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RANKING OF POLISH REGIONS IN TERMS OF THE IMPACT OF GLOBALIZATION

Introduction

The ranking of 16 regions (provinces) of Poland in terms of the impact of globalization ("receptivity to globalization") will be presented. The ranking was developed using 10 indicators.

Globalization is a process, which has never been defined once and for all. The world is becoming more and more diversified in terms of how much the globalization process is advanced. The diversification stems from conditions which either facilitate or hamper the globalization processes.

The same is true for the regions/provinces of Poland, which show various intensity of features underlying the globalization processes. The provinces are related to the level of NUTS – II (Number Unity Territorial Statistics – II) of the European Union. They vary in size from 9.4 thousand km² to 35.6 thousand km² in area and from 1 million to 5.1 million in population. The intensity of the globalization process impacts depends very much on the features of the process itself and location of regions with respect to infrastructure corridors, which bring the globalization processes to the regions.

The ranking of the regions was based on the following indicators. Social indicators include the level of urbanisation and the level of employment in sector III (services). Economic indicators are as follows: the level of GDP per capita and foreign trade volume (exports plus imports). Technological indicators include expenditures for scientific research and the number of students per 1000 inhabitants. Political indicators are as follows: the level of support for integration with the European Union achieved in the referendum and the number of hotel nights (lodgings given) per 1000 inhabitants. Environmental indicators applied: share of protected areas (as the percentage of total surface of a region) and the volume of emissions – dusts and gases (tons per 1 km²).

The most intensive impacts of the globalization are visible in Mazowsze region (including the capital city of Warszawa). Relatively well developed impacts are seen also in Western regions of Poland close to the German border. Average impacts can be found in middle of Poland and the lowest ones in the eastern regions. The number of indicators underlying the ranking was gradually increased, which however had no significant impact on the sequence within the ranking of provinces. Globalization processes come to Poland from abroad via infrastructure corridors. Poland is connected with abroad by 15 main corridors.

The results of the ranking will be presented in tables and illustrated by a graph and four charts. The study includes introduction, basic characteristics of the provinces, indicators of the globalization impacts, ranking of the provinces and final conclusions. The outcome will lead to the conclusion that the level of globalization impact ("receptivity to globalization") depends significantly on features of the environment where the globalization processes take place. These "receptivity to globalization" features have an influence on solutions taken at national, regional and local levels. Therefore their impact on approaches taken with respect to spatial development policy is significant. This development policy should in turn lead to development of features supporting globalization.

1. Characteristics of the provinces

As of 1st January, 1999 the new organisational structure of the Polish State was implemented. The borders and size of provinces (traditional Polish name: voivodeships) were changed.

16 units corresponding to European regions (NUTS II) were established. Provinces vary one from another, both in terms of simple features (surface, quantity of inhabitants) and in terms of structural /complex features.

Chart 1 presents a map of the Polish provinces, with their borders, names and main cities. Moreover the external surroundings of Poland is also shown, including range of Polish maritime area, which constitutes additional informal province. The map presents also main infrastructure transport and communication corridors, linking Poland with its neighbouring countries.

Chart 1. Administration division of Poland into provinces (regions NUTS II)
Source: Own elaboration

The round-like shape of Polish territory results in a situation that 11 provinces have a frontier location. The Lower Silesian Province has common borders with two countries, i.e. Germany and Czech Republic: an advantageous location from the trade turnover point of view. On the other hand, neighbouring with countries being formerly Soviet Republics seems to be at present disadvantageous in this respect. Differentiation of provinces has a direct impact on the level of their receptivity to external globalization processes. Therefore, when characterising the provinces, particular attention was paid to the features describing their receptivity to globalization.

The average Polish province's surface amounts to 19,500 square kilometres. The largest one, i.e. the Mazowieckie Voivodeship has a surface of 35,600 square kilometres, thus occupying 11,4% of the total country's surface. Together with Wielkopolskie Voivodeship, their surfaces account for over 20% of Poland's territory. The smallest Polish province is Opolskie Voivodeship (4-times smaller than Mazowieckie Voivodeship), then Swietokrzyskie and Slaskie (Silesian) Voivodeships (3 times smaller than Mazowieckie).

The average population of the province is 1,930 mln people. Provinces including industrial centres and big urban agglomerations belong to the most populated (and most densely populated) in Poland. These are: Mazowieckie and Slaskie Voivodeships (5 mln inhabitants each). The least populated are Lubuskie and Opolskie Voivodeships (1 mln inhabitants each). Variety in population density among provinces can be defined by the proportion 1: 6,5, i.e. from 397 persons/km² in the most industrialised and urbanised Slaskie Voivodeship to 60 persons/km² in Warminsko-Mazurskie Voivodeship. Generally, more urbanised are provinces located in the Western Poland. The provinces located in the East part of Poland belong to the least urbanised territories of Europe.

There is a direct connection between an urbanisation level and scale of dusts and gases emission. Provinces with lowest urbanisation level are simultaneously the provinces of the

lowest emission level of these pollutants. On the contrary, Slaskie Voivodeship, the most urbanised province of Poland, emits 35% of total country's emission.

The provinces show significant disproportions as to their internal characteristics. For instance, their GDP per capita level vary at 2:1 proportion. The disproportion in respect to foreign trade volume per capita is as high as 9:1. Taking into account these two features, the lowest economic level is typical for East part of Poland: Lubelskie, Podkarpackie, Podlaskie, Swietokrzyskie and Warminsko-Mazurskie Voivodeships. The reasons for the low level of GDP on these areas, comparing to the Poland's average, is the highest share of rural population against the country's average index. The loss of the their to-date economic base resulting from restructuring processes as well as lack of the direct foreign investments there, is caused by two types of historic trends. On one hand, there was a forceful industrialisation and urbanisation of Poland's capital city and Slaskie Voivodeship during socialist era, and on the other - civilisation backwardness of the Eastern and Southern parts of Poland.

The largest disproportion occurs in terms of outlays for research and development (R&D) per capita. It equals to 27:1. The high concentration in spatial terms is reflected by high percentage (45 %) of total outlays for R&D spent in Mazowieckie Voivodeship, quite typical for capital regions. To the next leading provinces: Slaskie and Malopolskie some 17% of outlays are allocated. There is natural co-relation between R&D outlays with location of academic and scientific centres. The leading role in this field plays Warszawa and Kraków and in the second turn the following provinces: Wielkopolskie (with Poznan), Zachodniopomorskie (with Szczecin), Pomorskie (with Gdansk) and Dolnoslaskie (with Wroclaw). The smallest investments in R&D activities are assigned to the following voivodeships: Opolskie, Swietokrzyskie, Lubuskie and Podlaskie (totally 2,7% of the whole country's outlays).

The spatial structure of Poland's natural environment has an influence on and reflects in the types of economic activities carried out. Assumption of the co-relation existing between legally preserved areas and quantity of lodgings accessible can be confirmed in case of two provinces: Malopolskie (with Kraków) and Warminsko-Mazurskie (with Olsztyn). Both provinces have an established reputation on the tourist market, not only domestically. After all, the legally preserved surfaces in these provinces, together with the least urbanised in Poland Swietokrzyskie and Podkarpackie Voivodeships, include over 50 per cent of the country's preserved areas. Malopolskie and Warminsko-Mazurskie Provinces are characterised by the biggest quantity of lodgings per 1000 inhabitants. Their share amounts to 27,8 per cent of Poland's total. Attractive tourist areas constitute a potential which can be developed using relatively small funds. Therefore, Zachodniopomorskie and Pomorskie provinces having GDP per capita at the country's average level belong to the provinces of the highest level of employment in services-related sector.

As far as support for EU accession is regarded, relatively most adherents live in provinces having well-rooted tradition of self-dependent functioning, and regional identity, i.e. Slaskie and Pomorskie Voivodeships. The opposite situation is typical for Lubelskie and Podkarpackie Provinces.

2. Measuring of the Globalization Process

Despite the problems with definition of the notion of globalization and with measuring the process it self, some trials are undertaken to estimate the level of countries' or regions' involvement in this respect. To overcome this difficulty, various sets of measuring tools are used. Below, three examples of the globalization processes analysis with adequately selected indicators are presented.

The first example concerns construction of a ranking list of the most "globalised" countries[1]. The list is a final outcome of 4 sub-rankings: economic, social, political and technological. Each of them takes into account various factors reflecting the country's involvement in the international affairs. 62 countries were classified, grouping 85 % of world's inhabitants and

95% of industrial output of the world. Poland has the32nd position on this list. The main reason of such low place is the 43rd place in the economic sub-ranking. However, in political sub-ranking, Poland occupies the 16th position. In case of some particular indexes, as international tourism for example, Poland occupies the 7th position, whereas in respect of membership in the international organisations – the 10th place.

The second example concerns a ranking of countries from the economy's competitiveness point of view[2]. Poland occupies there the 45th place (between Columbia and Turkey).

The third example comes from the World Economic Forum[3] and relates to the level of computerisation. This ranking is based on the scope of use of the advanced technologies by: private persons, business and administration. Ranking makes use of measuring points method (maximum 6 points). According to its outcomes, Poland occupies the 39th position among 82 classified countries (it has obtained 3,85 points).

Table 1 presents comparison of the three a/m ranking lists for top 10 positions plus Poland. The comparison shows that the leading positions are occupied by nearly the same group of countries. The most important implication from these rankings is a positive co-relation between computerisation of the given economy with its competitiveness and the level of its globalization receptivity.

These three types of ranking prove the possibility to project a ranking related at the same time to globalization's level in the given countries as well as influence of conditions existing in the given country for the globalization process.

Table 1. Compiled countries' ranking (10 top position and Poland)
Source: According to endnotes

No.	Ranking 1: globalisation	Ranking 2: competitiveness	Ranking 3: computerisation
1.	Ireland	USA	Finland
2.	Switzerland	Finland	USA
3.	Sweden	Luxemburg	Singapore
4.	Singapore	Holland	Sweden
5.	Holland	Singapore	Iceland
6.	Denmark	Denmark	Canada
7.	Canada	Switzerland	Great Britain
8.	Austria	Canada	Denmark
9.	Great Britain	Hong-Kong	Taiwan
10.	Finland	Ireland	Germany
	Poland (32)	**Poland (45)**	**Poland (39)**

For the sake of the study, the selection was carried out to chose indicators connected with globalization and vital for 5 fields related to provinces functioning. These fields are as follows: social, economic, technological, political and ecological. Out of statistical data published in the yearbooks[4] for the provinces the appropriate indicators can be selected which, after their transformation, can be used for elaboration of rankings describing their receptivity of the provinces to globalization.

When selecting the data, the level of their relation to globalization features was taken into account. Therefore, only these connected with globalization were chosen out of data potentially accessible. Apart of this, some data have high level of co-relation. After testing, 10 types of indicators were selected (2 for each field) to constitute a basis for establishing of provinces ranking. They are as follows: urbanisation level, percentage of employed in service sector, GDP per capita, foreign trade turnover, outlays for scientific researches, outlay of students, public support for integration with EU, quantity of lodgings given, preserved areas, emission of dusts and gases. Out of these data, for each of the a/m fields the main and auxiliary data were selected. Enlarging quantity of indicators does not influence the outcomes of the ranking, i.e. does not change sequence of provinces in term of their receptivity to globalization impact.

To the given indicators various weights were attached to reflect their importance for the provinces' receptivity to globalization. It stems from the fact that the indicators have influence for the given field and some influence to the others.

Table 2. Weights of indicators re. differentiation of provinces
Source: Own elaboration

Types of indicators / Field	Main	Auxiliary	? points for:	
			5 indicators	10 indicators
- social	? urbanisation level (1) ? employed in service sector(1)	? GDP (1) ? students (1) ? foreign trade turnover (0,5) ? outlays for R&D (0,5)	3	5,0
- economic	? GDP (1) ? foreign trade turnover (1)	? urbanisation (1) ? employed in service sector (1) ? outlays for R&D (0,5)	2	4,5
- technological	? outlays for R&D (1) ? students (1)	? foreign trade turnover (0,5)	2	2,5
- political	? support for integration (1) ? lodgings given (1)	? urbanisation (1)	2	3
- ecological	? preserved areas (1) ? emission (1)	-	1	2
		Total maximum	**10 points**	**17points**

The importance of measures for various fields is reflected in their weight indices. In the table no. 2 the weights of measures and fields in the assessment of receptivity to globalization for individual provinces are presented.

From this table, the following weight indices to the particular indicators stems:
urbanisation level – 3 points, percentage of employed in service sector – 2 points, GDP per capita – 2 points, foreign trade turnover – 2 points, outlays for scientific research – 2 points, quantity of students - 2 points, public support for integration with the EU – 1 point, quantity of lodgings given – 1 point, preserved areas - 1 point, emission of dusts and gases - 1 point.

3. Receptivity of the provinces to globalization processes

Data concerning provinces, characterising theirs receptivity to globalization, are much differentiated. These data, in the form of basic indicators, are shown in table 3. Basing on them, the transformed indicators were calculated as the proportion of the indicator's for the given province to the maximum value for the selected voivodeship.

As the basic indicators for the provinces the following items were adapted (their numeration was used in the table 3 and 4:

I. urbanisation level, calculated as relation of population of towns to total population,
II. percentage of persons employed in service sector to total employment volume,
III. GDP per capita,
IV. foreign trade turnover (imports and exports),
V. outlays for scientific researches per capita,
VI. quantity of students per 1000 inhabitants,
VII. public support for integration with EU in the referendum,
VIII. lodgings given (hotel nights) per 1000 inhabitants,
IX. percentage of preserved (environmentally valuable) areas to total surface,
X. emission of dusts and gases in tonns/km²

The transformed indicators taking into consideration weight indices for each are presented in

Table 3. Basic indicators re. differentiation of the provinces (2000)
Source: Statistical Yearbook of the Provinces, Main Offices for Statictsics, Warszawa, 2001

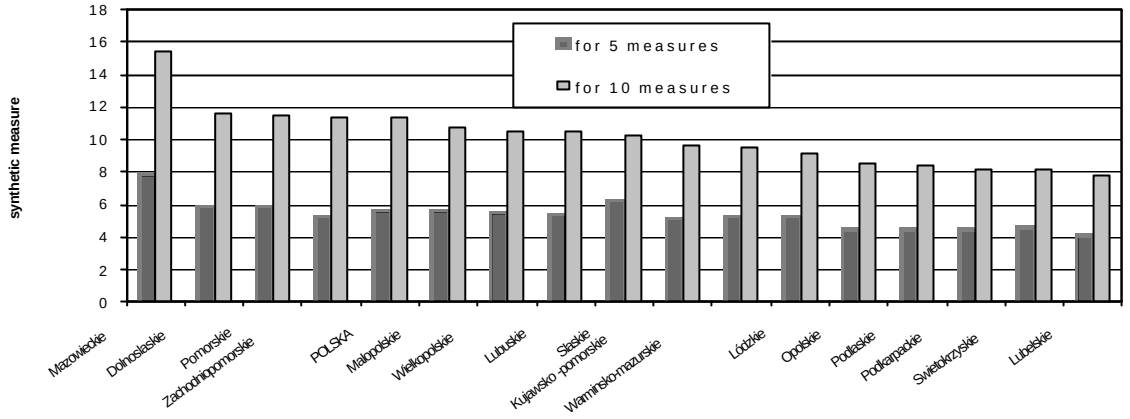
Province (in accordance with its number)	Indicator for the province (indicator's number in accordance with text)									
	I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.	X.
1.	71,5	53,5	16,3	2,2	105	44	51,7	177	20,2	6,6
2.	62,2	45,1	14,1	1,6	59	33	46,5	47	31,1	5,0
3.	46,9	32,8	11,1	0,6	66	38	39,0	37	22,7	1,9
4.	64,7	52,8	14,4	1,9	37	33	50,0	109	37,4	2,0
5.	64,8	40,8	14,5	1,3	110	38	45,2	38	16,4	18,7
6.	50,4	41,4	14,2	1,2	135	43	48,1	266	58,0	14,4
7.	64,2	52,9	23,8	5,2	427	62	48,0	228	30,1	5,7
8.	52,3	43,3	13,3	1,1	39	29	47,2	47	27,1	6,9
9.	41,0	32,1	11,7	1,0	58	29	44,2	41	47,8	1,8
10.	58,5	36,8	11,6	0,7	30	37	40,0	38	31,9	0,8
11.	68,3	54,4	16,1	2,6	93	35	52,7	179	32,5	2,9
12.	79,3	50,1	17,6	2,1	80	37	53,2	63	22,0	52,8
13.	45,8	32,3	12,4	0,6	16	36	41,8	31	61,3	8,1
14.	60,2	47,3	12,3	0,9	39	31	46,2	256	53,6	0,7
15.	57,7	44,2	16,7	2,4	100	36	49,1	97	31,3	6,3
16.	69,6	56,8	15,9	1,7	40	54	50,7	221	20,5	3,8
Poland	61,6	45,5	15,9	2,1	124	41	45,6	128	33,1	7,3

Table 4. Transformed indicators re. differentiation of the provinces
Source: Own calculations based on table 2

Province (in accordance with its number)	Transformed Indicator (indicator's number as in table 2)										Synthetic indicator		Relation 5/10 in %
	I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.	X.	for 5 values	for 10 values	
1.	2,7	1,9	1,4	0,8	0,5	1,4	1,0	0,7	0,3	0,9	5,9	11,6	51
2.	2,3	1,6	1,2	0,6	0,3	1,1	0,9	0,2	0,5	0,9	5,2	9,6	54
3.	1,8	1,2	0,9	0,2	0,3	1,2	0,7	0,1	0,4	1,0	4,1	7,8	53
4.	2,5	1,9	1,2	0,7	0,2	1,1	0,9	0,4	0,6	1,0	5,4	10,5	51
5.	2,5	1,4	1,2	0,5	0,5	1,2	0,8	0,1	0,3	0,7	5,3	9,2	58
6.	1,9	1,5	1,2	0,5	0,6	1,4	0,9	1,0	1,0	0,7	5,6	10,7	52
7.	2,4	1,9	2,0	2,0	2,0	2,0	0,9	0,8	0,5	0,9	7,8	15,4	51
8.	2,0	1,5	1,1	0,4	0,2	1,0	0,9	0,2	0,4	0,9	4,5	8,6	52
9.	1,6	1,1	1,0	0,4	0,3	0,9	0,8	0,2	0,8	1,0	4,5	8,1	56
10.	2,2	1,3	1,0	0,3	0,1	1,2	0,7	0,1	0,5	1,0	4,5	8,4	54
11.	2,6	1,9	1,4	1,0	0,4	1,1	1,0	0,7	0,5	0,9	5,9	11,5	48
12.	3,0	1,8	1,5	0,8	0,4	1,2	1,0	0,2	0,4	0,0	6,3	10,3	61
13.	1,7	1,1	1,0	0,2	0,1	1,2	0,8	0,1	1,0	0,9	4,6	8,1	57
14.	2,3	1,7	1,0	0,4	0,2	1,0	0,9	1,0	0,9	1,0	5,3	9,5	56
15.	2,2	1,6	1,4	0,9	0,5	1,2	0,9	0,4	0,5	0,9	5,5	10,5	52
16.	2,6	2,0	1,3	0,7	0,2	1,7	0,9	0,8	0,3	0,9	5,3	11,4	46
Poland	2,3	1,6	1,3	0,8	0,6	1,3	0,9	0,5	0,5	0,9	5,6	10,7	52

table 4. This table includes as well values of transformed indicators: for 5 synthetic indicators and for all 10 indicators. Transformed indicators' levels for the given provinces show high differentiation. According to the type of indicator, this differentiation is developed increasingly along two axes. The first one grows from Mazowieckie Voivodeship towards Eastern provinces, and the second from the West-located provinces towards the East. Differentiation of synthetic indicators (for total of 10 indicators) amounts to 2:1. Differentiation of the synthetic indicator assuming the country's average at 100, equals to 144:73 proportion. The diagram of the differentiation of this indicator is presented on the chart 2.

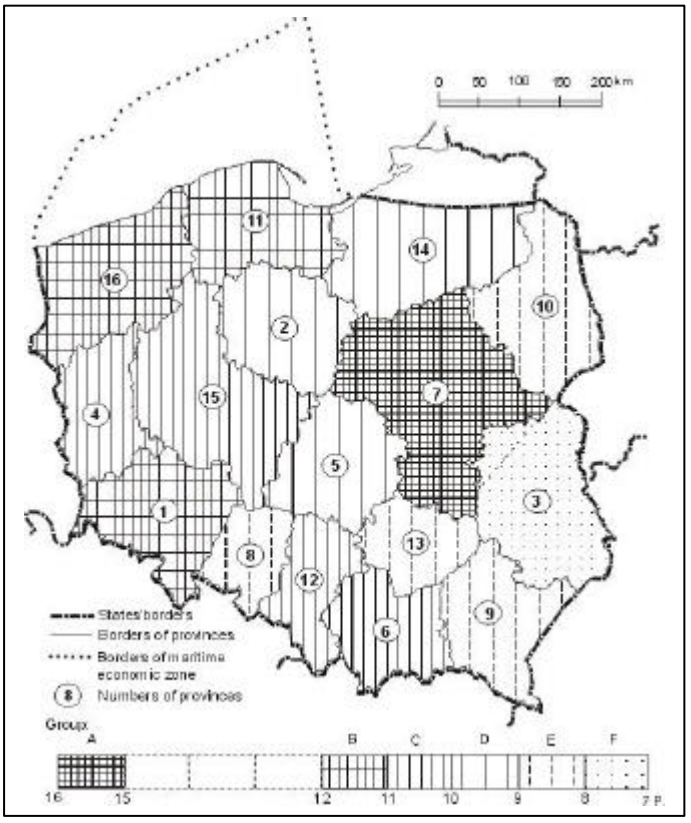
Chart 2. Differentiation of synthetic indicator of receptivity to globalization for the provinces
Sources: Own elaboration based on the table 4



As resulting from the calculation presented, the provinces are differentiated in terms of the globalization impact. Poland as a whole does not occupy the top position in the globalization ranking. Domestically, Poland is divided into voivodeships which shows various level of receptivity to globalization processes, with the Mazowieckie province (capital Warszawa) leading in the Polish internal ranking.

Differentiation of the receptivity to globalization of the provinces is presented on the chart 3.

Chart 3. Ranking of Polish voivodeships in terms their receptivity to globalization
Source: Own elaboration



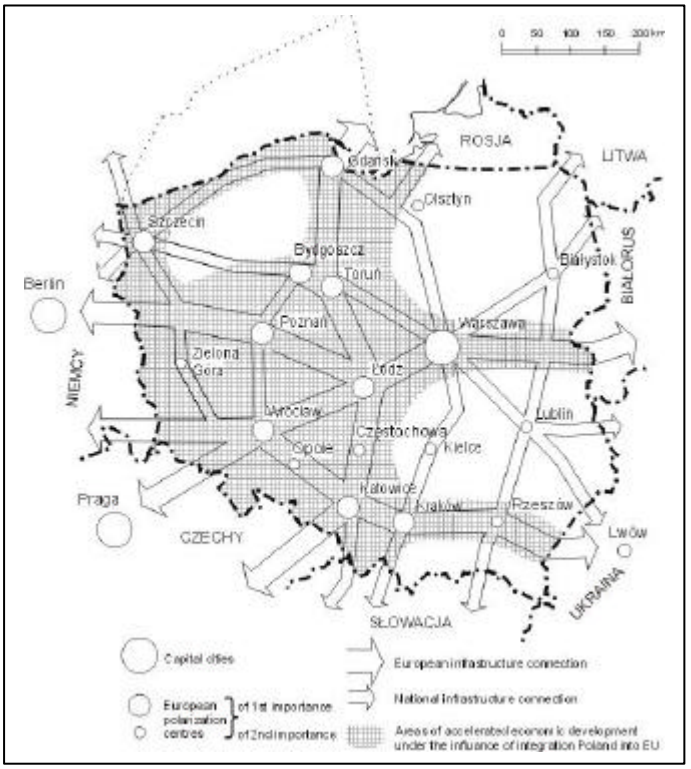
This receptivity is reflected by the synthetic indicator, given in table 4. Accordingly, the voivodeships can be divided into 6 groups: from the highest receptivity to globalization (Group A) to the lowest one (Group F).
- group A (the highest): Mazowieckie;
- group B (good): Dolnoslaskie, Pomorskie and Zachodniopomorskie;
- group C (average): Lubuskie, Malopolskie, Slaskie, Wielkopolskie;
- group D (moderate): Kujawsko-Pomorskie, Lódzkie, Warminsko-Mazurskie;
- group E (low): Opolskie, Podkarpackie, Podlaskie, Swietokrzyskie;
- group F (the lowest): Lubelskie.

The following conclusion from the chart 3 can be drawn. Mazowieckie province is the dominant one in terms of receptivity to globalization. The next highest in this ranking are the provinces located in the West of Poland, bordering Germany and Baltic Sea.

On the contrary, the Eastern part of the country, is much less receptive to globalization. Thus, when appraising the impact of the globalization processes on the country, one should have in mind its significant internal differentiation.

In evaluation of the provinces' differentiation in terms of receptivity to globalization the other methodologies can also be used. Two other examples are mentioned below.

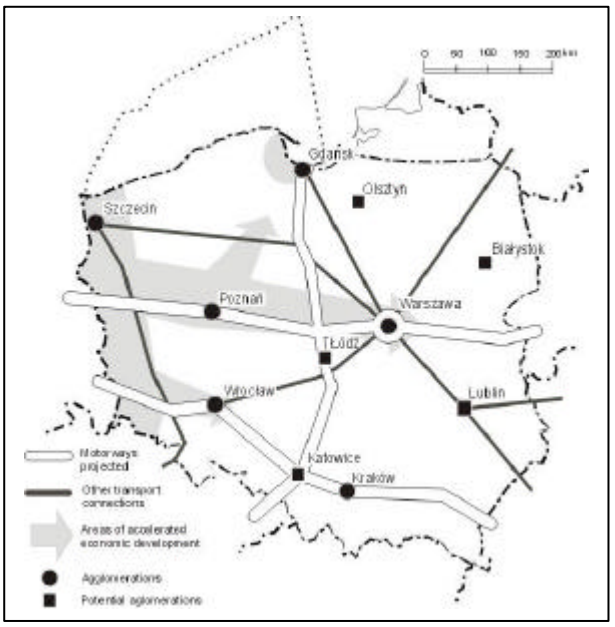
Chart 4. Model of Poland's sustainable development
Source: Own elaboration based on K. Fiedorowicz, 1996,
Conceptions of Spatial Policy, The Czestochowa University of Technology



The first example relates to the model of Poland's sustainable development. It was elaborated for the need of the country's long-term spatial development policy. The main conclusion resulting from the model is as follows: the region of an accelerated economic development, due to influence of integration with the European Union, is located in the area spreading from Poland's Western border up to the centre of the country with its capital, Warszawa. This region functions in relation to metropolitan cities and town centres of European importance and in relation to infrastructure channels. The relevant model is presented on the chart 4.

The second example concerns a scheme of Poland's spatial structure. This structure is shaped by the influence of main centres (i.e. cities), infrastructure axes and areas of the accelerated economic development. The scheme of Poland's spatial structure is shown on the chart 5.

Chart 5. Scheme of Poland's spatial structure
Source: Own elaboration based on G. Weclowicz, 1996,
Contemporary Poland. Space and Society, UCL Press, London



4. Final Conclusions

The following conclusions stem from the study on provinces' receptivity to globalization.

1/ Polish voivodeships are much differentiated in terms of their receptivity to globalization processes coming from outside. The level of differentiation is increasing.

2/ There are various aspects of globalization. To describe them, the adequate indicators can be selected. Then, there is a possibility of calculating the synthetic indicator. It describes general receptivity of provinces to globalization. As a result, the appropriate ranking of voivodeships can be elaborated.

3/ The ranking of provinces in terms of their receptivity to globalization indicates their significant differentiation. Poland is not a homogeneous country in this respect.

4/ Elaborating of such a ranking is vital. The ranking explains which provinces quicker and easier adapt themselves to globalization and which of them make it slower.

5/ The ranking of provinces indicates where will the process of migration be focused. Immigration flow (inflow) will be directed towards to the provinces characterised by the higher level of receptivity to globalization. The outflow of the population on the other hand will be typical for provinces with the lower level of receptivity.

To sum up, it should be stated that elaboration of the ranking of provinces in term of their receptivity to globalization may bring both cognitive advantages as well as practical benefits. The cognitive advantages allows to note their differentiation in terms of the features under examination. Practical benefits enable to take appropriate activities, utilising provinces' differentiation in terms of their characteristics related to globalization processes.

Notes

[1] Study of the A.T. Kearney consulting firm for the bi-monthly, *Foreign Policy*, 2002
[2] *IMD World Competitiveness Yearbook*, 2003
[3] *World Economic Forum*, 2003,Davos
[4] Statistical Yearbook of Provinces 2001, Warszawa, Main Office for Statistics,