INNOVATIVE CAPACITY & PERFORMANCE OF TRANSITION ECONOMIES: COMPARATIVE STUDY AT THE LEVEL OF ENTERPRISES

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Historical Background

The present tendencies are expanding worldwide due to three main directions: the globalization which implies increased international competitiveness [20], technological changes (introduction of ICT led to the need for qualified employee, therefore knowledge has become a necessity [25], [26]), organizational behaviour, ICT, knowledge, innovation are considered priorities. Developed countries and the OECD recognized that some common themes are emerging, the need "for policy coherence in dealing with development for leadership from developing countries and for partnerships with shared risk as well as a focus on key sectors for social and economic development. The related theme is innovation." [24]

The historical background, the circumstances which bring innovation to the forefront are important in the study of the innovation performance of countries. To evaluate the necessities and to formulate adequate policies, it is important to know the role of the government, businesses and individuals in the innovation process. In the last decades, different approaches to development with various degrees of success have been observed all over the world. However, all economies have started to face the same problems; they are trying to deal with the increasing poverty and inequality in the global economy. The problems worsen due to the economic, financial crisis, nowadays economies are still recovering or are still feeling the prolonged crisis, fact which continues to influence the public and private sector resources and which has a significant impact on further development. Sustainable development and equal opportunities are new challenges that need to be approached and solved immediately.

The potential of digital aids in providing information and services to citizens is widely recognized by many countries. The penetration of Information and Communication Technologies (ICT) influences the changes of the human existence, the interaction between people, the way of interaction within the society and the way in which societies involve individuals [2], [8]. A growing number of studies and research papers show that innovation has a significant role in the social and economic development assuring economic competitiveness. This means activities which create value through knowledge and became a priority issue. In this respect, policies must follow priorities such as: diffusion of knowledge, enlargement of the innovation support, mission oriented strategies, upgrading human resources, access to skills and competencies, abilities to learn, promotion of organizational change, technological change, productivity, and competitiveness [19]. Starting from the Lisbon strategy and its objectives to make Europe "the most competitive and dynamic knowledge-based economy in the world" a lot of policy initiatives were promoted. In March 2002, the European Commission in Barcelona [56], recognized that financial support for research and innovation is needed. In 2003, "The action plan investing in Research" was formulated by Danuta Maria Hübner, MEP, Chair of the Committee on Rural Development at the European Parliament. On 14 October 2011, she declared that "innovation is the only way to go for Europe … growth will not happen without the commitment of the private sector, but despite the fact that innovation may principally be a task for private entrepreneurs, it is up to public authorities to create conducive regulatory frameworks to provide guarantees that reduce the risk that

naturally accompanies innovation. In fact, innovation-led growth is increasingly place-based, with regions and cities taking the lead. Regions and cities are places where universities and talents, entrepreneurial spirit, social innovation, attractive lifestyles and innovation funding schemes come together."

1. The Relevance and Role of Innovation in Economic Growth – Short Review of the Literature

The relevance of the innovation was recognized already in the 18th century when its different features were formulated: Adam Smith in his well-known work *"An Inquiry into the Nature and Causes of the Wealth of Nations"* [39], made a remark on the new generation of specialists who could improve productivity through knowledge. Friedrich List predicted infrastructure, institutions which would contribute to the development of the manufacture through creation and allocation of knowledge [7]. Joseph Alois Schumpeter showed that innovation is a great force of the economic activity [27], [36]. In order to analyze and study the innovation, it is very important to define this concept. A brief analysis of innovation in contemporary society is presented by Jon Sundbo [40]. His book presents the development of the innovation theories, an analysis of the innovation concept. Various approaches to the concept are presented in the literature starting from the papers which treat this subject based on the definiton of Schumpeter (published in 1934), in a classical way as Everett Rogers [10], [14] did, to the modern approach, studies published after 1970 when the innovation started to be considered a priority theme ([35], [23], [43] and others). Moreover, approches from the narrowest to the broadest definition can be found. Abernathy and Utterback were among the first who distinguished the radical innovation and incremental innovation in 1978. A review of the innovation literature was published recently by Kevin Shihping Huang and Yu-Lin Wang [21]. Laird D. McLean's paper presents a review of the existing literature, the major contributions on organizational culture and creativity and innovation, supports and impediments to organizational innovation, a synthesis of the work of Theresa M. Amabile, Rosabeth M. Kanter and Van de Ven, Angle and Poole. [28] "…The organization is a business that is bringing creativity to life through innovative products and services that customers desire, therefore fulfilling customers' needs, creating jobs, and contributing to the economy, or whether the organization is the local government using ideas in a creative way to meet the needs of community, therefore increasing the quality of life, organizational creativity and innovation play an integral role in serving all of us." Studies published in the last decade by Cassiolato [4]; Rosenberg [34]; Castellacci [5]; Fagerberg [11], [12]; Fagerberg, Maryann Feldman, Martin Srholec in [13] showed that innovation is the engine of the growth, being an important element of the development achievements. Annotated bibliography about the regional performance measurement and asset mapping of innovative systems in the United States was compiled by Eric Bowen, Zheng Tian, Junbo Yu, James Riggle, Randy Jackson and Shaoming Cheng in 2010 [3]. Many researchers followed, improved and deepened Schumpeter's argument: John Kenneth Galbraith [15], Richard M. Goodwin [16] developed a technique for the modelling of economic activities, a tri-dimensional model to study the interaction between the business cycles and economic growth. Albert O. Hirschman [18] studied the economic development theories. Paul Romer was selected, in 2010, among the Foreign Policy's Top 100 Global Thinkers and he is recognized for his work in the field of the theory of growth and innovation [33]. Gene M. Grossman [17] contributed to the growth theory regarding the role of the innovation in the growth. He analyzed innovation and growth in the global economy, and studied the resources which lead to long term economic growth. In the last period, the number of studies that prove the role of innovation in socioeconomic transformation of developing countries has increased. The innovation activities in developed and developing countries must be treated in a different manner. In Europe, the first programs which promoted innovation and SMEs started after 1980 [52]. Publicly available databases (Eurostat, EIS, IUS) and international survey results (CIS) show that, between European countries, there are big discrepancies concerning the innovation performances on many indicators.

2. Comparative Analysis on Innovation Performance of Transition Economies

In transition economies, the world-wide financial and economic crisis effect started to be felt only in the second half of 2008 and, in a short period, the economic output and production have sharply declined in the whole CEE. At the end of 2010, the economic crisis seemed to be over, however Romania will continue to feel longer the impact of the economic crises. The World Economic Forum provides detailed evaluations of the productive potential of the economies worldwide. The current Report ranks 142 economies using a very comprehensive set of parameters. [37], [38], [22]. The competitive performance of the countries is analyzed by the Global Competitiveness Index, it was introduced by Xavier Sala-i-Martin in 2004 and the countries rank is published annually by World Economic Forum, using different indicators grouped by 12 pillars. Based on the 12 pillars value, the countries are classified in different development stages such as: factor driven, efficient-driven and innovation-driven economies. Romania and Bulgaria were enrolled as efficient-driven economies.

The rank of Romania is getting worst compared with 2009, because the country drop off 14 positions. It is remarkable that Romania lost very much due to the 11th and 12th pillars concerning innovation and sophistication factors, reaching only the 106th place from 144 analyzed countries. Estonia, Hungary, Lithuania, Latvia, Poland were classified in the state of transition, converting from the efficiency-driven stage to the innovation-driven stage, while the Czech Republic and Slovakia based on the competitiveness index turned already to innovation-driven economies.

To understand this situation, we have to remark that transition in Romania started in 1990 and was more difficult than in other Central and Eastern European countries. [44] The EBRD indicators show the duration of each of the three transition stages (Table 1) and it can be observed that the evolution in the case of Romania was very slow. Czech Republic in 1995, Hungary and Poland in 1996 and the Slovak Republic in 2000 became members of the OECD because these countries reached OECD standards. The impact of transition stages on SME development was studied by different researchers. [1]

Tab. 1: EBRD Transition Report

	Stage 1	Stage 2	Stage 3
Romania	1989–1993	1994–1998	1999–2004
Poland	1989	1990–1992	1993–1994
Hungary	1989–1990	1991–1992	1993–2004
Bulgaria	1989–1992	1993–1998	1999–2004
Slovakia	1989–1990	1991–1993	1994–2004

Source: [1], [48]

The Innovation Union Scoreboard divided the EU Member States into four groups based on their summary innovation performance characterized by the Summary innovation Index (SII). [46] The transition economies of Central, South and East European countries belong to moderate innovators group (Czech Republic, Hungary, Poland, Slovakia) and to modest innovators group (Bulgaria, Romania).

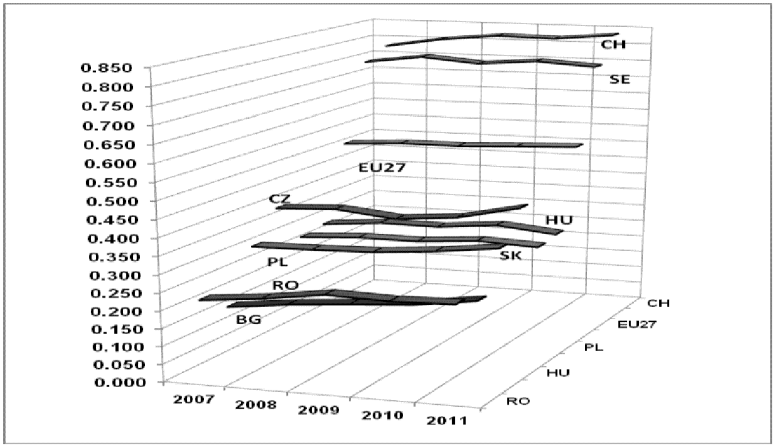
Tab. 2: Transition Countries Rank in EU27 According to their Innovation Performance

	Modest innovators		Moderate innovators			
	BG	RO	PL	SK	HU	CZ
Innovation performance in EU27	26	24	23	22	19	17
Innovation performance in Europe	32	29	27	26	22	20
Average country growth performance	8.6 %	5 %	1.8 %	2.5 %	2.1 %	3.2 %
	Growth leader	Moderate growers				

Source: [46]

The innovation performance of the countries presented in the report is based on 25 different indicators grouped into 8 innovation dimensions characterizing 3 main types of indicators enablers (the main drivers of innovation), firm activities (innovation effects at the level of the firm) and outputs (the effects of firms' innovation activities). Based on the SII, the transition countries are situated far below the EU27 average. The innovation leader in EU27 is Sweden and the European leader is Switzerland.

Fig. 1: Innovation Performance Based on SII



Source: [46]

The innovation leader countries have high performances in all 8 dimensions. The distance between the moderate, modest innovators and leaders is significant in the dimension of intellectual assets and linkages & entrepreneurship, which shows insufficiency at the level of the firms. The modest innovators and also the moderate innovators are behind the leaders in the dimension of innovators, what means weak effectiveness of firm innovativeness. The gap is very high also in the dimension of open, excellent, attractive research systems and finance and support, which indicates the weakness of the main drivers of innovation in the transition countries. Another negative aspect for Romania is the slow growth in innovation performance. Among the modest innovators, Bulgaria was ranked as the growth leader in innovation performance. The growth in innovation performance for the EU27 was calculated based on data including a 5 year period.

In order to improve the situation, long and also short term policies are needed at the level of each country. In order to evaluate the necessities, a brief analysis is needed in the case of all 25 indicators, used in the calculation of the summary innovation index (SII). Table 3 presents the countries' ranking on each innovation dimension.

Tab. 3: Transition Countries Rank in EU27 According to the 8 Innovation Dimensions

		RO	BG	HU	CZ	PL	SK	Number of countries above EU27 average
Enablers	Human resources	**26**	21	20	18	14	11	17
	Research system	**25**	22	20	19	**26**	23	12
	Finance and support	22	**26**	20	19	18	23	9
Firm activities	Firm investments	13	20	18	10	15	**26**	11
	Linkage & entrepreneurship	**25**	**26**	20	17	24	22	14
	Intellectual assets	**27**	23	20	21	22	24	7
Outputs	Innovators	23	24	**25**	8	**26**	21	13
	Economic effects	16	**25**	5	9	21	17	10

Source: [46]

In case of Romania and Bulgaria adequate policies are needed to encourage development in almost all innovation dimensions. On the dimension of open, excellent, attractive research systems both Romania and Poland are behind the majority of EU Members' States. On the intellectual assets dimension all transition countries must work to improve it. Hungary must improve the innovators dimension thus must introduce policies which encourage the innovative SMEs activities. The best position between the analyzed countries has Czech Republic but its SII value is also under EU27 average.

To verify the relationship between the innovation dimensions and SII, GCI and NRI indices, a regression analysis was applied. Using the regression analysis, we can show how one or more independent variables can be used to predict a dependent variable. In order to discover the strength of the relationship between the independent and dependent variables, the Spearman rank correlation, ρ, was calculated. The ρ closer to -1 or 1 means a stronger correlation. The quality of prediction is measured by the value of R^2. The R^2 value closer to 1.0 means better quality of prediction. In social science research, any R^2 value above 0.5 is considered good. Data in Table 4 show the relationship between the linkages & entrepreneurship (L&E) dimension and the considered variables. The calculated Spearman rank correlation is significant at the 0.01 level.

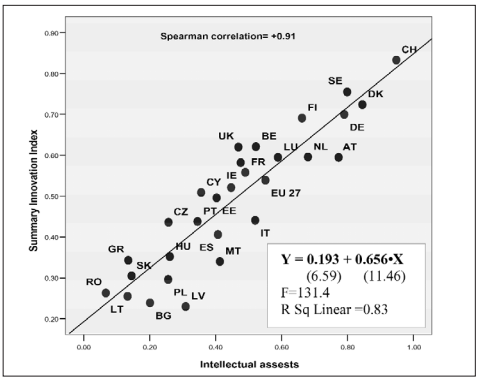
Tab. 4: The Calculated Spearman Rank Correlation

ρ	SII	Research System (RS)	Finance and support	Firm invest-ments	Intellectual Assets (IA)	Innovators	NRI	GCI	GDP/capita
L&E	0.893	0.811	0.755	0.647	0.718	0.641	0.796	0.729	0.714

Source: Own calculations

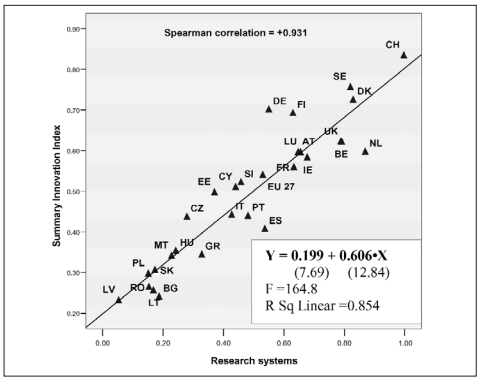
Examining the results, the analysis reveals a significant relationship between SII index, the intellectual assets (IA) score, open, excellent, attractive research systems score (RS). The regression model between the intellectual assets, open research system and SII score is linear and the obtained results are presented in Figure 2, Figure 3.

Fig. 2: Direct Correlation between IA and SII



Source: Own calculations

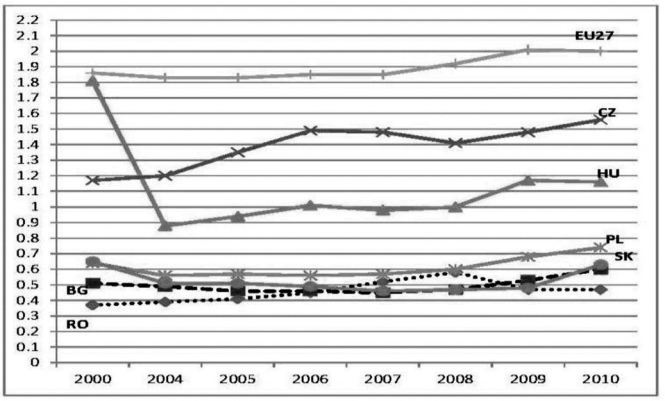
Fig. 3: Linear Correlation between IA and SII



Source: Own calculations

The open, excellent, attractive research systems innovation dimension is included in the category of the indicators that form the main drivers of innovation and which was calculated based on the following indicators: international scientific co-publications, top 10 % most cited scientific publications and non-EU doctorate students. Thus the score depends on the indicators which with own, national forces can be improved slowly because of the mentality and culture problems. To improve the score on short term, not only in Slovakia and Romania but in other CEE countries as well, European policies should encourage the scientific partnerships of universities and research centres also from developed economies. The penetration of the CEE countries' scientific publications in the most cited international scientific journals can be increased through the improvement of the quality of education and research institutes. Another weakness of the transition countries presents the low level of GDP expenditure on R&D comparatively with the EU-27 average (figure 4).

Fig. 4: The Level of GDP Expenditure on R&D



Source: [49]

The intellectual assets innovation dimension calculation is based on different forms of intellectual property rights, trying to capture the innovation efforts at the level of the firm and it uses the following indicators: PCT patent applications, PCT patent applications in a societal challenges (climate change, mitigation, and health), community trademarks and community designs. In this respect, the CIS Survey analysis has shown that in Romania the innovation effort is very low. The patent applications to the EPO, in 2008, were 1.7 per million of inhabitants in Romania and 9.2 in Slovakia. The EU-27 average in this indicator was 119.5. (Eurostat) [53]

The Spearman rank correlation coefficient calculated by SPSS has shown the correlation between the 8 innovation dimensions of Summary innovation index, labour productivity and the GDP/capita. The calculation was made using data on EU-27 member states, EU-27 average and Switzerland. The obtained Spearman rank correlations between the considered variables are presented in the table 5.

Tab. 5: Correlation between Innovation Dimensions and Economic Development

Spearman rank correlation	SII	Labour productivity	GDP/ capita
Human resources	0.70	0.63	0.63
Open, excellent, attractive research systems	**0.92**	**0.87**	**0.93**
Finance and support	0.67	0.41	0.48
Firm investments	0.66	0.26	0.36
Linkage & entrepreneurship	0.88	0.61	0.70
Intellectual assets	**0.92**	**0.80**	**0.87**
Innovators	0.61	0.56	0.58
Economic effects	0.74	0.62	0.68

Source: Own calculations

According to Eurostat, "Labor productivity per person employed (EU-27 = 100) is ratio between GDP expressed in purchasing power standards (PPS) and the number of persons employed. GDP per person employed is intended to give an overall impression of the productivity of national economies expressed in relation to the European Union (EU-27) average. If the index of a country is higher than 100, this country's level of GDP per person employed (http://epp.eurostat.ec.europa.eu) is higher than the EU average and vice versa. The understanding of the driving forces behind labour productivity, in particular the accumulation of machinery and equipment, improvements in organization as well as physical and institutional infrastructures, improved health and skills of workers ("human capital") and the generation of new technology, is important for formulating policies to support economic growth. Labour productivity estimates can serve to develop and monitor the effects of labour market policies. For example, high labour productivity is often associated with high levels or particular types of human capital, indicating priorities for specific education and training policies". [50]

Next, we analysed the Global innovation Index (GII). The GII 2011 has been published by INSEAD eLab since 2007 [51]. It recognizes the key role of innovation, its contribution to economic growth and ranks 125 countries worldwide, accounting for 93.2 % of the world population and 98 % of the world GDP. The evaluation of the innovation capacity is based on 79 indicators grouped in 7 categories (institution, human capacity and research, infrastructure, market sophistication, business sophistication, science outputs, creative outputs). The worldwide leader is Switzerland and Sweden is situated in the 2nd place. The ranking of the transition economies based on SII and GII index is presented in Table 6. According to GII, Romania is placed behind Bulgaria and the Czech Republic is situated behind Hungary.

Tab. 6: Innovation Performance and Capacity

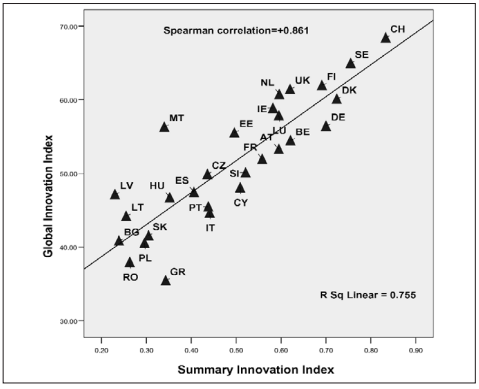
	BG	RO	PL	SK	HU	CZ
Innovation performance in EU27 (SII)	26	24	23	22	19	17
Innovation performance in Europe (SII) 34 country	32	29	27	26	22	20
Innovation capacity (125 country) Global innovation index 2011	42	50	43	37	25	27
Global innovation index 2012 (141 economies)	43	52	44	40	31	27

Source: INSEAD, Global Innovation Index 2011, 2012

Concerning human capital and research, in 2011 Romania was ranked 65th, for business sophistication occupied position 71 (in this category the innovation linkages was ranked 107th) and for creative outputs it occupied the 64th position with the creative intangibles in 102nd position. In the case of Slovakia, the creative outputs were ranked in 63rd position; the worst situation is in the category of creative intangibles where it was ranked in 91st position.

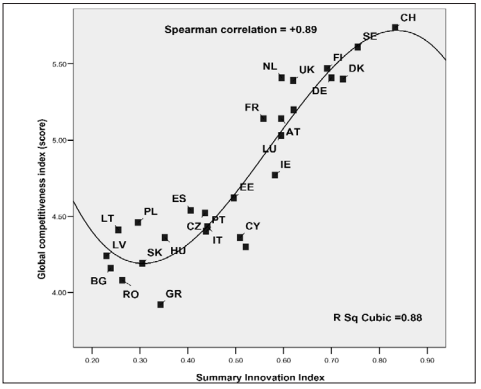
The Spearman rank correlation coefficient calculated by SPSS shows a strong linear correlation between SII and GII rankings, thus for a high SII, the GII score is high as well. See Figure 5.

Fig. 5: Linear Correlation between SII and GII



Source: Own calculations

Fig. 6: The Correlation between SII and GCI



Source: Own calculations

In order to analyse the impact of the innovation on the economic development, the Spearman rank correlation was calculated. The result suggests that a critical level of innovation must be achieved. Only if the SII value is greater than a given threshold (we propose for this the value of 0.4) the innovation outputs contribute to economic development. (Figure 6)

Next, we will analyse the readiness level of the transition countries using the Network Readiness Index (NRI). The NRI is defined as a nation's or community's degree of preparation to participate in and benefit from information and communication technology developments. It has been published since 2000–2001. The NRI was introduced by Kirkman et al in 2002 and it was redefined by Dutta et al in 2003. The 2012 report [9] analysed the economies using 10 pillars. Previous reports calculated the NRI with 3 component indexes (environment, readiness, usage) including totally 9 subindexes (pillars).

Tab. 7: Network Readiness Index

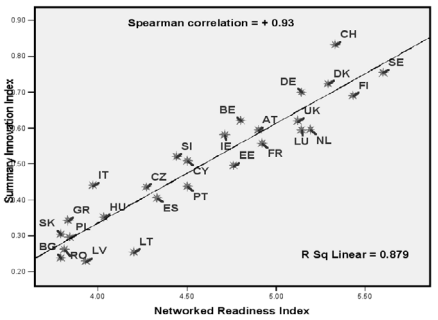
	Number of countries	BG	RO	PL	SK	HU	CZ
2006–2007	122	72	55	58	41	33	34
2007–2008	127	68	61	62	43	37	36
2008–2009	134	68	58	69	43	41	32
2009–2010	133	71	59	65	55	46	36
2010–2011	138	68	65	62	69	49	40
2011–2012	142	70	67	49	64	43	42

Source: [9]

Starting from 2010, Slovakia lost in rank comparatively with Poland, but the Slovak declining tendency was indicated by the SII score as well.

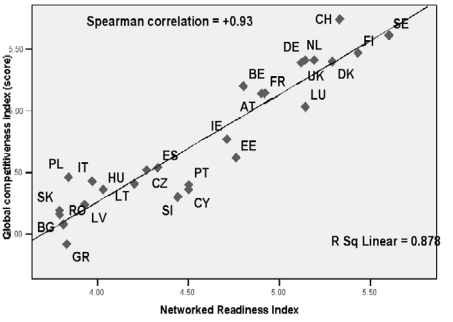
For countries with high NRI score, the SII is also high (Figure 7). Linear correlation was also obtained between the countries competitiveness index and NRI, respectively SII and GDP (Figure 8, Figure 9).

Fig. 7: Linear Correlation between SII and NRI



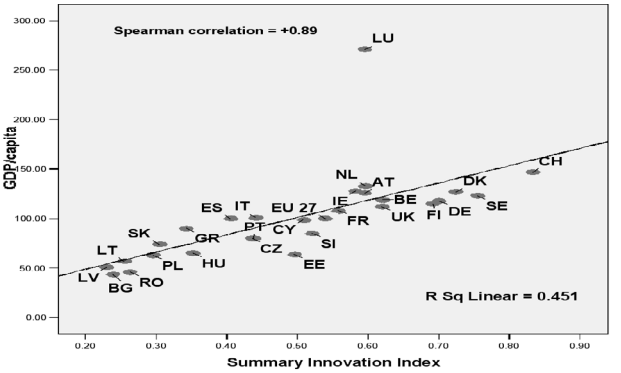
Source: Own calculations

Fig. 8: Correlation between NRI and GCI



Source: Own calculations

Fig. 9: Correlation between SII and GDP



Source: Own calculations

3. Innovative Capacity & Performance of Enterprises

A growing number of studies and research papers show that the economic recovery largely depends on innovation, on the innovation capacity of enterprises. Different studies proved that technology and innovation increase the economic competitiveness and have a significant role in social and economic development. The SII score is calculated based on three main types of indicators, from which two are based on the innovative efforts at the level of the enterprise (firm activities with 9 composite indicators grouped in three categories: firm investments, linkage & entrepreneurship and intellectual assets) and on the firm's innovative activities effect (outputs with 8 composite indicators grouped in two categories: innovators and economic effects).

In order to analyze how the innovative capacities of the enterprises can be increased, the Spearman's rank correlation coefficient was calculated. The obtained results, the strength of relationships between the enumerated variables are presented in Table 8.

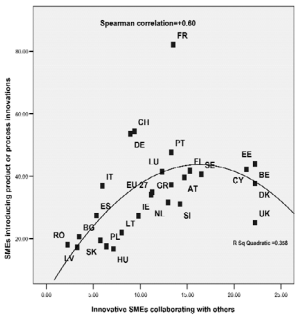
Tab. 8: Spearman Rank Correlation in the Sample

		Spearmar Rank Correlation
Population completed tertiary education	Innovative SMEs collaborating with others	0.51
Population completed tertiary education	SII index	0.59
Population completed tertiary education	NRI index	0.67
KIA employee	GDP/capita	0.93
KIA employee	Labour productivity	0.86
Innovative SMEs collaborating with others	SMEs introducing product/process innovations	0.60
Innovative SMEs collaborating with others	SII index	0.66
International scientific co-publications	Innovative SMEs collaborating with others	0.65

Source: Own calculations, [46]

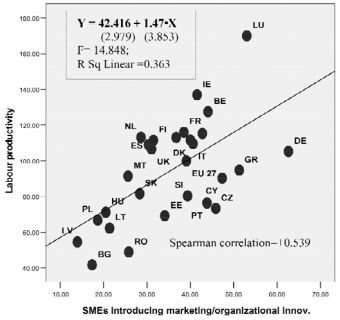
Next, Figure 10 shows SMEs introducing product/process innovations vs. innovative SMEs collaborating with others for EU-27 and Europe leader countries and Figure 11 the SMEs introducing marketing/organizational innovation vs. labour productivity. The analysis shows that the collaboration between innovative SMEs has a positive impact on the innovation activities of the enterprises. In this respect, a supreme value can be determined. Figure 10 presents that, even if we increase the intensity of the collaboration, after a point, named threshold, it won't have any effect on the innovation growth.

Fig. 10: SMEs Introducing Innovations vs. Innovative SMEs Collaborating with Others



Source: Own calculations

Fig. 11: SMEs Introducing Marketing/ /Organizational Innovation vs. Labour Productivity



Source: Own calculations

Starting from 1990, the number of SMEs in transition economies has grown significantly over the years. This phenomenon means not only increase in their number, but also the diversification of their activities.

In Romania, more than 99 % from all enterprises are micro, small and medium size enterprises. Since 2008, the SMEs in Romania have been confronted with big difficulties. The world crisis began to show its effects in Romania in October 2008. These effects became perceptible first by companies. The private sector, the SMEs, took austerity measures before the public sector. A survey result, realized by the CNIPMMR, for the period from October 2008 to March 2010 shows that 49.71 % of SMEs reduced their activity, only 7.3 % enlarged their activities and the percentage of bankruptcy was 27.91 %. [41], [42], [32], [6], [29], [31].

The level of innovative SMEs and their activities in summary innovation Index (SII) are incorporated in linkage & entrepreneurship and in the innovators dimensions, with the rank 25 and 23 from 27 EU Members' state. (Table 3) The analysis of the innovative SMEs is in compliance with the Oslo manual [32] using the CIS Survey data. The data for Romania are presented in table 9.

Tab. 9: The Evolution of Innovative Enterprises in Romania

	2002–2004	2004–2006	2006–2008	2008–2010
Innovative enterprises (%)	19.9 %	21.1 %	33.3 %	30.8 %
The number of innovative enterprises	5136	5970	9986	8116

Source: Own calculations based on CIS Survey data [30]

In Romania, the source of information of innovative SMEs is represented by universities only with 4.1 % in the period of 2004–2005, respectively, with 5.1 % in the period of 2006–2008. Moreover, research centres represented only 3.5 % of innovative SMEs information source in 2004–2006, respectively 3 % in the period of 2006–2008. The weakness of SMEs innovativeness is caused partially by the facts presented above.

Tab. 10: The Evolution of the Main Types of Innovation of Entreprises in Romania

Innovative SMEs		2002–2004	2004–2006	2006–2008	2008–2010
Technological innovator	Product innovator	472	525	710	631
	Process innovator	1203	1169	1965	948
	Process and product innovator	3461	4276	3073	2054

Source: NIS [47], Press communication no. 124, 30.06.2008; no. 269 2010; no. 153 28.07.2010; no. 29 8.02.2012; own calculations

Tab. 11: The Weight of Cooperation Activities of the Romanian Innovative Firms

Cooperation 2006–2008	The weight of cooperation	The number of enterprises with cooperation
National level	12.9 %	177
European level	7.6 %	104
USA	1.4 %	19
China, India	0.8 %	11
Others	0.6 %	8

Source: [30]

The cooperation, which is a composite indicator of linkage & entrepreneurship dimension, is another weakness of the Romanian innovative SMEs. In the period 2004–2006, only 17.3 % (1033 firms), respectively 13.8 % (1378 firms from the total 9986 innovative firms) of firms between 2006–2008 had concluded cooperation agreements.

The lack of funds for innovation, high innovation costs, and the lack of experience are considered barriers. The distribution of innovative SMEs at NUTS 1 level is presented in Table 12.

Tab. 12: The Regional Distribution of Innovative Firms in Romania

NUTS 1	The weight and number of innovative firms 2004–2006		The weight and number of innovative firms 2006–2008
North-West and Central region	20.7 %	1236	29 %
North-East and South-East region	34.7 %	2071	45.9 %
South-Muntenia and Bucureşti-Ilfov	16.8 %	1003	34.2 %
South-West-Oltenia and West	12.1 %	722	22.6 %

Source: [30]

In Slovakia, 99.2 % of entreprises are SMEs and 0.8 % are large entreprises. The structure of active entreprises in 2010, based on SBA Fact Sheet 2010/2011 [54] was the following: 71.0 % micro, 25.4 % small and 2.8 % medium sized. In this period, the SME sector lost about 12 % of its workforce and large entreprises lost about 11 % of their employees. EIS 2009 [55] shows that 21.4 % of Slovak SMEs introduced innovation of products or processes and 21.5 % implemented organizational or marketing innovation. In Slovak Republic the barriers of innovation activities on the level of firms are the following: the high costs of innovation (reported by 21.5 % of SMEs), the absence of financial resources in entreprises (reported by 18.5 % of SMEs), absence of financial resources outside of entreprises (reported by 11.8 % of SMEs), uncertain demand for innovation products (11.6 % of SMEs) and the absence of qualified human resources (reported by 8.7 %).The Slovak Republic is situated also behind advanced countries concerning the innovation efficiency and the effective transfer of R&D results to innovation processes. A detalied report was published in 2010. [45]

Conclusions and Recommendations

According to the estimates, over 90 % of the enterprises feel the recession. Official data show that the business environment deteriorated. In 2009, the decreasing tendency was more accentuated; 10 times more enterprises suspended their activities than in the same period of 2008. The economic situation of firms continued to deteriorate in 2011, restructuring plans and further market contractions led to the bankruptcy of many enterprises. In Romania, companies concentrated their strategies on the reduced costs of the resources and not on the improvement of productivity.

The Europe 2020 Strategy was formulated with the aim to help Europe "to come out stronger from the crisis and to turn the EU into a smart, sustainable and inclusive economy delivering high levels of employment, productivity and social cohesion". In this respect, 3 priorities, and totally 7 flagship initiatives were formulated. The flagship initiatives represent catalyst of each priority theme.

All the flagship initiatives: innovation, education, information society, climate, competitiveness, labour market – present challenges for all post communist countries and they require short and long term strategies. Policies must encourage the main drivers and enablers of innovation. In this respect, the quality of the education system must be improved, the enrolment in tertiary education must increase (especially in engineering and natural sciences), and the funds for higher education and research must be increased.

On the other hand, to strengthen the SME sector, entrepreneurship must be encouraged. The teaching of entrepreneurship has to take into consideration that there is a difference, in terms of economic and cultural background, between the advanced EU countries and the newcomers, where entrepreneurship and enterprising is still a relatively new phenomenon. In addition to the Lisbon strategy and the Oslo Agenda, the primary aim in transition country view is to promote entrepreneurship, assist in the creation of new SMEs and strengthen the private SME sector [45]. Strengthening the linkage & entrepreneurship innovation and the intellectual assets dimension, which depend more on qualified human resources, can increase the innovation effects at the level of the firm.

Social inclusion in Europe is a major challenge and the Universities can play a key role here. In this respect, it is crucial to build up a university network supporting dynamic cultural change across society. Thus, suitable local, regional and national strategies are needed in correlation with the local particularities.

Another target must be *the stimulation of technology transfer and the commercialization of the academic research.* EC Final Proceedings (2006), proposes that all institutes which are interested in entrepreneurship education should implement the following measures: improve partnership between universities and SME sector, improve partnership between regional government, high schools and SMEs, enable students to achieve practical experience in small enterprises during their study, involve successful entrepreneurs in the education process (for example inviting guest speakers), create conditions for establishing practical teaching centres at small enterprises (SME companies), bring education closer to the real life.

In this respect, Universities should be proactive not only in elite communities, or where individuals can afford education, but also within outreach community programs to encourage entrepreneurship.

To *increase economic competitiveness, the development of the innovation infrastructure* and the dissemination methods of research results for industrial and commercial applications should be encouraged. The compatibility of research projects with industrial policies should be ensured. To increase the competitiveness of human resources employed in SMEs, financial measures should be instituted to support researchers' mobility to the business environment.

In Romania a special attention should be paid to the *increase of competitiveness of production and services* from the agricultural and forestry sector.

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Abstract

INNOVATIVE CAPACITY & PERFORMANCE OF TRANSITION ECONOMIES: COMPARATIVE STUDY AT THE LEVEL OF ENTERPRISES

Zsuzsanna K. Szabo, Michal Šoltés, Emilia Herman

In the last decades, different approaches to development with various degrees of success have been seen all over the world. However, in the last period, all economies started to be confronted with the same problems. They are still recovering from the economic and financial crisis, what continues to influence the public and private sector resources and has a significant impact on further development. It is widely recognized, through a growing number of studies and research papers that the economic recovery largely depends on the improvement of the SME sector and research and development. Technology and innovation play a significant role in social and economic development. As resource of economic competitiveness, the SME sector and innovation have become a priority issue. Innovation means activities that create value through knowledge and produce growth. Innovation is driven by entrepreneurs who take risks, accept challenges and change things. In this respect, it is essential to promote policies that support innovation and technological transfer to the SME sector. Furthermore, these policies should support entrepreneurial competitiveness at regional level; in industrial branches it is important to impplement measures to attract investors having a significant role in the regional sustainable development.

The paper presents a short review of the literature on the relevance and the role of innovation in growth. It focuses on the innovation capacities and performances of the transition economies emphasizing the innovative force of enterprises. This study intends to analyze the barriers and challenges for CEE and South European countries in comparison with developed economies and in compliance with Europe 2020 strategies. Moreover, it identifies weak points and local, particular strengths of innovation in the (post)crises period and it identifies the targets for the next period. All the flagship initiatives: innovation, education, information society, climate, competitiveness, labour market present challenges for the analysed countries and require short and long term strategies. The scientific approach in this respect is a necessity because it can process the data in publicly available databases and assess the progress of these countries, which is at the time being slow; some of them are situated in the last places in EU27 concerning the innovation. The goal is to improve this situation.

Key Words: *innovation, transition economies, enterprises, crisis, SME, entrepreneurship.*

JEL Classification: *L25, M21, I25, L29, H12.*