

4

Universities, Regional Development and Economic Competitiveness *The Polish Case*

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Introduction

This paper explores the regional engagement of Polish universities and shows that the assumptions about the linkages between universities, their regions and economic competitiveness that are taken for granted in the knowledge-economy policy discourse in advanced Western European economies may not fit Poland today. Universities in Poland contribute to economic development, but numerous other features that are known to contribute to economic growth are non-existent and numerous inhibitors of economic growth, already addressed in knowledge-intensive economies, are still in operation. Two decades of social and economic transformation (often referred to as “catching up with the West,” or “post-communist transition” and “EU accession” periods) are not long enough to bridge the gap between the two parts of Europe, and convergence processes between Poland and Western European economies may last much longer than was initially assumed following the collapse of communism in 1989 (Barr, 1994; Goodin, 2003; Elster *et al.*, 1998).

Official policy documents strongly criticize Polish universities for their low research performance and their low level of regional engagement, both in teaching and in research. This chapter shows that in less knowledge-intensive economies (and Poland was ranked only 39th in the Global Competitive Index in 2010, a point I will discuss in detail below), universities’ regional engagement generally occurs in teaching rather than in research, and the role of universities in economic growth can be considerably lower than is assumed in the knowledge-economy discourse used to support Polish higher education reforms. There are many other external factors limiting the role of universities in regional and national competitiveness that need to be taken into account.

While the policy discourse in Poland already stresses the fundamental role of universities’ regional engagement in research, it is hard to assess how long it will take for the development of strong links between universities and their regions to emerge. The strongest links are clearly seen in the teaching dimension of regional engagement, especially in the private sector contest for students from lower socio-economic strata who are traditionally

focused on more labor market-related areas of study. Regional engagement in research is a much more distant goal, and there is a need for more public resources to be invested in joint programs for universities and companies, and for major changes in the current individual and institutional research assessment formulas and requirements for academic promotion. But the major complexity is that regional engagement in research requires research-intensive regional economies as components of a more research-intensive national economy – changes that will take years to emerge. Simplified comparisons between countries and regions of the level of universities' regional engagement do not take into account the significant difference between knowledge-driven economies and economies the still aspire to become knowledge-driven. In the case of Poland, many other factors, external to universities, have a substantially greater impact on regional and national competitiveness than do factors linked directly to higher education and innovation systems.

The Polish higher education policy discourse emphasizes knowledge production as a contributor to economic growth in regions, but little emphasis has been placed on addressing major barriers to economic growth that are exogenous to higher education and innovation systems. The most powerful inhibitors of regional economic growth in Poland are not related to universities, either directly or indirectly. The role of higher education and innovation systems in economic competitiveness needs to be balanced with, and assessed in the context of, the role of all (of Michael E. Porter's) "pillars of competitiveness" (Porter *et al.*, 2008). Any fair assessment of knowledge production in Poland, including a fair assessment of the contribution of Polish universities to the economic growth of regions, needs to consider the fundamental role of the continuing East/West divide within the enlarged European Union. The divide continues both in the economy and its regulatory frameworks (as viewed, for instance, through the proxy of the World Bank's "ease of doing business" index, published annually), and in higher education and innovation systems (as viewed, for instance, through two selected pillars of the Global Competitiveness Index, "higher education and training" and "innovation," as a way of directly assessing the performance of the university sector and its knowledge production). The objective of this paper is to explore the tensions in the actual regional engagement of Polish universities in the context of the knowledge-economy policy discourse which provided the intellectual foundation for a recent wave (2008–11) of higher education reforms.

Research and teaching, as the two major traditional university missions, are being increasingly complemented with the "third" mission, often defined in policy contexts as the regional mission. European universities were mostly teaching institutions, until Humboldt's reforms in Germany in the early nineteenth century produced an alternative model focusing on research alongside teaching. The regional mission reflects the change in attitude of universities' external stakeholders: national and local governments, local businesses

and industry, as well as students and their parents. Higher education is also increasingly conceived as a vehicle for the economic development of the nation and of the region in whose social and economic fabric it is embedded (see Goddard, 2000; OECD, 1999). The regional mission means opening up universities to the regions in which they are located, which may result in a wide range of interactions, from cultural to social to economic (Arbo and Benneworth, 2006). OECD (2007a) studies of the regional engagement of universities on the basis of case studies available from regions in Europe and beyond show that there are both monetary and non-monetary elements to these activities, as universities are reaching out to the region in several dimensions, ranging from cultural interaction with citizens to economic interaction with local enterprises.

The fundamental role of knowledge production in the economic growth of knowledge-driven economies puts universities and the outcomes of their teaching and research increasingly in the public spotlight (Etzkowitz, 2008; Foray, 2006; Leydesdorff, 2006). Universities are increasingly measured, compared and ranked both internationally and nationally; rankings and comparisons are publicly debated (King, 2009). The “economic relevance” of universities links university activities, directly or indirectly, with innovations in the private sector (Geiger and Sá, 2011). Links between higher education and the economy are tightening throughout Europe. There are increasing policy pressures, accompanied by new national and European-level funding mechanisms, to link university missions much more closely to the economy (Maassen and Olsen, 2007). Teaching is expected to be linked more closely to labor market needs, avoiding the mismatch between higher education offerings and labor market needs, and research is expected to be more easily commercialized; the third mission in general, and regional engagement in particular, is expected to create new revenue streams for educational institutions. The economic competitiveness of nations and regions is increasingly linked to national and regional knowledge production, including knowledge production in universities. Recent reforms of Polish higher education and research systems (2008–11) are also based on these assumptions.

Regional Engagement: the National Policy Level and the Institutional Level

A high level of regional engagement of higher education institutions is taken for granted in knowledge-driven economies, and the graduate labor market is analyzed in detail in many European higher education systems. Systematic quantitative analyses of the regional engagement (or the lack thereof) of higher education institutions, including their contribution to the local labor market, are routinely performed. Methodologies and good practices for assessing the impact of particular educational institutions and regional educational

systems on particular regions are available. There are standard approaches for comparing the performance of educational institutions in regions and for regions, based on benchmarks and good practices. Internal institutional management and governance mechanisms, as well as external pressures and financial incentives, play important roles in supporting this regional mission.

In Poland, following the new law on higher education of March 2011, these mechanisms include additional state funding for university partnerships with businesses, especially through public and private science and technology parks; new incentives for universities' regional initiatives, including new study programs prepared with the assistance of local and regional companies; modified requirements for the academic career ladder; and increased cooperation with the local industry in university governance, with new industry representatives on university boards of trustees. The crucial role of the regional engagement of universities was stressed by two competing Polish strategies for the development of higher education that were produced in 2010 (one produced by the Polish rectors' conference and the other by a consortium of consulting firms funded by the Ministry of Science and Higher Education). According to the latter, the openness of higher education institutions to their social and economic environments should serve the purpose of:

continuously adjusting degree courses and curricula to the needs of the labor market. The element combining research activities of higher education institutions with practice is the transfer of knowledge and innovation between institutions and the business sector. Their important task related to educational and research activities includes building links to the region and their social environment.

EY, 2010 p. 65

Overall, the level of university responsiveness to labor market needs is low in Poland. The level of cooperation with the business sector is also low. As a ministerial report on the barriers to cooperation between research centers and companies explained, Polish companies need to be made more aware of the possibilities associated with cooperating with universities; approximately 20% of companies did not know that that it was possible to cooperate with the academic community, and 40% of companies had never tried to get in touch with universities. Also 40% of surveyed companies did not know how to reach research centers potentially interested in the commercialization of research. At the same time, surprisingly, almost half of the companies surveyed that actually got in touch with scientists (45%) reported that the initiative for cooperation came from the scientists. Companies involved in partnerships with universities were generally satisfied; the effects of cooperation with scientists were rated as rather positive by 51%, and definitely positive by 17% of respondents. Only 3% of the companies surveyed provided a "rather negative"

or “definitely negative” assessment of a university partnership (MNISW, 2006, pp. 4–10).

The linkages between Polish universities and their social and economic environments, from an international comparative perspective, are weak, and all major international reports on Polish higher education released in the last few years stress the exceptional academic character of Polish universities, and their engagement with their own (academic) issues rather than with issues of interest to, or relevant for, the society and the economy. The linkages between educational offerings (especially for public institutions) and labor market needs are also very weak. As an OECD report stressed,

it is not clear how far the current offerings do in fact respond to actual labour market needs. ... the whole tertiary education system, and not only the academic sector, is academically driven. The effect is a set of institutions that are typically – though not always – strongly inward-looking in focus, rather than facing outward toward the wider society, including working life.

OECD, 2007b, p. 77

A World Bank report reaches similar conclusions about Polish universities’ links to the economy:

The combination of academic traditions with an autonomous legal and financial framework has encouraged a relatively inward looking and independent academic culture, which tends to show little interest in either the labour market or the business and innovation environment. Most higher education institutions lack a clear focus on the needs of high technology companies or societal needs in general.

World Bank/EIB, 2004, p. ix

This academic ethos is prevalent throughout the system, and Poland does not seem to be an exception in Central Europe.

The remarkable expansion of the Polish tertiary education sector (1.9 million students in 2010, as compared to 404,000 students in 1990) was mainly achieved through privately funded, part-time higher education at public institutions and, in particular, through the expansion of the private higher education sector (from 6 institutions in 1990 to 195 institutions in 2000 and 330 institutions in 2010). Most private providers offer higher education in high-fee, low-cost subjects such as social sciences, but it is likely that public higher education institutions also fill their classrooms in subjects that do not require specific equipment and are, as a rule, low cost. The government, however, still needs to consider how to respond to the drift toward low-cost subjects, which is especially evident in the private sector. Such a response should

include supporting the establishment of excellent conditions for teaching, learning and research in priority areas, and might include other forms of “soft steering,” such as the recent introduction of “contracted studies” funded by the Ministry of Science and Higher Education in the strategically important areas of sciences and engineering. The program of “contracted studies” started in 2008 and by 2013 the government will have spent PLN 1 billion (about USD 350 million) on this initiative: currently, it includes about 25,000 students, 10,000 of whom receive non-refundable “motivation stipends” from 57 institutions. The program has proved a success; in the 2010/2011 academic year, polytechnics received more applicants per student place than did the universities, for the first time in the last two decades. Seven of the top twenty most popular areas of study were from the Ministry’s list of “contracted studies” (see Kwiek and Arnhold, 2011).

It is generally assumed in the policy literature that the contribution of Polish universities (and, generally, of universities in new EU member states) to the economic competitiveness of the regions in which they are located is the same as the contribution of Western European universities, especially in the European Commission’s policy documents and Polish higher education strategies (for example see EC, 2003, 2005, 2006). In other words, no major differentiation is made between two parts of Europe in the EU-level policy literature on European universities, despite striking differences in their actual research output, public and private research funding levels and (until a recent wave of reforms) management and governance structures. The role of university knowledge production in regional development is widely stressed in Poland, and universities are often criticized in national policy analyses and new governmental reform strategies for their underperformance in both research output and regional development (for instance, in the ministerial “Rationale” accompanying assumptions to the most recent changes in the law on higher education, MNISW, 2010). In the overall conceptual framework provided to Polish policy makers by the knowledge-economy discourse (widely used by both the European Commission and the OECD in the last decade, see Brown *et al.*, 2011), universities are viewed by the ministry as institutions that are neglecting their regional mission. The underperformance of universities in research is also believed to be a factor contributing to the low economic competitiveness of the country. Increasing the research performance of Polish universities, policy makers believe, will be one of the keys to economic growth and competitiveness in the years to come.

Universities in Poland are currently (2008–11) undergoing large-scale reforms, following reforms of their Western European counterparts and wider European transformations of higher education systems in the last two decades (Maassen and Olsen, 2007). There is a considerable tension in policy arguments that fail to see the different economic roles of research-intensive universities in Western Europe in maintaining high levels of economic competitiveness and

the economic roles of universities in Poland, which is only aspiring to become knowledge-driven.

The tension between national policy, as reflected in policy documents produced in the last three years, and institutional practice is clearly discernible. At the policy level, which uses a set of standard assumptions about universities' role in the knowledge economy, the links between academic knowledge production and national (or regional) economic performance are clear. But these assumptions are problematic in the policy context, at least at the moment. Poland does not seem to fit the picture of a "knowledge economy" and, consequently, the policy discourse prevalent in Polish public debates and policy documents does not fit Polish universities as centers of knowledge production, including knowledge production for regional development. This is an important tension; while the regional dimension of university knowledge production is heavily emphasized at the national policy level, in practice, for example, the number of projects involving universities and corporate partners, the share of income in university budgets from company-contracted research or the role of enterprises in shaping the educational offers of regionally oriented universities are still quite marginal.

Regional Engagement: Major Tensions

In terms of definitions, Foray notes: "by knowledge-based economies I mean, essentially, economies in which the proportion of knowledge-intensive jobs is high, the economic weight of information sectors is a determining factor, and the share of intangible capital is greater than that of tangible capital in the overall stock of real capital" (Foray, 2006, p. ix; see also Leydesdorff, 2006; Stehr, 2002). In Poland, the share of knowledge-intensive jobs is relatively low, by OECD standards, and the structure of the labor market is substantially different from the OECD average. The World Bank recently defined a knowledge economy as one in which "knowledge assets are deliberately accorded more importance than capital and labor assets, and where the quantity and sophistication of the knowledge pervading economic and societal activities reaches very high levels" (World Bank, 2007, p. 14; see also OECD, 1996). Poland does not easily fit either definition.

There are clear tensions in Poland between the ideal roles of universities in generating economic growth as presented in national policy documents which draw heavily from the European knowledge-economy discourse (as well as roles of universities in increasing the economic competitiveness of the regions where they are located), and the practical level of internationally measurable knowledge production and research intensity in Polish universities. Unrealistic expectations of Polish universities are combined with harsh criticisms of their research underperformance, of the mismatch between higher education and the labor market, and of their low level of regional engagement.

There are a range of complex factors underscoring this tension. Major Western European economies are highly competitive. They are knowledge economies not only because they have well-performing universities; they are knowledge economies because their well-performing universities function (to refer to Porter's twelve pillars of competitiveness) in strong institutional environments supporting growth and competitiveness that includes: high-quality infrastructure, high macroeconomic stability, a workforce that is healthy and well-educated at the basic educational level and healthy domestic and foreign market competition. Other important characteristics of these supportive environments are labor markets that are efficient and flexible, financial markets that are sophisticated and make capital easily available for private-sector investment, a readiness to adopt existing technologies, sizeable markets, a high level of business sophistication and companies that are innovative. As Porter points out, not only are the pillars of competitiveness "related to each other, but they tend to reinforce each other" (Porter *et al.*, 2008, p. 6).

Polish universities function in Polish economic, political, social and legal environments; they function in regions embedded in national economic, political, social and legal environments. Universities do not function in isolation from other institutions and organizations, and are powerfully embedded in this national context. Thus, returning to the popular criticism of universities by policy makers, universities in Poland indeed underperform in all aspects of their regional engagement (as shown by both hard data and soft data, international comparative statistics, global rankings, as well as numerous national case studies). Their level of academic entrepreneurialism is low (Kwiek, 2008a, 2008b; Shattock, 2008), partnerships with enterprises are relatively rare, their scientific and technological parks are small, with underdeveloped links to the business community (Mora *et al.*, 2010), their non-core non-state research income is low (although their non-core non-state income from teaching, through fees, is well-established, Kwiek, 2010), their regional mission in research is underdeveloped (the regional teaching mission of private higher education institutions is better grounded than the same mission in public higher education institutions) and their role in national innovation systems is low. This is all true.

But all of these assessments, based on international comparative data and analyses, need to be viewed in the context of the very different economic, political, legal and social environments in which Polish universities operate today. They have their own history of almost five decades of operating under the communist regime and two decades of post-communist transformation. The knowledge economy has not yet arrived in Poland. The regional engagement of universities in Western European knowledge economies is radically different from the experience of universities in the countries that were until recently called "transition" and "accession" economies. Any analysis of these systems needs to focus on their possible *modi operandi* under changing legal, social

and financial circumstances only slowly leading in the direction of knowledge economies. The low research output of Polish universities, measured internationally, leads to low levels of regional research engagement. The regional research dimension is determined by the national research dimension.

Other tensions related to the regional university mission in Poland include links to the other two missions, teaching and research. Is the regional mission in Poland viewed as a fully legitimate third mission, with separate national funding streams, or is it viewed as a mission that complements teaching and research? Is it viewed and assessed at both the individual and institutional levels as an additional component of the core missions by providing a “regional” dimension to teaching and a “regional” dimension to research? In most OECD countries, higher education policy does not include an explicit regional dimension: “ministries of education characteristically act as champions of the role of higher education and research in meeting national aspirations in terms of scientific excellence and advanced education of high quality for its own sake” (Goddard and Puukka, 2008, p. 22). Current practice in both university funding and governance in Poland indicates that the regional mission is regarded as an additional dimension to teaching and research, and not as a separate category to be individually or institutionally assessed. It is not funded through national or regional funding streams that are separate from teaching and research. It is not used for assessment of the performance of individual academics, academic units and institutions. The regional mission also seems to be relatively irrelevant to academic employment patterns and tenure systems. As the OECD stressed in its study of “globally competitive, locally engaged” universities,

In the past, neither public policy nor the higher education institutions themselves have tended to focus strategically on the contribution that they can make to the development of the regions where they are located. Particularly for older, traditional higher education institutions, the emphasis has often been on serving national goals or on the pursuit of knowledge with little regard for the surrounding environment. This is now changing.

OECD, 2007a, p. 11

This is also changing in Poland. In general, the regional dimension in research in Poland seems to be undervalued, as compared with traditional national and international dimensions. Empirical evidence shows that regional research studies are undervalued by national research communities, with much more prestige traditionally allocated to national- and international-level research activities. Tensions arise from viewing the regional mission as a separate university mission, and as a new way of financing the traditional two missions: teaching and research. Certainly the lack of separate national

funding streams for the regional mission in Poland contributes to the relatively low social legitimacy and low academic prestige of regionally engaged research undertaken in universities.

Regional development in Poland is funded largely by regional funds, except for national, strategically important infrastructure (like roads, railroads, airports etc.), while public universities in Poland are funded almost exclusively by national funds. And their funding does not come from student fees, as studies (in major, regular-track programs) are free or tax based. Consequently, even public funding for teaching is national; the link between fees from part-time students, paid regionally, and the regional relevance of teaching services is very weak in the public sector (as opposed to the Polish private sector, whose strength often derives from its regional engagement in fee-based teaching). The tensions are unavoidable: national interests represented by the national Ministry of Science and Higher Education are different from regional interests represented by regional authorities, responsible for funding compulsory education. The difference between public and private sectors is that national interests in funding for teaching in the public sector are different from regional interests in funding for teaching in the private sector, provided by (mostly, except for a limited number of private institutions with national ambitions, in almost all cases located in the capital, Warsaw) regional students through their fees. Both in theory and in practice, the private sector is much more regionally oriented in teaching.

Thus an interesting tension occurs between public and private higher education institutions in their educational program offerings. Private higher education in Europe is overwhelmingly a Central (and Eastern) European phenomenon (the main exception in Western Europe being Portugal). The demand-absorbing growth in Poland in the last two decades of an “independent private sector” (using the OECD definition) (see Kwiek, 2011) that was almost fully fee based introduced a new element of competition into the national education system: a competition for (fee-paying) local students, increasingly from lower socio-economic strata, much more interested in the relevance of their education to local and regional labor-market needs than were students from traditional, elite, nationally oriented public institutions, mostly from higher socio-economic strata. The private sector has strengthened the regional engagement of the higher education system, albeit only in teaching, since research plays only a marginal role in the private sector.

Private institutions are generally not involved in a prestige-seeking race for national and international research grants and for prestigious, nationally and internationally measured research output. But their teaching mission, especially in non-metropolitan areas, in institutions serving populations from the rural areas and small towns/cities is increasingly regionally oriented, especially in terms of matching local and regional labor-market needs and their educational offerings. While older, more established public higher

education institutions are in larger cities, the private sector in Poland is scattered throughout the country (see Goddard and Puukka, 2008, p. 23). And Polish students are much more attached to the ideas of the labor-market relevance of higher education and of closer cooperation with local and regional employers in both curricular and governance issues (for instance, tailor-made study programs for enterprises offered by universities) than are their Western European colleagues, as recent Eurobarometer data indicate (EC, 2009).

According to this study, Polish students, more than students in any other European country, are very concerned with the relevance of higher education programs for the labor market, as opposed to Western European systems, where program relevance is generally much lower and the linkages to the labor market are perceived to be much weaker. Higher education reforms intended to link higher education more directly to the labor market have powerful social support. A large majority of surveyed Polish students (89%) agreed that it should be possible to undertake work placements in private enterprises as part of their study programs. Almost all (97%) Polish respondents agreed that it is important for higher education institutions to foster innovation and an entrepreneurial mindset among students and staff (the highest response in Europe). Poland has also had the highest support in Europe for the idea that higher education institutions should provide tailor-made study programs for enterprises to help upgrade their work-force (93%, much higher than the European average of 76%). Also, the idea of involving enterprises in higher education governance structures, curricula design and funding is very strongly supported (86%, the average for Europe being 72%. EC, 2009, pp. 40–43).

Unfortunately, the extremely positive attitude of Polish students to stronger linkages between higher education and employers does not seem to be mirrored by the employers themselves. One possible explanation for this difference is that employers are assessing higher education–regional labor market cooperation much more realistically. In contrast to students' perceptions, graduate recruiters in Central Europe, as reported in the recent EU analytical report on *Employers' Perception of Graduate Employability* (EC, 2010), were generally the least likely of those from among 31 countries to say that cooperation with higher education institutions was important, and most likely to say that such cooperation was not at all important. Six countries where employers have the lowest opinion of university–employer cooperation include five new EU member states, including the higher education systems of Poland, Slovakia, the Czech Republic and Hungary (as well as Latvia and France). In Poland, 27% of employers viewed their cooperation with higher education as “not important at all” (almost equal to the European average of 26%); at the same time, only 9% of employers viewed this cooperation as “very important.” In terms of employers' satisfaction with the skills and capabilities of higher education graduates, among 31 European countries studied, Poland consistently ranked below the European average: 9th from the bottom for good literacy skills; 3rd

last for good numeracy skills; 5th last for team-working skills; 11th from the bottom for communication skills; 5th last for ability to adapt and act in new situations; 4th from the bottom for analytical and problem-solving skills; 5th last for planning and organizational skills; 3rd last for decision-making skills; and 5th from the bottom for foreign-language skills (EC, 2010, pp. 26–31).

Thus there is a powerful tension between the positive attitude of Polish students towards stronger higher education–employer cooperation closely linked to the regional mission of the university, and the very negative (and highly pessimistic) attitude of employers to this cooperation. Consequently, the introduction of stronger links between universities and their regional economic partners may take longer than is indicated in current higher education strategies in the region.

Universities, their Environments, and Economic Competitiveness

Universities function in multi-level, interdependent environments, and their regional engagement is closely linked to the characteristics of the economies in which they function. But the relationship between universities and the economic competitiveness of nations and regions is complicated and there is no easy, one-way passage from systems of better-developed universities to more competitive regional economies. Growth, wealth and competitiveness are produced, first of all, at the level of companies, and if universities fit better into patterns of effective university–enterprise cooperation, regional economies have a chance to be more competitive. Macroeconomic, political, legal and social circumstances underpin a successful economy, but these are not the only essential conditions for success, since “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 *et al.*, 2008, p. 53). So, economic competitiveness and productivity ultimately depend on the microeconomic capabilities of the economy (for more details on Central Europe in general see Kwiek, 2012).

Discussions of knowledge production and the regional engagement of universities in post-communist Europe cannot ignore a fundamental distinction between efficiency-driven growth in such European countries as Albania or Bulgaria, almost innovation-driven growth (in transition between the second and the third stage of economic development in this classification) in Poland, Hungary, Slovakia and Romania and, finally, innovation-driven growth in the Czech Republic. Of the twelve pillars of competitiveness (Schwab, 2010), two are of special interest: “higher education and training” and “innovation.” While most major OECD economies are ranked in the top twenty countries on the index, Poland is ranked 39th. Expectations of higher education are similar in Poland and in Western Europe (and derive

from both the knowledge-economy discourse and OECD and EC documents and reports) but there are many other equally important factors – exogenous to educational efforts and even exogenous to government efforts – which are specifically Polish. These exogenous factors make difficult a comparative analysis of higher education roles in promoting economic growth, and also create considerable tensions between the “knowledge economy” discourse used at the policy level in Poland and actual environments in which Polish universities function.

In the areas most important for knowledge production in the Global Competitiveness Index, Central European economies such as Poland, Slovakia and Hungary are ranked generally low and, in some specific cases, very low. But even if they were ranked high or very high in these areas, their overall economic competitiveness would still be low, given their rankings in other standardized and measurable pillars of competitiveness not related to higher education and innovation systems.

The Polish economy is not globally competitive, not only because it lags behind in higher education and innovation pillars of economic competitiveness, as policy makers and reformers in higher education tend to stress. In the Global Competitiveness Index Poland consistently ranks very low in one of the most expensive categories of public expenditure, the pillar of infrastructure: the quality of overall infrastructure is ranked 108th out of 139 economies; the quality of roads is ranked 131st; the quality of port infrastructure is ranked 114th; and quality of air transport infrastructure is ranked 108th (Schwab, 2010, pp. 111–299). Hungary, Slovakia and the Czech Republic are also generally ranked very low in all of the sub-indices of infrastructure, in the 50–80 range, with the exception of railroad infrastructure in the Czech Republic and Slovakia.

Consequently, even a much more modernized, reformed and Europeanized higher education and innovation system in Poland would not be a determining factor in overall regional and national economic competitiveness. There is a wide, although slowly diminishing, East/West gap related to a multitude of factors, from tax systems to legal systems to transportation infrastructure. Knowledge production in Poland cannot be assessed in isolation from its multi-layered economic, infrastructural and legal environments.

Knowledge production in universities and in the business sector in Poland occurs in economic and regulatory realities which cannot be easily overcome by either universities or companies. In universities, it is funding and governance regimes, in the business sector it is often the “ease of doing business” that matters most for all companies, including those involved in research, development, and innovation. To show the differences between major OECD economies and Poland, I will briefly review the “ease of doing business” ranking (at the microeconomic level of companies) produced annually by the World Bank since 2005 (World Bank, 2010).

This ranking focuses on the comparative advantage of countries by analyzing ten categories of regulatory activity: starting a business, dealing with construction permits, employing workers, registering property, getting credit, protecting investors, paying taxes, trading across borders, enforcing contracts and closing a business. The Central European countries are scattered along the ranks, with Slovakia and Hungary in the forties (ranking 41st and 46th), followed by Poland and the Czech Republic, almost in the middle of the ranking (70th and 63rd) (World Bank, 2010, p. 4). These are the regulatory realities, internationally assessed, in which the Polish economy is operating, which go far beyond (higher) education and innovation systems but which, at the same time, directly influence both national economic competitiveness and processes of knowledge production in the business sector. Poland's regulatory weaknesses, direct inhibitors to becoming a fully fledged knowledge economy, are clear: Poland is ranked below 100 (out of 183 countries) in such categories as starting a business (113), dealing with construction permits (164) and paying taxes (121) (World Bank, 2010, pp. 159–93).

Universities in Western European countries – unlike Poland – function in highly competitive economies, and companies, including companies involved in research, development and innovation, operate in relatively friendly legal and regulatory environments. Given these differences, it is important that the expectations of the Polish higher education system, in terms of its contributions to both national and regional economic development, should be realistic. It is also extremely important to recognize that the role of higher education systems in Poland and in Western Europe is very different, due to a multitude of factors exogenous to the higher education systems themselves. The necessary (and measurable) need for “catching up with the West” in such areas as infrastructure, technology or business sophistication may be viewed as more important and, consequently, public funding may be directed more easily towards these areas rather than towards higher education or research and development in public higher education. In assessing the level of public funding for research in Poland, this is exactly what has been the case for the last two decades. Throughout the 2000s, gross domestic expenditure on research and development was in the range of 0.5–0.6 % of GDP, and it was not until 2009–11 that there was a modest increase in expenditure.

Conclusions

Highly competitive economies have excellent universities operating in increasing symbiosis with the business sector, and both universities and the business sector operate in friendly legal and regulatory environments. Globally competitive universities in Europe operate in globally competitive

regions and economies. This is not the case with Poland, which increasingly refers to knowledge-economy principles and uses the knowledge-economy discourse in legitimizing new national higher education strategies, but lags behind not only in its higher education and innovation systems but also in other factors that are known to directly impact on economic competitiveness. Higher education and innovation systems are located in and influenced by their national social and economic contexts; they belong to national settings, are funded through national taxes, cooperate with regional companies and produce graduates with the skills necessary for national economies. The national context is both a burden and a challenge for the higher education and innovation systems. The major tension in Poland is between policy objectives to become a globally competitive, knowledge-driven economy and institutional realities, including the economic, legal and infrastructural environments in which Polish universities and Polish companies function. The “arm of the past” (communist and post-communist transformation periods in Poland) is long (Elster *et al.*, 1998). The tension between basic assumptions about the role of universities in knowledge economies, valid for most affluent OECD economies, and the post-communist realities of university knowledge production in Poland is still substantial. Convergence processes take much more time than was initially assumed.

While the regional dimension of knowledge production is heavily emphasized at the national policy level in Poland, in university practice this role is still marginal. The strongest links between universities and their regions are seen in the teaching dimension of regional engagement, and regional engagement in research is a distant goal. Regional research engagement of Polish universities requires more research-intensive regional economies, components of a more research-intensive national economy. Comparisons between the levels of universities’ regional engagement in various countries need to take into account the difference between knowledge-driven economies and economies which still aspire to become knowledge driven. Contributions to regional development in the two cases seem fundamentally different, and this difference needs to be reflected in policy discourse and policy documents. Expectations from universities that they will boost regional economies and contribute more directly to regional economic growth and new jobs may be unrealistic in the Polish case, due to a multitude of other relevant factors not linked either directly or indirectly to universities.

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