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ШЛЯХИ ВДОСКОНАЛЕННЯ ПОСТАЧАЛЬНИЦЬКОЇ ЛОГІСТИКИ МЕТАЛУРГІЙНОГО ПІДПРИЄМСТВА

У статті розглянуто шляхи вдосконалення управління матеріально-технічним постачанням родинних підприємстві промисловості. Проаналізовано забезпеченість мареіальнимі ресурсами корпорації Казахмис. Запропоновано для оптимального управління матеріальними ресурсами створення логістичного центру для родинних гірничорудних підприємстві.

Ключові слова: логістика, матеріально-технічне постачання, постачальна логістика, лоістіческій центр.

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ПУТИ СОВЕРШЕНСТВОВАНИЯ СНАБЖЕНЧЕСКОЙ ЛОГИСТИКИ МЕТАЛЛУРГИЧЕСКОГО ПРЕДПРИЯТИЯ

В статье рассмотрены пути совершенствование управление материально-техническим снабжением родственных предприятии промышленности. Проанализированы обеспеченность мареиальными ресурсами корпорации Казахмыс. Предложены для оптимального управления материальными ресурсами создание логистического центра для родственных горнорудных предприятии.

Ключевые слова: логистика, материально-техническое снабжение, снабженческая логистика, лоистический центр.

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MULTIDIMENSIONAL COMPARATIVE ANALYSIS OF LEVELS OF LIVING OF POPULATIONS IN EU MEMBER STATES

The major purpose of the article is the comparative analysis of levels of living of populations in EU member states, determination of features that differ studied populations and indication of groups of countries of similar levels of living of their inhabitants in the light of diagnostic features assumed for the study.

Keywords: European Union; taxonomy; synthetic variable.

Introduction. Level of living is a complex category, applied both in economic as well as in social sciences, that is defined in the literature of the subject in various ways. In order to understand the scope of this notion, we ought to pay attention to the definition formulated by UN Committee of Experts in 1954, according to which the level of living includes "totality of actual living conditions of people, and degree of material and cultural satisfaction of their needs through the stream of goods and services against payment and also those coming from social funds" [5, p.73]. This concept of level of living became the foundation for a lot of other definitions of this notion.

A. Luszniewicz defined the level of living as the "degree of satisfaction of material and cultural needs of population by a stream of goods and services against payment and by the fund of collective consumption in a particular unit of time and space" (2 p.12). According to the author, numerical ratings of the degree of satisfaction of seven fundamental types of needs, including food, housing, health, educational needs, recreation, social insurance and material management, are the measures of the level of living of populations.

The major purpose of the article is the comparative analysis of the level of living of populations of European Union member states, determination of features that differ studied populations most and indication of groups of countries of similar levels of living of their inhabitants in the light of diagnostic features assumed for the study. Thus, an attempt was made to answer the question of what the distance between Poland and new Community member states that entered the EU (in 2004, Cyprus, Czech Republic, Estonia, Lithuania, Latvia, Malta, Slovakia, Slovenia; in 2007 – Bulgaria and Romania) and the countries of old EU-15 is, and if a significant relationship between the level of life of inhabitants and economic development of the state finds confirmation in the results of the studies.

The analysed phenomenon of the level of living is not a phenomenon that is directly observed. Conclusions about its level can be made on the grounds of the analysis of the set of diagnostic variables that present its various aspects. And that is why the study was performed with the use of the method of multidimensional comparative analysis (Z Hellwig's taxonomic gauge of development and Ward's method), and the studied period of time was the year of 2010.

Research method. For the purpose of formation of the ranking of EU countries and ordering them from "the best" to "the worst" with respect to the level of living of their populations, a synthetic variable was constructed while basing it on the method suggested by Z. Hellwig [1, p. 307-327; 6, p. 129-130]. The stages of proceedings included:

1. On the basis of matrix of standardised *m* initial variables, a model object ("development model") of the "best" values for each variable was determined:

$$z_0 = [z_{01}, z_{02}, ..., z_{0j}, ..., z_{0m}] \qquad (1)$$

where:

$$z_{0j} = \begin{cases} \max\limits_i z_{ij}, & \text{if } Z_j \text{ is stimulant} \\ \min\limits_i z_{ij}, & \text{if } Z_j \text{ is de stimulant} \end{cases} \qquad i = 1,2,...,n \quad j = 1,2,...,m \qquad (2)$$

2. Similarity of objects to the "abstract" best object was analysed through calculation of the distance (most often Euclidean) of every object to the model of development:

$$d_{i0} = \sqrt{\sum_{j=1}^{m} w_j (z_{ij} - z_{0j})^2} \quad \text{i = 1, 2, …, n} \qquad (3)$$

where d_{i0} represents Euclidean distance *i*-of this object from the model of development, and w_j is the weight for this j-variable determined on the basis of statistical method, that is $w_j = V_j / \sum_j V_j$, where V_j is variability factor of this j variable.

The more the object is similar to the model, the higher the level of the phenomenon placed for this object.

3. Synthetic measure called the measure of development was determined for every object.

$$s_i = 1 - \frac{d_{i0}}{d_0} \quad (4)$$

where:

$$d_0 = \overline{d} + 2S(d_0) \quad (5)$$

$$\overline{d} = \frac{1}{n}\sum_{i=1}^{n} d_{i0}, \qquad S(d_0) = \sqrt{\frac{1}{n}\sum_{i=1}^{n}\left(d_{i0} - \overline{d}\right)^2} \quad (6)$$

The measure of development assumes the values from the range [0, 1] while the value of measure calculated for development model equals 1 and for the anti-model it is zero. The higher the development of a complex phenomenon, the higher the measure of development (a particular object is less distant from the model).

The methods of grouping (classification) allow for division of the collection of *n* objects into disjoint and non-empty sub-sets called classes in such a way that the objects included in the composition of the same categories would be more similar, and the objects belonging to different categories, would be the least similar with respect to the studied complex phenomenon. While grouping the objects organised in a linear way, we can perform a division of these objects with respect to the level of studied phenomenon into four typology groups. The limits of ranges of synthetic variable are determined on the basis of calculated values of arithmetic mean ($\overline{s}$) and standard deviation S (s) of synthetic measure. Such an approach is supported mainly by the fact that this way of division is very often applied in research practice. Compare: [3, p. 93], [9, p. 96]. Thus the collection of studied objects organised in a linear way according to the criterion of descending value of development measure, can be divided into four homogeneous groups (i.e. of similar level of living of populations) that include objects of the values of synthetic variable that belong to the following ranges [7]: Group I : $s_i \geq \overline{s} + S(s)$; Group II : $\overline{s} + S(s) > s_i \geq \overline{s}$; Group III $\overline{s} > s_i \geq \overline{s} - S(s)$; Group IV: $s_i < \overline{s} - S(s)$.

Ward's method, in turn, is one of the agglomeration ways for grouping, which is distinguished from others by application of the approach of variance analysis to assess the distance between agglomerations. While forming a tree diagram (the so-called dendrogram) two agglomerations are combined in one agglomeration to minimise the sum of squares of deviations of all objects from those two agglomerations from the centre of gravity of the new agglomeration that will occur as a result of connection of these two agglomerations. In this method, on every stage, a pair is selected out of all pairs of agglomerations that are possible to match, that as a result of matching gives an agglomeration of the minimum diversity with respect to variables that describe them.

Numerical data and results of research. There is no standard concept about what partial measures should cover the area of observation while defining the level of living of population. It is important that the set of measures should describe the analysed phenomenon in the most accurate way. A barrier of the access to source data often constitutes the criterion for selection.

In the study of the level of living of population, appropriate selection of diagnostic features that characterise the described phenomenon often has a significant impact on final results. Diagnostic variables that make foundations for construction of synthetic measure should have: a high substantive value, high capability of differentiating the analysed territorial units (threshold value of variability coefficient is most often established on the level of 10 %), unequivocal character of preferences (stimulant, de-stimulant and nominant) and ought to present the lack of mutual correlation for the purpose of eliminating the phenomenon of information repetition.

Research into the level of living of populations in European Union countries was characterised by the measures that describe various areas of social and economic life of member states. All statistical data come from 2010 and were taken from Internet database of Statistical Office of the European Union, EUROSTAT [10].

Table 1 shows a collection of 17 potential variables that describe the level of living of population that were divided into 8 groups. In order to obtain clarity of presented data, particular variables were given the X_{ij}, symbol, in which:

i – is the number of group in which the variable is located (i=1...8) and j- the number of variable in a particular group (j=1,2,3). Additionally, the collection of adopted diagnostic variables was divided into two subsets: stimulants (S) and de-stimulants (D).

Table 1. **Diagnostic variables describing the level of living of populations in European Union member states***

Symbol of variable	Group name	Variable name	Mean	Coefficient of variability in %
X_{11}	1. Labour market	Unemployment rate reported in % (D)	10.10	43
X_{12}		Number of unemployed people registered per 1000 people (D)	48.60	44
X_{13}		Employment rate in % (S)	68.48	8
X_{21}	2. Health protection	Life expectancy (in years) (S)	78.24	4
X_{22}		Infant mortality rate per 1000 live births (D)	4.20	43
X_{31}	3. Population incomes and poverty	Average monthly salary (Euro) (S)	1957.67	57
X_{32}		Rate of people at risk of poverty (D)	23.92	32
X_{41}	4. Housing conditions	Average number of rooms per 1 person (S)	1.53	26
X_{42}		House overcrowding rate in % (D)	21.84	85
X_{51}	5. Education	Rate of population at 30 to 34 years of age with university education (S)	34.57	29
X_{52}		Number of students per 1000 people (S)	42.44	25
X_{61}	6. Transport	Number of cars in use per 1000 people (S)	458.63	24
X_{62}		Number of passengers transported by air per 1000 people (S)	2537.01	79
X_{71}	7. Public safety	Road accident fatalities per 1000 people (D)	1277.48	113
X_{72}		Number of crimes reported by the police per 1000 people (D)	49.5	62
X_{81}	8. Natural environment	Gas pollution emission in t/km2 (D)	13370.3	116
X_{82}		Waste produced per year in t/km2 (D)	867.53	124

**Source*: own case study on the basis of Eurostat database.

Finally, on the basis of substantive and formal criteria, the following variables were considered in the study: X_{11}, X_{22}, X_{41}, X_{51}, X_{52}, X_{61}, X_{62}, X_{71}, X_{82}. An attempt was made to select the variables that would represent various areas of the level of living i.e. that would be representatives of particular groups of variables. Due to high values of correlation coefficient none of variables from the third group was qualified to final set of explanatory variables: Population income and poverty.

On the grounds of calculated descriptive characteristics of diagnostic variables (tab. 1) we can observe that there is significant spatial differentiation with respect to analysed features that in the further part will be the foundation for construction of synthetic measure.

Among all European Union member states the highest registered unemployment rate (X_{11}) was reported in Spain (21 %). Equally high level of the rate characterised Lithuania and Estonia. The lowest level of unemployment characterised Austria (4.4 %); Holland and Luxembourg reported similar results. The range of variability of this characteristic was in the studied year 15.7 %.

The states that reached the values above the EU mean, which was 10.1 %, were mostly the countries of the "new" Union. Bulgaria, Latvia, Slovakia and Hungary are for example among them. Also several countries of the "old" European Union were characterised by the level of unemployment that was higher than Union mean. They were Greece, Spain, Ireland and Portugal. Mostly, the countries of the former UE-15, including Belgium, Denmark, Holland and Luxembourg can pride themselves on unemployment rate below the mean value. However, also among the countries that joined the Union in 2004, the values below 10.1 % were reported. This was observed in Cyprus, Czech Republic, Slovenia and Romania, among others.

Infant mortality rate (X_{22}) is a measure that provides information about the level of social and economic development of the state and about the quality of mother and child health care. In social sciences, it is treated as a general measure of civilizational development. It results from the analysis of data that the highest value of infant mortality rate per 1000 live births was reported in the countries that are in the European Union for the shortest period of time, i.e. in Romania and Bulgaria (9.8 and 9.4 respectively). These are the results that are significantly higher than European Union mean. The lowest coefficient of infant mortality rate was reported in Finland (2.3). A similar level of this rate was also observed in Czech Republic, Portugal, Slovenia and Sweden. The difference between the maximum and the minimum value of the variable is 7.5 per mill.

The mean value of infant mortality coefficient for the whole Union was 4.2 per mill. The values above the mean were reported in nine countries, while eight of them are the countries that joined the Union in 2004. Apart from Bulgaria and Romania, they are Latvia, Malta and Slovakia. Beside Great Britain, each of the countries of the "old" Union was characterised by the rate below the Union mean. In Poland in 2010, 5 deaths at birth were reported per 1000 live births and it is the result that is worse than Union mean by 0.8 per mill.

The average number of rooms per 1 person (X_{41}) in the whole Community was 1.53. Only the states of the "old" Union were characterised by the values above the Union mean. The highest value of the rate was reported in Belgium and Ireland (2.1) and also in Holland and Malta (2.0), whereas the lowest rate was reported in Romania (0.9). The values in Latvia, Poland and in Hungary were on a similarly low level, where 1 room fell for 1 person.

The highest rate of population at the age from 30 to 34 years of age with university education (X_{51}) was reported in Ireland (almost 50 % in this age group). Among all the countries, Romania compared the least favourably, with the population rate that was slightly over 18 %. The results above the mean value for the EU-27, which is 34.57 %, were reported mostly in the countries of the "old" EU, in Belgium, Finland and in Sweden, among others. Majority of new Union member states had, in turn, the result below the mean. Here we can mention countries such as Czech Republic, Malta or Slovakia. Poland, as one of few states of the "new" Union can pride itself on the rate value that was higher than Union mean. In 2010, over 35 % of Polish people at the age between 30 to 34 years of age had university education. During the period of joining the Union structures by Poland, this rate was at the level of only 14.4 %.

With respect to the number of university students per 1000 people (X_{52}) Poland was located among the states with the highest value of this rate. In 2010 there were 56.3 people studying at university per 1000 people which located this country on the 4th position among all Union states. Majority of European Union states are placed close to the mean that was slightly over 42 people. In 12 countries, the results slightly over the mean value were reported, and among them as many as seven were the countries of the "new" Union, including Lithuania, Estonia, Romania and Slovenia. In the group of countries of the "old" Union, Finland and Greece proved to be the best, where the number of people studying for BA or MA degree or at uniform Master's studies (dependently on the educational system of the state) per 1000 people was higher than 56.

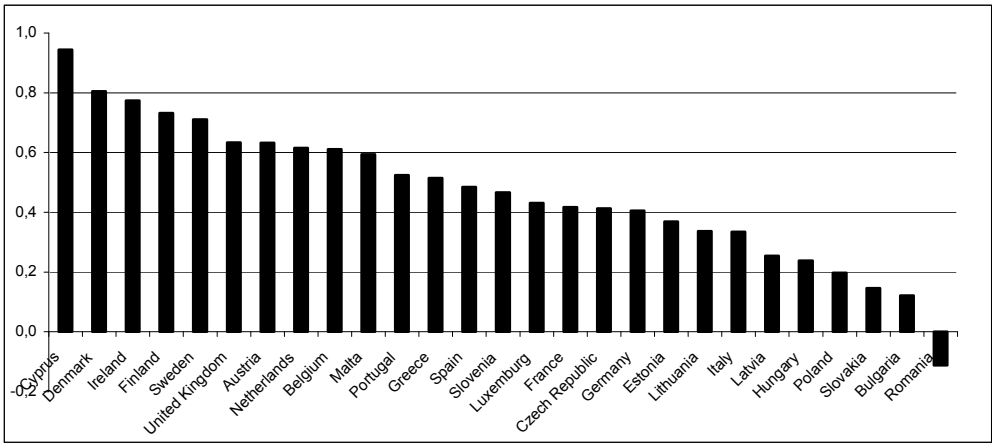
The mean number of passenger cars in use per 1000 people (X_{61}) in the whole Union was 459. In majority of countries the results close to Union mean were reported. Only in six of the countries the value of this rate was slightly lower than the mean for the union and except for Greece, they were the countries of the former eastern bloc, including Latvia, Slovakia and Hungary among others. It ought to be reported that in Romania the analysed variable X_{61} assumed the value that was three times lower than the respective rate for Luxembourg (Romania – 201; Luxembourg – 660).

The number of passengers transported by air per 1000 people (X_{62}) is the next variable that shows significant differentiation. There are two countries that are remarkably distinguished against the others. They are Cyprus and Malta. The value of the rate for these two countries was respectively 8481 and 7948 people. These are the values that significantly exceed the Union mean that is 2537 people. The results above the average can also be observed in 10 states of the "old" Union. They are Denmark, Spain and Ireland. On the other hand, the lowest values were reported in Slovakia (347) and also in Romania, Poland, Lithuania, Bulgaria, Slovenia and in Hungary. For these countries, the number of passengers was not higher than 1000 people, which proves that air transport is poorly developed there.

X_{71} variable that defines the number of road accident fatalities per 1000 people is the representative of group 8 – public safety. In Poland in 2010, 4572 road accident fatalities were reported and it was the worst result in the European Union. For the last eight years, the situation has improved, because as it results from EUROSTAT data, in 2002, the value of the rate was 5827, which means that it was over 1200 more fatalities than in 2010. Apart from Poland the highest values of this rate (almost four times higher than the Union mean) were reported in France, Germany and in Italy. On the other hand, in countries like

Malta, Luxembourg, Cyprus and Estonia, the number of fatalities was not higher than 100 per 1000 people.

In the next step of the analysis, the variables were brought to uniformity – all were transformed into stimulants through application of differential transformation method. Next, normalisation of features was performed, and thus all variables were standardised for the purpose of deprivation of variable name and standardisation of the order of their magnitude. Having the standardised values of variables, Hellwig's synthetic measure of development was calculated (fig. 1). The smaller the difference between the values of measure from one, the more a particular object (the country) is developed with respect to the level of multi-quality phenomenon, and so the closer it is to the model object.



Graph 1. Arrangement of EU-27 states according to Hellwig's taxonomic development measure in 2010*

* *Source:* own case study.

Cyprus proved to be the country of the highest value of Hellwig's development measure, where the level of living of the population showed the lowest deviation from development model. High locations in the ranking were also occupied by Denmark, Ireland, Finland and Sweden. Romania was located at the end of the list with the lowest values of the measure.

Distribution of the values of Hellwig measure is characterised by very small left-sided asymmetry which proves that in the studied period the values of s_i measure that were higher than the mean were predominant (i.e. prevailing number of countries was characterised by the level of living that is higher than the mean).

While applying fundamental descriptive characteristics of synthetic measure, which is an arithmetic mean ($\bar{s} = 0,4666$) and standard deviation (S(s)=0,2333), classification of countries was performed and they were divided into four typology groups that reflected the level of living of the population in the light of adopted feature:

Class I – of the highest level of living of the population, includes: Cyprus, Denmark, Ireland, Finland, and Sweden.

Class II – the class of moderate level of living of population includes eight states: Great Britain, Austria, Holland, Belgium, Malta, Portugal, Greece and Spain.

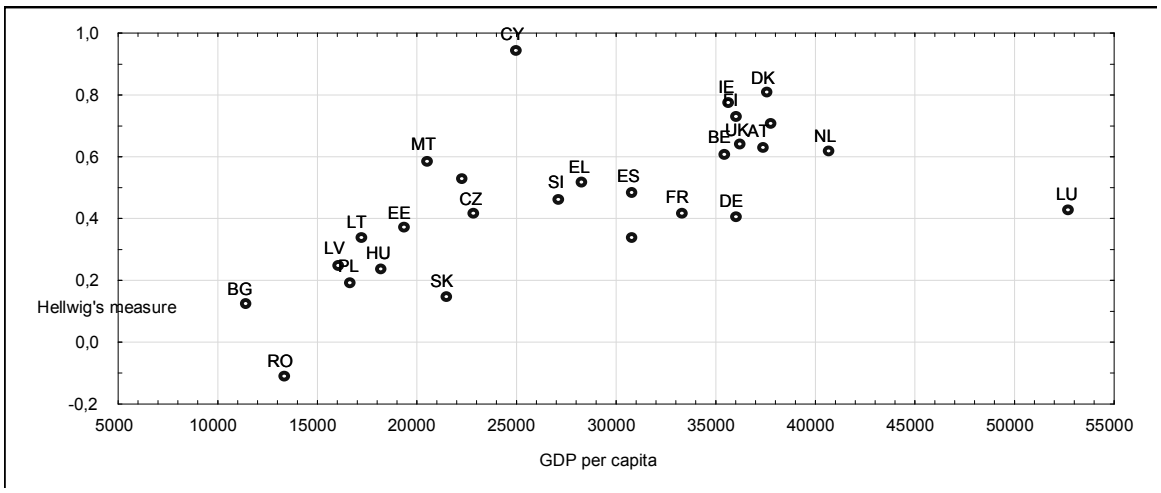
Class III – includes as many as ten countries of low level of analysed phenomenon. Four of them are the countries of "old" Union (France, Germany, Italy, Luxembourg) and the next six are "new" EU member states that joined the Community in 2004 (Slovenia, Lithuania, Latvia, Hungary, Estonia, Czech Republic).

The last class IV with the lowest level of living of population includes the countries of the former Eastern bloc: Poland, Slovakia, Bulgaria and Romania. The latter two countries joined the Community in 2007.

It is generally known that condition of the state economy is an important determinant of the level of living of the population. In comparative studies GDP per capita is the rate that is most frequently applied for the assessment of the level of economic development. The level of development of economies of particular Community countries (when considering GDP per capita as the basis) is clearly differentiated. This differentiation concerns both the relationships between the countries of the "old Union" (EU-15) and the new member states. This differentiation itself is nothing surprising; however its scale is important. It ought to be mentioned that in the whole Europe, as much as 88 % of GDP is created by economies that belong to EU while the area of the Community is inhabited by 67 % of the continent population [8. p. 166]. Diversity of the states with respect to GDP per capita calculated according to the purchasing-power parity (in international dollars) in 2010 shows that in 13 of them, GDP rate was lower than the mean level for the whole Union that amounted to around $ 31496 per 1 inhabitant.

New Union member states are significantly different from this mean and the largest distance can be reported for: Romania (of 55 %), Bulgaria (of 56 %) or Hungary (of 68 %). If we consider other European countries, this stratification of GDP per capita would be even larger. For example in Ukraine, GDP per one inhabitant is 4.5 times smaller than Union mean and almost 13 times smaller than in Luxembourg. In Turkey, Macedonia or Montenegro the analysed rate was in 2010 from 2 to 2.8 times lower than the mean for the Community. The Union mean was definitely influenced by accession of new members to EU which aggravated inequalities and sharpened the problems associated with coherence in European Union.

As the research shows, there exists a clear relationship between the level of economic development of the country and the level of living of its inhabitants. Fig. 2 shows relationship between the value of synthetic measure of the level of living and GDP per capita according to the purchasing-power parity (in $).



Graph. 2. The value of Hellwig's synthetic development measure in relation to GDP per capita (according to the purchasing-power parity in $) in 2010*

**Source:* own case study.

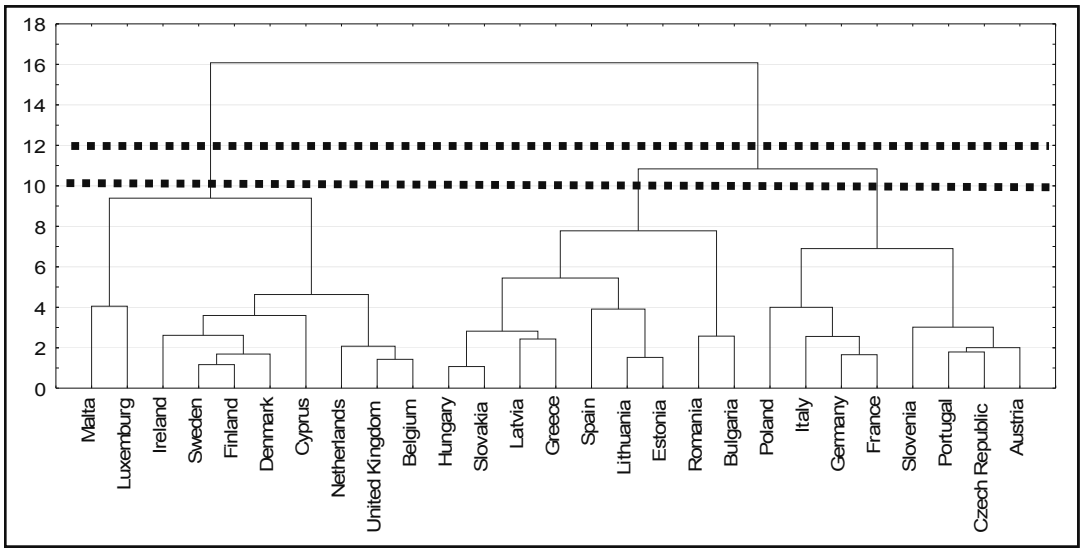
Analysing the aforementioned dispersion graph, we can state that there is a clear positive relationship between these values. The countries that were distinguished by high value of Hellwig's measure, including Denmark, Sweden, Ireland, Finland or Belgium and Holland (group I and II), are also characterised by high level of GDP per capita. On the other hand, low value of GDP per one inhabitant, in countries such as: Romania, Bulgaria is reflected in low value of synthetic measure that defines the level of living of inhabitants of the countries in this group (group IV). The occurrence of a clear relationship between analysed values is confirmed by calculated value of Pearson's linear correlation coefficient that is 0.7106. What is more, this coefficient proved to be statistically important, with the level of significance 0.05.

In the final stage of the analysis a classification of countries into homogenous groups was performed with the use of Ward's method of agglomeration. Euclidean distance was adopted as the measure of distance. As a result of hierarchical grouping a dendrogram was obtained. It is shown in Graph. 3. Division into two agglomerations is clearly outlined. However, it seems reasonable to also divide the right agglomeration into two smaller sub-groups which thus would give three agglomerations. Suggested divisions are marked in graph 3 with dotted lines.

The first agglomeration that is most numerous includes mostly the countries of former EU-15, that is Luxembourg, Ireland, Sweden, Finland, Denmark, Holland, Great Britain and Belgium, and among the group of new Union member states, it includes Cyprus and Malta. Variables that represent four groups of features, that are housing conditions – X_{41}, education- $X_{51,}$ transport -X_{62} and natural environment – $X_{82.}$ are predominant in this group.

The second agglomeration includes mostly the countries of the former Eastern bloc (Hungary, Slovakia, Latvia, Estonia, Romania, Bulgaria), but also Greece and Spain, the countries that recently have been struggling with economic crisis. High unemployment rate (X_{11}) and high level of infant mortality (X_{22}) are features that are characteristic of this group of states.

Poland and Czech Republic were found in the third agglomeration together with such states as: Italy, Germany, France, Slovenia, Portugal and Austria. X_{71} variable – the number of road accident fatalities per 1000 people, with relatively high values, proved to be the most important feature in this group.



Graph 3. Dendrogram of classification of EU member states with the use of Ward's method*

**Source:* own case study.

For the purpose of comparison, classification of EU-27 states within 3 groups was also performed with the method of k-means. Obtained composition of groups of states that occurred, was almost identical with results of classification with Ward's method. Hungary and Italy were the only exceptions here as they changed their positions. What is more, the variance analysis conducted during classification showed that all considered variables discriminate concentrations, because for each of the variables, F statistics was significant on the level of relevance of 0.05.

Conclusions. On the grounds of performed analyses we can make some fundamental observations:

- analysing the results of performed linear arrangement, we ought to remember that they are based on nine selected variables. And they, in turn, are resultants of somehow subjective choice of the author (starting with the choice of the type of measure, its model, through selection of diagnostic variables, their standardisation) and the access to data. Supposedly, while adding or removing some variable, we might obtain slightly different results. However, it certainly does not diminish the value of this study as the assessment of the level of living of populations in European Union member states;
- the leading group of countries that are the closest to development model and thus the countries that are characterised by the highest level of living of population in the light of adopted qualities include: Cyprus, Denmark, Ireland,Finland and Sweden;
- on the opposite side, we can find the countries of the former Eastern bloc, which are characterised by the lowest level of living of their populations and at the same time, they are distinguished by a low rate of GDP per capita. They include Hungary, Poland, Slovakia, Bulgaria and Romania.
- despite the fact that Poland has been the EU member state since 2004, the level of living of its inhabitants is still significantly different from the level of living of the populations of the so-called "old" Community member states.
- there occurs a clear, positive relationship between the level of economic development of the state (measured in GDP per capita) and the level of living of its inhabitants. The countries that were distinguished by high value of Hellwig's measure, including Denmark, Sweden, Ireland, Finland or Belgium and Holland are also characterised by high level of GDP per capita. On the other hand, low value of GDP per one inhabitant in countries including: Romania, Bulgaria is reflected in low value of synthetic value that describes the level of living of inhabitants of these states.

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БАГАТОВИМІРНИЙ ПОРІВНЯЛЬНИЙ АНАЛІЗ РІВНІВ ЖИТТЯ НАСЕЛЕННЯ В КРАЇНАХ-ЧЛЕНАХ ЄС

В статті проведено порівняльний аналіз рівнів життя населення країн-членів ЄС, визначено їх відмінності та виявлено групи країн зі схожими характеристиками умовжиття населення.

Ключові слова: Європейській Союз; таксономії; синтетична змінна.

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МНОГОМЕРНЫЙ СРАВНИТЕЛЬНЫЙ АНАЛИЗ УРОВНЕЙ ЖИЗНИ НАСЕЛЕНИЯ СТРАН-ЧЛЕНОВ ЕС

В статье осуществлен сравнительный анализ уровней жизни населения стран-членов ЕС, определены их отличительные черты и выявлены группы стран с похожими характеристиками условий жизни населения

Ключевые слова: Европейский Союз; таксономия; синтетическая переменная.

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STATE INCENTIVE OF COMMERCIALIZATION OF INTELLECTUAL PROPERTY

The article shows understanding of the essence of commercialization process and finds its characteristic features. It also defines the main directions of the state stimulation of commercialization of intellectual property. The mechanisms of the state regulation which can be expediently applied in the Ukrainian practice are presented in this article.

Keywords: commercialization, innovative activity, intellectual property, scientific and technical developments.

Problem statement. In a modern world innovative development of economy as the main macroeconomic task is possible only under the condition of successful realization of a huge number of specific innovative projects. Scientific and technical activity has become a day-to-day activity for millions of experts involved in it; its results versatility influences the activity of billions of people on the planet, the processes of its development are the subject to the state regulation in the developed countries and those countries which try to intensify their social and economic develop-