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SITUATION OF ECONOMIC RESEARCH IN SLOVAKIA

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A b s t r a c t. The aim of the paper is to determine the situation in higher education and research area in Slovakia and to compare this development with the EU 27 and OECD countries. The interest is oriented on the economic research as an instrument between Slovakia, EU 27 and World in overall research indicators. The principal problem is insufficient funding of Research and development. Despite this fact an improvement occurred in the Science and Research category of indicators during recent years in Slovakia.

INTRODUCTION

In 2000, the EU Member States responded to the challenge of globalisation with the Lisbon Strategy for a competitive knowledge-based economy and, as part of this strategy, the 3 % objective for research and development (R&D) intensity and the initiative to create a European Research Area (ERA). The goal is to create a true European Single Market for Research, where knowledge, researchers and technology can move across frontiers in the same way as goods, people, services and capital do.

Increasing investment in R&D is one of the key objectives of the Lisbon Strategy. A substantial increase in investment in R&D is important for the achievement of a European Research Area and for providing a significant boost to the industrial competitiveness of the European Union [European Commission 2008].

Advanced economies such as the European Union, the US and Japan represent a shrinking share of global R&D expenditure worldwide. According to OECD data, the EU-27 share declined from 29% in 1995 to 25% in 2005. Similarly the US and Japan have lost 4 and 3 percentage points respectively of their shares over the same period. As part of the overall process of globalisation, R&D activities are becoming increasingly internationalised [European Commission 2007].

Based on the Eurostat report [2011] although there has been little evolution in R&D intensity at EU-27 level, there has been a considerable increase in R&D investment in real terms: between 2000 and 2006, R&D expenditure in EU-27 has grown in real terms by 14.8 %. Comparable figures are for the US and Japan are 10.1 % and 21.9 %.

There has been a significant increase in the R&D intensities of more than half of the EU Member States. In 2008, R&D intensity (i.e. R&D expenditure as a percentage of GDP) in the EU-27 stood at 1.90 %, up 1.85 % on 2007, but still below the 3 % target set for 2010 by the Lisbon strategy. The 3 % target will be maintained for the next ten years as one of the five key targets of the Europe 2020 strategy. Slovakia R&D expenditure as a percentage of GDP was in the year 2008 0.47%.

Investment in R&D has been comparatively low according to the OECD Science, Technology and Industry Outlook (2010). Gross expenditure on R&D (GERD) was 0.5% of GDP in 2008, the second lowest in the OECD. However, average annual real growth in GERD accelerated to nearly 6% between 2004 and 2008. Government funded around 52% of GERD in 2008, up from an average of 37% in the 1990s, while industry financed a comparatively low 35%, down from over 60% during much of the 1990s.

In 2008, industry-financed GERD was 0.2% of GDP, below the average of 1.5%. In that year, the business enterprise sector performed 43% of GERD, the higher education sector 24%, and government 33%. Business expenditure on R&D (BERD) was only 0.2% of GDP.

In 2008, both the 0.7 triadic patents per million population and the 457 scientific articles per million population were low. Other outcomes were also weak during 2004-06: 9.4% of firms introduced new-to-market product innovations and 14.1% of firms undertook non-technological innovation.

Eurostat report (2011) determines Government budget appropriations or outlays on research and development (GBAORD) as funds allocated to R&D in central government or federal budgets and therefore mean budget provisions, not expenditure. In 2009, GBAORD expressed as a percentage of GDP stood at 0.74 % in the EU-27. Despite it was still below the levels recorded by its main economic partners: the United States (0.99 %, 2008) and Japan (0.75 %, 2009).

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Among the EU Member States, only Sweden (3.75 %) and Finland (3.73 %) exceeded the EU goal of devoting 3 % of GDP to R&D and also outperformed Japan, the United States and South Korea. Though Denmark (2.72 %), Austria (2.67 %) and Germany (2.63 %) did not achieve the 3 % goal, they were well above the EU-27 average. R&D expenditure in the EU-27 increased by an average of 3.3 % a year between 2003 and 2008, reaching EUR 237 billion in 2008. Germany, France, Italy and the United Kingdom together accounted for more than half of the EU-27 total.

Slovak higher education has undergone fundamental changes since the fall of the iron curtain. First, the new Higher Education Act which was adopted in the former Czechoslovakia in 1990 marked a new era, bringing academic freedom to higher education after a period of central management by the government of contents and procedures. The Higher Education Act of 2002 (Act No.131/2002 of Law Code on Higher Education) introduced another set of radical changes, such as the implementation of the Bologna Declaration and the establishment of higher education institutions as legal entities (having been State budgetary institutions before) as well as profound changes in the allocation of funds to Higher Education Institutions [Jensen et all 2008].

Comparing the overall research results of the Slovak higher education system with other national research and education systems, we find a comparatively low output. Despite this fact an improvement occurred also in the Science and Research category of indicators.

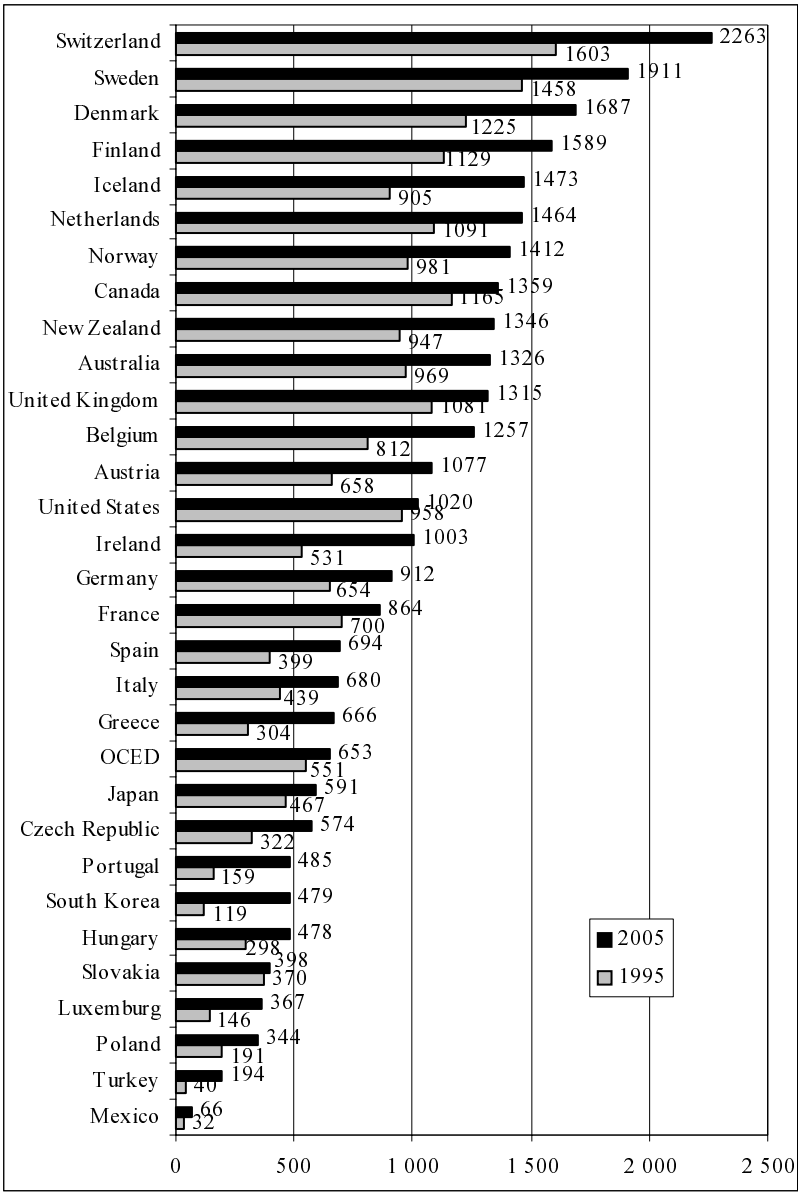

Figure 1. Number of scientific publications in OECD countries in 1995 and 2005 relative to one million population (in 1995 and 2004). Countries listed in order of the number of publications in 2005
Source: Main Science and Technology Indicators 2006/1, Thomson Scientific, NSI 1981-2005.

Table 1. Ranking of universities, higher education institutions and faculties of the Economic sciences group

		EKONOM	Students and Techers (SV1-SV4)	Aplications for Study (SV6-8)	Publications and Citations (W1-W2a)	PhD Studies (W4a-W6)	Grants (W7-W10)	2010 Average	2009 Ranking	2008 Ranking	2007 Ranking
↑	1	Slovak University of Agriculture	81	55	79	94	21	65,9	2	2	2
↓	2	Technical University of Kosice	80	46	75	59	63	64,4	1	1	1
↑	3	Matej Bel University	85	47	50	62	10	50,7	6	6	6
↓	4	University of Zilina	78	56	7	85	15	48,4	3	3	3
↓	5	University of Economics	72	31	47	61	20	46	4	5	5
↓	6	Comenius Univesristy	58	48	51	56	3	43,1	5	4	4
≡	7	University of Presov	42	51	8	26	4	25,9	7	7	n.a.
=	8	J. Selye University	30	42	4	*	10	17,3	8	8	n.a.
		International School of Management Slovakia	86	72	2	*	25	37	n.a.	n.a.	n.a.
↑	1	Faculty of Economics and Menagement Slovak University of Agriculture	81	55	79	94	21	65,9	2	2	2
↓	2	Faculty of Economics Technical University of Kosice	80	46	75	59	63	64,4	1	1	1
=	3	Faculty of National Economy University of Economics	84	29	80	65	60	63,9	3	4	4
↑	4	Faculty of Economics Matej Bel University	85	47	50	62	10	50,7	9	10	6
=	5	Faculty od Operation and Economics of Transport and Communications University of Zilina	78	56	7	85	15	48,4	5	3	3
↓	6	Faculty of Buseness University of Economics	66	36	42	76	9	45,9	4	5	5
=	7	Faculty of Management Comenius Univesristy	58	48	51	56	3	43,1	7	6	9

Source: Report "Assessment of public universities and their faculties", ARRA [2010].

The Academic Ranking and Rating Agency (2006) applying the internationally comparable data estimated total of 1243 Web of Knowledge registered journal papers in the period 1996-2006 were published by 10 065 university teachers and 1239 research and artistic workers. This represents 0.11 papers per university academician (in 2004 it was still 0.12). 7,326 citations of these papers were recorded. Another issues in 2008 as the 0.7 patents per million population (in 2005 Slovakia 5.8, EU-27 105.7) and the 457 scientific articles per million population were low.

According to the research of the Academic Ranking and Rating Agency (ARRA) published in the report „*Assessment of higher education institutions and their faculties (2010)*" the following can be concluded about the results of Slovak higher education institution assessment for the year 2010:

The overall scientific production of Slovak higher education institutions is increasing only very modestly. An unambiguously positive trend in several faculties is the growing number of foreign students, whether from the European Union countries or from third countries. A strong growth is seen particularly at medical and pharmaceutical faculties. The interest of foreign students in studying at some Slovak faculties indicates the faculties' good reputation abroad and represents recognition of their quality.

The group of universities, higher education institutions, and faculties of economic sciences in the last twenty years could benefit from high numbers of applications for study. Similarly as in the last year, the group of faculties specialising in economics has its leaders in the Faculty of Economics and Management, Slovak University of Agriculture (FEM SPU), the Košice University of Technology's Faculty of Economics (EFF TUKE) and Faculty of National Economy (NHF EU) of the University of Economics. The first rank was taken by FEM SPU in the year 2010, during previous years the Slovak University of Agriculture and the Faculty of Economics and Management were stably placed on the second rank (Tab. 1).

CONCLUSION

Based on the summary report of Jensen, Kralj, McQuillan, Reichert [2008] we could determine these main problems in research area:

- Scarce money for starting up new research activities; (co-financing)
- Scarce money for investing in new equipment and improvement of facilities;
- Insufficient funds to support mobility of students and staff. For international mobility, even to attend conferences which is a basic ingredient of a researcher's life, researchers have to apply for special (VEGA, KEGA) grants;
- Low investment in new books, international journals and other resources in the library, i.e. reduced access to necessary information;
- Problem with achieving the Data ….
- Low income of researchers resulting in comparatively low public recognition of a research career in society.
- Grants – controlled number of working hours.

Another less dramatic but still noteworthy competitive disadvantage which Slovak researchers have to face concerns the comparatively underdeveloped research support services at their institutions, a problem which can still be found at many Southern and Eastern European universities.

In order to improve the overall research performance and capacity of the country, the Slovak higher education system has to establish appropriate incentives for university research in terms of available time, financial support, research management support, as well as less bureaucratic grant regulations. Without these stimulus, all of which imply a targeted use of additional resources, university researchers will continue to be dramatically disadvantaged in comparison to their competitors abroad and will be unlikely to achieve comparable results.

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SYTUACJA BADAŃ EKONOMICZNYCH NA SŁOWACJI

Streszczenie

Celem opracowania było określenie sytuacji w szkolnictwie wyższym i badaniach naukowych na Słowacji oraz jej porównanie z pozostałymi państwami członkowskimi UE i krajami OECD. Szczególną uwagę poświęcono znaczeniu badań ekonomicznych jako instrumentu wzrostu gospodarczego i konkurencyjności. W wyniku analiz nie odnotowano istotnych różnic między Słowacją, krajami UE-27 i OECD w zakresie ogólnych wskaźników badań. Głównym problemem jest niedostateczne finansowanie badań i rozwoju w ostatnich latach na Słowacji. Jednak mimo probemów finansowych, nastąpiła poprawa wskaźników dotyczących nauki oraz badań.

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