A C T A U N I V E R S I T A T I S L O D Z I E N S I S
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THE IMPLEMENTATION OF THE TAXONOMIC SPATIAL MEASURE OF DEVELOPMENT IN THE ANALYSIS OF CONVERGENCE IN THE STANDARD OF LIVING

1. INTRODUCTION

In this paper, the term "*social convergence*" refers to the reduction in the dispersion of the standard of living across countries. It is an interesting and important research area since the rise in living standards and social cohesion are included in the fundamental documents of European integration. In the Preamble of Treaty Establishing the European Coal and Steel Community, one can read that: "*Anxious to help, by expanding their basic production, to raise the standard of living and further the works of peace*." Article 2 of the Treaty Establishing the European Community claims that: "*the Community shall have as its tasks (...) the raising of the standard of living and quality of life, and economic and social cohesion and solidarity among Member States*." Moreover in Article 3 of the Treaty on the European Union one can read that the EU "*(...) shall promote economic, social and territorial cohesion, and solidarity among Member States*." This confirms that social convergence is one of the main operational priorities of the European Union.

The main goal of this paper is to evaluate and verify the existence of social convergence among 24 European Union countries (Cyprus, Malta and Luxemburg were excluded due to the lack of data) during the period 1995–2012. The research conducted by Hobijn and Franses (2001: 171-200), Neumayer (2003: 275-296), Puss, Viies and Maldre (2003: 1-24), Berbeka (2006: 267-280), and Molina and Purser (2010: 1-49) show that methods previously used to analyse economic convergence can be also adapted to social convergence analysis. In order to verify that social convergence process takes place in the European Union the occurrence of σ-, β- and γ-convergence was tested.

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The standard of living is a multidimensional category; hence, the taxonomic spatial measure of development was used as its approximation. Measures based on GDP were rejected as many authors claim that GDP per capita cannot be used alone as the standard of living measurement (Daly, Cobb 1990:62-82; Khan 1991: 469-502; Clarke 2005:3; Stiglitz, Sen, Fitoussi 2009: 21-40).

2. TAXONOMY SPATIAL MEASURE OF DEVELOPMENT AS THE STANDARD OF LIVING MEASURE

According to Bywalec and Wydymus (1992: 669-687), the standard of living refers to the level of wealth, comfort, material goods and necessities available to a certain socioeconomic class in a certain geographic area. Synthetic variables, which are a combination of several other variables, can be a good approximation of such a comprehensive phenomenon. In this research**,** the methodology proposed by Antczak (2013: 37-53) was used. In her research, E. Antczak modified the classical measure of development and presented the taxonomic spatial measure of development. This measure allows one to conduct simultaneous analyses in three dimensions: section, time and space. The modification was made by adding a spatial weight matrix to the formula of the classical Hellwig's development measurement (Hellwig 1968: 307-326).

There are at least three reasons to include the spatial factor into social convergence analysis. Firstly, as Waldo Tobler said, "*Everything is related to everything else, but near things are more related than distant things*" (Tobler 1970: 234-240). Secondly**,** the use of a regional dataset implies the consideration of the possibility that observations may not be independent due to inter-connections between neighbouring regions (Buccellato 2007: 1). Finally, empirical analyses that have ignored the influence of spatial location may have produced biased results (Fingleton, Lopez-Bazo 2006: 178). All those arguments suggest that the spatial factor should be included both in the standard of living and social convergence analyses.

According to Antczak (2013: 42) the distance between given object and the "*ideal*" one is given by the formula:

$$d_{spi}^{*} = \begin{cases} \sqrt{\sum_{j=1}^{m}\left(z_{ij}^{*} - \phi_{j}^{*}\right)^{2}} \\ \text{or} \\ \sqrt{\sum_{j=1}^{m}\left(z_{ij} - \phi_{j}\right)^{2}} \end{cases}, \tag{1}$$

where: d_{spi}^{*} – the distance between object i and the "*ideal*" object.

The upper part of Formula 1 refers to variables with spatial characteristics (variables for which Moran's I is statistically significant), therefore: ϕ_{j}^{*} – the "*ideal*" object for variables with spatial character (with the highest values for stimulants and lowest for destimulants), z_{ij}^{*} – the value of a normalised variable with spatial character, calculated as:

$$z_{ij}^{*} = \frac{x_{ij}^{*} - \overline{x}_{j}^{*}}{s_{j}^{*}}, \tag{2}$$

where: x_{ij}^{*} – the value of variable j in country i, calculates as: $x_{ij}^{*} = \mathbf{W}x_{ij}$, $\overline{x}_{j}^{*}$ – the average value of x_j, s_{j}^{*} – the standard deviation of x_j, $\mathbf{W}$ – the spatial weight matrix.

The bottom part of Formula 1 refers to variables without spatial character (variables for which Moran's I is not statistically significant), therefore: ϕ_{j} – the "*ideal*" object for variables without spatial character (with the highest values for stimulants and lowest for destimulants), z_{ij} – the value of a normalised variable without spatial character, calculated as:

$$z_{ij} = \frac{x_{ij} - \overline{x}_{j}}{s_{j}}, \tag{3}$$

where: x_{ij} – the value of variable j in country i, $\overline{x}_{j}$ – the average value of x_j, s_{j} – the standard deviation of x_j.

A spatial contiguity weight matrix was used in this research. These weights basically indicate whether countries share a common boundary or not:

$$w_{ij} = \begin{cases} 1, \text{bnd}(i) \cap \text{bnd}(j) \neq \varnothing \\ 0, \text{bnd}(i) \cap \text{bnd}(j) = \varnothing \end{cases}. \tag{4}$$

Value "1" refers to the situation in which countries i and j have a common boundary, 0 in which they do not. Diagonal elements in matrix **W** have values equal 0 as well. The spatial weight matrix was row standardised. Row standardisation involves dividing each neighbour weight for the country i by the sum of weights for all its neighbours.

After Calculation 1, the taxonomy spatial measure of development was calculated as (Antczak 2013: 43):

$$\mu_{spi}^{*} = 1 - \frac{d_{spi}^{*}}{d_{spi-}^{*}}, \tag{5}$$

where: $d_{spi-}^{*} = \overline{d}_{sp}^{*} + 2s_{spd}^{*}$, μ_{spi}^{*} – the taxonomic spatial measure of development for the county i, $\overline{d}_{sp}^{*}$ – the average value of d_{sp} calculated as in formula (1), s_{spd}^{*} – the standard deviation of d_{sp} calculated as in formula (1).

The proposed measure of the standard of living was calculates as follows:

1) Setting a wide set of diagnostic variables crucial to describing the analysed phenomenon (112 variables).

2) Removing variables that do not meet the formal correctness conditions, i.e.: data completeness, coefficient of variation higher than 10%, coefficient of correlation lower than 0.51 (Zeliaś 2004: 53).

3) Testing the existence of spatial autocorrelation using Moran's I statistic:

$$I = \frac{\sum_{i=1}^{n}\sum_{j=1}^{n} w_{ij}\left(x_i - \overline{x}\right)\left(x_j - \overline{x}\right)}{\sum_{i=1}^{n}\left(x_i - \overline{x}\right)^2} = \frac{z^T \mathbf{W} z}{z^T z}, \tag{6}$$

4) Calculating the taxonomic spatial measure of development for every domain $(\mu_{spiq}^{*}; q = 1, ..., 10)$ of the standard of living according to Formula 5.

5) Calculating the standard of living measure as the average of synthetic variables for each domain:

$$\mathrm{M}^*_{spi} = \frac{1}{p}\sum_{q=1}^{p} \mu^*_{spiq} \,, \tag{7}$$

where: M^*_{spi} – the synthetic variable describing the standard of living in the country i, p – the number of groups, μ^*_{spiq} – the synthetic variable for country i calculated on the basis of variables belonging to q group.

The set of diagnostic variables is set out in Table 1.

Table 1. The set of diagnostic variables

Domain	Variables
Population	x_1 – total fertility rate (S) x_2 – old age dependency ratio (D)
Labour market and job security	x_3 – unemployment rate (D) x_4 – employment rate (S) x_5 – number of deaths due to accidents at work per 100 000 inhabitants (D)
Health and social care	x_6 – number of doctors per 100 000 inhabitants (S) x_7 – number of nurses per 100 000 inhabitants (S) x_8 – number of hospital beds per 100 000 inhabitants (S) x_9 – number of deaths due to tuberculosis per 100 000 inhabitants (D) x_{10} – number of deaths due to diabetes per 100 000 inhabitants (D) x_{11} – infant mortality rate (D) x_{12} – number of new AIDS cases per 100 000 inhabitants (D) x_{13} – obesity rate (D)
Education	x_{14} – number of university students per 1 000 inhabitants (S) x_{15} – number of academic teachers per 1 student (S)
Leisure time	x_{16} – annual cinema trips per capita (S) x_{17} – number of hotels per 1 000 inhabitants (S)
Living conditions	x_{18} – number of newly built dwellings per 1 000 households (S)
Transport and communication	x_{19} – number of newly registered passenger cars per 1 000 inhabitants (S) x_{20} – airline passenger transport in passenger–km per capita (S) x_{21} – railway transport in passenger–km per capita (S) x_{22} – road network density (S) x_{23} – proportion of paved roads in total road network (S) x_{24} – number of mobile phone subscribers per 1 000 inhabitants (S) x_{25} – percentage of population with access to the Internet (S)
Social security	x_{26} – corruption perception index (D) x_{27} – number of murders per 100 000 inhabitants (D) x_{28} – number of drug–related crimes per 100,000 inhabitants (D) x_{29} – number of suicides per 100 000 inhabitants (D) x_{30} – number of divorces per 1 000 inhabitants (D)
Population incomes and expenditures	x_{31} – total savings as a percentage of disposable income (S) x_{32} – tax and social contributions as percentage of gross income (D) x_{33} – inflation rate (D) x_{34} – wage per hour in manufacturing (in euro – fixed exchange rate 2012) (S)

Table 1. Continuation

Domain	Variables
Natural environment	x_{35} – particulate matters emission in micrograms per square metre (D) x_{36} – nationally protected areas as percentage of total land (S) x_{37} – carbon dioxide emissions in kg per capita (D) x_{38} – forest land as percentage of total land (S) x_{39} – water pollution emission in kg per 1 000 inhabitants (D)

(S) – for stimulants, (D) – for destimulants.

Source: own elaboration.

Table 2 includes Moran's *I* statistics for all diagnostic variables from Table 1. Moran's *I* is used to determine whether neighbouring countries are more similar than would be expected under the null hypothesis, which claims that the observed variable rates are assigned at random among locations. An alternative hypothesis, however, claims that variable rates are not spatially independent. The Moran's *I* statistic is statistically significant if p-value is lower than $\alpha = 0.05$.

As can be seen in Table 2, in 1995 there were 23 variables for which Moran's *I* was statistically significant: the old age dependency ratio, employment rate, number of nurses per 100 000 inhabitants, number of hospital beds per 100 000 inhabitants, number of deaths due to diabetes per 100 000 inhabitants, infant mortality rate, obesity rate, annual cinema trips per capita, number of newly-built dwellings per 1 000 households, number of newly registered passenger cars per 1 000 inhabitants, railway transport in passenger-km per capita, road network density, proportion of paved roads in total road networks, percentage of population with access to the Internet, number of murders per 100 000 inhabitants, number of drug-related crimes per 100 000 inhabitants, number of divorces per 1 000 inhabitants, tax and social contributions as the percentage of gross income, inflation rate, hourly wages in manufacturing (in euro – fixed exchange rate 2012), particulate matters emission in micrograms per square metre and forest land as percentage of total land. Moran's *I* was calculated for every year from 1995 to 2012, the number and types of spatially independent variables differ from year to year.

Table 2. Moran's *I* statistics and corresponding p-value (1995)

Variable	***I***	***E*(*I*)**	**$S_d(I)$**	**Z**	**p-value**
x_1	0.065	-0.043	0.193	0.565	0.286
x_2	**0.364**	**-0.043**	**0.196**	**2.072**	**0.019**
x_3	-0.057	-0.043	0.187	-0.073	0.471
x_4	**0.418**	**-0.043**	**0.190**	**2.429**	**0.008**
x_5	-0.138	-0.043	0.195	-0.485	0.314
x_6	0.088	-0.043	0.196	0.672	0.251
x_7	**0.421**	**-0.043**	**0.193**	**2.407**	**0.008**

Variable	I	$E(I)$	$S_d(I)$	Z	p-value
x_8	**0.695**	**-0.043**	**0.186**	**3.960**	**0.000**
x_9	0.147	-0.043	0.193	0.986	0.162
x_{10}	**0.682**	**-0.043**	**0.189**	**3.833**	**0.000**
x_{11}	**0.587**	**-0.043**	**0.167**	**3.772**	**0.000**
x_{12}	-0.017	-0.043	0.191	0.140	0.444
x_{13}	**0.552**	**-0.043**	**0.196**	**3.040**	**0.001**
x_{14}	0.150	-0.043	0.191	1.016	0.155
x_{15}	0.147	-0.043	0.157	1.213	0.113
x_{16}	**0.668**	**-0.043**	**0.194**	**3.663**	**0.000**
x_{17}	0.204	-0.043	0.193	1.277	0.101
x_{18}	**0.507**	**-0.043**	**0.197**	**2.801**	**0.003**
x_{19}	**0.374**	**-0.043**	**0.172**	**2.423**	**0.008**
x_{20}	0.241	-0.043	0.195	1.458	0.072
x_{21}	**0.488**	**-0.043**	**0.167**	**3.174**	**0.001**
x_{22}	**0.484**	**-0.043**	**0.188**	**2.802**	**0.003**
x_{23}	**0.832**	**-0.043**	**0.179**	**4.893**	**0.000**
x_{24}	-0.061	-0.043	0.178	-0.096	0.462
x_{25}	**0.360**	**-0.043**	**0.143**	**2.825**	**0.002**
x_{26}	**0.675**	**-0.043**	**0.198**	**3.638**	**0.000**
x_{27}	**0.858**	**-0.043**	**0.173**	**5.222**	**0.000**
x_{28}	**0.490**	**-0.043**	**0.191**	**2.801**	**0.003**
x_{29}	0.197	-0.043	0.188	1.283	0.100
x_{30}	**0.272**	**-0.043**	**0.186**	**1.700**	**0.045**
x_{31}	0.160	-0.043	0.195	1.045	0.148
x_{32}	**0.293**	**-0.043**	**0.193**	**1.747**	**0.040**
x_{33}	**0.497**	**-0.043**	**0.182**	**2.969**	**0.001**
x_{34}	**0.586**	**-0.043**	**0.194**	**3.246**	**0.001**
x_{35}	**0.503**	**-0.043**	**0.168**	**3.250**	**0.001**
x_{36}	0.084	-0.043	0.185	0.691	0.245
x_{37}	-0.108	-0.043	0.196	-0.329	0.371
x_{38}	**0.404**	**-0.043**	**0.193**	**2.317**	**0.010**
x_{39}	-0.047	-0.043	0.190	-0.018	0.493

Source: own calculations in STATA.

3. EMPIRICAL ANALYSIS

The estimated values of the synthetic variables M^*_{spi} (see: Table 3) and μ^*_{spiq} were the basis to test the occurrence of *sigma*-, *beta*- and *gamma*- convergence. An additional analysis for this group of domains was conducted due to the fact that convergence in one group of social indicators generally does not have to imply convergence in another group. The set of diagnostic variables and the methods used to investigate for the social convergence are intentionally the same as in author's previous research (Kuc 2014: 105-115). This will allow one to compare the results obtained by using classical and spatial measure of development.

The values of the taxonomic spatial measure of development are presented in Table 3. As can be seen, in all analysed periods Ireland was the one with the highest synthetic variable value and thus the country with the highest standard of living. High values of the synthetic variable can be also observed in Austria, Germany, United Kingdom and Sweden. While Romania, Bulgaria, Lithuania and Latvia placed at the bottom of the ranking.

Table 3. Values of the synthetic variables for European Union countries

ISO	1995	1999	2003	2007	2012
AT	0.5725	0.5784	0.5733	0.5491	0.5857
BE	0.5400	0.5039	0.4921	0.4915	0.5185
BG	0.3545	0.3217	0.2803	0.2958	0.3165
DK	0.4874	0.5030	0.5090	0.5226	0.4962
EE	0.3728	0.3801	0.4093	0.4241	0.4366
FI	0.5112	0.5228	0.5082	0.4908	0.5273
FR	0.5265	0.5209	0.5175	0.5500	0.5778
GR	0.4744	0.4890	0.5092	0.5051	0.4676
ES	0.4858	0.5353	0.5481	0.5527	0.5064
NL	0.5560	0.5496	0.5281	0.5291	0.5294
IE	0.6150	0.6614	0.6762	0.6706	0.5954
LT	0.3823	0.3950	0.3936	0.4062	0.3982
LV	0.3178	0.3446	0.3658	0.3946	0.3857
DE	0.5597	0.5617	0.5436	0.5238	0.5386
PL	0.3895	0.3940	0.3980	0.3982	0.4216
PT	0.4745	0.5349	0.4823	0.4523	0.4609
CZ	0.4263	0.4157	0.4286	0.4555	0.4855
RO	0.3458	0.3500	0.3371	0.3528	0.3727
SK	0.3972	0.4249	0.4172	0.4404	0.4626
SI	0.4271	0.4324	0.4417	0.4760	0.4831
SE	0.4956	0.4911	0.5158	0.4986	0.5150
HU	0.3916	0.3825	0.4019	0.3918	0.3797
UK	0.5725	0.5784	0.5733	0.5491	0.5857
IT	0.5400	0.5039	0.4921	0.4915	0.5185

Source: own calculations and elaboration.

3.1. *Beta*-convergence

Beta-convergence is a process in which countries with lower standards of living are improving faster than those with higher standards of living. The methodology used to measure β-convergence generally involves estimating a growth equation according to the formula:

$$g_i = \alpha + \beta \log M^*_{spi,0} + \varepsilon_t \,, \tag{8}$$

where: M^*_{spi} – the synthetic variable describing the standard of living in country i, g_i – the average change of the indicator over the analysed period, calculated as:

$$g_i = \frac{1}{T}\log(\frac{M^*_{spi,T}}{M^*_{spi,0}}) \,. \tag{9}$$

A negative relationship between the growth rate and the initial level of the standard of living (β must be negative and statistically significant) is evidence that the followers are catching up with the leaders (Barro, Sala-i-Matin 1992: 223-251). The log linear regression was used to estimate the annual growth rate of the standard of living based on the initial level of the standard of living. In the same way, the annual growth in each sphere of the standard of living was calculated (see: Table 4).

Table 4. Absolute β-convergence in the domains of standard of living

Domain	α	β	R^2
Standard of living	-0.5408	-0.2105 **	0.2293
Population	-0.0348	-0.1321	0.0399
Labour market and job security	-0.0262	0.1066*	0.1201
Health and social care	-0.0874	-0.1619	0.0431
Education	-0.1526***	-0.6595***	0.4769
Leisure time	-0.1597***	-0.3778***	0.6064
Living conditions	-0.3041***	-0.6628***	0.6399
Transport and communication	-0.0586*	-0.3985***	0.6619
Social security	-0.1759***	-0.5897***	0.7339
Population incomes and expenditures	-0.0440	-0.1545	0.2300
Natural environment	-0.0673	-0.1611	0.0519

Note: *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$.

Source: own calculations.

The results are as follows: beta-convergence process (β is negative and significant) take place in groups: education, leisure time, living conditions, transport and communication, and social security. R^2 in the standard of living equation is low.

Therefore, the hypothesis about existence β-convergence in the standard of living should be rather rejected.

3.2. *Sigma* convergence

The existence of β-convergence is a necessary, but insufficient, condition for σ-convergence. It is a necessary condition as without the catching up the spread between countries cannot shrink. It is not a sufficient condition because it is possible (at least theoretically), that countries with a lower standard of living can overtake those with a higher standard of living, so this may increase the disproportion (Sala-i-Matin 1996: 1019-1036). As a consequence *sigma*-convergence was tested only for those domains in which *beta*-convergence occurred.

Sigma-convergence refers to a reduction of disparities among countries. In this research, the standard deviation of a log-transformed taxonomic spatial measure of development was used as a measure of *sigma*-convergence. To test if the *sigma*-convergence exists, a linear trend model was estimated:

$$S_{M^*_{spi}} = \alpha_0 + \alpha_1 t + \varepsilon_t \,, \qquad (10)$$

where: $S_{M^*_{spi}}$ – the standard deviation of log-transformed variable.

If α_1 is negative and statistically significant the sigma convergence occurs. The results of the estimation are included in Table 5.

Table 5. Linear trends for standard deviation of log-transformed variables

Domain	$\boldsymbol{\alpha_0}$	$\boldsymbol{\alpha_1}$	$\boldsymbol{R^2}$
Standard of living	0.0866***	-0.0006**	0.2717
Education	0.1026***	-0.0009	0.4471
Leisure time	0.2203***	-0.0024***	0.7006
Living conditions	0.2765***	-0.0043***	0.6587
Transport and communication	0.1601***	-0.0023***	0.5839
Social security	0.1171***	-0.0015***	0.6870

Note: *** p < 0.01; ** p < 0.05; * p < 0.1.

Source: own calculations.

The value of α_1 is negative and significant, but once again R^2 is low, so the hypothesis about the existence of a sigma-convergence in the standard of living should be rejected.

However, considering given the domains of the variables, *sigma*-convergence occurs in: leisure time, living condition, transport and communication, and social security. It is only in the case of the education group that α_1 is not statistically significant.

3.3. *Gamma* convergence

Gamma-convergence is a concept proposed by Boyle and McCarthy (1999: 343-347). It requires an examination of the change in the ranking of countries. It is a simple measure that captures the change in rankings is Kendall's index of rank concordance calculated as:

$$\tau = \frac{C - D}{n(n-1)}, \tag{11}$$

where: τ – Kendall's index of rank concordance, C – the number of concordant pairs, D – the number of discordant pairs, n – the number of observations.

If τ is closer to zero, then the changes within distribution are higher and γ-convergence occurs. Analogously to the case of sigma-convergence, *gamma*-convergence was calculated only for those groups of variables in which *beta*-convergence occurred. According to Kusideł (2013: 78) the lack of *beta*-convergence censors the search for other types of convergence. Based on the data included in Table 6 and significance level $\alpha = 0.05$ *gamma*-convergence occurs only in education.

Table 6. Values of τ-Kendall index of rank concordance and corresponding p-values

Domain	τ	**p-value**
Standard of living	0.8184	0.0000
Education	0.2898	0.0516
Leisure time	0.7463	0.0000
Living conditions	0.3695	0.0122
Transport and communication	0.7246	0.0000
Social security	0.4348	0.0031

Source: own calculations.

4. CONCLUSIONS

This article has reviewed the existence of the social convergence among the European Union countries between 1995–2012. On the basis of the obtained results, the hypothesis about the existence of *sigma*-, *beta*- and *gamma*-convergence in the standard of living should be rejected. Undoubtedly, the single synthetic measure is a convenient and helpful indicator, but may fail to capture movements that are relatively small. Perhaps this is due to the fact that negative and positive effects in different domains may cancel out each other. For that reason, the analysis was also conducted in every group of determinant.

The analysis indicated the existence of the σ- and β-convergence in the following groups of variables: leisure time, living condition, transport and communication and social security. This means that countries with poor performance at the start period have improved more in percentage terms than countries with strong performance in the above-mentioned areas.

The process of catching up can be observed. The analysis indicated the existence of β-and γ-convergence in the field of education. This means that countries with poor performance at the first point leapfrogged those with initial strong performance.

The peace of convergence in every domain is relatively low. However, taking into consideration the multidimensionality of the standard of living, the slow pace of change in the given domains should not be something surprising. Improvement in the standard of living often requires changes that are complex, long-term and difficult to implement.

Comparing the obtained results with author's previous research, it can be seen that the approach based on spatial synthetic measure gives models that better fit the data and indicate a faster rate of convergence (Kuc 2014: 105-115).

Further research concerning the use of spatial taxonomic measures of development should be focused on testing whether the taxonomy measure of development is affected by the selection of the spatial weight matrix, the normalisation and aggregation procedure. However, it seems that the measure proposed by Antczak including the spatial factor allows one to conduct a deeper analysis concerning the analysed phenomenon.

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ABSTRACT

The main goal of this paper is to analyse the existence of the social convergence in the European Union between 1995–2012. The social convergence refers to a reduction in the dispersion of the standard of living across countries. A taxonomic spatial measure of development was used as the standard of living approximation. The use of the new approach proposed by E. Antczak allowed for an explanation of the disparities in the analysed phenomenon by taking into account the immeasurable spatial factor. A variety of techniques were used to test for convergence. The existence of *sigma*, *beta* and *gamma* convergence was tested for the global aggregated measure of the standard of living and, furthermore, for 10 groups of factors affecting this phenomenon.

WYKORZYSTANIE PRZESTRZENNEGO TAKSONOMICZNEGO MIERNIKA ROZWOJU W ANALIZACH KONWERGENCJI POZIOMU ŻYCIA

ABSTRAKT

Głównym celem niniejszej pracy jest analiza konwergencji społecznej Unii Europejskiej w latach 1995–2012. Konwergencja społeczna rozumiana jest tutaj, jako zmniejszanie dysproporcji w przestrzennym zróżnicowaniu poziomu życia pomiędzy państwami członkowskimi. Za aproksymację poziomu życia przyjęto przestrzenny taksonomiczny miernik rozwoju. Wykorzystanie zmodyfikowanego miernika taksonomicznego zaproponowanego przez E. Antczak pozwoli na nowe podejście w wyjaśnieniu dysproporcji w analizowanym zjawisku poprzez uwzględnienie niemierzalnego czynnika przestrzennego. Znajomość i zrozumienie struktur przestrzeni powinny natomiast umożliwić lepsze przewidywanie zmian poziomu życia ludności w przyszłości. Do testowania występowania konwergencji społecznej wykorzystano kilka różnych metod. Ponadto badanie konwergencji poziomu życia przeprowadzono dla globalnej miary agregatowej poziomu życia, jak również dla poszczególnych grup czynników wpływających na owe zjawisko.