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**Tertiary Education and Regional Economic Competitiveness and
Innovation
from a Central European Perspective.**

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1. The regional dimension of higher education (a comparative view).

The idea of higher education institutions having a regional mission is relatively new. While there have always been prospering and structurally weak regions in each country, the new element in the post-WW2 history of Western capitalism was that “spatial inequality was now perceived as a problem. ... Moreover, finding a solution to the problem was made the responsibility of the central government”, as Peter Arbo and Paul Benneworth put it in their recent literature review of regional dimension of higher education (Arbo and Benneworth 2007: 8). Higher education and research institutions appeared in regional policy in the 1980s, and the first encouragement of the processes of the commercialization of research results was the Bayh-Dole Act, passed in the USA in 1980. While the original regional policy was that of economic and social equalization within the nation’s boundaries and played a compensatory function for the lagging-behind regions, in the last ten years its focus changed substantially. Today, “regional policy” has become a “regionalised innovation policy”, and individual regions are now involved in a “race for innovation” to be competitive and attractive. Nowadays “each individual region has assumed responsibility for its own development” (Arbo and Benneworth 2007: 19). They must perform to their potential; and it is no longer so much the national aim in national policy to equalize differing potentials of various regions.

Additionally, innovation policies are becoming ever more comprehensive and refer to various new social aspects – they must address, for instance, unemployment, poverty and social exclusion. The broadening of regional policy has implications for higher education institutions; namely, they have to live up to new expectations (Arbo and Benneworth 2007: 22).

Research and teaching, as the two major traditional missions of higher education, are being increasingly complemented with the “third” mission: the regional mission. The new third mission reflects the change in attitude of universities’ external stakeholders: national and local governments, local businesses and industry, as well as, finally, students and their parents. Higher education is increasingly conceived as a vehicle for economic development of the nation and of the region in whose social and economic fabric it is embedded (see Goddard 2000; HEFCE 2003, OECD 1999).

The links between education and the labor market (as well as unemployment) are complicated and multi-dimensional. Equally complicated are the links between economic growth and higher education. Education per se, and in itself, is not a magic remedy for all social ills, including all ills of the labor market. Of fundamental importance for Poland, for instance, are institutional arrangements which do not refer directly to the labor market, such as e.g. legal frameworks limiting the freedom of economic activities, high level of fiscalism, low efficiency of public administration, high relocation/mobility costs of the workforce, the access to information on the labor market, labor code regulations etc. (UNDP 2007: 192). Education (including higher education) is key factor influencing the labor market and competitiveness of particular regions – but not the only one, and perhaps not the most important one? It is one of the pillars – a necessary but probably not sufficient one, as we will discuss below.

The regional engagement of higher education institutions is taken for granted in most Western European economies, and the graduate labor market is analyzed in detail in sociological research; perhaps the most advanced research is carried out in the USA (on the state-basis) and in England (see e.g. various HEFCE-funded, Higher Education Funding Council for England, reports on “the regional mission” of universities in various parts of England, or HERDA-funded, Higher Education Regional Development Association, reports on regional graduate strategies in the South West Region; see HEFCE 2003a, 2003b, 2003c, HERDA 2002, HERDA 2005a, 2005b). It is perfectly possible to perform systematic quantitative

analysis of the regional engagement (or its lack) of tertiary education institutions, including its supporting the local labor market. There are methodologies and good practices for assessing the impact of particular institutions and regional systems on particular regions and there are methods of monitoring their region-focused functioning. There are standards of comparing institutions and regions, based on benchmarks and good practices analysis. The mismatch between labor market demands and higher education supply is studied, and the information asymmetry on the skills needed in the region between institutions on the one hand, and students and their parents on the other hand is found critical to be overcome. Good practices show that internal mechanisms in institutions are important to support their regional mission (and they include additional funding, new incentives, modified career ladder requirements, monitoring of failures and successes of ongoing regional engagement, cooperation with the local industry e.g. via university boards etc). Also a specific mental barrier found in institutions is important to overcome: regional engagement is still found inferior (and ranked as an inferior academic activity) than the national or international one.

The institutional responsiveness to the labor market needs seems low in CEE countries. The OECD Thematic Review is perfectly right when it states that “students must be well-informed about labor market outcomes in order to be responsive to them in their study choices” (OECD 2008, vol. 3: 26). But they are not. In Poland, the regional dimension of both teaching and research is already regarded as a complementary option; the local and regional labor market and educational needs of regionally-minded students are increasingly taken care of by both public and private institutions. Most of over 300 private institutions are focusing on the regional needs through mostly vocationally-oriented, mostly BA-level only study programs. Public universities open satellite campuses scattered throughout their regions, competing head-on with the private sector institutions. The regional contribution of both sectors is significant.

But the direct contribution of the private sector to “knowledge economy” is marginal as the sector’s mission is teaching, and research is virtually absent, which is a good example of complicated links between higher education institutions and knowledge economy in vastly differentiated educational systems. If for Polish universities research is financially insignificant, for Polish private institutions it is financially non-existent (which, by the way, makes the private sector, based on single revenue source, surprisingly, non-entrepreneurial, see Kwiek 2008a; in 2007, income from research was 14% for the public sector and 1.4% for

the private sector; income from teaching in 2007 was 81% for the public and 93% for the private). From a financial viewpoint, Polish higher education is generally teaching-based and its contribution to both national and regional competitiveness is teaching-based (rather than research-based). There is a widening gap between top increasingly research-based Western European institutions and top Polish (and new EU entrants) mainly teaching oriented institutions. The same gap is replicated in nations and regions in the form of the gap between the public and the private sector, with Poland, Bulgaria, Romania, and Estonia as good examples. To refer to the OECD Thematic Review, of the four major missions (the formation of human capital, building of knowledge bases, dissemination and use of knowledge and maintenance of knowledge), CEE institutions focus mostly on the first – which is teaching-based (OECD 2008 vol. 1: 11).

Higher education systems in CEE countries today face the same challenges as those in other OECD countries but in the double unfriendly context of the need to radically change the structure (and focus) of their former educational systems while operating in tough fiscal and economic environment (Barr 2005). The four CEE countries discussed here have the most expanding higher education systems. They are among the top six OECD countries with the highest change in the number of students in higher education between 1995 and 2004, with the first three ranks belonging to Poland, Hungary, and the Czech Republic (OECD 2008: 30). But the massification of higher education took place in a specific context. As Nicholas Barr put it, in EU accession countries, the governments were caught between conflicting imperatives: “the constraints of the Stability and Growth Pact, and the demands of other parts of the public sector – unemployment benefits, active labor market policies, poverty relief, and policies to address social exclusion, pensions, healthcare, and school education. The resources to finance mass, high-quality higher education from taxation were simply not there” (Barr 2005: 243). One of the implications could be that the numerical expansion occurred in mostly cheap-to-run programs, with strong fee-based (rather than tax-based) private sector, with severe negative correlation with the quality of education – and this is the Polish case. A similar expansion occurred in Bulgaria and Romania, apparently with the same correlation. Hungary, the Czech Republic and Slovakia stand here apart, with relatively, by comparison, underdeveloped private sector (financially either independent, or government-dependent).

2. Economic competitiveness: some comparative data

There are many ways of viewing competitiveness. In this presentation, I will follow the notion of competitiveness developed in the last twenty years by Harvard-based economist, Michael E. Porter, starting with his *The Competitive Advantage of Nations* (Porter 1990) to annual *The Global Competitiveness Report* which he co-edits for World Economic Forum (Porter, Sala-i-Martin, and Schwab 2008). In his view, macroeconomic, political, legal and social circumstances underpin a successful economy – but are not sufficient: “wealth is actually created in an economy at the microeconomic level – in the ability of firms to create valuable goods and services using efficient methods. Only firms can create wealth, not government or other societal institutions” (Porter, Sala-i-Martin, and Schwab 2008: 53). So economic competitiveness and productivity ultimately depend on the microeconomic capability of the economy.

Such a notion of competitiveness is critical to our discussion of the higher education/economic competitiveness link in CEE countries. The regional role that higher education institutions play in CEE countries is thus strongly determined by both microeconomic (companies) and macroeconomic settings in which they are embedded – which we will discuss below.

Higher education plays different roles in different OECD countries as their economies are driven by different types of competitiveness (related to different stages of economic development). The only four CEE members of the OECD – Poland, Hungary, the Czech Republic and Slovakia, all recent EU entrants – are not driven by the same type of competitiveness as the most affluent OECD and EU-15 economies. Different economic stages mean different focus in defining their competitiveness and different roles of higher education, including regional roles. The role of (higher) education is different in each of the three stages and economic growth is faced with different competitiveness challenges in each of them. As nations develop, Porter says, their competitive advantages and modes of competing move from the factor-driven stage (low-cost labor, natural resources) to the investment-driven stage (foreign technology, imitation) to the highest one – the innovation-driven stage (innovative products and services at the global technology frontier). While in the first stage, the primary education sector is dominant, it is secondary sector in the second stage, and higher education sector in the third stage that are dominant.

Discussions about higher education and its role in economic competitiveness cannot lose sight of this fundamental distinction between factor-driven growth in such European countries as Albania or Ukraine, investment-driven growth in such European countries as Bulgaria, Romania, Latvia, Lithuania and Poland, and finally almost innovation-driven growth in the Czech Republic, Estonia, Hungary and Slovakia (the countries which are still in transition between the second and the third stage of economic development in this useful classification).

Of the twelve pillars of competitiveness used by Porter et al., two are of special interest to us here: “higher education and training” and “innovation”. As expected, the different pillars have different relative weights in different stages of economic development in the global index of competitiveness (the two criteria for the allocation of particular stages are the level of GDP per capita and the extent to which countries are factor driven). While major OECD (and EU-15) economies are ranked in the first two tens of the index, the four CEE countries analyzed are in the third, fourth and fifth tens of it (Czech Republic is ranked 33, Slovakia ranked 41, Hungary ranked 47 and Poland ranked 51). All of them were ranked lower in competitiveness in 2008 than in 2007, with Hungary and Poland sliding significantly down along the index (Hungary from 38 to 47 and Poland from 45 to 51. The total number of countries ranked is 131).

The five most competitive economies in 2008 were the USA, Switzerland, Denmark, Sweden and Germany. Surprisingly, in the first five ranks of the eight components of the higher education pillar, the biggest economies – the USA and Germany – appear only once (in the same category: local availability of specialized research and training), Switzerland appears 5 times, and Denmark and Sweden appears 4 times (Porter, Sala-i-Martin, and Schwab 2008: 426-433). The positive correlation between overall competitiveness between countries and overall ranking of their tertiary education systems, surprisingly, seems relatively weaker for biggest OECD economies but seems very strong for smaller OECD economies. And a powerful link is evident between competitiveness of economies and innovation: in the first ten ranks of the seven components of the innovation pillar, Sweden and Germany appear in all 7, the USA and Switzerland appear in 6, and Denmark appears in 2. The components of the innovation ranking include the following sub-indices: capacity for innovation, quality of scientific research institutions, company spending on R&D, university-industry research collaboration, government procurement of advanced technology products, availability of scientists and engineers, and utility patents (Porter, Sala-i-Martin, and Schwab 2008: 505-

512). A similar powerful link between competitiveness of economies and the various rankings of tertiary education and innovation systems can be shown on the basis of various OECD and EU datasets and publications (see, for instance, OECD's *Science, Technology and Industry Outlook* or EUROSTAT's *Science, Technology and Innovation in Europe*).

Regional economic competitiveness cannot easily overcome low levels of national economic competitiveness, as ranked above. Regions in Poland or Hungary are still economic parts of Poland and Hungary. And higher education institutions, with their curricula and programs, scope of their regional (third) mission etc, are just one of the several pillars of competitiveness. From this perspective, they should not be either blamed too strongly for the low (and often decreasing, as is the case of Poland and Hungary) competitiveness of their nations and regions, or, alternatively, praised too high for high (or increasing) competitiveness. Let us remind that the other pillars of competitiveness include institutions, infrastructure, macroeconomy, goods market efficiency, labor market efficiency, financial market sophistication, technological readiness, market size, business sophistication and, last not least, of interest to us here as well, innovation. They are often interdependent and try to reinforce each other (Porter, Sala-i-Martin, and Schwab 2008: 3-6).

Consequently, the argument of this paper goes, the contribution of higher education institutions to regional economic competitiveness and innovation in CEE countries is necessarily different there than in advanced OECD economies. The expectations toward higher education are similar in CEE countries but there are many equally important factors – exogenous to educational efforts, and even exogenous to government efforts – which are specifically Central and East European. These exogenous factors make comparative analysis difficult. And they, as we know from the political economy of structural reforms, make reforms difficult (Høj, Galasso et al. 2006: 5).

Consequently, when we discuss “tertiary education for the knowledge society” in OECD countries in general, we need to be mindful of the standardized and measured differences between major OECD economies and CEE members of OECD discussed here. We mean tertiary education, we mean knowledge society – but we mean also, perhaps most of all, economy and knowledge economy, especially at the microeconomic level of knowledge-intensive (or knowledge-poor) companies. Generalizations fitting the former – do not necessarily have to fit the latter.

It seems especially useful to focus on Poland and Hungary, the least competitive economies of the four, and both with recently severely decreasing competitiveness. Where are the weak and the strong points in tertiary education and training and in innovation? Overall, Hungary is ranked high in both higher education and innovation pillars (33 and 37 seven, respectively), while Poland is ranked high in the higher education pillar and low in the innovation pillar (rank 35 and 58, respectively). The strong points for both countries are certainly tertiary enrollments (Poland and Hungary ranked 22 and 25, respectively); strong points for Hungary are the quality of math and science education (23, and only 48 for Poland), internet access in schools (27, and only 48 for Poland); the quality of the educational system is ranked low for Poland (49) and very low for Hungary (65), the quality of management schools is low for both Poland (50) and Hungary (57), local availability of specialized and training services is low for Poland (40) and very low for Hungary (61), and finally the extent of staff training is very low for both Poland (66) and Hungary (74).

To show the differences between major OECD economies and the four CEE countries in the two linked areas, let me refer to ranking of higher education and innovation related to economic competitiveness on the one hand, and the ease of doing business (at the microeconomic level of companies) on the other. The ease of doing business has been annually measured by the World Bank in the last five years, most recently in *Doing Business 2008. Comparing Regulations in 178 Economies* (World Bank 2008).

There are ten categories in which comparative advantages of countries are sought: starting a business, dealing with licenses, employing workers, registering property, getting credit, protecting investors, paying taxes, trading across borders, enforcing contracts and closing a business. CEE countries are scattered along the ranks, with Slovakia very high in the thirties (rank 32), followed by Hungary in the forties (45), the Czech Republic in the fifties (57), and Poland almost in the middle of the ranks, in the seventies (74) (World Bank 2008: 6). Top OECD economies are in the top thirty, with Singapore, New Zealand and the USA in the first three ranks. These are the realities which go far beyond education but directly influence both national and regional competitiveness.

What are the advantages of Hungary over Poland? Poland's weaknesses are clear: it is ranked higher than 100 (out of 178 countries) in such categories as starting a business (rank 129) and

dealing with licenses (156). Hungary is ranked 107 in protecting investors (107). And not surprisingly, all four CEE countries are ranked over 100 in a single category – paying taxes, with between 300 and 900 hours spent on taxes per year (World Bank 2008: 130-162).

For instance, let us focus on the service economy and corresponding employment patterns in CEE countries. There is a strong tendency of employment structures in Poland to become similar to those in major OECD economies. Between 1994 and 2004, the share of those employed in agriculture and forestry decreased (from 24% to 18%), those employed in manufacturing also decreased (from 32% to 29%), and those employed in services increased substantially, from 44% to 53%. This is still far below the OECD average in terms of employment patterns but in terms of GDP by sector, the share of services is 66%, close to the OECD average of about 70%. The difference is that the service sector is composed of various activities, only some of which are knowledge-intensive, from wholesale and retail or restaurants to finance, insurance, real estate and business services. CEE countries lag behind in the share of the latter (which can reach 25-30%, as in the USA, France, or the UK; Anita Wölfl 2005: 9). There are only four companies with considerable (but still marginal by OECD standards) R&D investments in Poland - BRE Bank, Telekomunikacja Polska, Netia, and Orlen, with R&D between 5 and 23 million EUR (in 2007). The above factors have strong impact on the regional competitiveness, but also on the realities of the regional contribution of higher education institutions. The polarization of jobs between highly and medium-skilled workers and lower-end, service workers (in retail, distribution, and in occupations requiring little or no formal skills) in CEE countries can be higher than in major OECD economies as the number of the former may be relatively lower, so the wage premium may be higher. With differences in economies, differences in the demand for occupations may be growing, with different sectoral changes expected in CEE and in major OECD countries (see e.g. a recent report on *Future Skills Needs in Europe*, CEDEFOD, 2007: 13).

3. Lessons to be drawn

One lesson is that while regional economic competitiveness is clearly linked to national and regional higher education and innovation systems, unfortunately to CEE countries, it is **also** linked to other “pillars” of competitiveness. Higher education and innovation systems can be excellent but in other “pillars” these countries severely lag behind (which is measured and reflected in, for instance, ranks in competitiveness index or ranks in ease of doing business

index). Another lesson is that it is difficult for higher education and innovation systems to go beyond their national social and economic contexts: they belong to national settings, are funded by national taxes, and produce graduates with skills necessary for national economies. The national settings are for higher education and innovation systems both burdens and challenges. As Peter Arbo and Paul Benneworth put it, everyone wanted to create their own Silicon valleys but when the experiences were summed up, “a specific set of factors usually had to be present: a distinguished research centre, access to venture capital, a skilled labour force, a nearby international airport, cultural and natural amenities and a high quality of life”. Also contingent factors were important – such as military spending, regulatory frameworks, business culture, deliberate policies, the actions of key persons, and fortunate conjunctures (Arbo and Benneworth 2007: 14). And although only the combination of those specific factors (and some contingent factors) provides most stimulating grounds for the economic prosperity of regions, very good higher education institutions are somehow always present there as well.

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