Comparative Economic Research, Volume 18, Number 2, 2015
10.1515/cer-2015-0010

BOŻENA MIKOŁAJCZYK*

Poland's Innovativeness Against The Background Of EU Countries (Recent Research Results)

Abstract

Innovativeness in Europe has been a formulated goal of the EU since the Lisbon Strategy. One of the goals of the new Europe 2020 Strategy is smart growth, i.e. growth based on knowledge and innovation. This requires improving the quality of education and research results, the transfer of knowledge and innovations between countries, and broader commercialization of research results. Hence, the measurement of innovation evolves in order to reflect the factors that determine the level of innovativeness of economies. The purpose of this paper is to present the level of Poland's innovativeness against the background of the EU countries, using the SII (Summary Innovation Index).

Keywords: *innovation indicators, Europe 2020, measurement of innovation, innovation leaders*

1. Introduction

Innovation is one of the key factors that leads to economic growth and enhanced competitiveness. Achieving a sustainable competitive advantage by introducing innovations is primarily associated with the accumulation of knowledge and experience. The role of innovations in the search for sources of competitive advantage is constantly growing, along with the simultaneously increasing costs and

* Ph.D., Full Professor at the University of Lodz, Faculty of Economics and Sociology, Department of Accounting and Finance of SMEs

risks associated with their implementation. Innovations are no longer treated only endogenously but also as exogenous. This means that their level depends not only on R&D expenditures, but is affected by many factors and business innovations are dependent on both the private and the public sector. Therefore there are many factors besides the expenditures on R&D (funded by the state budget, companies, universities, the non-profit sector, and foreign funds) that determine the level of innovativeness of individual countries. Indicators used for measuring innovation are being increasingly re-calibrated to capture measurable factors determining the level of innovativeness. It should be kept in mind, however, that the level of innovativeness is also affected by a number of immeasurable factors.

Obviously innovation policy is designed to promote the innovativeness of the economy, by the introduction of new products, services, processes, as well as techniques and methods of management and organization. This requires the creation of a pro-innovative climate, fostering innovation culture in firms and the development of services to assist innovative businesses. In spite of the economic downturn, the debate on economic policy emphasizes providing an appropriate framework that promotes innovations which lead to structural changes and influence the international competitive advantage of countries.

The priority for the EU in the twenty-first century is to increase the role of knowledge and innovation - the driving forces behind the development of economies in the future. Achieving this goal requires better knowledge combined with economic practices, as well as a financial infrastructure that encourages innovation.

The Europe 2020 Strategy and its recommendations focus on investments in education, research and innovation as key to smart and sustainable development. The goal is to create the best possible environment for innovative activities for researchers and firms, including in the public sector.

The success of the Europe 2020 Strategy will depend largely on effective coordination of the implementation of EU reform programs, combined with the co-responsibility of all Member States for carrying out effective structural reforms.

The goal of this paper is to present the level of innovativeness in Poland against the background of the EU countries, measured by the SII (Summary Innovation Index) and calculated on the basis of parameters from three areas: Enablers, Firm activities. and Outputs.

2. Innovativeness of the EU countries in the second decade of the twenty–first century, with particular focus on Poland

Innovation is an important driver of economic progress and competitiveness in both the developed and developing countries. Many governments have put

innovations at the centre of their growth strategies. There is a growing awareness of the fact that the definition of innovation has been widened (Krawczyk 2012, p. 52) and is no longer limited to production activities but also includes the public sector, which cooperates with business. Business sector firms are dependent on the public sector as they maintain direct or indirect relations with this sector. These relations include, among others, regulatory requirements (everything from filling out online forms to the implementation of other requirements relating to pollution or safety, spatial planning, etc.), direct contracts (e.g. public procurement) and use of public services such as subsidies, grants, training programs, on-line services (European Public Sector Innovation Scoreboard 2012, p. 6).

Innovations are becoming more general and horizontal in nature and include both social innovations and business model innovations. Attention is increasingly paid to linkages between various entities in the area of innovation, which in turn stimulates innovation growth. These linkages include interactions between firms and scientific and research institutions and research universities and scientists from around the world.

The importance of innovation in the development of modern economies is reflected by the fact that, already in 2000 at the Lisbon summit, the European Union established innovation as a key goal of EU programs set out in the Lisbon Strategy. It was recognized that in order to become the most competitive and dynamic economy in the world, the European Union has to base its economy on knowledge, the implementation of information society policies, expenditures on research and development and human capital.

A special goal of the Lisbon Strategy, renewed in 2005, was to achieve economic growth and high employment. The importance of investments in R&D and innovation activities was also stressed. In this context, attention was paid to education and acquiring those new skills needed to increase productivity and competitiveness. Because of the crisis, the EU's assumptions and implemented changes aimed at achieving an innovative economy did not result in the expected economic growth.

One of the primary sources of information about the innovativeness of economies is the "Innovation Union Scoreboard" report. The Summary Innovation Index (SII) presented in the report is used to assess the innovativeness of the EU countries and is calculated based on 25 sub-indices. This allows for monitoring the changes in the level of innovativeness of economies and pointing out the differences between countries in their level of adaptation to the EU policy.[1]

[1] The values of individual and aggregated indicators have been published since 2010. Both the number and the formula for calculating the indicators underwent changes. In the most recent 2014 report 25 indicators are used for measuring the innovativeness of economies.

The SII level indicates a country's potential to increase the innovativeness of its economy. On the basis of the SII index, Member States can be divided into four groups:

- Innovation leaders,
- Innovation followers,
- Moderate Innovators,
- Modest innovators.

The countries in Group 1 - innovation leaders - include Sweden, Denmark, Germany and Finland. Their respective SII indices are more than 20% higher than the average for the EU countries.

Group 2 - Innovation followers – consists of Luxembourg, the Netherlands, Belgium, United Kingdom, Ireland, Austria, France, Slovenia, Estonia and Cyprus. The Summary Innovation Index for these countries is between 90% and 120% of the average for the EU countries.

Group 3 - moderate innovators – perform at a level 50% and 90% of the average for the EU countries. This group includes Italy, the Czech Republic, Spain, Portugal, Greece, Hungary, Slovakia, Malta, Croatia, Lithuania and Poland.

Group 4 - modest innovators - are characterized by an SII below 50% of the average for the EU countries. This group includes Romania, Latvia and Bulgaria.

The changes in innovation performance of the EU countries during the period 2006-2013 are presented in Table 1. The complete construction of the index is presented in Annex 1.

Overall, the EU annual average growth rate of innovation performance based on the SII reached 1.7% (Innovation Union Scoreboard 2014, p. 5) over the analyzed eight year period 2006-2013. Increases were reported in the following areas:

- human resources–by 2.3%,
- open, excellent and attractive research systems–by 4.5%,
- intellectual assets–2.1%,
- innovators–by 0.7%,
- economic effects–by 1.2%;

Whereas decreases in the level of innovativeness were reported in:

- finance and support–by 5%,
- firm investments–by 1.4%,
- linkages and entrepreneurship–by 0.1%.

The overall growth rate of the SII was primarily a result of increases in International scientific co-publications, non-EU doctorate students, and Community trademarks. The growth ratios for these indicators were over 6%.

Table 1. The dynamics of innovation in the EU-27 in 2006-2012 (by SII)

Main type/innovation dimension/indicator	Growth indicator 2006=100%
HUMAN RESOURCES	**102.3%**
1.1.1 New doctorate graduates	102.8%
1.1.2 Population aged 30-34 having completed tertiary education	103.6%
1.1.3 Youth aged 20-24 with upper secondary level education	100.5%
OPEN, EXCELLENT AND ATTRACTIVE RESEARCH SYSTEMS	**104.5%**
1.2.1 International scientific co-publications	106.0%
1.2.2 Top 10% most cited scientific publications worldwide	101.4%
1.2.3 Non-EU doctorate students	106.3%
FINANCE AND SUPPORT	**95.0%**
1.3.1 R&D expenditures in the public sector	101.8%
1.3.2 Venture capital investments	97.2%
FIRM INVESTMENTS	**98.6%**
2.1.1 R&D expenditures in the business sector	102.0%
2.1.2 Non-R&D innovation expenditures	95.3%
LINKAGES & ENTREPRENEURSHIP	**99.9%**
2.2.1 SMEs innovating in-house	103.8%
2.2.2 Innovative SMEs collaborating with others	101.2%
2.2.3 Public-private scientific co-publications	102.2%
INTELLECTUAL ASSETS	**102.1%**
2.3.1 PCT patent applications	100.0%
2.3.2 PCT patent applications in societal challenges	99.9%
2.3.3 Community trademarks	106.9%
2.3.4 Community designs	101.6%
INNOVATORS	**100.7%**
3.1.1 SMEs introducing product/process innovations	101.3%
3.1.2 SMEs introducing marketing/organisational innovations	100.8%
3.1.3 Fast-growing innovative firms	100.0%
ECONOMIC EFFECTS	**101.2%**
3.2.1 Employment in knowledge-intensive activities	100.7%
3.2.2 Contribution of MHT product exports to trade balance	100.2%
3.2.3 Knowledge-intensive services exports	101.0%
3.2.4 Sales of new to market and new to firm innovations	100.5%
3.2.5 License and patent revenues from abroad	103.7%

Source: Calculations based on the Innovation Union Scoreboard 2014, European Commission, p. 25.

The comparison of innovativeness of EU countries with main global competitors in the period 2006-2013 shows that the EU average is lower than that of South Korea, the United States and Japan, and is higher than that of Canada, Australia and the BRICS countries (China, India, Russia, Brazil, South Africa).[2]

The EU innovation leaders dominate especially in such indicators as R&D expenditures in the business sector, public-private scientific co-publications, PCT patents, and the population aged 30-34 having completed tertiary education.

There is a difference in the level of innovativeness between EU countries, especially between the 'old' and the 'new' EU. Poland occupies 25th position in the overall ranking, i.e. is not even a leader in Central and Eastern Europe.

Table 2. EU annual growth performance in 2013

Main type/innovation dimension/indicator	**EU-27**	**Finland**	**France**	**Poland**	**Bulgaria**
ENABLERS					
HUMAN RESOURCES					
1.1.1 New doctorate graduates	1.7	2.3	1.6	0.5	0.6
1.1.2 Population aged 30-34 having completed tertiary education	35.8%	43.0%	43.6%	39.1%	26.9%
1.1.3 Youth aged 20-24 with an upper secondary level of education	80.2%	72.0%	84.4%	89.8%	85.8%
OPEN, EXCELLENT AND ATTRACTIVE RESEARCH SYSTEMS					
1.2.1 International scientific co-publications	343	1840	707	226	213
1.2.2 Top 10% most cited scientific publications worldwide	11.0%	14.5%	10.4%	3.8%	3.2%
1.2.3 Non-EU doctorate students	24.2%	17.7%	31.5%	1.9%	3.8%
FINANCE AND SUPPORT					
1.3.1 R&D expenditures in the public sector	0.75%	1.02%	0.78%	0.56%	0.24%
1.3.2 Venture capital investments	0.277%	0.296%	0.307%	0.234%	0.038%
FIRM ACTIVITIES					
FIRM INVESTMENTS					
2.1.1 R&D expenditures in the business sector	1.31%	1.96%	1.45%	0.33%	0.39%
2.1.2 Non-R&D innovation expenditures	0.56%	0.51%	0.25%	1.02%	0.28%

[2] This comparison was based on 12 indicators. For more, see: Innovation Union Scoreboard 2014, European Commission, p. 29.

LINKAGES & ENTREPRENEURSHIP					
2.2.1 SMEs innovating in-house	31.8%	40.8%	29.9%	11.3%	13.0%
2.2.2 Innovative SMEs collaborating with others	11.7%	15.5%	11.1%	4.2%	3.3%
2.2.3 Public-private scientific co-publications	7.3	13.1	7.0	2.3	2.0
INTELLECTUAL ASSETS					
2.3.1 PCT patent applications	1.98	2.55	2.05	0.67	0.59
2.3.2 PCT patent applications in societal challenges	0.92	1.45	0.90	0.25	0.22
2.3.3 Community trademarks	5.91	7.45	4.131	3.21	5.30
2.3.4 Community designs	4.75	8.14	3.70	4.76	3.18
OUTPUTS					
INNOVATORS					
3.1.1 SMEs introducing product/process innovations	38.4%	41.6%	32.7%	14.4%	16.6%
3.1.2 SMEs introducing marketing/organisational innovations	40.3%	42.6%	42.8%	19.9%	16.3%
3.1.3 Fast-growing innovative firms	16.2	19.2	18.2	13.7	11.8
ECONOMIC EFFECTS					
3.2.1 Employment in knowledge-intensive activities	13.9%	15.5%	14.3%	9.7%	8.3%
3.2.2 Contribution of MHT product exports to trade balance	1.27%	-3.34%	5.23%	0.58%	-5.23%
3.2.3 Knowledge-intensive services exports	45.5%	65.1%	33.7%	28.3%	25.5%
3.2.4 Sales of new to market and new to firm innovations	14.4%	15.0%	14.7%	8.00%	7.6%
3.2.5 License and patent revenues from abroad	0.77%	0.89%	0.70%	0.21%	0.21%

Source: Own elaboration based on the Innovation Union Scoreboard 2014, pp. 82-83 (Annex A) and pp.70-71 (Annex B).

Table 2 shows the Summary Innovation Index (SII) and the sub-indices in the analyzed areas for selected countries representing the four groups (Innovation leaders, Innovation followers, Moderate innovators, Modest innovators).

The data shows that the level of innovativeness in Poland lags behind the EU average in the following areas:

I. Human resources: New doctorates and Youth aged 20-24 with upper secondary education. The value of the indicator for Population 30-34 having completed tertiary education, however, exceeds the EU average (Geodecki et al. 2013, p.23).

II. Poland lags behind the EU the most in the area of research systems, lagging behind in all indicators describing this area. The values of the indicators 'international publications' and 'scientific publications among the top 10% most cited scientific publications worldwide' are too small. In the second case the value is more than three times lower than the EU average. The value of the indicator 'non-EU doctorate students' is more than twelve times lower than the EU average.

It may be said that while Poland is undergoing structural changes towards a knowledge-based economy, the pace is still too slow.

The research system consists of financing and support. Expenditures on R&D financed from the state budget in relation to GDP are lower in Poland than the EU average, and the largest differences occur in the area of firm expenditures, which are four times lower than the EU average.

The relatively underdeveloped venture capital market in the EU is also upsetting, and also here Poland lags behind the EU average (Żylicz 2013, p. 38).

The area 'Linkages and entrepreneurship' relates specifically to the SME sector. Despite the considerable amounts of structural funds provided under the Innovative Economy Programme, the indicators for Poland in this area are three times lower than the EU average.

Poland also lags behind the EU in the area of 'inventions', both at the stage of applying for patents as well as obtaining a patent. This results in relatively low revenues from the licensing or sales of patents.

Product and process innovations implemented by SMEs in relation to the total number of SMEs are approx. 2.5 times lower in Poland than the EU average. In case of marketing and organizational innovations this lag is smaller.

Employment in knowledge-intensive activities in Poland clearly lags behind the EU average. This also applies to the export of knowledge-intensive services.[3]

The research conducted in Europe shows that more and more countries are developing and implementing various incentives in the form of tax credits and grants (Przegląd zachęt na działalność B+R na świecie 2013, Deloitte, 2013; R&D incentives and services. Adding value across Europe, Middle East and Africa [EMEA], 2012).

[3] For more on knowledge-intensive services, see Majewska, Truskolaski 2013, pp. 91-108.

Weak tax incentives affect the level of expenditures on R&D and, according to KPMG experts and the entrepreneurs, it is thus necessary not only to expand the scope and scale of tax relief but also to sustain the system of grants. Repayable assistance should be granted in the implementation phase of a project, because it is associated with a lower risk than the work on the project. Business innovations are very risky, hence guaranty insurance or even tax exemptions should be considered.[4]

Poland is ahead of Bulgaria with respect to most of the indicators that make up the SII, and it outperforms France and Finland in sub-indicators relating to the number of people with higher and secondary education.

The development of the EU economy is inextricably linked with the necessity of raising its competitiveness. A competitive economy provides a higher standard of living and employment for its citizens. Increasing production brings about rising social welfare and economic growth. In this respect Europe still significantly lags behind developed countries such as the United States, where production is over 20% higher than in the EU (The Europe 2020 Competitiveness Report: Building a More Competitive Europe 2012, p. 6). The EU is trying to reduce the development gap between itself and the more developed economies from other continents. Among the ways to achieve this goal one must certainly include the efforts to increase innovativeness. Innovativeness improves the quality of production and the rate of its growth, which enables an increase in employment and wages, which in turn raises quality of life and well-being of the society (Bal-Wozniak 2012, p. 51).

After failing to reach the goal set out in the Lisbon Strategy (R&D expenditures equal to 3% of the EU's GDP), European leaders decided to develop a new strategy called Europe 2020, the goal of which is smart, sustainable and inclusive growth, to be achieved through increased coordination of national and European policies (Strategia na rzecz inteligentnego i zrównoważonego rozwoju sprzyjającego włączeniu społecznemu 2010, p. 2). This strategy is a response to the growing competition from global leaders such as the United States, Japan, India and China, the latter two of which are emerging economic powers (Strategia na rzecz inteligentnego i zrównoważonego rozwoju sprzyjającego włączeniu społecznemu 2013, p. 3). The main target group is entrepreneurs, with particular focus on co-operation between science and business.

The Europe 2020 Strategy aims at growth that is intelligent, knowledge- and innovation-based, and designed to use R&D and innovation in order to solve the problems of climate, energy, health, demographic change and scarcity of resources.

The Europe 2020 strategy is realized through National Reform Systems, created to bridge the large gaps in economic and social situations between the

[4] Interesting insights in this area can be found in: Badania i rozwój w Polsce, Raport 2013, p. 4.

EU member states, especially between those of northern and southern Europe. These countries have different starting point and target with respect to what can be achieved within a predetermined period of time. Therefore, the European Commission has committed Member States to translate the main objectives of the Europe 2020 Strategy into national targets, and to define methods for their implementation. This has resulted in the preparation of documents called National Reform Programmes (NRP), which set out national targets and the measures necessary to achieve them.

The EU innovation policy is multidirectional and employs a variety of instruments that allow for the inclusion of numerous stakeholders in the process of its implementation, including national and local authorities, companies, research units, financial institutions and social partners,. Therefore the speed and success of the process of building an innovative EU economy depends on the involvement of the above-mentioned entities in the process of creating the EU's smart growth (Zygierewicz 201, p.134).

Moreover, the principle of "smart consolidation" - sustaining or if possible increasing expenditures promoting growth, such as expenditures on research and development - were to be widely used among EU countries.

However, the ongoing crisis has revealed structural weaknesses in the innovation in Europe. One of them is that the process of 'innovation convergence' among member countries has stopped, which has resulted in more and more visible growth differences between EU countries. Therefore, the EU economy needs to be refreshed, become more dynamic, and has to introduce new solutions, applications and business models that will help existing traditional industries to develop and maintain their competitiveness. Europe needs radical innovations that will help to make structural changes in industry. In the upcoming decade the EU has to do everything possible to attract the most talented individuals and to reward innovative companies, thus creating better opportunities for business start-ups and development (State of the Innovation Union 2012, pp. 4-5).

3. Conclusions

1. The effects of the economic crisis in the area of R&D and innovation in Europe have been presented based on the Innovation Union Scoreboard 2014 report, which shows the achievements of the EU countries and also the strengths and weaknesses of innovation systems.
2. The emerging concept of a two-speed Europe does not auger well for improving the situation on the continent. Hence, steps should be taken in order to develop a program focused on increasing the level of innovativeness of the

EU and on closing the existing gaps, much like when emphasis was put on levelling the differences between various regions within countries in the previous financial perspective 2007–2013.

3. In Poland, current economic growth is a result of entrepreneurship, a cheap labour force, and import of technology. This is not the way to ensure sustained development in the upcoming decades. There are too few exporters, especially among SMEs which produce mainly for the domestic market. The internationalization of activities, i.e. exports, contacts with partners from abroad, and the creation of cooperation networks, is a major challenge for the development of SMEs. This is reflected in the new perspective called Smart Europe 2014-2020. The growth observed in developed countries is a result of their increase in productivity and improvements of the factors of production, i.e. innovation and the ability to implement and sustain it.
4. A particular gap is observed in the area of cooperation between science and business. This phenomenon is also confirmed by the results of other studies (Czerniak 2013, p. 223). The reasons for the weak linkages between business and science are numerous, also including a lack of existing financial solutions. There is no proof-on-concept system, which means providing non-repayable grants to researchers which allows them to verify the results of their scientific work (regardless of whether they work at the university or in business) (Żylicz 2013 p. B8). Poland's innovativeness of Poland is slowed down not only by the low level of expenditures on R&D, but also by the unsatisfactory effects of these expenditures. In the new perspective "Smart Europe", EU funds are allocated to companies willing to cooperate with universities.
5. The percentage of firms involved in financing research and development in Poland is relatively low. Research shows that the more developed is the innovation system in a given country, the lower is the share of public expenditures on R & D. The commercialization of research results is more effective in the business sector, where the motivation to make good use of money spent is higher (Hausner 2013, p. 96). Liberal regulations with respect to tax credits and incentives to support the innovativeness of firms need to be created. It is also necessary to closely observe the practices functioning in other countries and their impact on increasing innovativeness.
6. The key factor for the effectiveness of innovation policy is concentration on the systemic dimension of innovation and on building strong linkages between the participants in the innovation process. More attention should be paid in Poland to the interactions between the institutions involved in the innovation process. Reforms of the Polish R&D system comprise the appointment of the Centre for Research and Development and the National Science Centre and the establishment of two advisory bodies for applied and basic research: the Scientific Policy Committee and the Committee for

Evaluation of Scientific Units. These bodies should bring about change and contribute to the creation of an efficient innovation system subordinated to the new legal regulations, reducing bureaucracy and financial barriers.

7. The EU earmarked 16 billion zl during the period 2014-2020 for business development. The first competitions will begin in 2015. Most of the funds - 8.6 billion zl are designed to be allocated to entrepreneurs within the "Smart growth" programme, which will replace the "Innovative economy" programme. Its main objective is to promote innovativeness in the economy, which is expressed mainly in increasing expenditures on R&D. The support provided within this programme will be focused primarily on stimulating the demand for innovation by firms by such measures as:
   - "from concept to market" projects,
   - creation and development of firms' R&D infrastructure,
   - supporting the implementation of results of R&D activities,
   - preparation of scientific institutions and firms to participate in international programs,
   - internationalization of innovative firms and supporting the activities of venture capital funds, business angels, and seed capital funds.
8. The second main source of funds for firms will come from sixteen regional operational programs managed by the provinces. They will be mainly related to increasing the competitiveness of the SME sector. This means the creation of new firms as well as supporting the development of existing ones.
9. Consolidation of public finance is probably the most important challenge for Poland. A development strategy based solely on the inflow of EU funds and low-cost labour attracting foreign investors - the model functioning in recent years - has to change.

Annex 1. Innovation Union Scoreboard indicators

Main type/innovation dimension/indicator	Data source: Numerator	Data source: Denominator	Years covered
ENABLERS			
Human resources			
1.1.1 New doctorate graduates (ISCED 6) per 1000 population aged 25-34	Eurostat	Eurostat	2004 – 2011
1.1.2 Percentage of population aged 30-34 having completed tertiary education	Eurostat	Eurostat	2005 – 2012
1.1.3 Percentage of youth aged 20-24 having attained at least upper secondary level education	Eurostat	Eurostat	2005 – 2012

Open, excellent and attractive research systems			
1.2.1 International scientific co-publications per million population	Science-Metrix (Scopus)	Eurostat	2005 – 2012
1.2.2 Scientific publications among the top 10% most cited publications worldwide as % of total scientific publications of the country	Science-Metrix (Scopus)	Science-Metrix (Scopus)	2004 – 2009
1.2.3 Non-EU doctorate students[2] as a % of all doctorate students	Eurostat	Eurostat	2006 – 2011
Finance and support			
1.3.1 R&D expenditure in the public sector as % of GDP	Eurostat	Eurostat	2005 – 2012
1.3.2 Venture capital investment as % of GDP	Eurostat	Eurostat	2007 – 2012
FIRM ACTIVITIES			
Firm investments			
2.1.1 R&D expenditure in the business sector as % of GDP	Eurostat	Eurostat	2005 – 2012
2.1.2 Non-R&D innovation expenditures as % of turnover	Eurostat (CIS)	Eurostat (CIS)	2004, 2006, 2008, 2010
Linkages & entrepreneurship			
2.2.1 SMEs innovating in-house as % of SMEs	Eurostat (CIS)	Eurostat (CIS)	2004, 2006, 2008, 2010
2.2.2 Innovative SMEs collaborating with others as % of SMEs	Eurostat (CIS)	Eurostat (CIS)	2004, 2006, 2008, 2010
2.2.3 Public-private co-publications per million population	CWTS (Thomson Reuters)	Eurostat	2005 – 2011
Intellectual assets			
2.3.1 PCT patents applications per billion GDP (in PPS€)	OECD	Eurostat	2003 – 2010
2.3.2 PCT patent applications in societal challenges per billion GDP (in PPS€) (environment-related technologies; health)	OECD	Eurostat	2003 – 2010
2.3.3 Community trademarks per billion GDP (in PPS€)	Office for Harmonization in the Internal Market	Eurostat	2005 – 2012
2.3.4 Community designs per billion GDP (in PPS€)	Office for Harmonization in the Internal Market	Eurostat	2005 – 2012

OUTPUTS			
Innovators			
3.1.1 SMEs introducing product or process innovations as % of SMEs	Eurostat (CIS)	Eurostat (CIS)	2004, 2006, 2008, 2010
3.1.2 SMEs introducing marketing or organizational innovations as % of SMEs	Eurostat (CIS)	Eurostat (CIS)	2004, 2006, 2008, 2010
3.1.3 Employment in fast-growing firms of innovative sectors	*Eurostat*	Eurostat	2009, 2010
Economic effects			
3.2.1 Employment in knowledge-intensive activities (manufacturing and services) as % of total employment	Eurostat	Eurostat	2008 – 2012
3.2.2 Contribution of medium and high-tech product exports to the trade balance	United Nations	United Nations	2005 – 2012
3.2.3 Knowledge-intensive services exports as % total service exports	Eurostat	Eurostat	2004 – 2011
3.2.4 Sales of new to market and new to firm innovations as % of turnover	Eurostat (CIS)	Eurostat (CIS)	2004, 2006, 2008, 2010
3.2.5 License and patent revenues from abroad as % of GDP	Eurostat	Eurostat	2005 – 2012

Source: Innovation Union Scoreboard 2014, p. 10.

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Streszczenie

INNOWACYJNOŚĆ POLSKI NA TLE KRAJÓW UE (NAJNOWSZE WYNIKI BADAŃ)

Innowacyjność Europy stała się celem UE już w Strategii Lizbońskiej. W nowej Strategii Europa 2020 jednym z celów jest rozwój inteligentny czyli oparty na wiedzy i innowacji. Wymaga to podniesienia jakości edukacji, wyników działalności badawczej, transferu wiedzy i innowacji między krajami i większej komercjalizacji wyników badań. Stąd pomiar innowacyjności ewaluuje by ująć czynniki, które decydują o poziomie innowacyjności gospodarek. Stąd celem opracowania jest przedstawienie poziomu innowacyjności Polski na tle krajów UE za pomocą SII (Summary Innovation Index).

***Słowa kluczowe**: wskaźniki innowacyjności, Europa-2020, pomiar innovacji, liderzy innowacji*