Prokopovych S.
Ph.D, Associate Professor
Simon Kuznets Kharkiv National University of Economics, Kharkiv
Chernova N.
Ph.D, Associate Professor
Simon Kuznets Kharkiv National University of Economics, Kharkiv

APPLIED ASRECTS OF REGIONAL UNEVENNESS ANALYSIS

Many countries are faced with the problem of a significant differentiation of development levels of individual regions and territories, which is one of the main causes of acute social tension, falling social security [1].

The aim of the research is to study some aspects of regional unevenness evaluation and analysis in the European Union. The obtained results can be used when determining the centres of economic growth, problem areas, caring out a comparative analysis of the unevenness structure.

The objects of study are 31 European Union countries. The research period is limited to the years from 2000 to 2013. Thus, the study period does not only include the years of relative economic stability but the financial crisis of 2007 − 2008and the years of overcoming its consequences. This allows to explore the phenomenon of uneven economic development over a long period and under different conditions.

The following objectives were set in accordance with the goal of the study: 1) to identify the key indicators that will help assess the level of economic development of the territories; 2) to build assessment and analysis models of the regional unevenness level; 3) to select the centres of economic growth, the problem regions, and groups of regions with homogeneous nature of changes in economic development; 4) to make a comparative analysis of the unevenness structure.

Within this paper the authors suggest to use the main economic indicator GDP per capita for EU countries.

The assessment model of regional unevenness is proposed to be build according to the algorithm shown below.

1. Formation the initial data matrix $Y = (y_{tj})$, where y_{tj} is the value of GDP per capita (EUR) in the year t, $(t = \overline{1,T})$ in the region j, $(j = \overline{1,n})$.

2. Calculation the average level for each year, $\bar{y}_t, t = \overline{1,T}$

3. Calculation deviations from the averagelevel, $\Delta y_{tj} = y_{tj} - \bar{y}_t, j = \overline{1,n}$

4. Calculation the deviation average values for each region, $\overline{\Delta y_j}$:

$$\overline{\Delta y_j} = \frac{\sum_{t=1}^{T} \Delta y_{tj}}{T}, \qquad j = \overline{1,n}.$$

5. Calculation standard deviation, σ_j:

$$\sigma_j = \sqrt{\frac{\sum_{t=1}^{T}\left(\Delta y_{tj} - \overline{\Delta y_j}\right)^2}{T - 1}}, \qquad j = \overline{1,n}.$$

The initial data sets were formed according to the open excess information of the European Statistical Committee [2].

Let's consider the results. A model of the regional unevenness analysis has been built on the basis of the graphical method. The average deviation of GDP per capita of the average level $(\overline{\Delta y_j}, j = \overline{1,n})$ and standard deviation $(\sigma_j, j = \overline{1,n})$ have been used as initial indicators. The initial set of indicators was formed according to the following assumptions. If the average values of the deviations are positive, then the level of development can be considered high (or at least above average). Negative values indicate that the level of development is below average.

The standard deviation may be interpreted as a measure of balance, a measure of evenness of development. High values (above a certain threshold) indicate the presence of imbalance of the territory development. Low values demonstrate a balanced, steady development.

When calculations of $\overline{\Delta y_j}$ and σ_j are made, each region (or country) may be presented as a point in two-dimensional space. The obtained set of points should be divided on four relatively homogenous groups (quadrants) with the following characteristics: Quadrant I – a positive average value and a high standard deviation. Quadrant II – a positive average value and a low average deviation. Quadrant III – a negative average and a low average deviation. Quadrant IV – a negative average and a high average deviation. The application of the proposed model to the EU is presented below (Fig. 1).
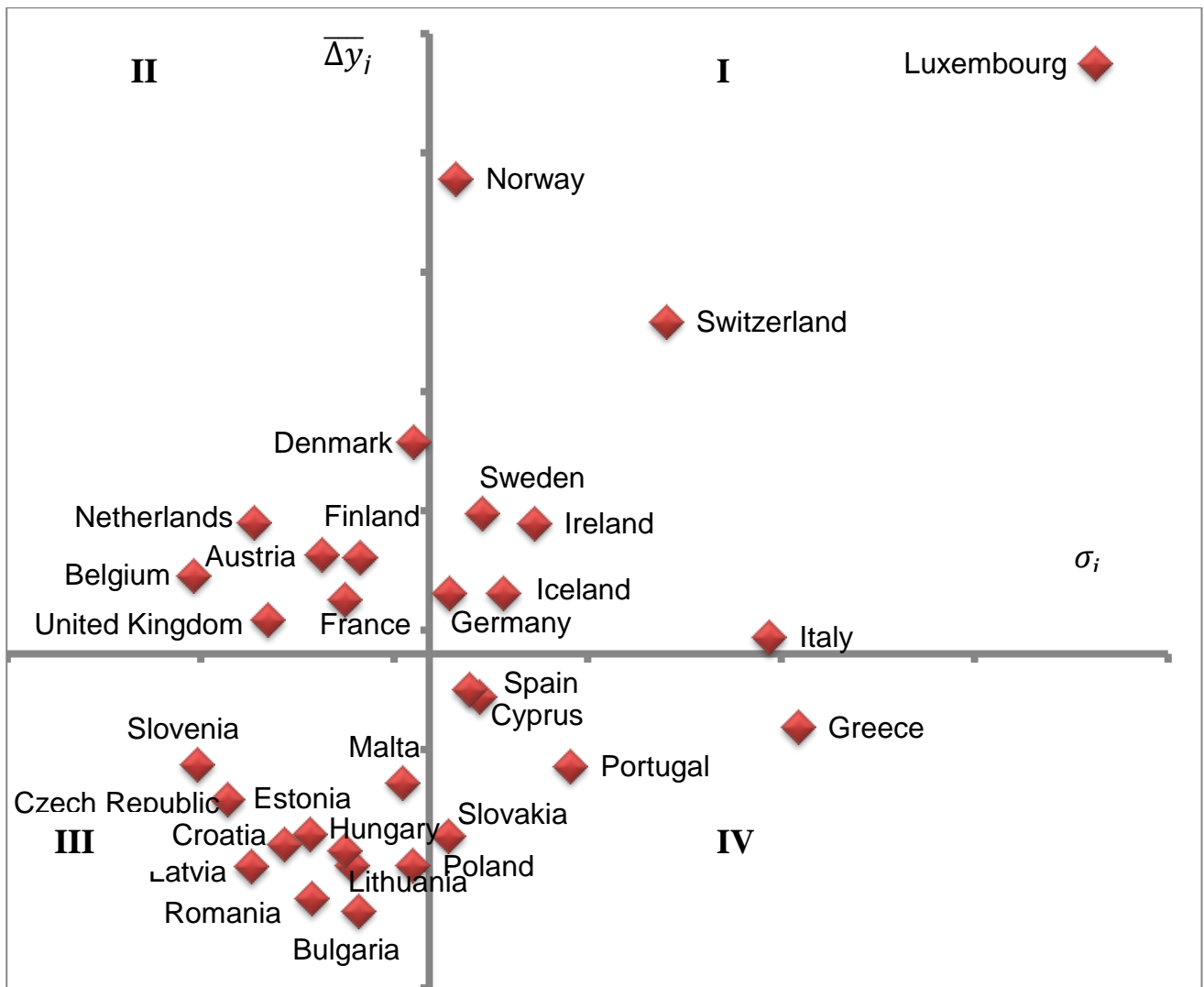
Fig.1.Implementation of Unevenness Model of Analysis

The absence of intersections on the graphs of Δy_{tj} shows a relative stability of the composition of the quadrants over time for the EU.

The model suggested by authors allows carry out analysis of quadrants structure in dynamics. It also makes it possible to determine those regions which are situated near axes and may migrate from the present quadrant. Those regions do not demonstrate a stable position. Thus it is crucial to investigate the opportunity of changing their membership and select the factors that may support such changes.

References.

1. Klebanova T. S. Model basis of early warning and localization of crises in economic systems of territories / T. S. Klebanova, L. S. Guryanova, I. K. Shevchenko // Aktualni problemy ekonomìky. – 2014. – No 3. – P. 269-278.

2. Eurostat [Electronic resource]. – Access mode: http://ec.europa.eu/eurostat