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European Regional Space Classification Regarding Smart Growth Level[1]

Abstract

Europe 2020 strategy, as the successor of Lisbon strategy, represents the vision of social market economy for Europe of the 21st century covering three related priorities: 1/ smart growth: knowledge based economy and innovation growth; 2/ sustainable growth: support for effective and taking advantage of resources economy which is more environmentally friendly and more competitive; 3/ inclusive growth: support for high employment level economy providing social and territorial cohesion.

The paper presented classification results including European regional space positional statistics regarding advancement and smart growth level in NUTS 2 regions. Regional smart growth covers three pillars: innovation, creativity (Knowledge Based Economy) and smart specialization illustrated by characteristics available in Eurostat data resources. These qualities constituted the basis for constructing aggregate measures for specific pillars and also for the purposes of regional classification. The results of obtained classes were assessed in an overall European space, in groups of regions distinguished in line with integration processes chronology and also in capital regions and these including the country capital, as well as in the system of Polish regions.

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1. Introduction

Three main components of Europe 2020 strategy (Europe 2010), i.e. smart growth, sustainable growth and inclusive growth, constitute the unity and reflect an integrated and holistic territorial approach towards the European economic development. It is required from regional managers to define substantive combinations of the five goals resulting from Europe 2020 strategy – namely: improved conditions for innovation, research and development; improved education levels; meeting goals with regard to climate change and energy; employment promotion or social inclusion promotion, especially by means of reducing poverty – which also reflects major challenges they face in local perspective. Preparing clear and measurable indicators, regarding each objective results and assumptions, becomes indispensable, among others, for all stakeholders, including these at regional level, to be capable of defining progress, impact and effectiveness of both projects and Operational Programmes.

The objective of the hereby study is to provide classification, using positional statistics, of the European regional space with regard to smart growth advancement degree and level in NUTS 2 regions.

2. Smart growth – vision, concept, measurement

'Intelligence' refers to cognitive capacity, to cleverness (in Latin *intelligentia*), while 'smart' is understood as intelligent, clever, reacting to changes in a given time. The most compact way to define smart growth is by referring to it as economic development based on knowledge and innovation.

Economic situation in Europe results, among others, from economic growth downturn, as compared to its most important competitors, which results from differences in labour productivity as the consequence of lower investment level in R&D and innovation, insufficient implementation of information and communication technologies, as well as inconvenient access of some social groups to innovation.

The Strategy *Europe 2020*, as the successor of the Lisbon Strategy, presents the vision of social market economy for Europe, heading towards overcoming the existing crisis and focused on preparing economy for the challenges of the decade to come. On March 3rd 2010 the European Commission issued the Communication *Europe 2020 – A strategy for smart, sustainable and inclusive growth fostering social inclusion.* The proposal announced by the

European Commission, referring to the initiation of a new strategy, was accepted by the European Council on March 26th 2010. The Strategy *Europe 2020* specifies both the position and goals of the European Union (EU) till 2020 (Europe 2010).

In the EU strategic documents smart growth is understood as obtaining better results in:

- education by encouraging to acquire knowledge, study and upgrade qualifications,
- research work and innovation by means of creating new products and services influencing economic growth and stimulating employment, as well as facilitating social problems solving,
- digital society, i.e. the implementation of IT and communication technologies.

Smart growth means increasing the role of knowledge and innovation as the driving forces in economy which requires: improving education quality, better research work results, support for innovation and knowledge transfer, full implementation of information and communication technologies, as well as undertaking efforts to transform innovation ideas into new products and services which could result in higher growth, opening new jobs and solving social problems in Europe and worldwide.

The Strategy *Europe 2020* covers three related priorities (Europe 2010):

- smart growth: development of knowledge-intensive economy and innovation;
- sustainable growth: support for economy using its resources efficiently, more environmentally friendly and a more competitive one;
- inclusive growth: support for economy featuring high employment rate, ensuring social and territorial cohesion.

Within the framework of streamlining activities and stimulating progress the European Commission accepted that the strategy should present an agreed, reduced number of measurable goals for 2020. These targets should constitute a part of the leading motive, i.e. smart and sustainable growth facilitating social inclusion. The objectives should be measurable and reflect situation diversity characteristic for the member states and, for the sake of comparisons, be based on sufficiently credible data.

However, in professional literature widespread research referring to smart growth is currently absent, both in national and regional dimension.

Strategic documents for EU countries indicate the following goals (Europe 2010; A strategy 2010):

- employment rate of population aged 20-64 should increase from the current 69% to at least 75% level, among others, as the result of the growing number of working women and elderly people, as well as better integration of migrants at the job market;
- current EU goal regarding investment in research and development activities (R&D) is 3% of GDP;
- carbon dioxide emission should be reduced to at least 20%, as compared to the level of 1990, or if the situation allows, even by 30%; the share of renewable energy sources in an overall energy consumption should increase to the level of 20% and energy efficiency should also grow by 20%;
- the goal referring to education and referring to the problem of individuals finishing school education prematurely, covers the reduction of dropout rate indicator to 10%, as compared to the current 15% level, and also increasing the percentage of people aged 30-34 who completed tertiary education from 31% to at least 40% till 2020;
- the number of Europeans living below the national poverty level should be reduced by 25% (i.e. by over 20 million people).

The implementation of priorities and meeting goals set forth by the Strategy requires numerous activities carried out at both EU level and within particular member states. Therefore the European Commission suggested seven thematic projects, including these focused on the following goals implementation:

- smart growth (Innovation 2011; Youth 2010; Digital 2011): Innovation Union, Youth on the move, A Digital Agenda for Europe,
- sustainable growth (Europe 2010): Europe taking effective advantage of resources and Industrial policy for globalization,
- social development fostering social inclusion (A strategy 2010): Programme for new skills and employment and also the European programme for fighting poverty.

3. Measures facilitating smart growth identification and assessment

Owing to the fact that professional literature, so far, has not offered any studies on smart growth, both in national and regional dimension, the identification of measures and measurement methods based on literature studies turned out, at the current stage, impossible. The approach followed by the World Bank (Knowledge 2006) was helpful in defining research areas and measures,

where the methodology of difficult to measure Knowledge Based Economy was facilitated by specifying its pillars, for which lists of measures were prepared reflecting their nature in the best possible way.

In order to define areas allowing the specification of pillars and preliminary lists of measures helpful in smart growth measurement the studies of strategic objectives, flagship projects fostering smart growth as well as data base statistical resources for the European NUTS 2 level regions, were performed. Initial analysis indicates that significant elements of smart growth take the form of three components – pillars: smart specialization, creative regions and innovation. The proposals of measures for specified pillars, allowing for smart growth characteristics, are presented below.

Pillar I – smart specialization (SS), smart specialization indicators (whether a given variable is a stimulant (S) or a destimulant (D) was indicated in brackets):

(SS_1) - workforce employed in knowledge-intensive services as the share of workforce employed in services (S),

(SS_2) - average growth rate of workforce in knowledge-intensive services as the share of workforce employed in services (S),

(SS_3) - workforce in mid and high-tech industry sector (as % or workforce employed in industry) (S),

(SS_4) - average working rate of workforce in mid and high-tech industry sector (as % of workforce employed in industry) (S).

Pillar II – creative regions (CR), creativity indicators:

(CR_1) - share of tertiary education workforce in total workforce number in the region (S),

(CR_2) - share of population aged 25-64 participating in life-long learning in a region (S),

(CR_3) - human resources in science and technology as % of working population (S),

(CR_4) - people aged 15-64 born in a different country as % of population aged 15-64 (S),

(CR_5) - unemployment rate as % of active population (D),

(CR_6) - basic creative class (% of population aged 15-64) (S),

(CR_7) - share of residents in their working age who moved from different EU regions in the recent year (S),

- share of people with poor results in maths, reading and learning (D), national data,

(CR_8) - tertiary education graduates aged 30-34 (% of population aged 30-34) (S),

(CR_9) - access to broadband Internet (% of households) (S).

Pillar III – innovation (I), indicators of innovation potential, capacity and effects:

(I_1) - patents registered in the European Patent Office (EPO) per 1 million of workforce (S),

(I_2) - productivity in industry and service sectors (PPS per worker) index EU27=100 (S),

- productivity trend in industry and service sectors (annual mean productivity growth in real perspective) (S), data from a different year unavailable,

(I_3) - employment rate (% of population aged 20-64) (S),

- new foreign enterprises per 1 million of inhabitants (total number of new foreign enterprises per 1 million of inhabitants) (S), data unavailable,
- changed number of new foreign enterprises per 1 million of inhabitants (total number of new foreign enterprises per 1 million of inhabitants) (S), data unavailable,

(I_4) - investments in private sector per 1 inhabitant by purchasing power parity (S),

(I_5) - R&D expenditure in business sector (% of GDP) (S),

(I_6) - R&D expenditure (% of GDP) (S).

Indicators listed for the purposes of each smart growth pillars measurement represent the consensus between the requirements presented in EU strategic documents and database resources offering information at EU NUTS 2 level regions.

4. The proposal of research methodology

For the purposes of European regional space analysis regarding smart growth pillars, each of which is described by a set of qualities, the classification method, based on positional statistics, was suggested (Markowska, Strahl 2003, Strahl 2002).

A set of hierarchical objects is given $P = \{P_1, P_2, \ldots, P_n, \ldots, P_N\}$, within which there are placed lower order sets of objects - p, i.e.:

$$\begin{aligned} P_1 &= \{p_1^1 \cup p_2^1 \cup \ldots p_K^1\}, \\ P_2 &= \{p_1^2 \cup p_2^2 \cup \ldots p_K^2\}, \\ P_n &= \{p_1^n \cup p_2^n \cup \ldots p_K^n\}, \\ P_N &= \{p_1^N \cup p_2^N \cup \ldots p_k^N\}. \end{aligned} \tag{1}$$

In the study hierarchical objects represent EU countries, while lower order objects refer to NUTS 2 level EU regions of which each is described by a data matrix illustrating, in the first stage, the values of qualities assigned to smart growth pillars. Each pillar stands for a phenomenon characterized by a set of qualities, which were normalized using zero unitarization (considering their properties – stimulant, destimulant) (Kukuła 2000). Based on normalized values for each pillar aggregate measure was calculated as the arithmetic mean of qualities responsible for a given pillar. Following this approach aggregate measures constitute variables (m) marked by $X = \{X_1, ..., X_m\}$ symbols and observed in the studied objects – regions.

For each X_j ($j = 1, 2, \ldots, m$) variable the chosen positional statistics are calculated, which in this case is the median (Me), i.e. the central value below and above which 50% of variable realization is present. The suggested classification procedure allows for the construction of 2^m (i.e. $G = 2^m$) classes possible to enter into combination with m variables (Markowska, Strahl 2003). Therefore:

- S_1 class covers these objects - regions from p set for which values of all m variables X_j meet condition (2), i.e.:

$$x_{kj} \geq Me \ X_j \quad \text{dla} \quad p_k^n \notin S_1. \qquad (2)$$

- S_2 class includes these objects - regions from p set for which values of only (m-1) variables constructing one of $\binom{m}{m-1}$ combinations of variables meet condition (2),
- S_2 class includes these objects - regions from p set for which values of the next combination (m-1)-element variables meet condition (2),
- when no more (m-1)-element combinations are possible classes for (m-2)-element combinations are constructed and condition (2) is put forward,
- S_g ($g = 2^m$) class is constructed of regions for which x_{kj} values of all X_j variables do not meet condition (2).

5. European regional space classification regarding smart growth pillars – research results

The initial set of suggested variables was characterized by extensive data gaps, because out of 271 EU regions only 102 rows were complete (37,6%). In order to fill in data gaps extrapolation methods were applied, also including the regression method.

Years from which data originate for particular variables were different owing to their availability in Eurostat data base and in EU reports. Therefore for CR_6, I_2, I_5, I_6 qualities it was 2007, for CR_1 – CR_5, CR_8, I_1, I_3 qualities - 2008, for CR_8 – 2009, for SS_1 and SS_3 – 2010, mean value from the period of 2002 – 2006 for I_4, mean value for 2007-2008 in case of CR_7, geometric value from the period of 2000-2010 for SS_2 and SS_4 qualities.

For the classification of regions, with regard to smart growth level, aggregate measures were used in relation to the following pillars: smart specialization, creative regions and innovation which, as the result of the described procedure variants implementation, allowed for the construction of the following classes (see table 1) to which regions were assigned based on aggregate measures' values and their comparison with the median calculated for all analyzed regions.

The classification covers data for 265 regions, i.e. for 97,8% of all EU NUTS 2 level regions (Regions 2007). Due to the absence of all data the following regions were not included: French overseas Guadeloupe, Martinique, Guyane, Réunion and Spanish: Região Autónoma dos Açores, Região Autónoma da Madeira.

Table 1. Characteristics of classes

Class		Measure value higher than the median		
		SS	CR	I
1		+	+	+
2	A	+	+	–
	B	+	–	+
	C	–	+	+
3	A	+	–	–
	B	–	+	–
	C	–	–	+
4		–	–	–

Source: Authors' compilation.

The lowest aggregate measure value was registered for innovation pillar and the highest for creative regions pillar. The largest diversification related to aggregate measure values – assessed on the basis of variability coefficient – is characteristic for EU regions from the perspective of innovation. Median values and other characteristics of aggregate measures in regions for each of the pillars are presented in table 2.

Table 2. Basic statistics of aggregate measures in pillars

Statistics	SS	CR	I
Min	0,1799	0,1600	0,0721
Max	0,6625	0,8945	0,7126
Mean value	0,3969	0,4052	0,2586
Median	0,3971	0,4087	0,2453
Standard deviation	0,0886	0,1171	0,1160
Variability coefficient	22,32	28,90	44,86

Source: Authors' compilation.

Aggregate measure value lower than 0,2 was registered for the following pillars:

- smart specialization only for the Spanish region of Comunidad Valenciana,
- creative regions for ten regions including five Greek ones (Notio Aigaio, Sterea Ellada, Peloponnisos and Ionia Nisia), four Romanian (Sud-Est, Sud-Vest Oltenia, Nord-Est and Sud – Muntenia) and the Italian region of Sicilia,
- innovation for 86 regions, however, below 0,1 in case of 16 following region: six Polish (Lubelskie, Zachodniopomorskie, Lubuskie, Opolskie, Kujawsko-Pomorskie and Warmińsko-Mazurskie), three Romanian (Nord-Vest, Centru, Sud-Est) and three Hungarian (Dél-Dunántúl, Észak-Magyarország, Észak-Alföld), two Bulgarian (Severozapaden, Severen tsentralen) and two Italian (Calabria, Sicilia).

On the other hand, aggregate measure value above 0,6 in particular pillars was registered in case of the following regions:

- smart specialization: German Bremen, Saarland and Kassel, as well as the French region of Corse,
- creative regions: British (Inner London, Outer London, Berkshire, Buckinghamshire and Oxfordshire and also Surrey, East and West Sussex), Netherlands regions (Noord-Holland, Utrecht), Swedish Stockholm, Belgian Prov. Brabant Wallon, Danish Hovedstaden and Finnish Etelä-Suomi,
- innovation – only for the German region of Stuttgart.

In the first and fourth class each of the 57 regions were classified, in the second class 78 regions (with nine in class 2A – aggregate measure value for innovation pillar was lower than median value, 26 regions in 2B class – aggregate measure value for creative regions pillar lower than the median and 44 regions in 2C class characterized by lower than median value of aggregate measure for smart specialization pillar), while the third class covered 72 regions (of which 41 were listed in 3A class – smart specialization aggregate measure

value more favourable than the median, 23 in 3B class – higher than median aggregate value for the pillar including creative regions and seven in 3C class – only aggregate measure value for innovation pillar more favourable than the median value).

Among regions listed in the first class the largest representation originated from EU 15 regions with the vast majority from Germany (15), The Netherlands (9 out of 12), Great Britain (8), Belgium (7 of 8) and 5 out of 8 Swedish regions. While analyzing the number of regions in this class in the perspective of countries attention should also be paid to the fact that it includes 3 from each of 5 Danish and Finnish regions. The first class covers 26,8% from 209 EU 15 regions – see table 3.

Table 3. Regions from EU countries in the obtained classes

Class		Regions (number of regions)
1 (57)		(BE 7) Prov. Antwerpen, Prov. Oost-Vlaanderen, Prov. Vlaams-Brabant, Prov. Brabant Wallon, Prov. Liège, Prov. Luxembourg, Prov. Namur, (DK 3) Hovedstaden, Sjælland, Midtjylland, (DE 15) Stuttgart, Karlsruhe, Freiburg, Tübingen, Oberbayern, Oberpfalz, Mittelfranken, Unterfranken, Berlin, Bremen, Hamburg, Darmstadt, Gießen, Köln, Rheinhessen-Pfalz, (ES 1) Comunidad Foral de Navarra, (FR 4) Alsace, Franche-Comté, Bretagne, Midi-Pyrénées, (LU) Luxembourg, (NL 9) Groningen, Friesland, Drenthe, Overijssel, Gelderland, Utrecht, Zeeland, Noord-Brabant, Limburg, (SI 1) Zahodna Slovenija, (FI 3) Etelä-Suomi, Länsi-Suomi, Åland, (SE 5) Östra Mellansverige, Småland med öarna, Västsverige, Mellersta Norrland, Övre Norrland, (UK 8) Cheshire, Lancashire, North Yorkshire, Derbyshire and Nottinghamshire, Herefordshire, Worcestershire and Warwickshire, Berkshire, Buckinghamshire and Oxfordshire, Hampshire and Isle of Wight, Gloucestershire, Wiltshire and Bristol
2 (78)	A (9)	(FR 1) Languedoc-Roussillon, (HU 1) Közép-Magyarország, (SK 1) Bratislavský kraj, (UK 6) Tees Valley and Durham, Northumberland and Tyne and Wear, Cumbria, East Yorkshire and Northern Lincolnshire. West Midlands, Northern Ireland
	B (26)	(BE 1) Prov. Hainaut, (CZ 1) Střední Cechy, (DE 16) Niederbayern, Schwaben, Brandenburg – Südwest, Kassel, Braunschweig, Hannover, Lüneburg, Düsseldorf, Münster, Detmold, Arnsberg, Koblenz, Saarland, Dresden, Schleswig-Holstein, Thüringen, (IE 1) Border, Midland and Western, (FR 2) Haute-Normandie, Centre, (IT 2) Piemonte, Lombardia, (AT 3) Burgenland, Niederösterreich, Steiermark
		(BE 3) Région de Bruxelles-Capitale, Prov. Limburg, Prov. West-Vlaanderen (CZ 1) Praha, (DK) Syddanmark, Nordjylland, (DE 1) Trier, (IE 1) Southern and Eastern, (ES 5) País Vasco, La Rioja, Aragón, Comunidad de Madrid, Cataluña, (FR 5) Île de France, Aquitaine, Rhône-Alpes,

Class		Regions (number of regions)
	C (44)	Auvergne, Provence-Alpes-Côte d'Azur, (NL 3) Flevoland, Noord-Holland, Zuid-Holland, (AT 5) Wien, Oberösterreich, Salzburg, Tirol, Vorarlberg, (PT 1) Lisboa, (FI 1) Pohjois-Suomi, (SE 3) Stockholm, Sydsverige, Norra Mellansverige, (UK 12) Leicestershire, Rutland and Northamptonshire, East Anglia, Bedfordshire and Hertfordshire, Essex, Inner London, Outer London, Surrey, East and West Sussex, Kent, East Wales, Eastern Scotland, South Western Scotland, North Eastern Scotland
3 (71)	A (41)	(CZ 6) Jihozápad, Severozápad, Severovýchod, Jihovýchod, Střední Morava, Moravskoslezsko, (DE 5) Brandenburg – Nordost, Mecklenburg-Vorpommern, Chemnitz, Leipzig, Sachsen-Anhalt, (GR 3) Anatoliki Makedonia, Thraki, Sterea Ellada, Voreio Aigaio, (ES 2) Castilla-la Mancha, Extremadura, (FR 4) Picardie, Bourgogne, Lorraine, Corse, (IT 2) Valle d'Aosta, Provincia Autonoma Trento (LV) Latvija, (HU 6) Közép-Dunántúl, Nyugat-Dunántúl, Dél-Dunántúl, Észak-Magyarország, Észak-Alföld, Dél-Alföld, (PL 4) Podkarpackie, Lubuskie, Dolnośląskie, Warmińsko-Mazurskie, (PT 3) Alentejo, Região Autónoma dos Açores, Região Autónoma da Madeira, (RO 2) Sud – Muntenia, Vest, (SI 1) Vzhodna Slovenija, (SK 2) Západné Slovensko, Stredné Slovensko
	B (23)	(BG 1) Yugozapaden, (EE) Eesti, (ES 5) Galicia, Principado de Asturias, Cantabria, Comunidad Valenciana, Illes Balears, (FR 1) Limousin, (CY) Kypros, (LT) Lietuva, (PL 1) Mazowieckie, (RO 1) Bucuresti – Ilfov, (FI 1) Itä-Suomi, (UK 11) Greater Manchester, Merseyside, South Yorkshire, West Yorkshire, Lincolnshire, Shropshire and Staffordshire, Dorset and Somerset, Cornwall and Isles of Scilly, Devon, West Wales and The Valleys, Highlands and Islands
	C (7)	(DE 2) Oberfranken, Weser-Ems, (IT 4) Provincia Autonoma Bolzano, Veneto, Friuli-Venezia Giulia, Emilia-Romagna, (AT 1) Kärnten
4 (58)		(BG 5) Severozapaden, Severen tsentralen, Severoiztochen, Yugoiztochen, Yuzhen tsentralen (GR 10) Kentriki Makedonia, Dytiki Makedonia, Thessalia, Ipeiros, Ionia Nisia, Dytiki Ellada, Peloponnisos, Attiki, Notio Aigaio, Kriti, (ES 4) Castilla y León, Andalucía, Región de Murcia, Canarias, (FR 5) Champagne-Ardenne, Basse-Normandie, Nord - Pas-de-Calais, Pays de la Loire, Poitou-Charentes, (IT 13) Liguria, Toscana, Umbria, Marche, Lazio, Abruzzo, Molise, Campania, Puglia, Basilicata, Calabria, Sicilia, Sardegna, (MT) Malta, (PL 11) Łódzkie, Małopolskie, Śląskie, Lubelskie, Świętokrzyskie, Podlaskie, Wielkopolskie, Zachodniopomorskie, Opolskie, Kujawsko-Pomorskie, Pomorskie, (PT 3) Norte, Algarve, Centro, (RO 5) Nord-Vest, Centru, Nord-Est, Sud-Est, Sud-Vest Oltenia, (SK 1) Východné Slovensko

Source: Authors' compilation.

The second class includes 18 British, 17 German, 8 Austrian and 8 French regions with regard to aggregate measures values of smart growth pillars, which gives the total result of 35,4% of all EU 15 regions.

In the third class 44 EU 15 regions and 28 EU 12 regions were classified including 11 British, 7 German, 7 Spanish, 6 Italian, 6 Hungarian, 6 Czech and also 5 French and 5 Polish regions.

In the fourth class, which covered regions for which each of the three aggregate measures illustrating smart growth pillars was lower than the median defined for all analyzed EU regions, the most numerous were Italian regions (13), Polish (11), Greek (10), as well as French, Bulgarian and Romanian ones (5 regions each).

Isolated regions from EU 12 were registered in the first class (Zahodna Slovenija) and the second class (Bratislavský kraj, Praha and Střední Cechy, as well as Közép-Magyarország). 50% of the remaining ones were classified in the third class, while 41,1% in the fourth class. It means that as many as 91,1% of regions from EU 12 are listed in classes where two or none of aggregate measures, for the distinguished smart growth pillars, did not present better values than the median value.

While analyzing positions of capital regions or including the country capital in the overall classification it has to be emphasized that out of 28 first class regions (aggregate measures values for each pillar higher than the median) five regions were listed including only one from countries of the recent accessions - Zahodna Slovenija – see table 4.

Table 4. Capital regions or including the country capital in the obtained classes

Class (number of regions)		SS	CR	I	Capital regions
1 (5)		+	+	+	Hovedstaden, Berlin, Luxembourg, Zahodna Slovenija, Etelä-Suomi
2 (13)	A (2)	+	+	–	Közép-Magyarország, Bratislavský kraj
	B	+	–	+	
	C (11)	–	+	+	Région de Bruxelles-Capitale, Praha, Southern and Eastern, Comunidad de Madrid, Île de France, Noord-Holland, Wien, Lisboa, Stockholm, Inner London, Outer London
3 (7)	A (1)	+	–	–	Latvija
	B (6)	–	+	–	Yugozapaden, Eesti, Kypros, Lietuva, Mazowieckie, Bucuresti – Ilfov
	C	–	–	+	
4 (3)		–	–	–	Attiki, Lazio, Malta

Source: Authors' compilation.

The following two EU 12 regions (Közép-Magyarország, Bratislavský kraj) are currently included in 2A class (aggregate measure value for innovation

pillar is lower than the median). The most of regions, because as many as 11, were listed in 2C class which contains regions characterized by aggregate measure value for smart specialization pillar lower while for innovation and creative regions pillars higher than the median value).

Polish regions, in positional classification, with regard to aggregate measures values for smart growth pillars, were listed in 3A class (Podkarpackie, Lubuskie, Dolnośląskie, Warmińsko-Mazurskie – aggregate measure for smart specialization pillar better than the median) and 3B class (Mazowieckie – aggregate measure value for creative regions pillar better than the median) see table 5.

Table 5. Polish regions in the obtained classes

Class (number of regions)		SS	CR	I	Polish regions
1		+	+	+	
2	A	+	+	–	
	B	+	–	+	
	C	–	+	+	
3 (5)	A (4)	+	–	–	Podkarpackie, Lubuskie, Dolnośląskie, Warmińsko-Mazurskie
	B (1)	–	+	–	Mazowieckie
	C	–	–	+	
4 (11)		–	–	–	Łódzkie, Małopolskie, Śląskie, Lubelskie, Świętokrzyskie, Podlaskie, Wielkopolskie, Zachodniopomorskie, Opolskie, Kujawsko-Pomorskie, Pomorskie

Source: Authors' compilation.

The majority of Polish regions – 11 out of 16 were classified in the fourth class in which each of aggregate measures was lower than the EU median value).

6. Conclusions

The presented analysis constitutes a part of broader research stream evaluating the results of "Europe 2020" strategic goals such as smart growth, social cohesion and social exclusion prevention.

It illustrated the occurring extensive differences between EU 12 and EU 15 regions with regard to aggregate measures. The largest number of capital

regions was listed in class 2 (13/27), in particular in class 2A (Közép-Magyarország, Bratislavský kraj) and 2C (Région de Bruxelles-Capitale, Praha, Southern and Eastern, Comunidad de Madrid, Île de France, Noord-Holland, Wien, Lisboa, Stockholm, Inner London, Outer London).

Mazowieckie was placed in class 3B – one aggregate measure higher than the median. The majority of Polish regions (11/16) are included in the class where all measures are smaller than the median.

The need occurs for conducting more dynamic analyses in order to assess changes of positions in the obtained classifications as well as the distance to be covered in accordance with Europe 2020 strategy.

References

A strategy for smart, sustainable and inclusive growth (2010), COMMUNICATION FROM THE COMMISSION, EUROPE 2020, European Commission, COM(2010) 2020 final, Brussels

Digital Agenda Scoreboard (2011), Commission Staff Working Paper, SEC(2011) 708, European Commission, Brussels

EUROPA 2020. Strategia na rzecz inteligentnego i zrównoważonego rozwoju sprzyjającego włączeniu społecznemu (2010), Komisja Europejska, Komunikat Komisji, KOM(2010)

Innovation Union Competitiveness report (2011), Directorate-General for Research and Innovation, Directorate-General for Research and Innovation, Research and Innovation, European Commission, Luxembourg: Publications Office of the European Union

Knowledge Assessment Methodology (KAM) (2006), World Bank Institute, World Bank, Washington

Kukuła K. (2000), Metoda unitaryzacji zerowanej, Biblioteka Ekonometryczna, Wydawnictwo Naukowe PWN, Warszawa

Markowska M., Strahl D. (2003), *Statystyki pozycyjne w klasyfikacji porównawczej*, [w:] K. Jajuga, M. Walesiak (red.), *Klasyfikacja i analiza danych – teoria i zastosowania*. *SKAD*, Prace Naukowe Akademii Ekonomicznej nr 988, Taksonomia 10, AE, Wrocław

Regions in the European Union. Nomenclature of territorial units for statistics NUTS 2006/EU-27 (2007), Series: Methodologies and Working Papers, European Commission, Luxemburg

Strahl D. (2002), *Klasyfikacja regionów z medianą*, [w:] J. Dziechciarz (red.), *Zastosowania metod ilościowych*, Prace Naukowe Akademii Ekonomicznej nr 950, Ekonometria 10, AE, Wrocław

Youth on the Move (2010), Publications Office of the European Union, European Union, Luxembourg

Streszczenie

KLASYFIKACJA EUROPEJSKIEJ PRZESTRZENI REGIONALNEJ ZE WZGLĘDU NA POZIOM INTELIGENTNEGO ROZWOJU

Strategia Europa 2020, jako sukcesor Strategii Lizbońskiej, jest wizją społecznej gospodarki rynkowej dla Europy XXI wieku, obejmującą trzy powiązane priorytety: 1/ rozwój inteligentny: rozwój gospodarki opartej na wiedzy i innowacji; 2/ rozwój zrównoważony: wspieranie gospodarki efektywniej korzystającej z zasobów, bardziej przyjaznej środowisku i bardziej konkurencyjnej; 3/ rozwój sprzyjający włączeniu społecznemu: wspieranie gospodarki o wysokim poziomie zatrudnienia, zapewniającej spójność społeczną i terytorialną.

W pracy przedstawiono wyniki klasyfikacji ze statystykami pozycyjnymi europejskiej przestrzeni regionalnej ze względu na stopień zaawansowania i poziom inteligentnego rozwoju w regionach szczebla NUTS 2. Rozwój inteligentny regionów uwzględnia trzy filary: innowacyjność, kreatywność (Gospodarka Oparta na Wiedzy) i inteligentną specjalizację ilustrowane charakterystykami znajdującymi się w zasobach informacyjnych Eurostatu. Cechy te stanowiły podstawę do konstrukcji miar agregatowych dla określonych filarów, a także do klasyfikacji regionów. Wyniki uzyskanych podziałów oceniono w całej europejskiej przestrzeni regionalnej, w grupach regionów wydzielonych zgodnie z chronologią procesów integracji, a także w regionach stołecznych i zawierających stolicę oraz w układzie regionów polskich.