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**Potential and prospects
for development
of academic
entrepreneurship in Poland**

1. Introduction

The growing importance of “knowledge” as a production factor stimulates the development of new forms of cooperation between science and economy. In many countries and regions, the common direction of development of scientific and educational institutions is a practice of wide opening to cooperation with business (mainly with local small companies) and to developing entrepreneurial attitudes and abilities among own researchers, students and doctoral students. The development of knowledge-based economy has forced – especially in countries with advanced industries – profound changes in the operation of all scientific institutions, including higher education, which is one of the most important intellectual assets available to national economies. Triggering the entrepreneurial potential of academic staff and opening to business of university research laboratories has become a primary objective of scientific and technical policy in many countries, including Poland¹.

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1 According to the data presented in the report by the European Commission „Największe osiągnięcia UE w nauce i badaniach naukowych 2004-2009”, Poland ranks 13th in terms of funding under the 7th Framework Programme, 22nd in terms of R & D intensity and 25th in terms of the number of patent applications to the European Patent Office per million inhabitants. International comparisons indicate that Poland is among countries with one of the lowest levels of funding for science in the EU. Expenditures on R & D in Poland is only 0.57% of GDP. It is in 57.7% funded from the state budget, in 26% by the companies and in 16.3% from other sources (cited after: *Przedsiębiorczość akademicka dylematy rozwoju. Raport z badań 2010*, pp. 8-9.)

Under these conditions, was formed the trend described as “academic entrepreneurship.” According to K.B Matusiak and K. Zasiadly, an interest in issues of entrepreneurship in the academic environment is associated with (Matusiak, Zasiadly 2005, pp. 145-148):

- activities associated with the commercialisation of new ideas from science to the economy, which particularly effective turns out to be a model of “inventor-entrepreneur”, allowing the current adjustment of new solutions in terms of market and consumer expectations;
- increasing pressure to innovate, which leads to shortening the time from idea to market use, which forces the spatial approximation of a company and research institution or university, a scientist and entrepreneur, as a result the innovation is increasingly becoming a product of the environment in which the entrepreneur operates;
- intensified search for new forms of revenue raising in higher education and scientific institutions by streamlining the communication channels and cooperation with business, and consequently, sales of technology and research services;
- ever increasing need for enhancing the attractiveness of education by training for the practical use of acquired knowledge in own company;
- an increasingly demanding job market that creates a difficult barrier to overcome for many graduates of universities, as a result self-employment becomes a relatively simple way to break the deadlock in this regard.

This article aims to present the state of academic entrepreneurship in Poland, including the factors determining its development. The first section discusses the theoretical issues related to the essence of academic entrepreneurship and the results of selected research and analytical work on issues of development of academic entrepreneurship in Poland. In the further part of the article, in relation to the discussed research, presented are conclusions and recommendations on how to best support the development of academic entrepreneurship. The article uses the reports and expertise resulting from research conducted in this field.

2. The concept of academic entrepreneurship

In the literature, the concept of academic entrepreneurship is perceived very widely – from business education, through the management of intellectual property and any form of commercialisation of R & D and knowledge transfer from universities to the economy, to the business activity of students.

In Anglo-Saxon countries this term is associated with the process of formation of technology companies at universities, the so-called spin-off or spin-out (established and run by academic staff and students) and the university entrepreneurship, that is, all situations in which the university acts as a bidder of specific type of know-how and wants to sell them on a purely market-based principles (Matusiak, Matusiak 2007, p. 158). Particular attention in this place should be given to understanding academic entrepreneurship as a process of formation in universities of *spin-off* or *spin-out* companies². *Spin-off* companies are independent ventures and unintended by the parent organisation, whereas the *spin-out* companies are dependent venture, linked by capital or otherwise with the parent entity (Głodek, Gołębiowski 2006, p. 56). In the case of spin-off companies is a full sharing of property rights for entrepreneurs and emerging companies. A university expects indirect effects, such as the increase in prestige, further contacts and orders. However, in the case of *spin-out* company, it is assumed that such company is owned by the university. In this case, the knowledge used by the company comes from the university and the university authorities assess the potential of new technology and make decisions on the directions of commercialisation activities: sale of a patent, granting of license, or founding of spin-out company (Klimczuk 2011, p. 7). University spin-off companies are essential mainstream of academic entrepreneurship and one of the active mechanisms of commercialisation and technology transfer. It is then a new, attractive mechanism for the commercialisation of scientific know-how that allows to multiply the benefits derived by the researcher and other scientific and business partners (university, equity investors). However, academic entrepreneurship often in everyday language (as in Poland, among others) is understood a bit differently and more broadly. It is not only the process of creating spin-offs, but most of all business activity university professionals (academic staff) and those for whom staying in university is a certain stage in life – students or doctoral students and includes the promotion of entrepreneurship, educating to entrepreneurship, activating to entrepreneurship (Matusiak, Matusiak 2007, pp. 158-159). Academic entrepreneurship, especially in relation to students, is also viewed as a sign of activity not related to the business – activity in gaining experience, participation



2 Slightly different perspective on spin-off and spin-out companies is presented by the Polish Agency for Enterprise Development. A *spin-off* company is described as an entity that is the result of self-empowerment of employees of the parent entity, using its material and intellectual potential, while a parental entity is considered both the enterprise as well as academic and research units. A feature that distinguish the spin-out from the spin-off company is a relationship with the parent organisation. *Spin-off* companies operate in isolation from the parent organisation. *Spin-out* companies are formed mostly with the knowledge and consent of the parent managing staff of an enterprise or university, and thus remain linked in terms of capital or operations (e.g., legal services, accounting) with the parent entity (*Innowacje i transfer technologii. Słownik pojęć* 2008, pp. 13-14, 97-98). For more on the essence of “spin off” in: Popławski, Bakalarz 2008, pp. 65-71.

in scientific circles. According to the K.B. Matusiak and M. Matusiak, there is no contradiction between one and another understanding of entrepreneurship, but it must be remembered that these different approaches imply the use of other development tools (Matusiak, Matusiak 2007, p. 159).

In the U.S., the main example of academic entrepreneurship is a direct creation of knowledge-based companies, which are supported by the private sector. Whereas in Europe, academic entrepreneurship is defined much more broadly, as the entire spectrum of activities including: supporting the relationship of science-economy, pre-incubation and incubation of enterprises originating from universities (*Innowacyjna przedsiębiorczość akademicka – światowe doświadczenia* 2005, s. 17, more: Duczmal 2010, pp. 74-75).

A holistic approach to the issue of entrepreneurship is presented by J. Cieslik. According to J. Cieślík, academic entrepreneurship should include activity of both researchers who commercialise technologies created in university laboratories, and students and graduates who take the risks associated with running innovative companies, using the knowledge acquired during their studies (Cieślík 2009a, pp. 8-9; Cieślík 2009b, pp. 122-124; Cieślík, Matusiak, Guliński, Skala-Poźniak 2011, pp. 28-29).

Under Polish law, the term “academic entrepreneurship” has not been in use until recently. Academic entrepreneurship in Poland was reflected in the legislation as late as in 2005. Law on Higher Education (Ustawa z dnia 27 lipca 2005 r. - Prawo o szkolnictwie wyższym, Journal of Laws No. 164, item 1365, with later amendments) contains provisions that universities collaborate with the socio-economic environment and spread the idea of entrepreneurship in the academic environment (Article 4. 4.) The universities are autonomous in all areas of their operations and may choose the suitable entrepreneurship development tools that depend on their profile of education and regional conditions. The university, in accordance with Article 7 of the Act, may also carry out an economic activity organisationally and financially separated from the ordinary activity, which is educating students and conducting research. Law on Higher Education within the meaning of the Article 86 allows universities to create new university technology transfer instruments: academic entrepreneurship incubators (AIP) and technology transfer centres (TTC.) These units can be created in the form of university units and in the form of commercial companies or foundations (Gryzik 2009, pp. 46-47; Pado 2008, pp. 4-6; Guliński, Zasiadły 2005, pp. 23-27).

Available reports of research on academic entrepreneurship Polish allow to identify and extract its following five meanings (Drozdowski 2008,

pp. 74-75, *Opracowanie modelu wspierania przedsiębiorczości akademickiej w Wielkopolsce 2006*, p. 10,12). First, academic entrepreneurship is often identified (especially by the students themselves) with the resourcefulness and adaptive creativity of students (as an expression of thus understood academic entrepreneurship is indicated, for example, an ability to find attractive seasonal work, take advantage of scholarship opportunities, etc.) Second, academic entrepreneurship is sometimes identified with education in entrepreneurship and the promotion of entrepreneurship, and entrepreneurial attitudes. The third definition of entrepreneurship links this term with the support of entrepreneurs who are students or recent graduates or doctoral students/academics (primarily with academic enterprises incubation, including spin-off companies). According to the fourth comprehension of academic entrepreneurship, its essential goal and its essence is to promote the transfer of knowledge and new technologies to the economy. The last, fifth understanding of entrepreneurship links this concept with entrepreneurship of a university, defining it as the search of the university for extra-budgetary sources of funding, primarily in the area of a commercial offer. Entrepreneurship of a university is, therefore, any kind of initiatives and ventures that are aimed at its transformation (without affecting basic research and teaching that stand for its primary constitutional mission) in a research enterprise capable to "market pull" the money for the provision of broadly taken research services of utilitarian nature. The concept of entrepreneurship of a university is therefore marked by stimulating and sustaining academics interest in research that comes to satisfy the needs and interests of business, as well as fostering and developing specific intra-university *start-ups*: research projects, which carry high risk, and at the same time, are particularly promising due to the their potential practical applications. But the mentioned concept comprises also an appropriately devised (market- and modernisation-oriented) policy on the creation of centres and research laboratories (intended to serve not only to realise the scientific aspirations *par excellence*, but also aimed to raise the attractiveness of a university as a potential partner for the business.) Finally, the concept of university entrepreneurship also means an appropriate financial management of a university (e.g., *top-slicing*, *cross-subsiding*), which is aimed at both specific compensatory redistribution of resources (including their transfer from the university profit centers to the university cost centres), and, for example, balancing intra-environment tensions in relation to disparities in profits from grants, patents, licenses, creating a modern and above all realistic in terms of implementing, concepts of financial business participation in promoting the development aspirations of a university.

3. Factors contributing to academic entrepreneurship

Academic entrepreneurship breaks a fairly common pattern of thinking that owning a company and commercial tests are contrary to the principles of research, and thus inappropriate for academics. The effect of the new approach is the development of third-generation university model, which foresees widening the existing statutory operations including education and research to actively support entrepreneurship. There is the concept of university-an incubator of entrepreneurship. Observations indicate that the inventor, innovator and entrepreneur are usually different persons, and only in exceptional cases, the characteristics of these three types occur together – for example, Edison, Bell, Eastman, Dell. Most students and academics in engineering focus on the use of technology when creating new products and services, usually ignoring market and financial affairs (Matusiak, Matusiak 2007, p. 160; Matusiak 2009, pp. 34-35).

In Polish conditions, to create modern science-economy relations and prepare for self-employment, is a completely new challenge. Strategy for Higher Education in Poland to the year 2020 clearly shows that apart from the traditional missions of a university, there is also the so-called third mission of a university, which binds it closely with the region corresponding to its location and with the world of regional, national and international economy. The third mission of universities covers such key topics as: the commercialisation of research results, participation in regional initiatives (aimed at enhancing economic competitiveness and attractiveness of the regions), the cooperation of universities with employers in order to adapt training programs to new requirements of the labor market, the role of experienced persons from economic entities and public sector in teaching and research, as well as barriers for a university to cooperate with economic sector (Duczmal 2010, pp. 75-76).

The development of academic entrepreneurship requires a specific approach which respects the characteristics of two different environments: education and the economy. Effectiveness in this respect triggers a specific potential for development that is revealed: firstly – by permanent employment and a high level of value added products and services, and secondly – by competitive abilities of enterprises on a global scale.

Economic and social benefits that can be achieved from activation of academic entrepreneurship in the fields of economy and technology are numerous and there is no doubt that science becomes an important factor in economic development. In this situation, according to K.B. Matusiak, there is a need for (Matusiak 2009, p. 35): firstly – a broader flow of innovative solutions to the economy, that create new

kinds of economic activity, and secondly – the creation of many new technology companies that produce products and services with high potential and create jobs for people with higher education, thirdly – an increase in self-employment of academics (and students) that affects the reduction of unemployment, and fourthly – an increase in the competitiveness of individual economies.

Numerous examples of academic entrepreneurship in developed countries confirm its positive impact on economic development (Matusiak, Matusiak 2007, p. 162-163). Benefits are also received by the educational institutions. In the long term, strengthening cooperation with companies, including those who have been started by own employees (and students and doctoral students) brings tangible benefits in own revenue growth, new employment opportunities for graduates, commercialisation of technological solutions and organisation of professional practice. Active policy in the field of business education and practical support to create new companies, resulted in the development of university enterprises networks that often create very modern and globally competitive clusters³.

The scope of academic entrepreneurship is difficult to estimate, due to the lack of accurate statistics and comparable measures across countries (Głodek 2010, p. 47). The study of international research group Global Entrepreneurship Monitor (GEM) shows that the phenomenon has no longer a marginal character and becomes noticeable as far as its scope is concerned⁴.

In studies on academic entrepreneurship in many countries, one of the major problems is to try to find the factors that are conducive to entrepreneurial attitudes (Safin 2011, pp. 20-26; Lisiński 2010, pp. 24-30). Among the factors determining the development of academic entrepreneurship R. Drozdowski lists five groups (Drozdowski 2008, pp. 79-82). The first group are systemic and macrostructural factors. These are mainly EU funds (Operational Programme – Human Capital, Operational Programme – Innovative Economy) and the national and regional programs to support entrepreneurial innovation. The second group of factors are regional conditions. Regional potential for academic entrepreneurship is by far the strongest and in the most unequivocal way connected with: the academic

3 Many universities, primarily the American, already in the middle of last century have taken active steps in this area, often developing from small provincial universities or higher education facilities in the prestigious schools that are on the top of the ranking lists of best schools (e.g. Stanford University.) As for the universities that have gone in that direction and reached spectacular successes in the first place needs to be mentioned the Massachusetts Institute of Technology (MIT.) Among other examples can be the University in Philadelphia, and in Europe, the British Cambridge Universities, Heriott-Watt in Edinburgh, Technical University of Berlin, University of Stuttgart and the Mining Academy in Aachen, Swedish University of Lund.

4 The data from 2004 show that 3% of all start-up enterprises in 34 countries around the world, can be defined as “enterprises with great potential,” that is defined as those “which will have little competition, will be innovative in the market and will use cutting-edge technology” (Matusiak 2009, p. 35).

potential of the region, the level of residents prosperity, economic potential of the region, potential for innovation and a number of institutions/activities to promote innovative economy. The third, fourth and fifth group include positive educational, socio-cultural and business trends. Key factors in the sphere of education is an increase in the number of students and the introduction of the so-called three-stage higher education system. The important socio-cultural factors include a growth of individualistic orientation (which results in a greater entrepreneurship and professional mobility of the Polish society) and the gradual strengthening in Poland of the new middle class. The last area of factors associated with academic entrepreneurship are the positive trends in business. Important factors in this area are: changes in the investment market (increase in the number of venture capital funds, private equity funds, also increasing is the number of non-institutional investors – “business angels”), the creation of a new market on the Warsaw Stock Exchange under the name NewConnect and also an increase of enterprise expenditures on investments.

In addition to the above-mentioned conditions for the development of academic entrepreneurship, it is essential to mention an “academic entrepreneur” who is able to take the risk of running economic activity. Academic entrepreneurs are people associated with universities and other entities active in the field of science and research and development sector, the academic staff, students and others interested in the commercial use of gained knowledge (Matusiak 2009, p. 45).

4. Status of academic entrepreneurship in the light of national and regional research

With the introduction of legal framework for the functioning of academic entrepreneurship in 2005 in Poland increased an interest of the scientific community, local and state government in the issues of academic entrepreneurship. The effect of an increased interest in this matter was to carry out many research and analytical work, both national and regional on the issues of development of academic entrepreneurship in Poland. The result of the research were reports and expertise that presented the condition of academic entrepreneurship in Poland.

The nationwide academic entrepreneurship assessment was carried out in 2009 on behalf of the Polish Agency for Enterprise Development, as part of the system project “Academic entrepreneurship” (the development of spin-off and spin-out companies) – the need for training to for its development.”⁵ The study

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5 The results of this study were presented in the report by: Banerski G., Gryzik A., Matusiak K.B Mażewska M., Stawasz E. (2009), *Przedsiębiorczość akademicka (rozwój firm spin off/ spin out) – zapotrzebowanie na szkolenia służące jej rozwojowi. Raport z badania, PARP, Warszawa*. The study will be presented to The Polish Agency for Enterprise Development based on the above report.

was conducted between February and April 2009, and the aim of the project was to determine the current level of knowledge and skills of academics and students in the commercialisation of research results and running economic activity, as well as providing conclusions and recommendations on the best ways to promote new, innovative spin-off companies. Empirical studies were conducted on a sample of $n = 454$ students, doctoral students and academics from 44 randomly selected schools across Poland. The random sampling excluded those universities that do not run an innovative activity and their results cannot be used in economic practice.

The main conclusion that derives from the study is that the popularity of university economic activity in our country is still low. Only 6% of the respondents led their own spin-off company, and only 8% expressed a willingness to run their own business within the next year. However, as many as 40% of respondents declared their willingness to set up economic activity and use their professional knowledge in the future, with students declaring the intention of owning business more often than academics. Reluctance to self-employment was argued by, inter alia, problems of reconciling economic and scientific activities, satisfaction with current job, lack of relevant skills, ideas and knowledge about running a business, risk and stress they wanted to avoid. Other problems mentioned by respondents that could arise during the start-up and business operation: the business costs, lack of customers for products and services, poor economic conditions in Poland, the difficulty in obtaining property rights to own solutions, lack of knowledge on commercialisation of research results and money for business start-up, along with a large bureaucracy. Among the arguments in favour of starting own company there were: an opportunity to achieve greater profits, lack of a superior and a chance to develop own skills and abilities. Over 80% of respondents have the fact of owning a company associated with pleasure and satisfaction and the ability to develop their skills. The results of this study show that the decisions of the respondents on business start-up are under a strong influence of the environment. A key element of the environment, which positively affects the intention of the respondents to start own business is the immediate family. Closest friends, superiors, workmates, the university authorities (in case of academics), friends and the promoter (in case of students), according to respondents, also affect the decision on starting a business.

More than half of the academics (66%) stated that workmates would favour the business start-up, but only 54% of respondents claimed that their superior would favour such a decision. Studies show that 68% of scientists would take into account their supervisor's opinion, who would clearly not favour their decision

to start a business. A similar situation also applies to university authorities. 14% of academic staff assessed that the university authorities would not favour their business start-up, while 62% of respondents indicated an intention to agree with the authorities.

The study also measured the intentions of owning a dependent and independent company from the university. Every third respondent was interested in owning a company independent from the university, and only every fifth of a company dependent from the parent institution. The results show that if the respondents chose to be engaged in economic activity, the students would generally act independently from a university. However, there are chances for the emergence of a business activity at the university, which was to be run by its employees. The main reason for which the respondents preferred more to own a company independent from the parent unit was an opportunity to act independently (63% of responses.) Reasons for which the respondents would prefer to work within the structures of a university were: support on the part of a university, the fact of the current relationship with a university, less risk and greater stabilisation and the prospects for development.

The study allows to determine the role of a university in supporting the academic entrepreneurship. Nearly 73% of academics surveyed and 60% of students agreed with an opinion that a university offers in its scheme of study the subjects that promote entrepreneurial activity. However, as much as 10% of students and 22% of academic staff did not deem a university offer as favourable in this regard. On the other hand, higher scores on study schemes were awarded by the academic staff (3.87 points in a 5-point scale) than students (3.47 points.) In the opinion of 88% of academics and 80% of students, the study schemes were described as definitely or rather useful from the standpoint of their practical function. Therefore, an average of scores of practical usefulness of the scheme study offered by a university, from the standpoint of taking up entrepreneurial activity is high both among students and academics, and amounts to 4.02 points and 4.35 points, respectively in a 5 point scale. An important factor influencing the development of a university entrepreneurship is to train a university and its academic staff to undertake entrepreneurial activities, i.e., its organisation, scientific and research potential, the scope of cooperation with the environment and the academic resources. In the opinion of academic staff, universities are generally well prepared organisationally to manage research results and intellectual property. The vast majority (77%) of academics positively assesses the university regulations in this area. As preferable also presents itself the cooperation between surveyed universities

and enterprises or other institutions in the sale of services or execution of joint ventures. In the opinion of three quarters of academic respondents, universities run business cooperation with the environment. Much more pessimistic presents itself the experience of academics in collaboration with the business. Nearly half of university staff had never worked in an enterprise, and only 1/3 of the academic staff indicated any cooperation with companies or institutions. Every third person stated that he or she has more than 3 years, and every seventh more than 5 years of experience working in a company. Other persons focus solely on teaching and research activities within their universities. Also highly evaluated were the practical values of research work in universities and the suitability of research in relation to current problems and needs of the industry (an average rating stands at four points in a 5-point scale.) As many as 80% of employees claimed that their research is relevant to the needs of the business world, and that they can successfully be used in business practice. Moreover, as many as 52% of the surveyed academics assessed their knowledge on the commercialisation of research results, as very high.

The study also assessed the knowledge and skills connected with entrepreneurship and willingness to participate in training in this area. The individual knowledge on running an economic activity was assessed as broad. On the other hand, the students rated their knowledge in this area lower than the academics. However, an interest in free training on entrepreneurship was expressed by about 80% of students and 51% of academic staff that declared a desire to start-up an economic activity. In the case of students, the main cause of interest in this type of training was an opportunity to acquire new knowledge (69% of responses.) However, in the case of academic staff a believe that the training allows to gain new knowledge was demonstrated by only 33% of respondents, indicating a high sense of their own competence also in the economic activity, which had not virtually been encountered by nearly half of the academics. The results clearly show that the hierarchy of needs within training subjects is similar for both the students and academics. Among the most wanted training profiles respondents mentioned primarily training on: raising funds for economic activity, the procedures for the formal registration of a company, business plan development techniques and methods for learning foreign languages. Little interest was revealed in training on: the identification of attractive business ideas and specifics of business based on technological innovation. A particularly distressing phenomenon is a residual interest among students in training on the protection of industrial property and copyrights. This subject appeals as much closer to the academics who put a training of this kind at the high 6th rank.

Important from the standpoint of considerations in the article are the analysis of R. Drozdowski on the regions capacity for the development of academic entrepreneurship in Poland. The result of this analysis is the expertise created for the Ministry of Economy.⁶ The most important task and objective of the analysis was to present proposals and verification of methodology, by which it would be possible to determine the precise cause and effect relationships between the potential of the regions (provinces) and the condition and potential for development of academic entrepreneurship. For the purposes of the analysis was adopted an explanatory model consisting of a set of synthetic indicators, allowing to capture the most important and lasting relationships between the potential of the region and the development of academic entrepreneurship. The set of indicators used included⁷: (1) Collective Region Potential Indicator (includes indicators of: human and social capital, quality and education, academic potential, the economic living standards of residents, economic and innovative potential, institutional efficiency,) (2) The Collective Indicator of Climate for Entrepreneurship (indicators: institutionalisation of the business environment and the entrepreneurship support) (3) Collective Indicator of Development and the Potential of Regional Academic Entrepreneurship (includes the following aspects of regional academic entrepreneurship development: the quantity, ability to adapt, engagement in enterprise incubation and innovation potential.) Analysis of indicators of potential for the regions allowed to conclude that the strongest academic entrepreneurship (the strongest potential of this entrepreneurship) is situated in the Masovian, Pomeranian, Malopolska, Silesian, Wielkopolska and Lower-Silesia Provinces. In turn, in the Provinces of Warmia and Mazury, Lubuskie, Podlasie, Lublin and Swietokrzyskie, academic entrepreneurship is much less developed. Given the potential indicators of the regions it can be stated that the regional potential of academic entrepreneurship in Poland is proportionally correlated with: an innovative potential of the region, number of institutions and measures to support innovative regional economy, academic potential of the region, material status of its residents and economic potential of the region. Also, an important impact on the potential of academic entrepreneurship in the region has a metropolitan nature of the province capitals.

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6 The results of R. Drozdowski analysis were included in the expertise: *Potencjał regionów w zakresie rozwoju przedsiębiorczości akademickiej*, Instytut Technologii Eksploatacji - Państwowy Instytut Badawczy (ITE-PIB), Radom.. The results of R. Drozdowski research will be presented based on the above expertise.

7 Detailed information on the above indicators can be found in publications: R. Drozdowski (2008), *Potencjał regionów w zakresie rozwoju przedsiębiorczości akademickiej*, w: *Ekspertyzy i analizy dotyczące zagadnień transformacji wiedzy, konkurencyjności i innowacyjności gospodarki*, PARP, Warszawa, pp. 56-61.

5. Conclusions

The above results of research on behalf of the Polish Agency for Enterprise Development indicate that the potential of academic entrepreneurship in Poland is relatively low. It is primarily due to a small interest of the scientific community and students in running their own economic activity in the form of a spin-off company. This is undoubtedly a significant barrier to the development of academic entrepreneurship in our country. In order to stimulate academic entrepreneurship there is a need to increase the attractiveness of owning a company among students and academics. A mental barrier is not the only obstacle in establishing and running an economic activity. Respondents pointed to many problems that may arise in connection with an economic activity and also emphasised a low ability to overcome these problems. Many of the barriers could be eliminated by an appropriate measures taken by the university authorities. Although in the opinion of most academics and students, the study schemes are defined as promoting entrepreneurial activity, still the lack of concept for own company and a general lack of knowledge about running own economic activity are seen as significant barriers in setting up own economic activity. There is, therefore, a strong need to complement the study offer of universities with modules on entrepreneurship but also innovation and technology commercialisation. A major obstacle in the development of academic entrepreneurship in Poland is also the approach of the university authorities. The surveyed academics indicated that the university authorities and supervisors do not always promote the economic activity started by the academics, while the vast majority of respondents expressed an intention to agree with the authorities. There is a need, therefore to increase the awareness of the university authorities on the benefits of the development of entrepreneurship among academics and students. A significant barrier to the development of academic entrepreneurship is a low level of co-operation with enterprise and external institutions. Comparing the opinions of academics staff on the active business cooperation of a university with the environment, with their own, more limited activity in this area, one can draw a conclusion of an only declared, not the actual business co-operation of Polish universities with business practice. It is necessary to improve cooperation of universities and academics with business environment, local and regional administration and business institutions. Support of the academic enterprise should be comprehensive at the regional level. This requires a cooperation of universities with technology parks, clusters, venture capital funds, etc. A special role may be reserved here for local and regional authorities

which, under the RSI should lead to the development of co-operation networks of enterprises, government, research institutions and centers of innovation and entrepreneurship. An important element of the academic enterprise activation is also to build markets for new technologies and the introduction of instruments to stimulate the commercialisation of technology.

The analyses carried out by R. Drozdowski show that in Poland there is a regional diversity in academic entrepreneurship. The reason for this situation are the differences observed for many years in the level of economic and social development of individual Polish regions. The leaders of academic entrepreneurship appear to be the provinces that come at the forefront of the best regions in terms of academic innovative and economic potential, marital status of residents as well as the quantity and quality of institutions to promote innovation of the economy. Supporting the development of academic entrepreneurship in Poland should be so focused on its potential to stimulate growth in different regions of the country. The institutions responsible for it should affect these factors, which have the most significant impact on the potential of academic entrepreneurship in the region, and the effectiveness of this potential support depends primarily from determining in this regard an appropriate relationship between central and local government. Local authorities at local and regional levels better identify the problems of development and specificities of the territorial units, therefore, these bodies should also play a significant role in this regard.

Summary

Potential and prospects for development of academic entrepreneurship in Poland

The development of knowledge-based economy has forced – especially in countries with advanced industries – profound changes in the operation of all scientific institutions, including higher education, which is one of the most important intellectual assets available to national economies. Triggering the entrepreneurial potential of academic staff and opening to business of university research laboratories has become a primary objective of scientific and technical policy in many countries, including Poland.

This article aims to present the state of academic entrepreneurship in Poland, including the factors determining its development. The first section discusses the theoretical issues related to the essence

of academic entrepreneurship and the results of selected research and analytical work on issues of development of academic entrepreneurship in Poland. In the further part of the article, in relation to the discussed research, presented are conclusions and recommendations on how to best support the development of academic entrepreneurship. The article uses the reports and expertise resulting from research conducted in this field.

Streszczenie

Potencjał i perspektywy rozwoju przedsiębiorczości akademickiej w Polsce

Rozwój gospodarki opartej na wiedzy wymusił – szczególnie w krajach o zaawansowanych przemysłach – głębokie zmiany w funkcjonowaniu wszystkich instytucji naukowych, w tym szkolnictwa wyższego, będącego jednym z najważniejszych składników aktywów intelektualnych, jakimi dysponują gospodarki narodowe. Wyzwalanie potencjału przedsiębiorczości pracowników naukowo-dydaktycznych i otwarcie na biznes uczelnianych laboratoriów badawczych stało się podstawowym celem polityki naukowo-technicznej wielu krajów, w tym Polski. Celem artykułu jest przedstawienie stanu przedsiębiorczości akademickiej w Polsce z uwzględnieniem czynników warunkujących jej rozwój. W pierwszej części artykułu omówione zostały teoretyczne zagadnienia związane z istotą przedsiębiorczości akademickiej oraz wyniki wybranych prac badawczych i analitycznych nad problematyką rozwoju przedsiębiorczości akademickiej w Polsce. W dalszej części artykułu, w nawiązaniu do omówionych badań, przedstawiono wnioski i rekomendacje w zakresie najlepszych sposobów wspierania rozwoju przedsiębiorczości akademickiej. W artykule wykorzystano raporty i ekspertyzy będące wynikiem badań przeprowadzonych w tej materii.

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