

## THE SIGNIFICANCE OF RESEARCH – BUSINESS COOPERATION IN POLAND

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**Abstract:** Nowadays, a close cooperation between science and business seems to be necessary. In Poland business and science do not cooperate effectively enough. It is significant to create an atmosphere conducive to the exchange of knowledge between higher education institutions and business. In the long run, it contributes to the increase of competitiveness of enterprises and the development of parent education institutions. By taking steps to reform research and innovation system Poland can slowly transform into a knowledge-based innovation country.

**Keywords:** transfer of knowledge, transfer of technology, innovation, university and business cooperation

**JEL Classification:** P13, M14, O32

### 1. INTRODUCTION

In modern economy innovation and knowledge are considered as key factors of competitiveness of enterprises. Innovative activity of enterprises and the effective use of knowledge and research findings are essential factors in the competitiveness of the economy. The important elements of an innovation system are business institutions, such as parks and technology incubators, centers of technology transfer which support and facilitate the flow of knowledge and technology between science and business entities. All of the above mentioned are mainly focused on the implementation of the new solutions to business practice contributing to the economic and social development.

### 2. THE IMPORTANCE OF UNIVERSITY – BUSINESS COOPERATION FOR THE POLISH ECONOMY

In accordance with the report "Research Innovation Performance in EU Member States and Associated Countries 2013" a competitive European economy with high-quality jobs can only be based on innovative products and services. Development and growth of competitiveness of the economy is strongly related to the cooperation between science and business. It seemed to be a natural need for today's Polish economy.

With reference to the report Poland has increased its investment in R&D and improved its excellence in science and technology since 2000. The economy has been undergoing structural change towards higher knowledge intensity<sup>1</sup> (a 28% improvement since 2000) and Poland's global competitiveness is improving at a higher rate than the EU average. The applied reforms of the science and higher education system caused significant changes including the creation of agencies for applied and basic research. Two advisory bodies were established: the Committee for Science Policy and the Committee for Evaluation of Scientific Institutions. It is really noteworthy for the Polish economy to maintain high growth by improvement in the innovativeness of Polish companies [1].

Unfortunately, in Poland there has been low R&D spending and limited cooperation between research and industry. Figure 1 shows actual European trend in the area of investing in knowledge as well as Polish one. The graph presents the aim for Poland - to achieve national intensity R&D target of 1.7% by 2020.

Poland's R&D expenditure has grown slowly in recent years and remains low at 0.77 % of GDP in 2011, one of the lowest levels in the EU. The main weakness remains underinvestment by the private sector [1].

Figure 2 provides information on strengths and weaknesses of the Polish system in the area of human resources, scientific production, technology valorization and innovation. Compared with the reference group it is visible that one of the greatest weakness of Poland is low amount of public expenditure on R&D financed by business. Poland has also a low intensity of business researchers. It seemed to be that the business sector has been still playing a small role in the national R&D system. The another weakness of the Polish system relates to the innovation performance of companies. The score of SMEs introducing product or process innovations is relatively low. Poland's strengths are in human resources, where the average annual growth of new graduates in science and engineering exceeds the EU average. Moreover, Poland shows a positive trend with an average annual growth of 4.1 % for the level of employment in knowledge-intensive activities.

Unfortunately, in the area of high-impact scientific publications and patent applications Poland achieves the third lowest value among EU countries. The level of public-private co-publications is equally very low highlighting weak linkages and a lack of cooperation culture between science and industry in Poland [1].

Since the beginning of transformation in 1990, the number of centers of innovation<sup>2</sup> has systematically increased, reaching the number of 735 in 2010. In 2012, there were 821 centers. Next years, further increase of the

<sup>1</sup> The indicator on knowledge-intensity of the economy is an index on structural change that focuses on the sectoral composition and specialisation of the economy and shows the evolution of the weight of knowledge-intensive sectors and products and services.[1]

<sup>2</sup> Innovation centers make extensive promotion and incubation of innovative entrepreneurship, technology transfer and deliver innovation-oriented services, activate academic entrepreneurship and cooperation between science and business. [6]

## The Significance of Research – Business Cooperation in Poland

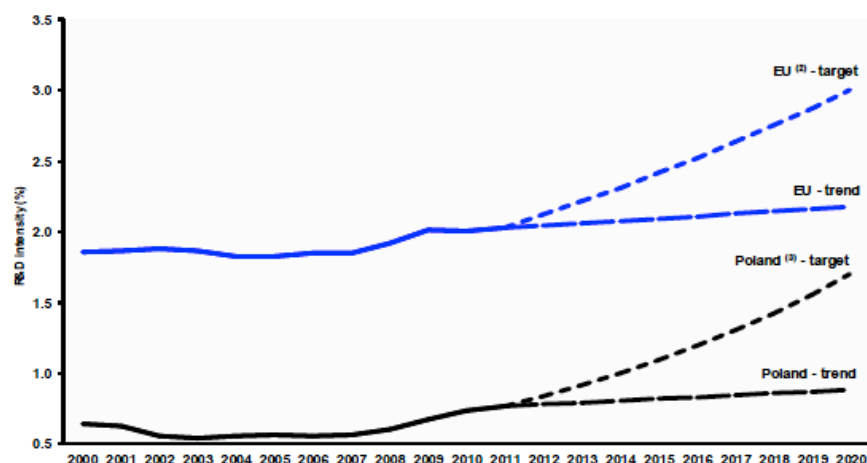
centers is expected. They will develop towards professionalization of services [6].

Moreover, in recent years a lot of reforms of higher education have been launched for increase the quality and effectiveness of the Polish research and innovation system. The reforms involved the creation of two executive agencies for applied research (the National Research and Development Centre – NCBiR) and for basic research (the National Science Centre - NCN). These reforms were implemented to strengthen university – business cooperation in Poland. The aim is to make the higher education system more flexible and better suited to labour market needs. The idea of higher education institutions (HEIs) is to provide well skilled graduates on labour market.

To educate young people properly the Polish education system ought to cooperate closely with business (labour market).

There are eight different ways in which HEIs and business may cooperate [2]:

1. Collaboration in research and development (R&D)
2. Mobility of academics
3. Mobility of students
4. Commercialization of R&D results
5. Curriculum development and delivery
6. Lifelong learning
7. Entrepreneurship
8. Governance



Source: DG Research and Innovation - Economic Analysis Unit

Data: DG Research and Innovation, Eurostat, Member State

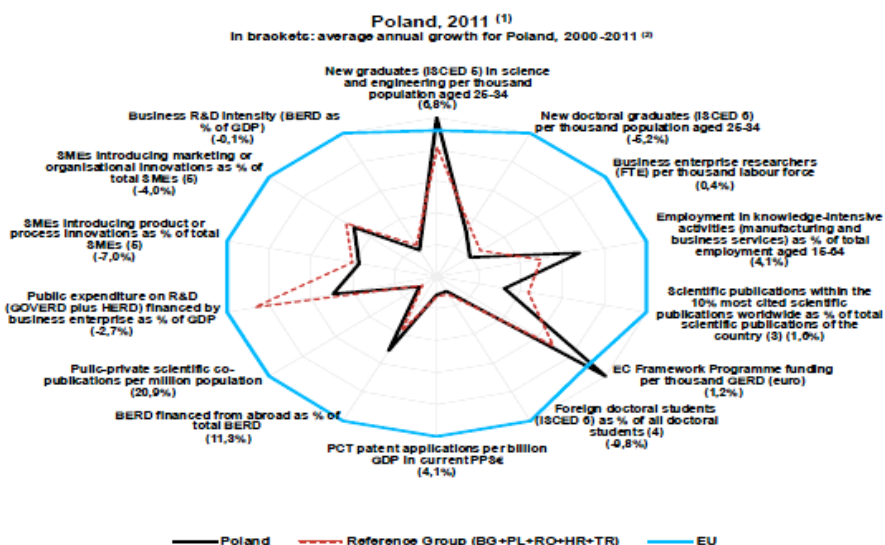
Notes: (1) The R&D intensity projections based on trends are derived from the average annual growth in R&D intensity for 2000-2011.

(2) EU: This projection is based on the R&D intensity target of 3.0% for 2020.

(3) PL: This projection is based on a tentative R&D intensity target of 1.7% for 2020.

**Figure 1** Poland – R&D intensity projections, 2000 – 2020

Source: *Research and Innovation Performance In EU Member States and Associated Countries. Innovation Union progress at country level*, European Commission, Publication Office of the European Union 2013, p. 205



Source: DG Research and Innovation - Economic Analysis Unit

Data: DG Research and Innovation, Eurostat, OECD, Science Metrix / Scopus (Elsevier), Innovation Union Scoreboard

Notes: (1) The values refer to 2011 or to the latest available year.

(2) Growth rates which do not refer to 2000-2011 refer to growth between the earliest available year and the latest available year for which comparable data are available over the period 2000-2011.

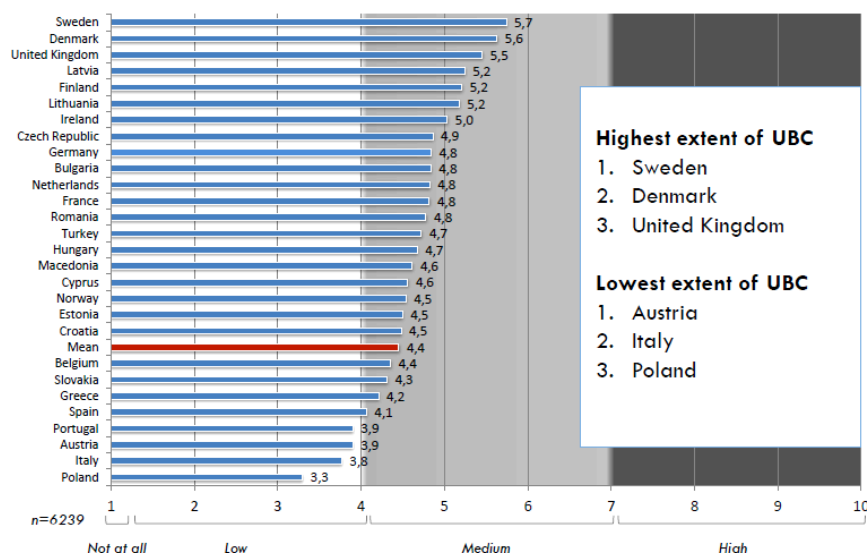
(3) Fractional counting method.

(4) EU does not include DE, IE, EL, LU, NL.

(5) TR is not included in the reference group.

**Figure 2** The strengths and weaknesses of the Polish R&D system

Source: *Research and Innovation Performance In EU Member States and Associated Countries. Innovation Union progress at country level*, European Commission, Publication Office of the European Union 2013, p. 206



**Figure 3** Extent of cooperation per country

Source: BAAKEN T., DAVEY T., MUROS V.G., MEERMAN A., *Study on the Cooperation Between HEIs and Public and Private Organisations in Europe*, European Commission, Science – to – Business Research Centre, Germany 2012, p. 25

There is a strong relationship among these types of cooperation. There is a high probability that in a case when a business entity engages in one type of cooperation it may also undertake a similar activity in the areas of the another types of cooperation.

Unfortunately, collaboration between university and business in Europe is still in the early stages of development. In accordance with the report “Study on the Cooperation Between HEIs and Public and Private Organisations in Europe” 1 out of 3 HEIs in Europe undertakes no or a very low university business cooperation (UBC) activity [2]. Figure 3 presents the extent of UBC regarding European countries.

It is briefly shown that Poland represents the lowest extent of cooperation between HEIs and business. Poland achieves quite low scores in the area of collaboration R&D, commercialization of R&D results and curriculum development and delivery comparing to another UE countries [2].

The goal for Polish HEIs is to carry out more joint research projects with business entities in order to make the collaboration stronger and engage business representatives in discussion on the curriculum to meet employers requirements.

### 3. BENEFITS OF UNIVERSITY BUSINESS COOPERATION

Generally speaking in the process of establishing the cooperation emerges one crucial and a long-standing challenge – to create a learning environment by professional education which exactly meets the requirements of the labour market. This includes close university business collaboration in the development of curriculum.

For students the greatest benefits of UBC are the chance of improving [2]:

- employability of future graduates,
- the learning experience of students,
- the performance of business.

Cooperation with HEIs is for business a chance of improving its performance. For business it is significant that

universities have the important resources to carry out long-term testing of innovative products. Universities may be perceived as places where ideas can be easily tested and exchanged by giving the students possibility to try out the market feasibility of their solutions at a well-known company.

Benefits for HEIs are associated with achieving HEIs mission – to contribute to society in a more meaningful way through knowledge and technology creation [4].

For both academics and HEIs, the existence of mutual trust, mutual commitment and shared goals as well as interest of business in accessing scientific knowledge are rated as essential drivers [4].

### 4. THE BARRIERS OF UNIVERSITY BUSINESS COOPERATION

The authors of the report “Study on the Cooperation Between HEIs and Public and Private Organisations in Europe” point out the most greatest barriers for HEIs in the area of such cooperation and they are [2]:

- lack of external funding for UBC,
- lack of financial resources of the business,
- lack of business awareness of HEIs activities.

Another report among the biggest barriers of collaboration with the education sector includes [3]:

- inadequate to companies needs educational program,
- complicated procedures of the cooperation,
- bureaucracy,
- lack of financial resources,
- lack of interest of cooperation.

Among the companies that have not yet decided in cooperation with research centers, most(37% of indications) points lack of appropriate legal regulations. The entrepreneurs simply indicate that it is necessary to create legislation that would encourage the cooperation with HEIs. Much less (33% of indications) indications were about the lack of corresponding offers of cooperation from the research centers [5].

## 5. CONCLUSION

Although total factor productivity has grown constantly in Poland, the main challenge for the Polish economy is still to enhance investment and innovativeness of Polish business and foster closer cooperation between the business sector and HEIs.

Going back to the report "Research Innovation performance in EU Member States and Associated countries 2013" Poland recommendation adopted by the Council states for ensuring better links between research, innovation and industry and improving access to finance for research and innovation activities [1].

The Polish education system should more refer to the transfer of knowledge and research to the community, support future job prospects of students and to the creation

of a knowledge economy. HEIs in Poland ought to provide well skilled graduates and be support for local business in the area of jobs creation and stimulation of economic growth.

In Poland in recent years, the number of centers of technology and knowledge transfer has increased, as well as the employment rate. The part of population at risk of poverty or social exclusion is decreasing. Poland has made good progress towards Europe 2020 targets in the area of education and environment.

The country is on a good way to create innovation-friendly business environment with a high regard of university business cooperation as an essential driver of knowledge-based economies and societies.

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