www.ees.uni.opole.pl
ISSN paper version 1642-2597
ISSN electronic version 2081-8319
Economic and Environmental Studies
Vol. 18, No 2 (46/2018), 971-993, June 2018

Innovation of the Polish economy in comparison with the EU member states

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Abstract: In the paper, the change in the innovation level of the Polish economy over the years 2007-2016 will be presented and a comparison of the innovation level between the Polish economy and those of the EU member states over the years 2010-2016 will be made. The aim of the paper is to find the answer to the question what the reason of the relatively low innovation level of the Polish economy is in comparison with other countries. In 2016, the Polish economy took the fourth place from the last among all the EU member states, reaching the innovation level of less than 55% relative to that of the EU in 2010.
In the first part, a measurement of innovation of the Polish economy will be presented. The measurement will use indicators that were described in three different reports of the Central Statistical Office. In the next part, the innovation level of all the EU member states will be described and the innovation level of the Polish economy will be compared with the innovation level of the EU member states' economies, such as: Sweden (SE), the Czech republic (CZ), Slovenia (SI) Lithuania (LT) and the European Union. The analysis will be made on the basis of data from European Innovation Scoreboard 2017 (EIS). The methodology that was used in EIS is based on OECD Frascati Manual. In the last part of the article, the evaluation of the innovation level of the Polish economy will be completed.

Keywords: innovation of economy, European Innovation Scoreboard

JEL codes: *O52, O57,O30*

DOI: https://doi.org/10.25167/ees.2018.46.31

1. Introduction

The indicators described in three reports supplied by the Central Statistical Office: 1) on research and development, 2) – on innovative activity and 3) – on annual macroeconomic indicators, were used to measure the innovation level of the Polish economy.

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The basic indicator used to measure innovation in economy is the amount of expenditure on R&D works (Gross expenditures on research and development) and its percentage share in GDP. Another important issue is the share of investment expenditures in GERD and the sources of financing these outlays, as well as the share of research workers in R&D and the share of all those in R&D with at least a doctoral degree. However, the key is the ability of a given economy to use capital and human resources to create inventions, submit patents and utility models. As a supplement, enterprises which introduced innovations were presented according to their size, and the structure of expenditures on R&D activity.

The analysis of Poland's innovation position in the context of the other EU countries was carried out on the basis of data included in the European Innovation Scoreboard 2017 (European Commission, 2017a: 7-10). Ten innovation level indicators, collected in four groups, were analysed:

- External determinants, which are the main factors enabling innovation that are beyond the control of enterprises and embrace three dimensions of innovation: human resources, attractive research systems and an environment conducive to innovation;
- Investments that mean public and private investments in research and innovation, and cover two dimensions: financing and support and business investment;
- Innovative activities that illustrate innovation efforts at the enterprise level, reflected in the three dimensions of innovation: innovators, connections and intellectual assets;
- Impact that includes the impact of innovation activities in enterprises in two dimensions of innovation: impact on employment and sales volume.

The methodology used in this report is based on the Frascati[1] textbook, which has now become an international standard and is the basis for R&D statistics.

The aim of the article is to find an answer to the question: what is the reason for such a low level of innovation in the Polish economy. The analysis of the causes will be based on national and international statistics. The Polish economy was compared with the economies of Sweden, Slovenia, the Czech Republic and Lithuania in order to highlight certain trends and differences in the development.

On the one hand, the economy of Sweden was selected as a kind of model for comparison, as it achieved great successes in the field of innovation development and

[1] Podręcznik Frascati (OECD Frascati Manual) został po raz pierwszy opracowany w 1963 roku.

implementation of new technologies (NBP, 2016: 74-107). In most of the world rankings, Sweden is at the forefront of innovative countries. The Bloomberg ranking (Bloomberg, 2018) of the most innovative countries in the world shows that Sweden is still the leader right after South Korea. Also, in the EIS ranking described in this paper and in the latest OECD report (The OECD Science, 2017), Sweden is at the forefront of innovative countries.

On the other hand, the Central and Eastern European countries were selected for comparison, and like Poland, have similar geographical, economic, social and cultural conditions, but in some cases their innovation rates are much higher. According to the Digital Economy and Society Index (DESI), Poland in 2017 ranked the 23rd, while Lithuania – the 13th, Slovenia – the 17th and the Czech Republic – the 18th. Sweden is in the forefront of the EU countries (European Commission, 2017c). In the global social development ranking - Social Progress Index 2017 – Poland took the 32nd place, Slovenia reached the 21st place, the Czech Republic – the 22nd, and Lithuania – the 35th (Porter, 2017).

2. Innovation of the Polish economy over the years

The total value of internal expenditure on research and development (GERD) in 2016 amounted to PLN 17,943.0 million, i.e. by 0.7% lower than in the preceding year. The share of the internal expenditure on research and development in GDP amounted to 0.97% in 2016 (against the highest 1.0% achieved in 2015). In comparison with 2007, in 2016 there was a 168.9% increase in the internal expenditure, which, with growing GDP, translated into less than 1% share of the GERD in GDP (Table 1).

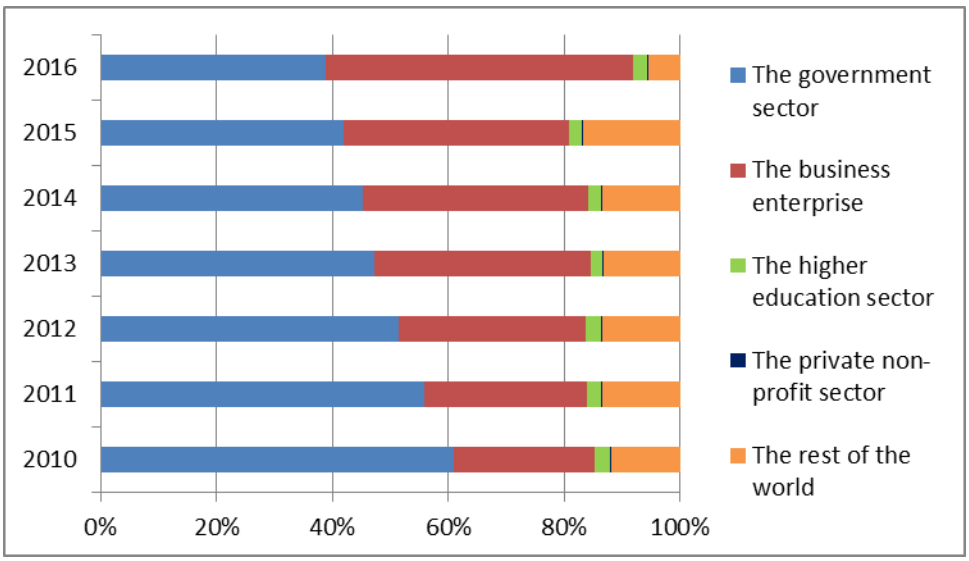
Table 1. Internal expenditures on R&D (current prices)

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
GERD [million PLN]	6 673	7 706	9 070	10 416	11 687	14 353	14 424	16 168	18 061	17 943
Share of GERD in GDP [%]	0.57	0.6	0.67	0.72	0.75	0.88	0.87	0.94	1	0.97
Investment outlays [million PLN]				2673.3	3169.3	4274.4	3393.7	4002.6	4746.8	3350.2
Share of investment outlays in GERD [%]				25.7	27.1	29.8	23.5	24.8	26.3	18.7

Source: author's own elaboration based on: GUS, Działalność badawcza, 2012, 2013, 2014a, 2015a, 2016a, 2017a

Internal expenditures on R&D activities are divided into two categories – current outlays and capital expenditures. From the point of view of increasing the innovation level of the economy, expenditures on new fixed assets related to R&D or acquisition of used fixed assets are more important. In 2016, compared with 2010, the investment outlays increased only by 25%, from PLN 2,673.3 million to PLN 3,350.2 million. The change in the ratio of investment outlays to total internal expenditure dropped from 29.8% in 2012 to 18.7%, which is alarming (Table 1).

Figure 1. Structure of expenditure on R&D by sources of financing



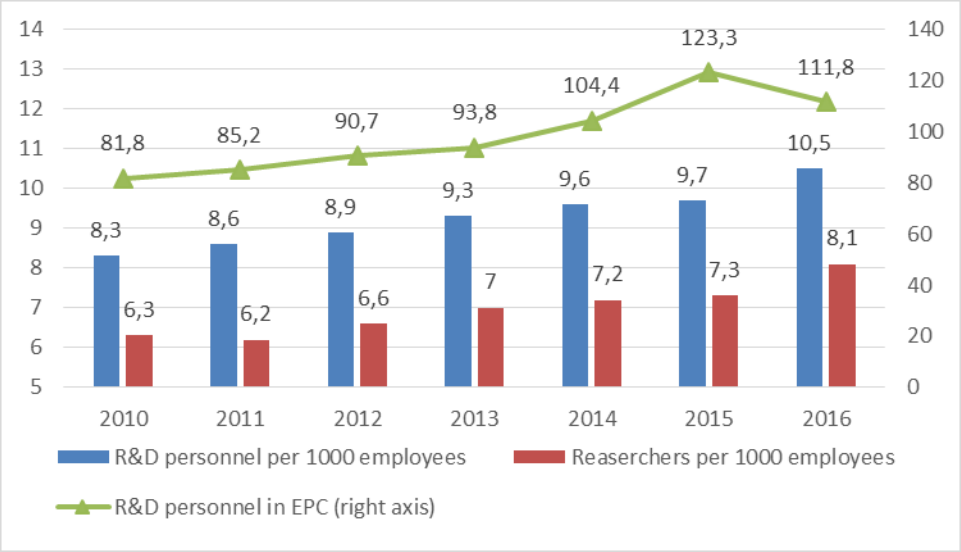
Source: author's own elaboration based on: GUS, Działalność badawcza, 2012, 2013, 2014a, 2015a, 2016a, 2017a

The structure of financing GERD expenditures has also changed in the last year, as shown in Figure 1. In 2010, 61% of the internal expenditure on R&D was financed from the government sector funds, while the enterprise sector financed R&D in 24%. In 2016, the highest amount of funds (PLN 9,528.4 million) came from the private sector and accounted for 53.1% of all expenditures borne by entities conducting R&D activity; in the case of the government sector, this share was 38.9%.

Since 2010, the number of people working in R&D activities has been systematically increasing from 129.8 thousand. up to 171.6 thousand in 2016. However, if we compare these values with the number of employees in R&D activities measured in full time equivalents (EPC),

we will see a decline in the value in 2016 (Figure 2). It means a significant increase in part-time employment. In addition, there was a growing disproportion between those working in R&D and scientific research workers, as shown in Figure 2. In 2016, there were 8.1 scientific research workers and 10.5 employees in R&D activity per 1000 employees.

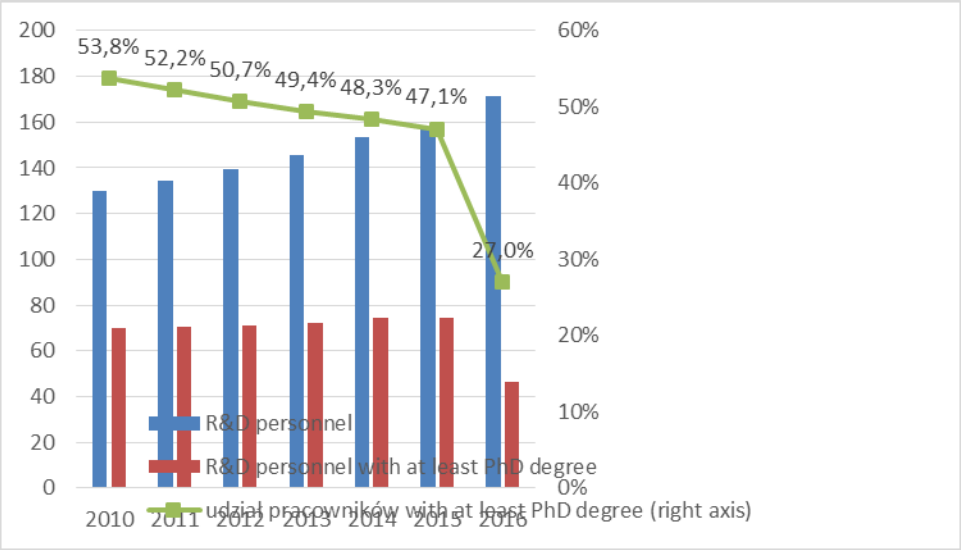
Figure 2. Workers in R&D



Source: author's own elaboration based on: GUS, Działalność badawcza, 2012, 2013, 2014a, 2015a, 2016a, 2017a

An important measure of the innovation level of the economy is the number of people employed in R&D activities, holding at least the doctor's degree. Since 2010, the share of the employees with at least a doctoral degree in the total number of employees in R&D activity has been gradually decreasing (Figure 3, the right axis), and in 2016 a drastic drop in its value is visible. The number of employees with at least a doctoral degree has decreased over the last year by 28.1 thousand people. In 2016, 11.7 thousand people with professor title were engaged in R&D activities, 19.1 thousand with habilitated doctor title, which accounted for 6.8% and 11.1%, respectively, of those working in R&D.

Figure 3. Workers in the field of R&D with at least the doctoral degree

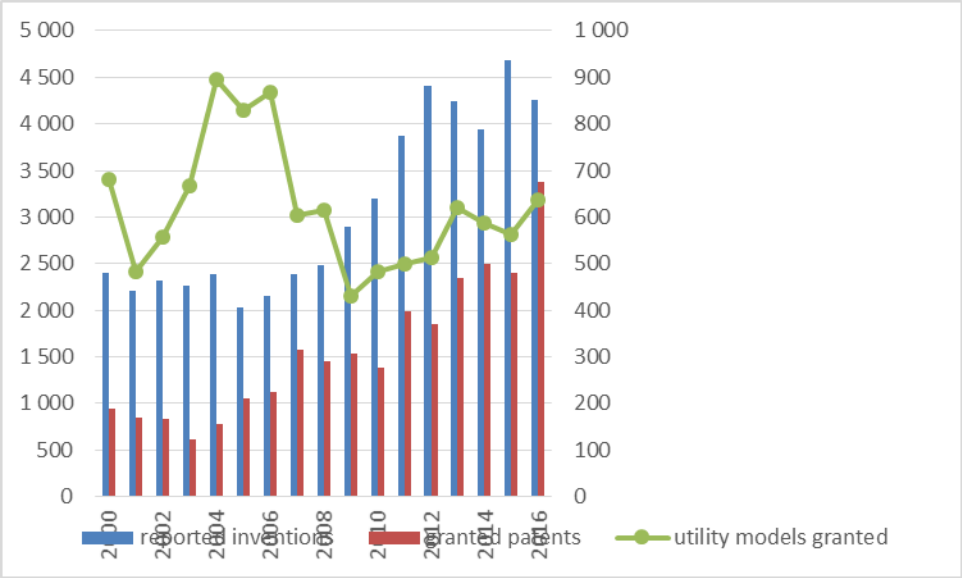


Source: author's own elaboration based on: GUS, Działalność badawcza, 2012, 2013, 2014a, 2015a, 2016a, 2017a

In 2016, the number of granted patents increased significantly, reaching the value of 3370 patents, which in comparison with the previous year meant an increase by 40%. At the same time, the number of reported inventions decreased by 9% (Figure 4 – the left axis). When Poland joined the EU, the number of utility models granted increased significantly, but after 2006 a drop in their number to the level of approx. 600 was noted (Figure 4 – the right axis).

In the years 2014-2016, 20.3% of the industrial enterprises and 14.5% of the enterprises from the services sector showed innovative activity. Taking into account the number of employees, the largest share in the total number of enterprises introducing innovations had those employing 250 people and more. In the years 2014-2016, innovations were the most common in enterprises from the industry and services sectors (51.0% and 37.1%, respectively).

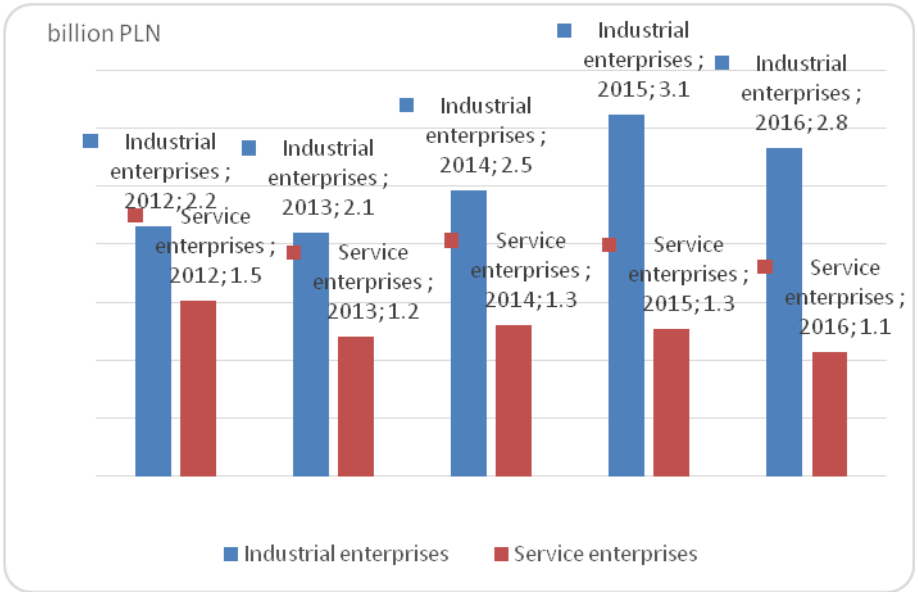
Figure 4. The number of reported inventions, granted patents and utility models



Source: author's own elaboration based on: Statistics Poland, 2018

In 2016, expenditures on innovative activity in industrial enterprises amounted to PLN 28.3 billion, and in service enterprises - PLN 10.71 billion, i.e. less by 9.0% and 15.3%, respectively, than a year before. The fact that the expenditure on investment activity among service enterprises was the lowest in the consecutive 5 years is alarming (see Figure 5). Industrial enterprises invested the largest expenditures on innovative activity in 2015.

Figure 5. Expenditures on innovative activity in billion PLN



Source: Author's own elaboration based on: GUS, Działalność innowacyjna, 2014b, 2015b, 2016b, 2017b

The expenditures on innovative activity in 2014-2016 in industrial and service enterprises were financed mainly from own funds, they amounted to 71.6% and 88.2% respectively. These values increased in comparison with the previous period. At the same time, the share of funds obtained from abroad decreased significantly compared to the previous period, for industrial enterprises – from 10.1% to 1.8%, for service enterprises – from 16.6% to 2.8%.

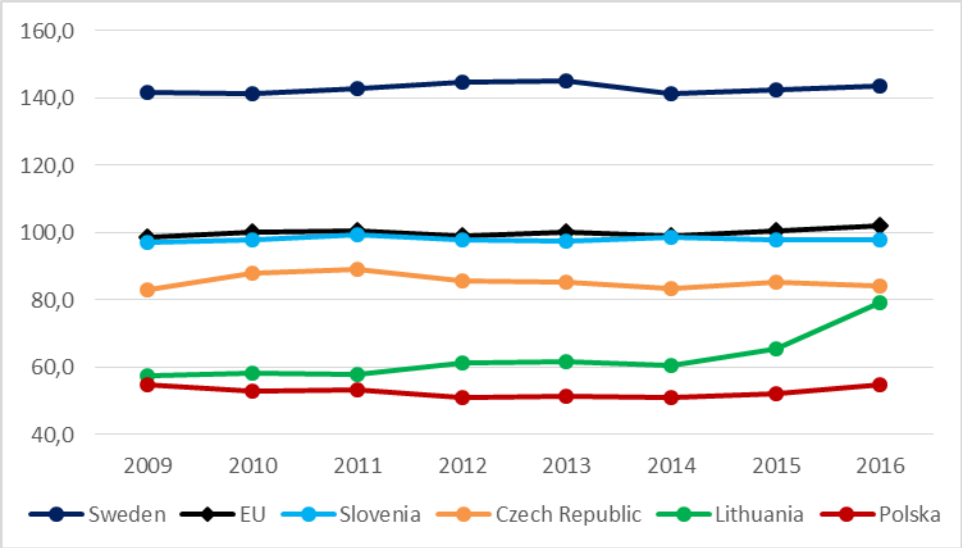
3. Comparison of the Polish economy with the EU member states' economies

In 2016, Sweden ranked the most innovative country in comparison with the EU Member States (innovation rate - 143.6% of the EU average in 2010). The Member States were divided into four groups based on the average of results calculated on the basis of a total innovation indicator. On the one hand, innovation leaders, whose innovation results are well above the EU average, are: Denmark, Finland, Germany, the Netherlands, Sweden and the United Kingdom. On the other hand, strong innovators with the results above or near the EU average include: Austria, Belgium, France, Ireland, Luxembourg and Slovenia. The results of Croatia, Cyprus, the Czech Republic, Estonia, Greece, Hungary, Italy, Lithuania, Latvia, Malta, Poland, Portugal, Slovakia and Spain are below the EU average, so they were classified as moderate innovators. Bulgaria and Romania are weak innovators with results far below the EU average (European Commission, 2017b).

The innovation level of the Polish economy in 2009-2016 remained at a similar level compared to the EU average of 2010. Unfortunately, Poland is still well below the EU average, being in the tail of the countries with the lowest innovation rate (the fourth place from last in 2016). Seeking the reasons for such a low level of innovation, a comparison was made between Poland's economy and other economies included in the group of moderate innovators, such as: Slovenia (the 12th place), the Czech Republic (the 13th place), Lithuania (the 16th place).

In 2009-2016, the Polish economy did not reach 55% of the EU average, while the Slovenian economy never fell below 97%, the Czech Republic below 83%, and the Lithuanian economy recorded a significant increase in the SII - Summary Innovation Index from 57, 5% in 2009 to 79.5% in 2016. However, the Swedish economy was still in the first place, reaching the level of 141.3 - 143.6% of the EU average from 2010 (Figure 6).

Figure 6. The innovation level of the selected EU member states

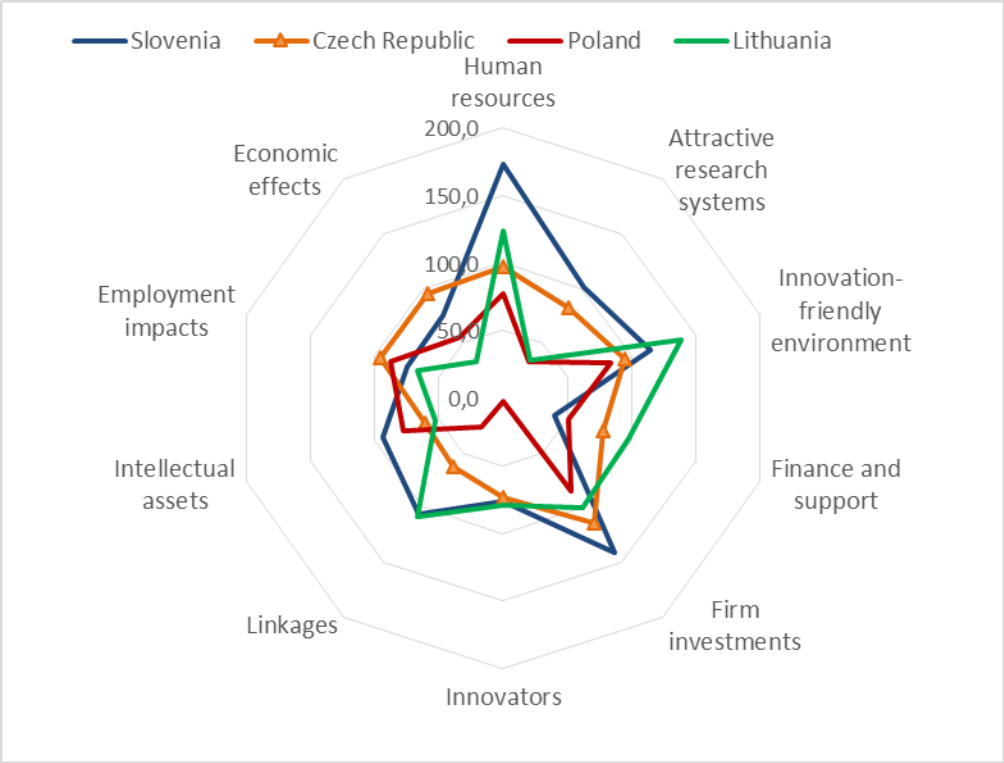


Source: author's own elaboration based on: European Commission, EIS 2017b

The total value of the innovation index (SII) consists of ten dimensions of innovation. The values of innovation dimensions in 2016 for Poland and other selected EU member states are presented in Figure 7. The largest distance divided the Polish economy from the above-mentioned countries in the following dimensions: innovators, linkages, attractive research systems, human resources and innovation-friendly environment. However, the greatest innovation level was demonstrated in the following dimensions: employment impacts and intellectual assets.

The Swedish economy, which is the innovation leader, far outperforms the other analysed economies (Figures 6 and 7). The weakest dimension of innovation for Sweden was the economic effects, which was influenced by low sales of new-to-market and new-to-firm innovations. However, the strongest sides were human resources (where the high value of the index resulted from the percentage of people of 25-64 age, involved in lifelong learning), attractive research systems and innovation-friendly environment. The number of international scientific co-publications in Sweden was 4 times higher than the EU average in 2016, while for Poland this value was 0.6.

Figure 7. Index of innovation of selected economies in 10 dimensions in 2016

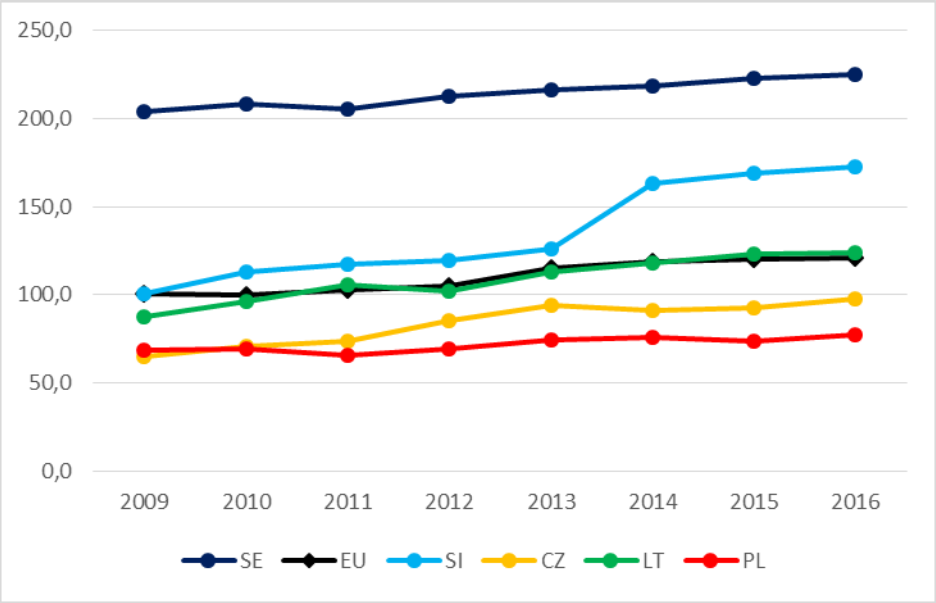


Source: author's own elaboration based on: European Commission, EIS 2017b

3.1. Human resources

The above-mentioned innovation index in the Polish economy was the lowest compared to other countries (Figure 8), and did not even reach the level of 80% of the EU index recorded in 2010. A significant increase in this period was recorded by the Slovenian economy (71.7%), and the slightly smaller by the Lithuanian economy (30.6%). The level of this indicator in Poland was influenced by a high percentage of people with higher education and, at the same time, a small number of people with the doctoral title and a low level of lifelong learning.

Figure 8. Innovation index – dimension: human resources

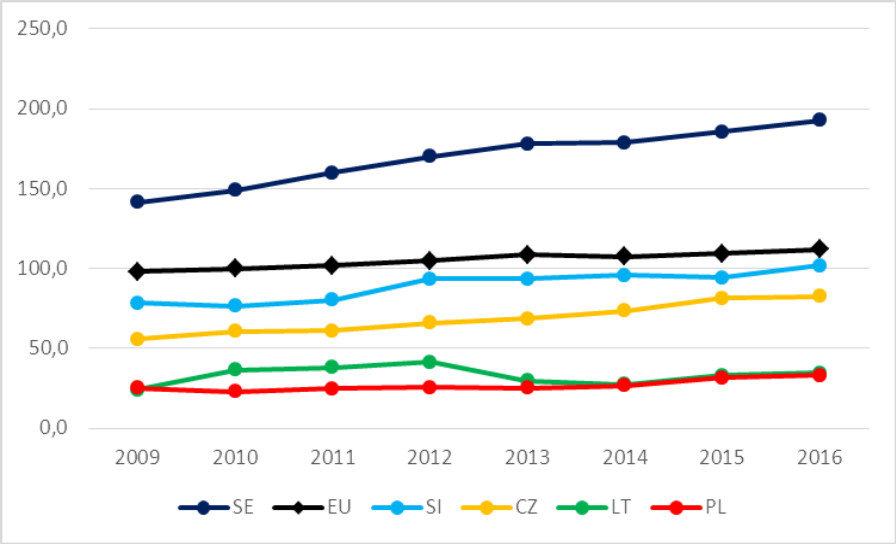


Source: author's own elaboration based on: European Commission, EIS 2017b

3.2. Attractive research systems

In the dimension of attractive research systems, the Polish and Lithuanian economies were characterized by the lowest level of innovation and, at the same time, the largest distance to other EU countries (Figure 9). For the both economies, a very weak result in this area was a consequence of poor international cooperation in the area of published research and low participation of foreign students in doctoral studies. The Swedish economy increased the most, enlarging the gap between it and the other EU countries.

Figure 9. Innovation index – dimension: attractive research systems

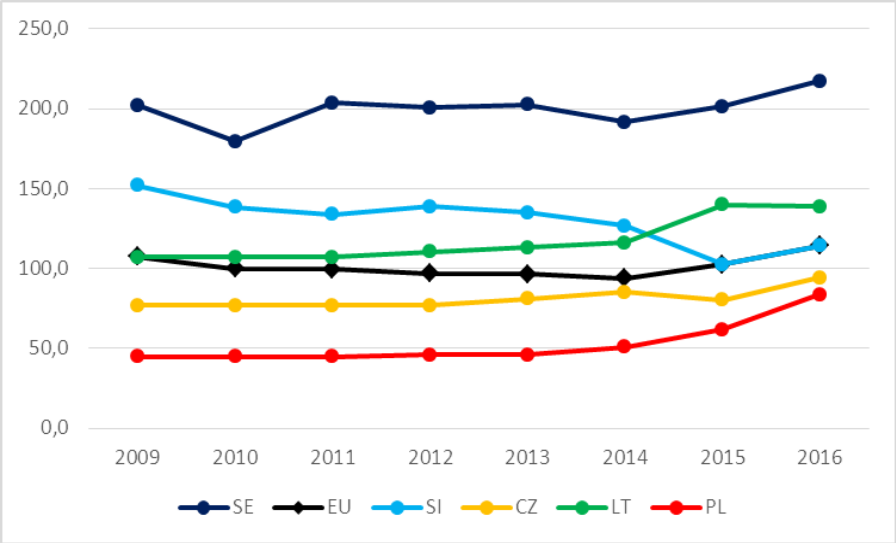


Source: author's own elaboration based on: European Commission, EIS 2017b

3.3. Innovation-friendly environment

In the Polish economy, there has been a significant progress since 2013 in the development of an environment conducive to innovation (an increase by almost 39%). Simultaneously, the Slovenian economy recorded a significant drop in the value of this indicator (-37.7%), which is associated with a decrease in corporate motivation. The growing Polish result was influenced by the growing range of broadband connections.

Figure 10. Innovation index – dimension: innovation-friendly environment

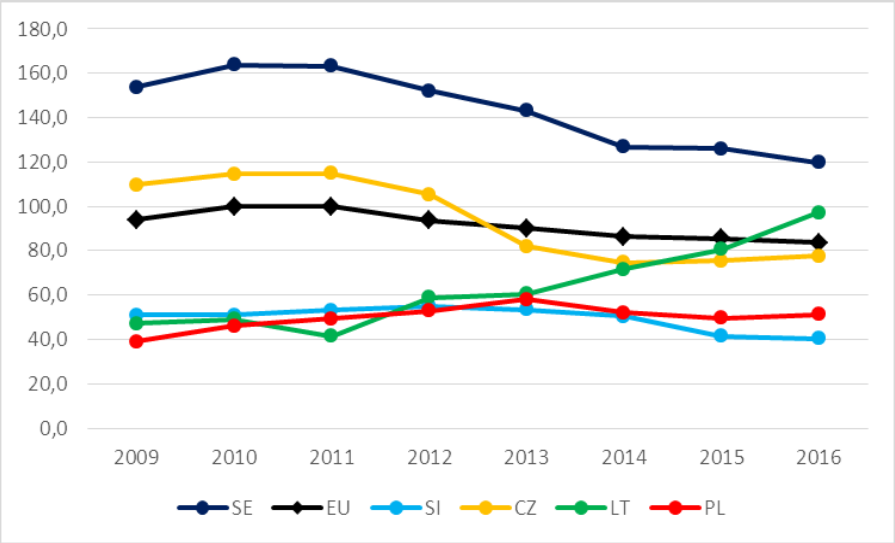


Source: author's own elaboration based on: European Commission, EIS 2017b

3.4. Finance and support

Innovation index in the area of financing and support for Poland was at the level of 51.2% and was slightly better than the index for Slovenia. The economies of Sweden, the Czech Republic and Slovenia recorded a decrease in the value of this index (which resulted from reduced venture capital spending), while the innovation index for the Lithuanian economy increased by 50% (Figure 11). The weak result of Poland and Slovenia in this area resulted from low spending on R&D in the public sector, as well as investments in venture capital.

Figure 11. Innovation index – dimension: finance and support

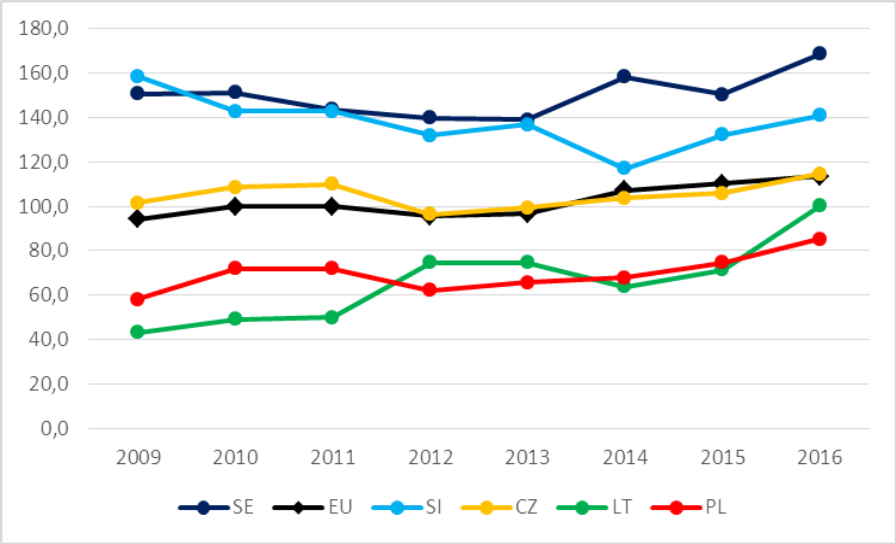


Source: author's own elaboration based on: European Commission, EIS 2017b

3.5. Firm investment

In 2016, Poland significantly improved the innovation index in the area of business investments, reaching 85% (Figure 12). However, it was still in the last place alternating with the Lithuanian economy. The economy of Sweden in 2013 improved the value of this index, significantly ahead of the Slovenian economy, which, unfortunately, recorded a decrease in this index in comparison with 2009. The decreasing Slovenian result in this aspect was affected by the decreasing level of expenditure on innovation outside R&D (non-R&D innovation expenditures). Poland's relatively good results included: a stable high level of expenditure on innovation outside of R&D and a steadily growing share of expenditure on R&D works among private enterprises.

Figure 12. Innovation index – dimension: firm investment

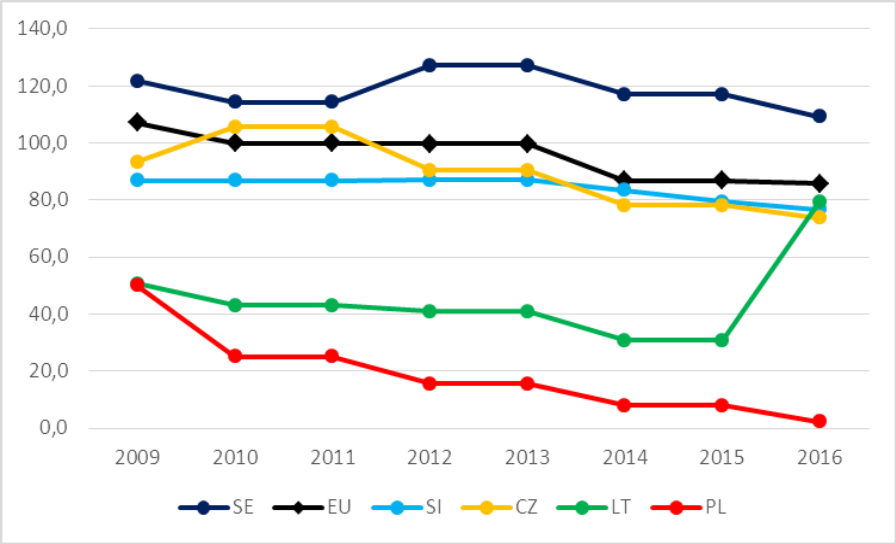


Source: author's own elaboration based on: European Commission, EIS 2017b

3.6. Innovators

In the majority of analysed economies, one can notice a decrease in the value of innovators in recent years. This is particularly evident for Poland, where this index decreased from almost 50% in 2009 to 2.2% in 2016 (Figure 13). An exception was the Lithuanian economy, which saw a significant increase in the last year, which is the result of a growing number of SMEs introducing product or process innovations and SMEs innovating in-house. The declining value of the index for Poland was composed of negligible percentages of SMEs introducing any innovations (product, process, marketing or organizational), as well as zero percentage of SMEs introducing innovations for their own needs. It is necessary to encourage small and medium-sized enterprises to take innovative actions.

Figure 13. Innovation index – dimension: innovators

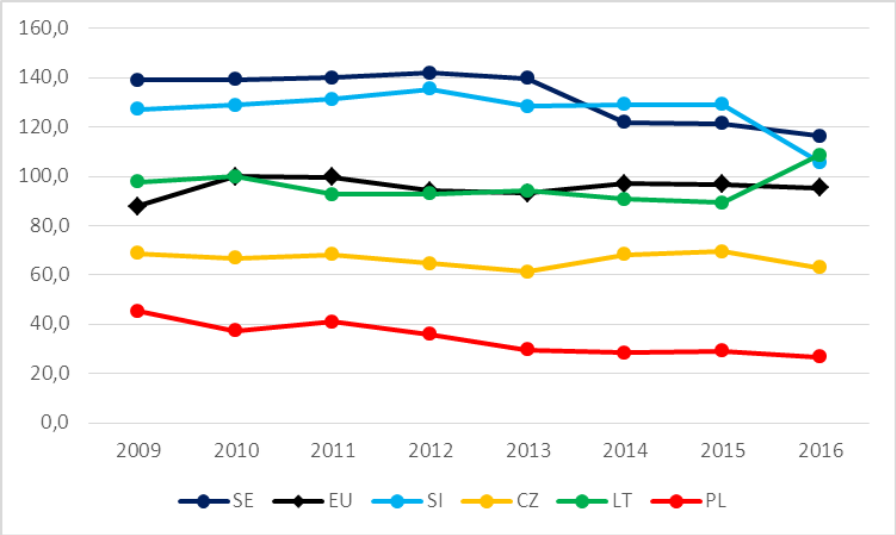


Source: author's own elaboration based on: European Commission, EIS 2017b

3.7. Linkages

In the linkages dimension, one could notice a deepening disproportion between the Polish economy and other economies (Figure 14). The distance separating us from the Czech Republic economy increased from 23.3% to 36.2%. The level of this index for the Polish economy decreased from 45.4% in 2009 to 26.8% in 2016. The economies of Sweden and Slovenia also recorded a drop in the value of this index. Such a poor result for the Polish economy resulted from the decreasing number of innovative SMEs cooperating with others and from a small number of public-private publications. The main reason can be seen in the lack of trust among private enterprises, in particular SMEs.

Figure 14. Innovation index – dimension: linkages

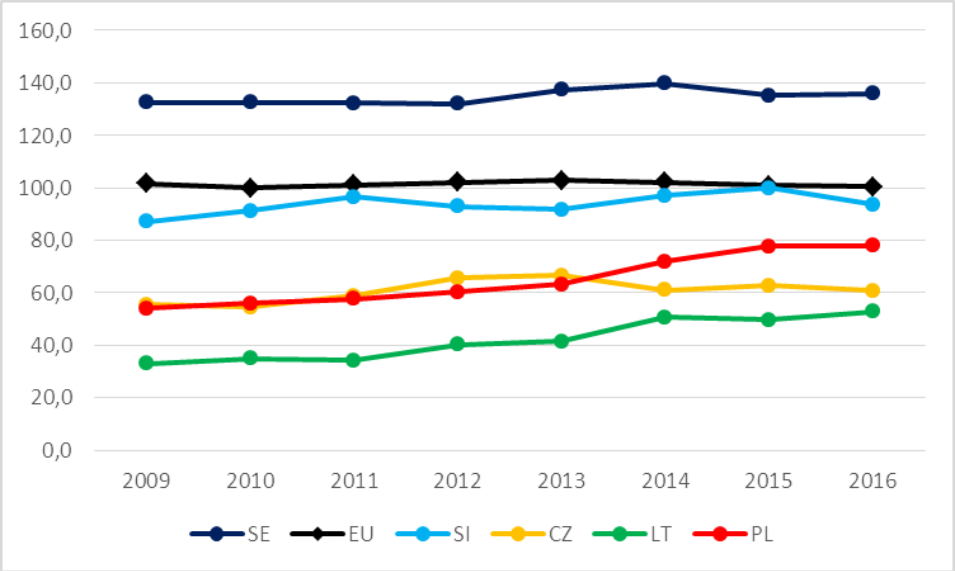


Source: author's own elaboration based on: European Commission, EIS 2017b

3.8. Intellectual assets

For the Swedish, Slovenian and Czech economies, stabilization of the value of the innovation index in the area of intellectual assets could be observed. However, for Poland and Lithuania, there was a systematic increase in the value of this index, which in 2016 reached almost 78% for Poland (Figure 15) and thus outperformed the Czech Republic economy. The growing value of the index for Poland resulted from the high number of utility models (compared to the EU average of 2010 it was 128%) and moderate number of trademarks. The weakest link was the number of international patent applications.

Figure 15. Innovation index – dimension: intellectual assets

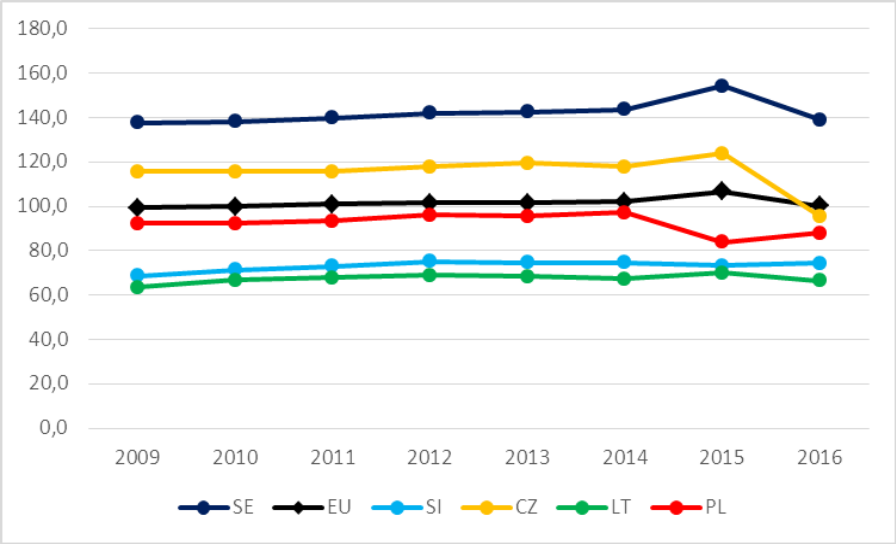


Source: author's own elaboration based on: European Commission, EIS 2017b

3.9. Employment impacts

Also, there was a stabilization of the values in all the economies in case of the innovation index in the dimension: employment impacts. For the Polish economy, the innovation index reached the level of 88% in 2016, thanks to which it still outperformed the Lithuanian and Slovenian economies (Figure 16). However, the Czech and Swedish economies recorded a decline in the value of this index in the last year, which resulted from declining employment in fast-growing innovative enterprises. In the Polish economy, the high level of this index was mainly affected by employment in fast-growing innovative enterprises (112% of the EU average from 2010).

Figure 16. Innovation index – dimension: employment impacts

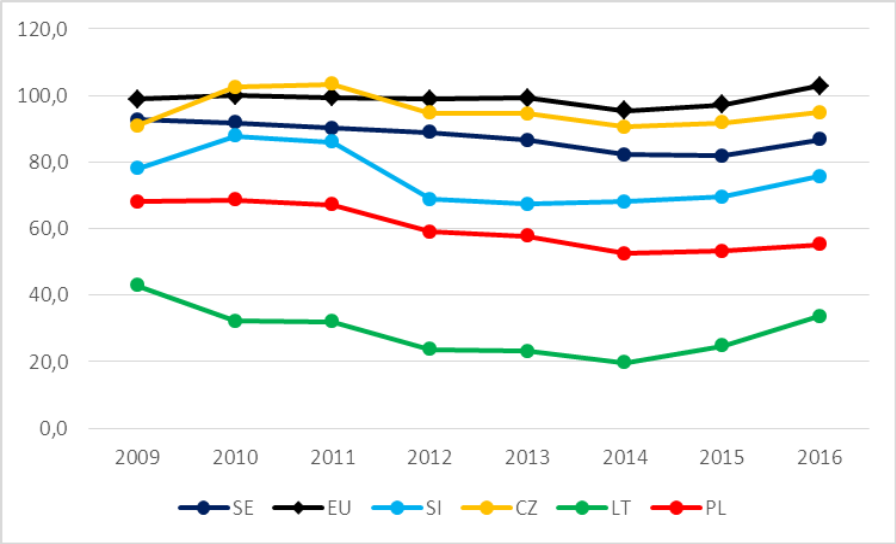


Source: author's own elaboration based on: European Commission, EIS 2017b

3.10. Economic effects

For all compared economies, the index of innovation in the area of economic effects was below the EU average. The innovation index for Lithuania was one of the lowest among compared economies (Figure 17). The economy of Poland and Lithuania until 2014 had been characterized by a declining value of the innovation index (the main responsibility for which fell on the declining value of sales of new-to-market and new-to-firm innovations as percentage of turnover). The index for Poland had remained at a similar level since 2014, while for Lithuania it had risen to 33.5%. Compared with other countries, the share of medium and high technology products in Poland's exports was at a similar level.

Figure 17. Innovation index – dimension: economic effects



Source: Author's own elaboration based on: European Commission, EIS 2017b

4. Conclusion

The aim of the article was to find an answer to the question: What is the reason for a dramatically low level of innovation in the Polish economy, compared with other countries? The Polish economy was compared with those of Sweden, Slovenia, the Czech Republic and Lithuania in terms of ten innovation indicators. It was focused on factors that have the strongest influence on the low or high level of innovation in Poland and other countries.

The starting point was an analysis of the innovation level of the Polish economy over the years. Based on the analysis of statistical data, the following trends were noted:

- until 2015, the GERD relation to GDP was growing (in 2015, GERD reached the maximum value of 1% of GDP);
- the share of investment expenditures in GERD was decreasing (18.7% in 2016);
- the share of the government sector in the financing of R&D works was decreasing for enterprises;
- the number of employees with at least the academic degree of doctor, working in R&D activity was decreasing;
- among enterprises that introduced innovations, 51% were industrial enterprises with a number of employees above 250;
- expenditures on innovation activity came mainly from own funds of industrial (71.6%)

and service enterprises (88.2%).

In the second part of the study, the European Innovation Scoreboard indicators were analysed. Unfortunately, the results of the analysis show that in most of the dimensions of innovation, Poland achieved the lowest rates. The only exceptions were the following indicators: intellectual assets, impact on employment level and economic effects. The tendencies listed below were observed:

- a small number of people with a doctoral degree and a low level of lifelong learning, but a high percentage of people with higher education,
- poor international cooperation in the field of published scientific research and low participation of foreign students in doctoral studies,
- increasing range of broadband connections,
- low expenditure on R&D works in the public sector, as well as on investments in venture capital,
- stable high level of expenditure on innovation outside of R&D activity and a growing share of expenditure on R&D works among private enterprises,
- minimal percentage of SMEs introducing any innovations, as well as a lack of innovations introduced by SMEs for their own needs,
- declining number of innovative SMEs cooperating with other entities and a small number of public-private publications,
- high number of utility models,
- high level of employment in fast-growing innovative enterprises,
- high share of medium and high technology products in export and at the same time decreasing sales value of innovations, which are new for the market and new for the enterprise.

The literature of the subject offers more and more publications analysing the innovation level of the Polish economy and presenting the search for the causes of the current state of it, as well as ways to improve the situation. One of the solutions proposed by Kisielnicki (2016: 67-79) is to modernize the management infrastructure, thanks to the use of appropriate IT tools. However, from the analysis, a much more serious problem emerges and is related to the support system at the national level and the pro-innovative attitude of the society. An interesting publication was prepared by the National Bank of Poland (2016), which focused on the analysis

of international experience and listed proposals for Poland in the area of pro-innovation policy. Solutions used in other countries cannot be directly transferred to our economy due to the need to adapt them to the specificity of a given economy, because there are no universal recipes for increasing innovation and competitiveness of the economy. The greatest challenge for improving the innovation level of the Polish economy is to improve cooperation between universities and SMEs. It was noticed that large companies are more willing to cooperate with universities and thanks to that, they are more likely to innovate. However, SMEs do not want to cooperate with both research centres and among themselves. The primary cause is the lack of trust, as well as the lack of motivation to innovate. It would be necessary to change the attitude of the whole society, which worked very well in the Scandinavian countries, but it takes time. It would be desired to implement the various support instruments and institutions that assist in a comprehensive manner, starting with assistance in completing the patent application, translating the application, submitting documents, so that the entrepreneur would not have an additional burden. A reward system for patent applications would be an additional incentive for SMEs.

The business sector in Poland is dominated by small entities that cannot afford significant R&D expenditures, but they can be very flexible in terms of market offer. Increasing innovation and competitiveness in sectors with low added value will require intensive cross-sector cooperation between the companies, but also to promote an environment conducive to the diffusion of knowledge and technologies between sectors. An important element would be the implementation of the innovation support program, based largely on EU funds. However, it must be underlined that the SMEs sector cannot cope with the submission of applications for co-financing. The applications are sometimes very complicated and a lot of projects fall out at the stage of formal evaluation, despite the help of external companies, which is additionally payable. Such actions effectively discourage SMEs from undertaking any innovative activities. Free institutional support would be needed here, which would cover the entire process, starting from filling out the application, through the evaluation process, to help with its implementation.

Another problem is openness to scientific and economic cooperation. Cooperation between Polish and foreign universities, as well as joint research and publications are at a low level. The reasons are to be found in the language barrier and poor mobility of Polish researchers. All initiatives that increase the mobility of people with higher education, or contribute to the creation of joint research and increase the foreign expansion of Polish

companies should be considered desirable.

In Poland, there is an increasing level of human capital, a high percentage of people with higher education and young people from Poland receive medals at global creativity Olympics. However, this does not translate into an increase in innovation. Part of this may be related to the economic emigration of young, well-educated people. Young scientists often travel abroad, where they acquire patents and implement their solutions. A support mechanism for young scientists in carrying out the whole process of creating innovations from the idea to its implementation on the market and adequate research infrastructure would be necessary here.

Summarizing, it is necessary to create an innovation policy based on shaping the public awareness of the need for innovation, stimulating cooperation between companies (especially SMEs), cooperation between the company and university, supporting commercialization of R&D and supporting the mobility of researchers. Future research will include proposition of particular actions.

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Innowacyjność polskiej gospodarki w porównaniu z krajami UE

Streszczenie

W artykule przedstawiono zmianę poziomu innowacyjności polskiej gospodarki na przestrzeni lat 2007-2016 oraz dokonano porównania poziomu innowacyjności polskiej gospodarki z gospodarkami unijnymi w latach 2010-2016. Celem artykułu jest znalezienie odpowiedzi na pytanie co jest przyczyną tak niskiego poziomu innowacyjności polskiej gospodarki w kontekście innych krajów. Należy podkreślić, że w roku 2016 wśród krajów EU zajmujemy czwarte miejsce od końca, osiągając niespełna 55% poziom innowacyjności dla średniej unijnej z roku 2010. W pierwszej części artykułu nacisk został położony na pomiar innowacyjności gospodarki Polski przy wykorzystaniu wskaźników opisywanych w raportach Głównego Urzędu Statystycznego. Natomiast w dalszej części opisano poziom innowacyjności wszystkich krajów UE a następnie dokonano porównania innowacyjności polskiej gospodarki z innowacyjnością gospodarek: Szwecji (SE), Republiki czeskiej (CZ), Słowenii (SI) oraz Litwy (LT). Analiza została przeprowadzona na podstawie danych zamieszczonych w European Innovation Scoreboard 2017. Wykorzystana metodyka opiera się na podręczniku Frascati OECD. W ostatniej części została dokonana ocena innowacyjności polskiej gospodarki poprzez podkreślenie pozytywnych bądź negatywnych tendencji.

***Słowa kluczowe*:** innowacyjność gospodarki, Europejska tablica wyników innowacji