Inzinerine Ekonomika-Engineering Economics, 2014, 25(5), 504–512

Socio-Economic Development in the EU Member States – Concept and Classification

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crossref http://dx.doi.org/10.5755/j01.ee.25.5.6413

The analysis and evaluation of levels of socio-economic development in various countries has become of greater scientific and practical significance in recent years. This makes it possible to locate the position of a given country in a specific group, evaluate change dynamics or the impact of various determinants on the diversity of development. A country's economic development can be defined as the continuity of change in its socio-economic life that results in improved living standards of its citizens as well as on the organization of structures and on-going processes in the country.
The authors have attempted to highlight the level of socio-economic development in the EU between 2005 and 2010. The basis of the evaluation was the construction, from a dynamic perspective, of a general synthetic measure of socio-economic development that takes account of different aspects of a country's socio-economic development, namely, demographic and labour market potentials, economic as well as social and technical potentials. The various aspects of development were based on 27 diagnostic features chosen on the basis of merit and statistical formality. Particular attention was given to countries that gained the EU membership after 2004.

Keywords*: Socio-Economic Development, Level of Development, Diversity of Development, Classification of Countries' Level of Socio-Economic Development, Dynamics of Change, the European Union.*

Introduction

The European Union consists of member states at various levels of socio-economic development. The objective of the EU's cohesion policy is the desire to align development disparities existing between the member states. International comparisons of levels of socio-economic development are becoming of interest to various stakeholders, who could be politicians, economists or investors. Monitoring of the changing levels of development in various countries is gaining significance. The multivariate methods of comparative analysis that allow for more objective research and inference, seem particularly appropriate in the assessment of the levels of socio-economic development of the EU member states.

The article is an attempt to compare levels of socio-economic developments of the various EU member states from 2005 to 2010. The *basis of the assessment* is a synthetic measure in dynamic terms, taking into consideration various aspects of socio-economic development of these countries, namely demographic potentials and labour market, economic potential as well as social and technical (including infrastructures) potential.

The aim of the study is to assess the diversity of the EU member states in terms of their levels of socio-economic development during the period studied, assess changes in the development as well as group countries of similar levels of socio-economic development. It seems important to determine the ranked position of the various EU countries, especially of those that recently gained membership. Full members of the European Union, effective 1 May 2004, are Cyprus, Estonia, Lithuania, Latvia, Malta, Poland, Czech Republic, Slovakia, Slovenia and Hungary. Both Romania and Bulgaria joined in 2007. Most of the countries mentioned, except for Cyprus, Malta and Slovenia are post-communist economies, which transitioned to free market economy at the end of the 20-th century. The countries share a similar history of socio-political oppression, similar types of socio-economic institutions, and the absence of private enterprises for at least two generations (Overbaugh, 2013).

The collapse of the Soviet Union paved the way for development opportunities for the newly emerged countries. However, carrying the burden of the aftermath of the economic crisis resulting from the planned economy, they had to undertake the difficult process of transformation (Pukala, 2011). Modern economic theories rest on the assumption that the starting level of economic development and the degree of economic freedom determine the pace of a country's growth (Barro & Sala-i-Martin, 1992; Johnson & Lenartowicz, 1998; Romer, 1994). If this was true, then countries with similar starting levels of economic development would exhibit the same rate of economic growth. Responses to the following questions are crucial. Were any changes observed in the levels of socio-economic development of the EU countries during 2005–2010? How has the position of each country changed in the ranking? Has accession to the European Union accelerated the socio-economic development of a given country?

The *objectives* of the article are as follows:

- to explain concepts of socio-economic growth and development based on existing scientific literature;
- to present indicators of socio-economic development;
- to determine the starting (potential) set of descriptive variables of socio-economic development of countries covered by the study;
- to choose diagnostics variables for the socio-economic development of countries, with consideration for statistical formality and substantive criteria;

- to design a synthetic measure of socio-economic development of member states of the EU;
- to analyze changes in the levels of socio-economic development of the various member states during 2005–2010.

The study applied such *methods of research* as analysis of scientific literature, and statistical measurements that include coefficient of variation, method of reverse correlation matrix, arithmetic mean of the normalized values of variable features, standard deviation, coefficient of asymmetry, as well as the synthetic measure of overall level of socio-economic development of the EU country, that had been designed by the authors. The study also made use of data from Eurostat, namely Europe in Figures – Eurostat yearbook, Key figures on Europe, Statistical Yearbooks of the Central Office of Statistics in Warsaw.

The Essence and Indicators of Socio-Economic Development - Scientific Problem

Development, as a concept, is ambiguous and is used in variety of contexts. It is, first and foremost, understood as a chain of on-going targeted and irreversible changes in the structures of complex bodies, i.e., systems (Chojnicki, 1989; Grzebyk & Stec, 2014). These changes, in the opinion of authors dealing with this issue, are both qualitative and quantitative in nature (as it involves increasing and improving existing phenomena as well as creating and developing new ones in systems) namely, economic, social and ecological. Hence the attributes of thus defined changes are (Malik, 2007; Kupiec, 1993), irreversibility and the positive assessment of on-going changes from the perspective of a given value system or principles recognized by interest groups in a regional or local perspective. Processes of change in a socio-economic system, on the other hand, are dictated by human activity and behavior (controlling and monitoring). They are focused on achieving distinguished states of final processes, that can serve as the realization of certain objectives of the activity (Chojnicki, 2008).

Development, from civilizational point of view, is a society's overall activity, consciously or subconsciously undertaken (genetic and cultural impacts) aimed at improving living standards and continued improvement of the human species. Development can thus, be seen as a transformative process that leads to forms, which in some respects are more perfect, complex and efficient. Development covers all, including individual, family, social, economic, natural, organizational and political aspects of life (Poskrobko, 2005).

Having analyzed the two approaches, the authors have proposed their own definition of socio-economic development as being a series of changes in a country's socio-economic life that leads to improvements in human life as well as a better organization of structures and processes taking place in a given country.

The key feature of development ought to be its lasting nature that takes into account aspects of social cohesion as well as environmental protection (Piasecki, 2003). Some authors draw special attention to the development of knowledge economy in the overall process of development (Krisciunas & Daugeliene, 2006).

Literature is abundant of the term "growth", besides the concept of development. Both concepts, economic growth and economic development, are often used interchangeably, although slight differences exist between them (Bartosiewicz, 2012; Grzybowski, 1993; Kamerschen *et al.*, 1991). Economic growth is expanding the capabilities of any country to produce goods and services desired by its people. Since productive capacities depend, first and foremost, on people and the quality of existing resources as well as on the level of technology, economic growth must thus, involve the extension and improvement of these same factors of production. Factors such as capital accumulation, improvements in human skills, and technological advancements are of key importance. E-services innovations and trust were also considered as some of the crucial factors of economic growth (Delina & Pridavok, 2013; Szabo *et al,* 2013, Szabo *et al.,* 2013a).

Economic growth means changes that involve growing the entire economy due to changes taking place in its composite elements. This means that economic growth can take place when, for example the scale of services provided increase, or there is a decline in agricultural and sometimes industrial production, but without changes in the volumes of other components of the economy. Economic growth is, therefore, a measure of short-term quantitative changes in the economy. Economic development, in addition to the quantitative economic changes, is expressed with the help of economic growth indicators that include qualitative changes in the country's socio-economic structures, as well (Wozniak, 2008; Nasilowski, 2005; Meredyk, 2007).

The authors, including others (Kamerschen *et al.*, 1991; Filip, 2009), are of the view point that development is a concept wider than growth as it covers qualitative elements and involves transformations in areas of economy, politics, culture, institutions, ecology, techniques and technology etc. Economic development also consists of other changes that often accompany economic growth. This includes, but not only, improving techniques and skills, which means going beyond factors that stimulate economic growth. An economy may show economic growth devoid of economic development, but not vice versa.

It is worthy of note also that all human activity is spacious in nature, including that of creating the phenomenon of socio-economic development, as it is always linked with a specific location. Similarly, the socio-economic development phenomenon does not occur uniformly, including geographical spheres, but rather its sources (pulses) do arise in a particular place and would then penetrate other areas. This process, however, does not take place uniformly in all directions. Faced on the one hand by varied kinds of barriers, and on the other by favourable conditions, the process becomes differentiated in the spatial dimension. The result is the even level of development of the various sectors (Korenik, 2003). This is ascribable to several specific features, both economic and non-economic, that are peculiar to countries of this region, including their relations with other countries and regions, common inter-regional political ties, especially the specificity of their historical and cultural development (Pukala, 2012).

Growth of the integral space in Europe is being influenced by a great number of diverse factors. Very

important among these factors seem to be those related to the expansion of the European Union as well as to the processes of transformation in Eastern and Central Europe. This means that the integration of Eastern and Central European countries into the European Union does not only point to the quantitative growth of the European Union (increase in the number of member states, the number of their population, overall territories and economic potential) but also to the qualitative transformation of the entire Europe (Melnikas, 2007). The development of the integral space in Europe, with the situation of the integration of Eastern and Central European countries to the European Union being taken into account, is a very complex and conflicting process. This process opens a number of new opportunities and perspectives for societal advancement all over Europe, including the countries of Eastern and Central Europe (Melnikas, 2002).

The European Union from its start, was not intended to be built with a single stroke, but by setting in motion a true solidarity among the countries through concrete actions to reduce asymmetries among the European Union's countries, including their constituent regions, in order to increase social and economic cohesion within its borders (Goncalves, 2011; Martin *et al.*, 2012).

„United in diversity", the official motto of the European Union (EU), which was adopted in May 2000, shows two of the EU's main characters: the desire for integration and diversity. The fact of European diversity is undeniably and inescapably clear as the EU is an economic and political union of 27 member States (Smith, 1998; Bucciarelli *et al.*, 2012), with 493 million people and a home market. It is evident, that there exist economic and social differences, in such a large territory, between the states and 268 regions, while the process of convergence is very slow and problematic (Kilijoniene *et al.*, 2010).

The EU arose from member States' desire to achieve complete integration. In fact, one of the basic principles of the European Governance is the commitment to promote integration by also making reference to the idea of conditionality (Smith, 1998; Bucciarelli *et al.*, 2012).

The authors have attempted to assess the position held by each country in terms of their levels of socio-economic development in the EU. It is known that disparities exist in the levels of development between countries, but the authors decided to examine if these disparities have diminished in countries that joined the EU after 2004 or if they have widened. United Europe will strive to achieve situations, where differences in levels of development will be minimized thus, resulting in improved living standards of its inhabitants.

The main reason why economists designed indicators of economic development is to enable the comparison of economic activities in various countries, regions, cities as well as that of the economic and political relations of countries like the European Union. The indicators also serve to collect data on the economic activities regarding these aspects and are indispensible in scientific researches. Indicators of economic development also enable the assessment of the level and quality of economic, social, ecological developments, and other policies undertaken by the government including other units of public authority (Fiedor & Kociszewski, 2010; Marciniak, 2007). As a result of the multidimensional nature of development, no such indicator, that would be free of drawbacks has been devised.

The level of development of each country in the world directly depends on the level of development of its manufacturing industry and its comparative contribution to the economy's structure. The bigger the role of the manufacturing industry and the more progressive its root structure, the higher the level of domestic product per capita (Kilijoniene *et al.*, 2010). Due to the complexity of the issue of socio-economic development, the authors have first made a selection of statistical indicators for defining socio-economic development, on the basis of which they designed a general synthetic measure to depict the level of development in the EU member states.

Methods Applied

The initial (potential) set of variables proposed for the assessment of the levels of socio-economic development is checked using the substantive and statistically-formal criteria. The substantive criteria ensure that variables representing all aspects of the object studied, at a given level of economic development, are selected. The statistically formal criteria concerns an appropriate level of variation of the indicators (the assumed coefficient of variation for a given feature ought to be higher than 0,10), and a low correlation between the features as well.

In order to assess the level of variation of selected features, the authors have applied the classical coefficient of variation as provided below:

$$v_j = \frac{s_j}{\bar{x}_j} \cdot 100 \quad (1)$$

where:

$\bar{x}_j$ – arithmetic mean for feature X_j,

s_j – standard deviation for feature X_j

To assess the correlated features, the inverse correlation matrix proposed by A. Malina and A. Zelias was applied (Malina, Zelias, 1997, p. 245–250). The procedure for eliminating variables in this method is as follows: in applying the matrix of correlation coefficients (R), the inverse matrix is demarcated as:

$$R^{-1} = \left[r^{(ij)} \right] \quad (2)$$

where:

$r^{(ij)}$ $(i, j = 1, 2, ..., m)$ — components of the inverse matrix R^{-1}.

The diagonal components $r^{(jj)}$ of the matrix R^{-1} are equal to unity, if the variable X_j is diagonal in respect of other explanatory variables. Dependency exists in cases where the variables are non-diagonal $r^{(jj)} \in (1, +\infty)$. Whenever a variable becomes excessively correlated with other variables, the diagonal components of the inverse matrix R^{-1} become much higher than unity. This is a symptom of a wrong numerical conditioning of the matrix R. If for the reduction of excessively correlated features the method of inverse correlation matrix is applied, then the set of features most often eliminated are those for whose components the diagonal matrix R^{-1} exceeds the value of 10. The next stage of the study involved the authors

harmonizing the nature of diagnostic features as they consisted of both stimulants and anti-stimulants. Transforming anti-stimulants into stimulants can be achieved using the differentia formula (Panek, 2009, p. 360):

$$x'_{ij} = \max_i x_{ij} - x_{ij} \quad (3)$$

Next, the standardization of variables was performed using the following formulas (Strahl, 1978, p. 205–214):

For stimulants:

$$z_{ij} = \frac{x_{ij}}{\max_i \{x_{ij}\}} \quad (4)$$

This transformation preserves the diversified variance and proportion between the standardized and original values, which is a particularly valuable feature in economic research (Ostasiewicz, 1998, p. 119).

The synthetic measure was calculated as an arithmetic mean of the standardized value of variables:

$$MS_i = \frac{1}{m}\sum_{j=1}^{m} z_{ij} \quad (5)$$

where:

MS_i- synthetic measure of socio-economic development;

z_{ij}- standardized value of j-th features in i-th object.

A synthetic measure was thus, set for each statistical feature for the various aspects of socio-economic development (groups I-IV). While calculating the general synthetic measure, however, the so-called multi-criteria taxonomy was applied. It is used when testing phenomena with a broad cognitive range in which the totality is made up of situations prevailing in many distinct fields (Mlodak, 2006, p. 129).

The overall value of synthetic measure for the i-th EU country is thus, the arithmetic mean of measures from various groups:

$$MS_i^O = \frac{1}{4}(MS_i^L + MS_i^G + MS_i^{IS} + MS_i^{IT}) \ (i=1,2,...,n) \quad (6)$$

where:

MS_i^O - overall synthetic measure of socio-economic development;

MS_i^L - synthetic measure of demographic potential and labour market;

MS_i^G - synthetic measure of economic potential;

MS_i^{IS} - synthetic measure for development of social infrastructure;

MS_i^{IT} - synthetic measure for development of technical infrastructure.

The GDP per capita is the most widely applied indicator in evaluating socio-economic development in the EU countries. As an indicator, however, it does not take cognizance of all fields of development, especially aspects of social development. It can, thus, lead to erroneous conclusions. A method that takes from the so-called multidimensional comparative analysis was applied in the study. These methods make it possible to design synthetic (aggregate) measures of socio-economic development, having taken care of several statistical indicators that describe varied aspects of development, both economic and social. Consequently, the results thus obtained are more reliable and objective. The research was conducted dynamically by designing a synthetic measure for the „object-periods" i.e., the socio-economic development of the EU countries for the whole period spanning 2005–2010 was evaluated. The static approach, i.e., evaluating socio-economic development for one or several years, treating each as separate periods is often applied in comparative analyses. This approach considerably limits inference. The value of the resulting synthetic measure may serve as the basis for allocating objects (e.g. EU countries) into groups of similar levels of the complex phenomenon being studied. An allocation scheme based on the arithmetic mean and standard deviation of the synthetic measure is also applicable in such circumstances (Nowak, 1990):

group I: $MS_i^o \geq śrMS_i^o + S_{MS_i^o}$

high level

group II: $śrMS_i^o + S_{MS_i^o} > MS_i^o \geq śrMS_i^o$

medium-high level

group III: $śrMS_i^o > MS_i^o \geq śrMS_i^o - S_{MS_i^o}$

medium-low level

group IV: $MS_i^o < śrMS_i^o - S_{MS_i^o}$

low level

where:

$śrMS_i^o$ - mean value of overall synthetic measure

$S_{MS_i^o}$ - standard deviation of overall synthetic measure.

Empirical Results

Available literature on the subject does not provide specific guidelines on which features to take into account in the assessment of socio-economic development of the EU countries. (Ravallion, 2011, p. 2) is of the opinion that the researcher is unconstrained in the choice of techniques, research methods and indicators to apply in statistical analyses. The potential set of statistical indicators proposed by the authors to assess the level of socio-economic development in the EU member states consists of 28 features, divided into 4 groups that include: demographic potential and labour market (group I, Features X1-X6), economic potential (group II, Features X7-X15), level of development of social infrastructure (group III, Features X16-X22), level of development of technical infrastructure (group IV, Features X23-X28).

Stimulants and anti-stimulants[1] have been designated with S and D symbols, respectively.

[1] *Stimulants are features, whose high values are, from a given point of view, desirable phenomena (e.g. level of socio-*economic development), *while low values are undesirable. Anti-stimulants on the other hand, are features whose low values are, from a given perspective, desirable occurrences, while its high values are undesirable.*

Group I. Demographic potential and labour market

Symbol of feature	Name of feature	Stimulant (S) or Anti-stimulant (D)
X1	Population per 1 km^2	S
X2	Natural increase per 1000 population	S
X3	Employed persons per 1000 population	S
X4	Unemployed rate in %	D
X5	Long-term unemployed rate in %	D
X6	Unemployed persons by age 15–24 years in % of total (Based on LFS)	D

Group II. Economic potential

Symbol of feature	Name of feature	Stimulant (S) or Anti-stimulant (D)
X7	Gross Domestic Product at purchasing power parity per capita (current prices) in current international dollars	S
X8	Export per capita in 1000 USD	S
X9	Gross value added by kinds of activity-industry and construction in %	S
X10	Gross value added by kinds of activity-agriculture, forestry and fishing in %	S
X11	Share of compensation of employees in Gross Domestic Product in %	D
X12	Employment in research and development activity per 1000employed persons	S
X13	Gross domestic expenditure in research and development activity in % of GDP	S
X14	General government consolidated gross debt in % of GDP	D
X15	Annual average inflation rates in %	D

Group III. Level of development of social infrastructure

Symbol of feature	Name of feature	Stimulant (S) or Anti-stimulant (D)
X16	Tertiary educational of persons aged 30–34 in %	S
X17	Share of people at risk-of- poverty or social exclusion in %	D
X18	Passenger cars per 1000 population in units	S
X19	Doctors per 1000 population	S
X20	Hospital beds per 100 000 inhabitants	S
X21	Death due to cancer (standardised death rate) by 100000 inhabitants	D
X22	Infant deaths per 1000 live births	D

Group IV. Level of development of technical infrastructure

Symbol of feature	Name of feature	Stimulant (S) or Anti-stimulant (D)
X23	Total greenhouse gas emissions (1990=100)	D
X24	Share of renewable energy in gross final energy consumption in %	S
X25	Internet users per 1000 population	S
X26	Fixed line telephone subscribers per 1000 population	S
X27	Cellular telephone subscribers per 1000 population	S
X28	Municipal waste generated per capita in kg	D

A selection of diagnostic features was performed for the data from 2010. While assessing the diversity of various variables, it was observed that all the statistical indicators proposed for the analysis were suitably, and highly differentiated as the coefficients of variation were higher than 0,1.

Having applied the inverse correlation matrix methods, the potential set of descriptive features of socio-economic development of the EU countries, the feature that was excessively correlated, namely X13 – expenditures on R&D as % of GDP was eliminated. The ultimate set of diagnostic variables, the base for designing synthetic measures of socio-economic development of the EU countries now consisted of **27 statistical indicators.** The same set of diagnostic features were adopted for the period 2005–2009.

The calculated value of the overall synthetic measure of socio-economic development and the ranked position of each EU member country is presented in table 1.

Leaders in the EU, taking the top places in the EU country ranking in respect of socio-economic development during 2005–2010 turned out to be Luxemburg, Finland, and Sweden. The lowest positions in the ranking were taken by Romania, Bulgaria and Hungary.

In the assessment of socio-economic development of the EU member states, interesting conclusions are provided by the analysis of the descriptive parameters of the overall synthetic measures, which has been computed separately for each year based on the dynamic indicators of development (table 2).

Table 1

Value of overall synthetic measure of socio-economic development in EU countries (MS_i^O) in 2005–2010

S/no.	Country	2005		2006		2007		2008		2009		2010	
		measure	position	measure	position	measure	position	measure	position	measure	position	measure	position
1	Austria	0,522	6	0,535	6	0,547	5	0,555	4	0,558	4	0,565	4
2	Belgium	0,491	10	0,497	14	0,514	13	0,509	14	0,509	13	0,510	11
3	Bulgaria	0,406	25	0,422	25	0,439	24	0,456	24	0,481	17	0,464	21
4	Cyprus	0,31	22	0,448	22	0,438	25	0,450	25	0,469	23	0,454	23
20	Czech Republic	0,91	11	0,502	12	0,517	12	0,531	9	0,533	7	0,532	8
5	Denmark	0,535	4	0,536	5	0,535	7	0,542	6	0,532	9	0,538	7
6	Estonia	0,87	14	0,510	9	0,513	14	0,512	13	0,517	12	0,509	12
7	Finland	0,67	2	0,572	2	0,580	2	0,582	2	0,574	2	0,575	3
8	France	0,500	9	0,502	13	0,520	9	0,523	10	0,526	11	0,523	10
17	Germany	0,09	8	0,525	7	0,534	8	0,539	7	0,547	6	0,554	5
9	Greece	0,443	21	0,451	21	0,458	22	0,467	22	0,472	22	0,452	24
25	Hungary	0,25	23	0,435	23	0,433	26	0,444	26	0,439	27	0,438	27
11	Ireland	0,513	7	0,522	8	0,537	6	0,533	8	0,532	8	0,508	13
27	Italy	0,450	19	0,462	19	0,470	19	0,473	21	0,474	20	0,475	18
14	Latvia	0,448	20	0,461	20	0,474	18	0,475	20	0,451	25	0,442	26
12	Lithuania	0,88	12	0,504	10	0,519	10	0,517	12	0,507	14	0,495	15

S/no.	Country	2005		2006		2007		2008		2009		2010	
		measure	position	measure	position	measure	position	measure	position	measure	position	measure	position
13	Luxembourg	0,74	1	0,591	1	0,601	1	0,598	1	0,599	1	0,603	1
15	Malta	0,459	17	0,481	16	0,487	17	0,486	17	0,491	16	0,496	14
16	Netherlands	0,524	5	0,539	4	0,551	4	0,555	5	0,551	5	0,553	6
18	P o l a n d	0,380	27	0,421	26	0,450	23	0,467	23	0,469	24	0,481	17
19	Portugal	0,55	18	0,464	18	0,470	20	0,478	19	0,473	21	0,469	20
21	Romania	0,382	26	0,402	27	0,425	27	0,437	27	0,448	26	0,448	25
22	Slovakia	0,408	24	0,428	24	0,469	21	0,482	18	0,481	18	0,474	19
23	Slovenia	0,88	13	0,502	11	0,518	11	0,520	11	0,527	10	0,528	9
10	Spain	0,73	16	0,480	17	0,489	16	0,486	16	0,476	19	0,463	22
24	Sweden	0,561	3	0,568	3	0,575	3	0,576	3	0,574	3	0,580	2
26	United Kingdom	0,484	15	0,489	15	0,495	15	0,496	15	0,497	15	0,492	16

Table 2

Values of descriptive parameters for overall development measures for EU countries

Years	Arithmetic mean	Standard deviation	Variation coefficient	Coefficient of asymmetry
2005	0,478	0,53	0,110	-0,054
2006	0,491	0,049	0,100	0,138
2007	0,502	0,047	0,094	0,196
2008	0,507	0,044	0,086	0,330
2009	0,508	0,042	0,83	0,350
2010	0,504	0,046	0,092	0,430

Increases in „average" levels of development in the EU member countries were witnessed during 2005–2009. There is also on-going gradual similarity between the EU countries in terms of their levels of development, as can be noticed from the decreasing values of the coefficient of variation of the synthetic measure. The asymmetry of distribution of the indicators of development was right-handed for all the years, except for 2005, which means that majority of the EU countries achieved relatively low (below the average) indicators of development with only few attaining high levels of development. The year 2010 witnessed some adverse changes in the level of development in the EU countries, namely a slight decline in average values of overall measure of development, increased value of the coefficient of variation (increased differences, although not large, in development levels between the EU countries), as well as increasing coefficient of right-hand asymmetry, though still weak. It might not be, however, unconnected with the global economic crunch that has also affected EU countries.

In order to capture the changes in the levels of socio-economic development in the EU countries, extreme values of overall synthetic measure for 2 periods, namely 2010 and 2005 were compared. In calculating the differences between values of the synthetic measures for the periods compared in the EU countries, increases or decreases in development measures were noted. Figure 1 shows the ordered ranking of EU countries in terms of changes in the overall synthetic measure.

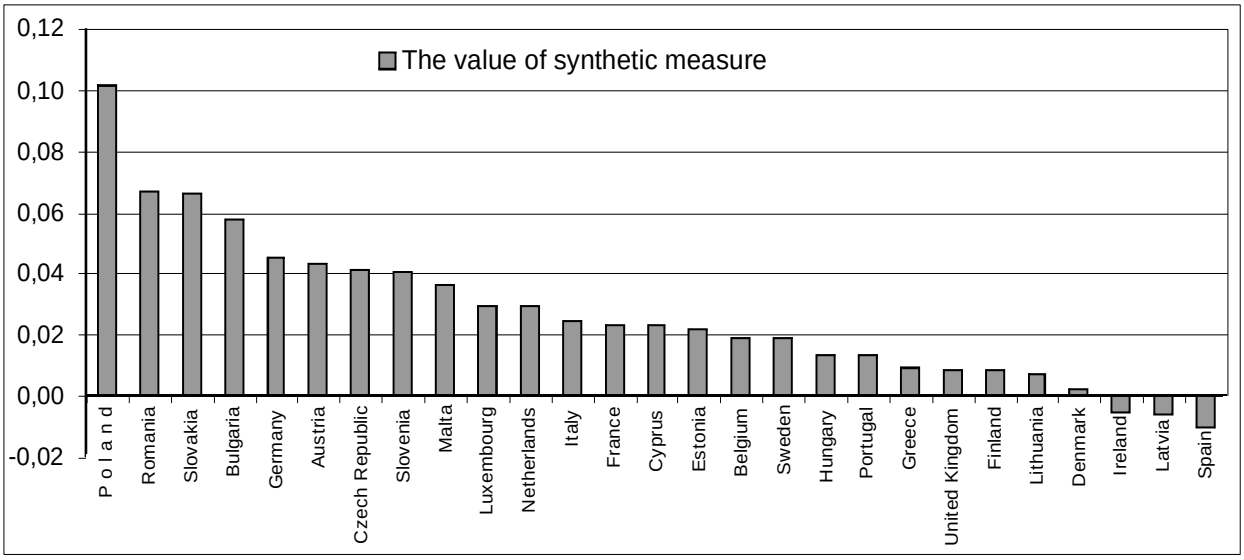

Figure 1. Increase or decrease in development measures in EU countries, comparing 2010 to 2005

24 of the 27 EU member states noted increases in the overall synthetic measure of socio-economic development in 2010 as against 2005. The highest positive changes in socio-economic development were obtained by Poland (increase of 0,101 in 2010 when compared to 2005), Romania (0,066), Slovakia (0,066), Bulgaria (0,058) and Germany (0,045). It should be noted, that some of these countries only became the EU members in 2004 and 2007.

Declining overall synthetic measure of socio-economic development in 2010 in relation to 2005 was observed in three EU countries, namely Spain, declining in 2010 by 0,010, Latvia (by 0,006) and Ireland (by 0,005).

Relying on the mean and standard deviation of the overall synthetic measure, the EU countries were classified into groups of different levels of socio-economic development in 2005 and 2010 (Table 3). The mean value measurement for the overall synthetic measure and standard deviation for 2005 amounted to 0,478 and 0,053 respectively, while for 2010 they were 0,504 and 0,046 respectively.

Table 3

Group of EU countries based on levels of socio-economic development in 2005 and 2010

Level of socio-economic development	Year	
	2005	2010
High	Luxembourg, Finland, Sweden, Denmark	Luxembourg, Sweden, Finland, Austria, Germany, Netherlands
Medium- high	Netherlands, Austria, Ireland, Germany, France, Belgium, Czech Republic, Lithuania, Slovenia, Estonia, United Kingdom	Denmark, Czech Republic, Slovenia, France, Belgium, Estonia, Ireland
Medium- low	Spain, Malta, Portugal, Italy, Latvia, Greece, Cyprus, Hungary	Malta, Lithuania, United Kingdom, Poland, Italy, Slovakia, Portugal, Bulgaria, Spain, Cyprus, Greece
Low	Slovakia, Bulgaria, Romania, Poland	Romania, Latvia, Hungary

Four EU countries, Luxembourg, Finland, Sweden and Denmark, attained a high level of socio-economic development in 2005. In 2010, however, only the first three retained their positions, but Denmark slipped slightly in its development, thus dropping to the medium high group. Three other countries, Austria, Germany and the Netherlands advanced to the elite group in 2010.

While 11 countries (4 of which gained access in 2004) were classified in the medium-high group II in 2005, only 7 (including 3, namely Czech Republic, Slovenia and Estonia that became members in 2004) maintained their classification in 2010.

The medium-low category consisted of 8 and 11 countries in 2005 and 2010 respectively. They are, in most cases, countries admitted to the EU in 2004 or the so-called EU-15 less developed countries.

The last group, with low level development in 2005, was made up of Slovakia, Bulgaria and Poland, but in 2010 only 3 countries, namely Romania, Latvia and Hungary remained in this group.

Conclusion

Socio-economic development, primarily associated with change, is a complex, difficult to measure concept. It is characterized by the following features (Gorzelak, 1989: (a)) a multi-dimensional category, (b) embodies a number of interdependent processes as well as social, economic, political, cultural, technical and psychological phenomena; (c) it is a category wider than growth as it embodies processes of structural change; (d) it is dynamic, meaning that mutual relationships of its individual components are not fixed and that development is spatially differentiated. While this, on the one hand, means that spatial organization of processes impacts on its pace and structure, relations between its component parts, on the other hand, differ in various spatial parts and that the dynamics of development of its component parts, including their interrelationships are also varied.

Socio-economic differentiation and developmental disproportions can form the premise for specialization and the pursuit of specific policies by governments of various countries.

For the needs of this article, 27 diagnostic features for describing various aspects of development were applied to assess the level of socio-economic development in the EU member states. A synthetic measure with a dynamic approach was also designed for each member country for the period 2005–2010.

It can be generally stated that:

1. The period 2005–2009 witnessed increases in average level of development in EU countries, and this was followed with declining disparities between the member states in terms of their levels of development.
2. Most EU countries have relatively low indicators of development. The impact of the global economic crisis was visible in 2010, when adverse changes in levels of development could be observed in EU countries.
3. The highest level of socio-economic development in the EU was achieved in Luxembourg, Finland, Sweden, Denmark as well Austria, Germany and the Netherlands.
4. A rather high level of development was also achieved in the Czech Republic, Slovenia and Estonia amongst the countries that joined the EU in 2004.
5. Low level socio-economic development was, however, observed in Romania, Bulgaria and Hungary.

When 2010 is compared to 2005, it is worthy of note also that increases in overall synthetic measure of socio-economic development were observed in 24 of the 27 EU member states, with the highest positive change in socio-economic development being noticed in Poland, Romania, Slovakia, Bulgaria and Germany. Four of them, which only joined the EU in 2004 and 2007 had already, within few years of their ascension, began to feel the impacts of the EU's coherency policy.

The isolation of groups of the EU countries with different levels of development could form the premise for the shift of subventions within the framework of the coherence policy being implemented by the European Union. Countries with low level economic development require more financial support. Such countries can also benefit from the experiences of countries with higher levels of development. It is worthy of mention, however, that socio-economic development is a complex process, with their impacts being observable only after a longer time perspective.

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The article has been reviewed.

Received in February, 2014; accepted in December, 2014.