungary based on the GEM surveys 2017-2019”, thanks for it. The author thanks Prof. Dr. László Szerb for his comments and advises on the earlier version of this paper.

higher competition and the lack of productive firms in CEE countries called for further institutional changes and refinements (Chepureno, 2015; Estrin et al., 2006; Smallbone and Welter, 2012). The entrepreneurial progress of these nations was hindered by such obstacles like the complex administration for starting-up a new business (van der Zwan et al. 2011). The slow convergence of the CEE countries to the rich European nations underlines the importance of the informal institutions (Estrin and Mickiewicz, 2011). Recently, the economic crisis in the last decade shed light on the weaknesses of small business and entrepreneurship development in the transition countries. The recovery process in the post-crisis period has been different in the CEE countries, showing some heterogeneity of the CEE region (Chepureno, 2015).

There are different individual (personal) and institutional factors that could affect entrepreneurship and business activity. In this paper we try to point out to those strengths and weaknesses within entrepreneurship ecosystem that potentially influence productive entrepreneurship in the CEE regions. In order to identify these factors, we use the recently developed REDI Index (Regional Entrepreneurship and Development Index) (Szerb et al., 2014; Szerb et al., 2017). The REDI index includes both individual and institutional factors and provides a good measure of the entrepreneurship ecosystem. In the next section we provide the theoretical background. The third section introduces the REDI Index and its methodology, the main results are explained in the fourth section, and the fifth section presents our conclusion and further research orientations.

2 THEORETICAL BACKGROUND

Entrepreneurship is widely believed to be an important driver of economic development, employment, and productivity growth both in country and regional levels. Here, we are focusing on the sub-national level of entrepreneurship. Several studies proved that entrepreneurs have a positive effect on economic growth however the magnitude of the impact varies significantly over development and regions (Acs–Audretsch, 1988; Acs–Varga, 2005; van Stel et al., 2005; Acs–Szerb, 2007; Fritsch–Müller, 2008). Moreover, the impact of new firms on regional development and employment can be noticed in longer time period (Audretsch–Fritsch 2002, Fritsch–Müller 2004).

Regional entrepreneurial activity can be explained by various motivations (Acs et al., 2008). Entrepreneurial behavior and attitudes play an important role in the entrepreneurial intention (Tamásy 2006); and together with adequate entrepreneurial climate it could lead to an increased level of new startups (Bosma–Schutjens 2011). However entrepreneurship cannot be measured through simple quantity types of entrepreneurial activity rates (foundation of new firms), since it includes many different ventures such as low impact necessity-motivated and unproductive businesses. To really capture the entrepreneurial aspect of a startup we need quality related activity measures that are associated with creativity, innovation, knowledge and technology intensity, value creation, or orientation and potential for high growth (Stam 2015).

The diversity between the entrepreneurial motivation and activity of low-income and high-income countries also point out to the importance of the context (Autio et al. 2014). Acs et al. (2013) emphasizes the role of wider regional context that regulates the quality and outcome of the entrepreneurship. According to Stam (2010) “entrepreneurship is the result of the interaction between individual attributes and the surrounding environment” (Stam 2010, pp. 141).

Entrepreneurship ecosystem (EE) research portrays entrepreneurship as the combination of interconnected actors and factors within a focal territory that contribute to the emergence of productive startup (Acs et al., 2014). According to Acs et al. (2014), the system of entrepreneurship “(...) is the dynamic, institutionally embedded interaction between entrepreneurial attitudes, ability, and aspirations, by individuals, which drives the allocation of resources through the creation and operation of new ventures” (Acs et al. 2014, p. 119). This approach makes a distinction among environmental, ecosystem elements and outcome (activity) measures.

In this context, the Global Entrepreneurship Index (GEI) and its regional version the Regional Entrepreneurship and Development Index (REDI) have emerged as relevant measures of the entrepreneurship ecosystem at the national level and regional levels, respectively, by identifying the entrepreneurship system as the complex interactions between entrepreneurial attitudes, abilities and

aspirations (Acs et al., 2014, Szerb et al 2014). In order to identify its strengths and weaknesses in Central and Eastern European (CEE) regions, we use the REDI. With the creation of the REDI, the main objectives were (1) to identify the main contextual and individual determinants of entrepreneurship on regional level, (2) to emphasize that the identified factors create a complex system, (3) to find adequate regional (or country-level) variables, and (4) to offer a useful tool to investigate alternative scenarios for policies affecting entrepreneurship.

3 METHODOLOGY AND DATA

The REDI methodology is based on the adoption of the GEI methodology that measures entrepreneurship at country-level (see Acs et al, 2013; Acs et al., 2014). To create the REDI, the institutional and individual indicators of the GEI had to be adapted to reflect regional conditions. Therefore, besides the county-level data the indicators are amended with regional institutional and regionalized individual variables (Figure 1).

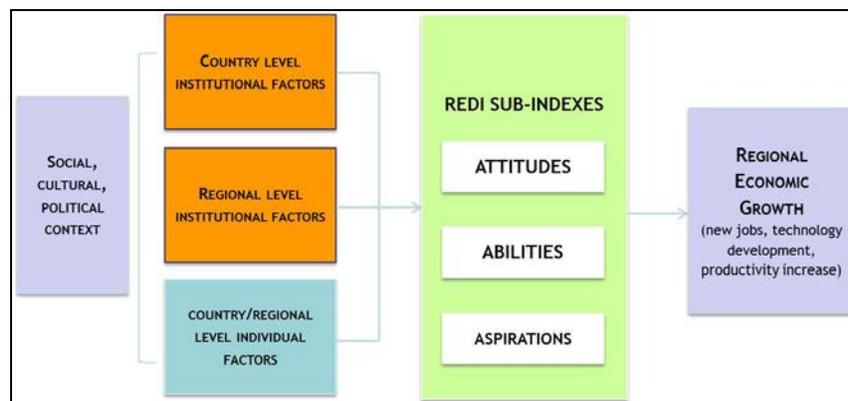


Figure 1. The Regional Entrepreneurship and Development Index (REDI) conceptual model; source: Szerb et al. (2017)

The structure and creation of REDI are summarized here only in nutshell (a more detailed description can be found in Szerb et al., 2014). The REDI has been structured by applying a six-level index-building process: (1) sub-indicators, (2) indicators, (3) variables, (4) pillars, (5) sub-indices, and, finally, (6) the super-index. The most important building blocks are the fourteen pillars that contain, simultaneously, regional individual, regional and country-level institutional variables. These pillars comprise three sub-indices: Entrepreneurial Attitudes (5 pillars), Abilities (4 pillars), and Aspirations (5 pillars) (Table 1).

Each of the pillars involves both individual- and institutional variables. An adequate analysis of the relative differences between pillars, both within a given region and across benchmark regions, should contribute an optimal initial guidance for the search for prospective strengths and weaknesses across regions. Regional and country-level variables are drawn from different database and the variables from 40 indicators. Some institutional indicators are complex creations in themselves, comprising 76 sub-indicators in total.

The entrepreneurial attitude (ATT) sub-index aims to identify the attitudes of a region's population as they relate to entrepreneurship. Opportunity perception indicates the recognition and exploration of the opportunities for a new business. Start of a new enterprise bears a relation to the own personal networks ("Networking") and adequate skills related to new business formation ("Startup skills"). Risk perception represents the attitude about the fear of failure that may have a negative effect, and cultural support indicates the population's main believes about the entrepreneurs like career opportunities, success stories or negative impressions (for e.g. corruption).

Structure of the REDI 3 Sub-indexes 14 Pillars		National and regional institutional variables	Regional level individual variables
Entrepreneurial Aspiration Sub-index	Financing	FINANCIAL INSTITUTIONS	INFORMAL INVESTMENT
	Globalization	CONNECTIVITY	EXPORT
	High growth	CLUSTERING	GAZELLE
	Process innovation	TECHNOLOGY DEVELOPMENT	NEW TECHNOLOGY
	Product innovation	TECHNOLOGY TRANSFER	NEW PRODUCT
Entrepreneurial Ability Sub-index	Competition	BUSINESS STRATEGY	COMPETITORS
	Human capital	EDUCATION & TRAINING	EDUCATION LEVEL
	Technology sector	ABSORPTIVE CAPACITY	TECHNOLOGY LEVEL
	Opportunity start-up	BUSINESS ENVIRONMENT	OPPORTUNITY MOTIVATION
Entrepreneurial Attitudes Sub-index	Cultural support	OPEN SOCIETY	CAREER STATUS
	Networking	SOCIAL CAPITAL	KNOW ENTREPRENEURS
	Risk acceptance	BUSINESS RISK	RISK PERCEPTION
	Startup skills	QUALITY OF EDUCATION	SKILL PERCEPTION
	Opportunity perception	MARKET AGGLOMERATION	OPPORTUNITY RECOGNITION

Table 1 – The structure of the Regional Entrepreneurship and Development Index; source: Szerb et al. (2017)

The entrepreneurial abilities (ABT) sub-index is principally concerned with measuring certain important characteristics of both entrepreneur and start-up with high growth potential. It indicates those skills that may contribute the high growth of a start-up. These pillars are measured among entrepreneurs whose businesses are up to 42 months old. Opportunity start-up represents the individual entrepreneurial motivation on the one hand and the business environment in that the start-up embedded on the other hand. Technological orientation (“Technology adoption”) reflects to the technology level of young firms’ activities, since human capital represents the educational level of employees. Competition indicates the concentration of markets through the number of competitors of young firms.

The entrepreneurial aspiration (ASP) sub-index refers to the distinctive, qualitative, strategy-related nature of entrepreneurial start-up activity. Product and process innovations represent the abilities of the start-up for new products and/or newly organized parts in the production process. The high growth measure indicates the orientation for expanding the number of jobs in the startup. Globalization represents the international orientation, the foreign customers of the start-up as well as the accessibility of the region. Financing refers to the financial background of startup business that is measured by the informal investments on the one hand and the regional concentration of financial sector on the other hand.

The index contains both individual-level and institutional variables. The former are based on indicators from the Global Entrepreneurship Monitor (GEM) Adult Population Survey dataset, and for present purposes we have used the 2007–2011 pooled GEM data. Since the GEM dataset lacks the necessary institutional variables, we complemented it for the index with other widely-used and relevant data derived from a variety of sources available as at December 31st 2013. In this paper we provide data and results only for the first version of REDI which has been published in 2014. Now, we are working on a revised version in the frame of a European research project and its results will be released soon.

4 RESULTS

4.1. Comparison the Central and Eastern European regional performance to all European regions

The Danish Hovedstaden (DK01) region – the capital city region – has the highest REDI score (81.8), since the Greek Kentriki Ellada (EL2) region has the lowest performance with only 16.7 REDI score; the difference is more than four fold. We compared these two regions to the average values of three European macroregions (Northern and Western, Southern, Central and Eastern European regions). The average REDI Index score of the Western European regions is 54.1 that significantly higher than the Southern European and

CEE regions' performance with 31.6 and 28.0 REDI scores, respectively (Table 2).

Region	ATT	ABT	ASP	REDI
DK01 (Hovedstaden)	79.3	88.2	77.7	81.8
Northern and Western European regions (average)	56.3	55.1	50.9	54.1
Southern European regions (average)	31.7	30.4	32.6	31.6
Central and Eastern European regions (average)	25.4	23.0	35.7	28.0
EL2 (Kentriki Ellada)	11.0	15.7	23.6	16.7

Table 2 – The REDI and sub-index values of the best and worst performing regions as well as three European macroregions; source: own calculation and edition

Since the Danish capital city region has an outstanding performance in almost all of the sub-indexes, the Greek region performs significantly below the Southern European average values of sub-indexes. The sub-index values of Southern European and CEE regions lag behind the Northern and Western European regional average in general. CEE regions have some advantage in Entrepreneurial Aspiration compared to the Southern European macroregion. All in all, Entrepreneurial Aspiration has the best scores among the three sub-indexes in Southern European and CEE regions, respectively. However it cannot balance those laggings that can be observed in Entrepreneurial Attitudes and Abilities sub-indexes.

Applying the quintiles as cut points, the 125 regions have been divided into five groups. According to the cluster results the best performing regions locate in the Scandinavian countries and in Western Europe. The lowest entrepreneurial performances are indicated in Central and Eastern European regions and in Mediterranean countries (like Greece, Spain, Portugal and Italy) (Figure 2).

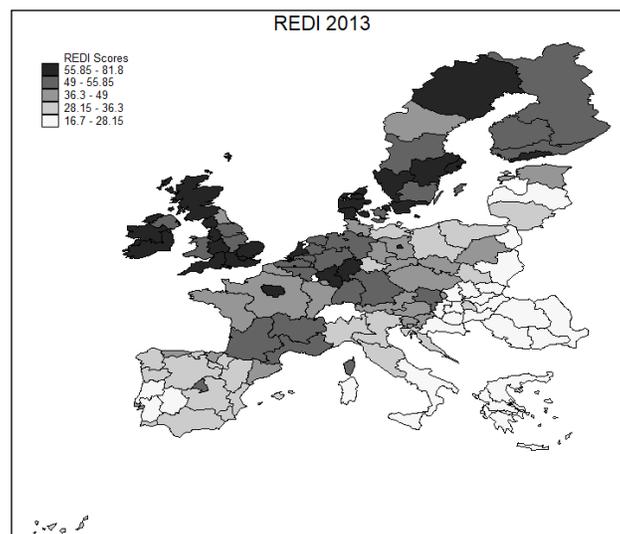


Figure 2 – The entrepreneurial performance of European regions according the REDI Index scores; source: own calculation and edition

These results show that capital city and highly urbanized regions (like London, Paris, Berlin, Copenhagen or Stockholm) have outstanding performance in REDI scores. A couple of regions that are not capital cities but have an important nationwide functional role belong to best performing ones like a few regions in the United Kingdom, Hessen in Germany or Västerverige in Sweden. Almost all of the Northern

and Western European regions belong to the best or above average performing territories.

The Central and Eastern European regions were ordered in the “Below average” and “Lowest” performing groups. The best performing CEE region, Zahodna Slovenija (SI02) can be found on 52nd position in REDI Index ranking. The Baltic states, Czech Republic, Slovenia, a couple of Polish regions and the capital cities of Hungary and Slovakia are among the “below average” performing regions. Their scores represent only a bit weaker performance than the East German, North Italian or Spanish regions (except Vzhodna Slovenija and Estonia). However it should be noticed that the Polish and Czech regions were measured by NUTS 1 level data that may hide many differences within these larger regions. All the Polish NUTS 1 regions except Eastern Poland have a significant metropolitan area which may serve as the engine of local and regional economy. The worst performing regions lag behind almost in all of the pillar values. All the Romanian regions, the non-capital Hungarian and Slovakian territories as well as Eastern Poland belong to this cluster together with Greek, Portuguese and a Spanish region. They rank from the 101st to the 123rd positions.

4.2. The entrepreneurial performance of CEE regions

In this chapter we are examining the entrepreneurial performance only of the 29 CEE country regions. The 1st ranked region is Zahodna Slovenija (SI02, 52nd in total rank) and Macroregiunea patru (RO4, 124th in total rank) occupies the last position in the CEE regions (Table 3).

REDI rank	Code	Region	REDI score	REDI rank	Code	Region	REDI score
52	SI02	Zahodna Slovenija	46.3	104	LV	Latvia	26.9
61	SI01	Vzhodna Slovenija	41.7	108	SK03	Stredné Slovensko	25.3
62	SK01	Bratislavský Kraj	41.4	109	SK02	Západné Slovensko	24.5
67	PL5	Region Południowo-Zachodni	39.2	112	SK04	Východné Slovensko	23.2
68	EE	Estonia	38.9	113	RO3	Macroregiunea trei	20.4
70	PL1	Region Centralny	38.3	115	HU22	Nyugat-Dunántúl	20.0
74	CZ	Czech Republic	37.2	117	HU23	Dél-Dunántúl	19.3
79	PL6	Region Północny	34.7	118	HU21	Közép-Dunántúl	18.6
80	PL2	Region Południowy	34.4	119	HU31	Észak-Magyarország	18.5
86	PL4	Region Północno-Zachodni	33.4	120	HU33	Dél-Alföld	18.1
97	LT	Lithuania	29.3	121	RO2	Macroregiunea doi	18.1
99	HU10	Közép-Magyarország	28.4	122	RO1	Macroregiunea unu	17.9
100	HR03	Jadranska Hrvatska	28.2	123	HU32	Észak-Alföld	17.8
101	PL3	Region Wschodni	28.1	123	RO4	Macroregiunea patru	17.8
103	HR04	Kontinentalna Hrvatska	27.2				

Table 3 – The REDI index scores and ranking of the CEE regions; source: own edition

The CEE regions have been assigned into four groups according to their REDI Scores (Figure 3).

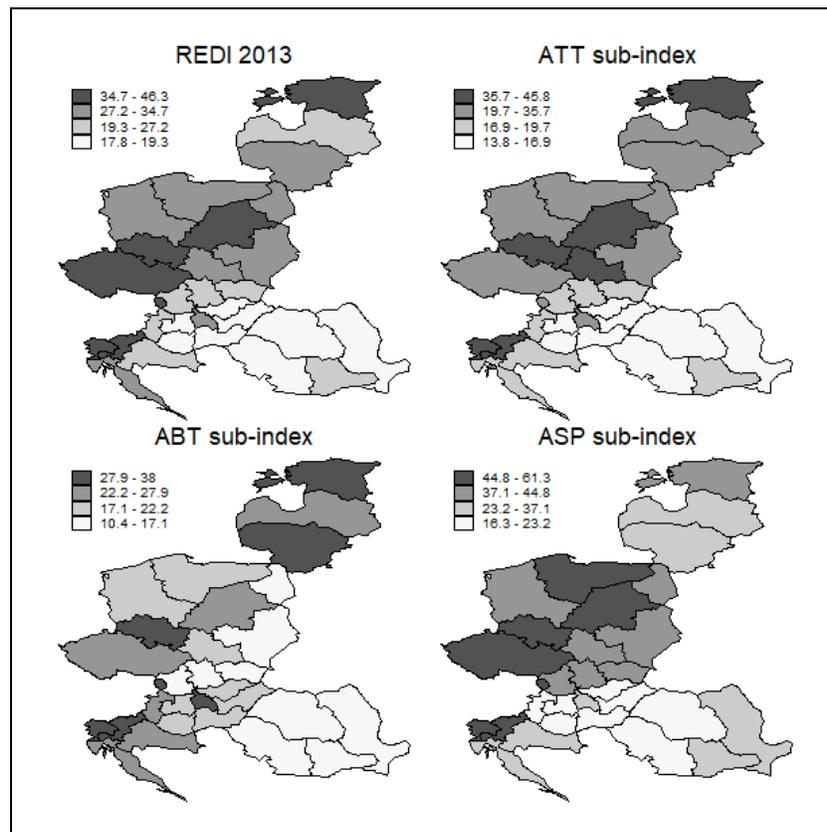


Figure 3 – REDI Index and its sub-index scores in CEE regions

Source: own edition

The Slovenian regions (Zahodna Slovenija and Vzhodna Slovenija), Estonia, Czech Republic, two Polish regions (Region Centralny and Region Poludniowo-Zachodni) and Bratislava's agglomeration (Bratislavsky kraj) belong to the first cluster that members perform significantly above the CEE average ("Outstanding CEE regions"). Although these territories represent relatively strong performance in each sub-index compared to other CEE regions, a few differences can be observed among the sub-index values. In comparison with the other group members, the Czech Republic shows relatively weaker performance in entrepreneurial attitudes and abilities, Bratislava represents weaker score in entrepreneurial attitudes and the Polish Region Centralny (PL1) has lower score in entrepreneurial abilities.

The REDI scores of the next cluster lag behind the best performing regions, but these are still above the CEE regional average. In these regions, at least one sub-index score is weaker as compared to their REDI scores. A weak sub-index value may refer not only to one or two weak pillars, but these values may also influence the whole entrepreneurship ecosystem of the region negatively. Compared to its REDI score, Lithuania shows weaker scores in entrepreneurial aspirations, while it has higher values in entrepreneurial abilities. A similar pattern can be observed in the case of the Hungarian capital city region (HU10 – Közép-Magyarország). Polish regions in this cluster have relatively good performance in entrepreneurial aspirations and attitudes, but their values represent weaker performance in entrepreneurial abilities than the other regions in this group. The Croatian regions are grouped in two different clusters. Jadranska Hrvatska (the coastal region) represents a marginally better performance in entrepreneurship than the continental region in Croatia. This difference may be explained by the role of tourism in the coast of Croatia and the economic poor territories in the Eastern part of Croatia.

Regions that belong to the third group have below average REDI scores. These regions have moderate in all of the sub-indexes. All of the Slovakian regions represent similar characters: they have moderate values in REDI and entrepreneurial attitudes, while their performance is relatively weak in entrepreneurial abilities and relatively strong in entrepreneurial aspirations. Western Transdanubian region (HU22 – Nyugat-Dunántúl) shows different character as other Hungarian regions, since its values are higher compared to other non-capital Hungarian regions, but it lags behind the scores of capital city region. The last group involves regions with the lowest REDI Index scores: three of the four Romanian and, and five of the seven Hungarian regions have been assigned to this group. All regions of Hungary and Romania can be found here, except the capital city's regions (Közép-Magyarország and Macroregionea Trei) and Western Transdanubia (HU22), respectively.

In sum there are only a few of CEE regions that reach the average value of Western European territories. Similar to the Western European pattern, the CEE capital city's regions perform much better than other regions (except Croatia). The entrepreneurial aspiration values of many regions are significantly higher than the scores in entrepreneurial attitudes and abilities. The low attitude values may refer to the lack of the adequate skills to perceive and exploit entrepreneurial opportunities on the one hand and the relatively low acceptance of the entrepreneurship as a high career status on the other hand. The low level of abilities may represent that the share of startups with high-technology level and highly qualified labor force is relatively low.

CONCLUSION

According to the literature entrepreneurship plays an important role in the regional economic development. In this paper, we have attempted to discover the main attributes of the entrepreneurial performance in Central and Eastern European regions by the application of the REDI Index. REDI measures the entrepreneurship ecosystem on sub-national level in a complex way. We have found that Western and Northern European, highly urbanized regions perform the best. Central and Eastern European regions lag behind the Western and Northern European regions significantly. There are only few CEE regions that reach the European regional average value. These are mostly small countries or capital city regions and they are the best performing territories in the whole CEE region. The differences between the Western and CEE regions can be explained by the historical background on the one hand and the lack of the entrepreneurial attitudes and abilities on the other hand. The relatively good values in the entrepreneurial aspiration could only partially counterbalance the weak performance of the other two sub-indices.

There were some limitations of the research. The use of NUTS 1 data instead of NUTS 2 data hides some vital differences within the regions. Moreover, a more detailed analysis of the REDI's institutional and individual variables could also contribute to understand better the differences in entrepreneurship in the European regions. After clustering the regions it would be useful to determine some regions as benchmark examples and continue the research of the entrepreneurship ecosystem by a more detailed analysis. Such regional investigation may confirm the results of the REDI in the CEE regions.

LITERATURE

Acs, Z. J., Audretsch, D., 1988, Innovation in large and small firms: An empirical analysis. *American Economic Review*, 78 (4), pp. 678–690.

Acs, Z. J., Autio, E., Szerb, L., 2014, National Systems of Entrepreneurship: Measurement issues and policy implications. *Research Policy*, 43 (3), pp.476–494.

Acs, Z.J., Desai, S., Hessels, J., 2008, Entrepreneurship, economic development and institutions. *Small Bus Econ*, 31, p. 219–234.

Acs, Z. J., Szerb, L., 2007, Entrepreneurship, economic growth and public policy. *Small Business Economics*, 28, pp. 109–122.

Acs, Z. J., Varga, A., 2005, Entrepreneurship, agglomeration and technological change. *Small Business Economics*, 24, pp. 323–334.

- Acs, Z., Szerb, L., Autio, E. (2013), *Global Entrepreneurship and Development Index 2013*. London: Edward Elgar.
- Audretsch D., Fritsch M., 2002, Growth regimes over time and space. *Regional Studies*, 36, p. 113–124.
- Autio, E., Kenney, M., Mustard, P., Siegle, D., Wright, M., 2014, Entrepreneurial innovation: The importance of context. *Research Policy*, 43, p. 1097–1108.
- Bateman, M., 2000, Neo-liberalism, SME development and the role of Business Support Centres in the transition economies of Central and Eastern Europe. *Small Business Economics*, 14(4), 275–298.
- Bosma, N., Schutjens, V., 2011, Understanding regional variation in entrepreneurial activity and entrepreneurial attitude in Europe. *Annals of Regional Science*, 47, pp. 711–742.
- Chepurenko, A. (2015), Entrepreneurial activity under ‘transition’. In R. Blackburn, U. Hytti, F. Welter (Eds.). *Context, Process and Gender in Entrepreneurship: Frontiers in European Entrepreneurship Research* (pp. 6–22). Cheltenham: Edward Elgar.
- Estrin, S., Meyer, K. E., Bytchkova, M. (2006), Entrepreneurship in transition economies. M. Casson, B. Yeung, A. Basu, N. Wadason (Eds.), *The Oxford handbook of entrepreneurship* (pp. 693–725). Oxford: Oxford University Press.
- Estrin, S., & Mickiewicz, T. (2011), Entrepreneurship in transition economies: the role of institutions and generational change. M. Minniti (Ed.), *The dynamics of entrepreneurship: evidence from the global entrepreneurship monitor data* (pp. 181–208). Oxford: Oxford University Press.
- Fritsch, M., Müller, P., 2004, Effects of new business formation on regional development over time. *Regional Studies*, 38 (8), pp. 961–975.
- Fritsch, M., Müller, P., 2008, The effect of new business formation in regional development over time: The case of Germany. *Small Bus Econ*, 30, p. 15–29.
- Kornai, J., 1992, The principles of privatization in Eastern Europe. *De Economist*, 140(2), 153–176.
- Kornai, J., 2006, The Great Transformation of Central Eastern Europe. *Economics of Transition*, 14(2), 207–244.
- Qian, H., Acs, Z. J., Stough, R., 2013, Regional systems of entrepreneurship: the nexus of human capital, knowledge and new firm formation. *Journal of Economic Geography*, 13, pp. 559–587.
- Smallbone, D., Welter, F., 2001, The distinctiveness of entrepreneurship in transition economies. *Small Business Economics*, 16, pp. 249–262.
- Smallbone, D., Welter, F., 2012, Entrepreneurship and institutional change in transition economies: The Commonwealth of Independent States, Central and Eastern Europe and China compared. *Entrepreneurship & Regional Development*, 24 (3–4), pp. 251–233.
- Stam, E., 2010, Entrepreneurship, evolution and geography. In: Boschma, R., Martin, R. (Eds.) *The handbook of evolutionary economic geography*. Cheltenham/UK, Northampton/USA: Edward Elgar, p. 139–161.
- Stam, E., 2015, Entrepreneurial ecosystems and regional policy: a sympathetic critique. *European Planning Studies*, 23, 1759–1769.
- Szerb, L., & Trumbull, W. N., 2016, The Development of Entrepreneurship in the European Transition Countries: Is Transition Complete?. *Strategic Change*, 25(2), 109–129.
- Szerb, L., Acs, Z. J., Autio, E., Ortega-Argilés, R., Komlósi, É. (2014), *REDI: The Regional Entrepreneurship and Development Index – Measuring regional entrepreneurship*. Report for the European Commission Directorate-General Regional and Urban Policy under contract number NO 2012.CE.16.BAT.057
- Szerb, L., Vörös, Zs., Komlósi, É., Acs, Z. J., Páger, B., Ortega-Argilés, R., Abaliget, G. (2017). *The New Regional Entrepreneurship and Development Index: Structure, Data and Description of Methodology*.

Tamásy, C., 2006, Determinants of regional entrepreneurship dynamics in contemporary Germany: A conceptual and empirical analysis. *Regional Studies*, 40, p. 365–384.

Tyson, L. D. A., Petrin, T., Rogers, H., 1994, Promoting entrepreneurship in Eastern Europe. *Small Business Economics*, 6(3), 165–184.

van der Zwan, P., Verheul, I., Thurik, R., 2011, The Entrepreneurial Ladder in Transition and Non-Transition Economies. *Entrepreneurship Research Journal*, 1(2), 1–18.

van Stel, A., Carree, M., Thurik, R., 2005, The effect of entrepreneurial activity on national economic growth. *Small Business Economics*, 24, pp. 311–321.



Visegrád photos

from left to right : (i) Pontoon Bridge, (ii) Visegrád Citadell, (iii) and (iv) Tournaments

Photo© by Dr. Antal Szabó