Abstract

The article deals with the issue of comparing the approaches to the measurement of disparities in the European Union and in the Czech Republic. Some methods applied to determine the disparities are common both in the European Union and in the Czech Republic, where regional disparities are measured at the national level (Czech Statistical Office) and the regional level as well, whereas the results are mainly used by the regional management. At the level of municipalities no measurement of disparities could have been carried out so far. Within the scope of the research program of the Ministry for Regional Development of the Czech Republic, a new methodology for the identification of the dynamics of economic development of municipalities was developed. This methodology was certified under the registration number 03-ÚÚR-259-2011/01-WD-30-07-1 and it allows for the measurement of disparities even at the level of particular municipalities.

JEL classification: R11, R58

Introduction

The territory of particular European countries is divided into so called regions. Regions may be characterized as geographically bordered territories with certain typical signs and characteristics. Natural-geographic conditions of particular areas allow for various economic activities which are distributed across the regions unevenly. This leads to a considerable inequality in the economic, social and civilization development of particular regions. The sustainable development of each society requires that the already existing and emerging disparities do not exceed a certain limit acceptable for the relevant society.

Despite the fact that the European Union is one of the wealthiest regions of the world, there are quite significant differences amongst the particular member countries as well as among areas in the countries themselves. There are multiple reasons for these differences. They may include long-term disadvantages existing due to the geographical remoteness of the relevant region, because of recent social and economic changes or as a result of a combination of these factors. These disadvantages are often displayed as a social decline, schools of poor quality, higher unemployment rate and insufficient infrastructure. As for some EU member countries,
one of the reasons for the disparities amongst the regions is the legacy of the former system of centrally planned economy.

The aim of the EU regional policy is to modernize the stagnant regions in order to level them with the rest of the EU. By means of the regional policy the EU transfers financial means from rich regions to the poorer ones.

The twenty poorest regions of the European Union are situated in Bulgaria, Romania, Poland and Hungary. On the other hand the twenty richest regions are in Germany, Netherlands, Great Britain and Denmark. There are sixty-six EU regions that are below the level of 75% of the average GDP in the EU; from that fifteen are located in Poland, nine in Hungary, seven in Romania, seven in Greece, six in the Czech Republic and six in Bulgaria.

1 Regional setup and methodologies used for the determination of disparities in the European Union

In a long-term perspective the development of the European Union is determined by two fundamental goals - competitiveness and cohesion. The EU Cohesion Policy results from the existence of disparities amongst countries, regions and social groups, and its principal aim is to reduce the disparities. The disparities that reflect the level of cohesion are classified as economic, social and territorial.

1.1 EU regional setup

The territorial composition of the European Union is not only represented by individual EU member countries (currently 27) but regions as well. A region is defined as a territory with more or less strictly determined borders; it often serves as an administration unit of a lower rank than the country itself. Regions are determined on the basis of various criteria (e.g. economic, ecologic, ethnical and/or natural-geographical attributes). A specific criterion is the determination of the administrative-management regions for the purposes and for the needs of application of the European Union regional policy tools. In this case we mean the so called artificially created regions, as nomenclature territorial statistical units (NUTS) divided further into six NUTS levels. NUTS 0 represents the territory of the whole country. NUTS I to NUTS III levels represent the regional level, whereas NUTS IV and NUTS V represent the local level. In order to designate the regions at the levels NUTS I to NUTS III, uniform principles were adopted and they are equally applied in all the EU member countries. These principles consider the existing institutional borders, the current state of the territorial-administrative arrangement of the relevant area, and the population - minimum and maximum limits. At lower levels such as NUTS IV and NUTS V there may exist districts and municipalities that are referred to as the self-governing units (Local Administrative Units-LAU). [7]

NUTS classification is also used for the statistical monitoring and analyses of social and economic situation in particular regions as well as for the purposes of preparation, implementation and evaluation of a regional policy. Moreover, it is used for the tasks associated with the drawing of financial means from the EU structural funds.

According to the statistical data published by Eurostat, as of 1 January 2011, there were 97 NUTS I regions, 271 NUTS II regions and 1,303 NUTS III regions in the European Union.
1.2 Disparities and methodology applied in the European Union

One of the important documents, the regional policy of the European Union is based on, is the "European Regional/Spatial Planning Charter". This strategic document unified the classification and typology of regions for all the member states which adopted it. In the European Union regions are divided into rural, municipal, border, mountain and structurally weak ones. [10]

The European Commission makes use of another classification, recognizing six types of regions. This classification identifies the territories that seek for an urgent attention and financial support. These six types of regions cover the stagnant regions (typified by an insufficient infrastructure, poorly qualified labor force and the prevailing agricultural production), regions affected by industrial decline and recession (of specific branches), periphery regions (their weak aspect is their location at the borders of the country, geographical isolation and insufficient availability of access/exit routes), border regions (situated at the outer borders of the European Union), regions affected by urban issues (such as negative social impacts of large agglomerations, negative impacts on environment, transport problems, etc.), rural regions (focused on agricultural production determined by climatic conditions and the changes thereof). [10]

In the European Union, multiple methods exist for the evaluation of regional disparities. Among the most often used ones is the "Inter-regional Comparative Method". With this method, particular regions and processes within these regions are compared on the basis of the results of the analysis; this is done to find out similarities and differences in the development of the regions. Another method for the evaluation of disparities is the "Method Using the Geographical Information System" involving the use of computer systems oriented on the processing of geographical data. The resulting data are transferred and presented in the form of maps. Quite a favourite method for the evaluation of disparities is the "Cluster Analysis" representing a rather wide group of methods used for the sorting of a specific set of objects into few relatively homogenous families, which are usually identified as "clusters". The statistical method called "Factor Analysis" allows for the evaluation of disparities by means of the development of particular indicators designated for the determination of the regional disparities. [6]

In the European Union, where numerous other methods are used, the regional disparities are evaluated at the national level. The so called "structural indicators" are based on the three pillars of the Lisbon economic, social and environmental process. Currently there are 79 indicators divided into six basic areas (environment - 18 indicators, employment - 11 indicators, social cohesion - 10 indicators, general economic environment - 9 indicators, innovation and research - 16 indicators, economic reform - 15 indicators. To facilitate the evaluation of the regional disparities, the list of structural indicators has been reduced, being currently referred to as the short list. [8]

2 The Czech Republic regional setup

Historically the Czech Republic was divided into regions that corresponded to the current level NUTS III. Before joining the European Union, so called cohesion regions were established as basic statistical units of the regional policy; they were used for various calculations within the European Union. The territory of the Czech Republic is divided into NUTS I through NUTS V territorial units. NUTS I is a unit covering the whole Czech Republic. NUTS II is a lower rank unit corresponding to the middle level of the administration arrangement of the Czech Republic. The middle level is characterized by the so called cohesion regions. There are eight cohesion regions in total (North-West, North-East,
Central Bohemia, South-West, South-East, Moravian-Silesian, Central Moravia and Prague). NUTS III corresponds to the lowest rank of the territorial - administration arrangement of the country. These are the so called administrative regions (self-government territories) - in total there are 14 administrative regions (Central Bohemian, South Bohemian, Plzeň Region, Karlovy Vary region, Ústí nad Labem region, Hradec Králové region, Pardubice region, Vysočina, South Moravian Region and the Capital City of Prague). NUTS IV represents the level of districts. In the Czech Republic we have 77 districts. NUTS V is represented by 6,250 municipalities.

2.1 Reasons for disparities amongst particular regions

Factors affecting the emergence of disparities amongst particular regions may be classified as primary and secondary. [4]

The category of primary factors covers the relatively low mobility of labor force, the relatively low mobility of capital, geographical factors and the economic structure of regions. In the Czech Republic the mobility of labor force is quite limited. People are not willing to move to get a job as the real estate market is not working efficiently. Also the sufficient transport serviceability is missing, making the mobility of the labor force even worse. The relatively low mobility of capital in the Czech economy is a consequence of a rather undeveloped capital market. Geographic factors cover the limited access to sufficiently big town centers, the low quality of transport connections, poor and insufficient natural resources (e.g. the mountain resorts offer soil of a poor quality only), etc. The economic structure of the regions was one-sidedly oriented. The current decline of the traditional branches leads to the economic recession in the regions (e.g. textile manufacture, glassmaking industry, etc.).

The category of secondary factors covers external economy, the demographic situation, the region environment and other factors. The inflow of new companies into the region is especially affected by external economy that is closely interconnected with the technical and financial infrastructure. The demographic situation of regions is mainly associated with a low level of education in rural areas. For the demographic development of rural areas a higher percentage of seniors living there is typical. The environment, representing an important local factor, may be deteriorated due to various reasons, thus loosing its attractiveness not only for the local population and tourists, but also for potential foreign investors. Other factors including, for instance, the social environment represented by accessibility of health facilities, the number of day-care and senior houses, etc., are also perceived by the population quite sensitively and they may lead to the departure of population from the region.

2.2 Disparities and the methods for their determination in the Czech Republic

As stated by Hasprová, Jáčová and Syrovátková [5, page 22], "regional disparities mean a deviation from an explicit, already determined and measurable indicator". One of the main goals of the regional policy is to reduce the regional disparities. In order to meet the goal, it is necessary to determine the territorial level the disparities will be determined at (cohesion regions, regions, districts, municipalities). Also, it is necessary to come up with a methodology and to determine indicators for the measurement and comparison of disparities. While selecting the methodology and indicators, availability of official data must be taken into consideration. However, at the level of districts and municipalities, the level of availability of the official data is quite poor, as the coverage of the current statistical monitoring is not wide enough. [2]
The methods used for the measurement of disparities are developed at the national level, by a statistical authority, regional authorities as well as within the scope of the research projects of universities.

2.2.1 Methods for the assessment of regional disparities at the national level

As stated by Alois Kutschereauer et al. [6, page 101], "the recent Czech regional practice evaluates the regional disparities either by means of methods based on inter-regional comparisons, comparing the regions on the basis of experience and knowledge, or by means of statistical methods; the practical use of that, at the level of particular institutes engaged in the issues of territorial disparities, is rather limited."

In the Czech Republic the most frequently used methods cover the method of inter-regional comparison, methods using the geographic information system, degree of variability, multivariate statistical methods, cluster analysis, factor analysis, simplicity model, method of real convergence, adjusted territorial Gini index, and the method of artificial neuron neural networks. These methods are mainly used at the national level. [6]

At this level the country is represented by the Ministry for Regional Development. It strives, by means of the available methodologies, to balance the uneven development of particular regions. During the years 2000, 2003, 2007 and 2010 the Ministry for Regional Development prepared methodologies for the evaluation of the development of regions. In 2000, in accordance with the Act No. 248/2000 Coll., on the Support of Regional Development, the Ministry for Regional Development presented a new methodology in the document titled "The Czech Republic Regional Development Strategy". This methodology divided the regions seeking for a concentrated support of the government to structurally-impaired regions, economically weak regions, rural regions and other regions. [13]

In the structurally-impaired regions the negative effects of structural changes are concentrated. We can see there decline of traditional branches, disappearance of manufacturing companies and the subsequent growth of the unemployment rate. They are determined by means of the following indicators: share of industrial employment in the relevant year in the total employment rate; development of the employment rate in industries in the relevant year compared to the base year 1990; summarized evaluation of the unemployment rate as of 31.12. in the relevant year; number of private enterprisers per 1,000 citizens in the relevant year (the level of significance was determined for particular indicators). [3]

Rural regions are characterized by a low density of inhabitation, decline of population and a higher rate of employment in agriculture. For the determination of rural regions, the indicators such as those that characterize the development of population are used (the structure of employment of citizens living in the relevant region and the share of population in rural municipalities).

Economically weak regions show a considerably lower level of development than is the average level in the Czech Republic. To define the economically weak regions the following indicators are used: summarized evaluation of the unemployment rate as of 31.12. in the given year; tax revenues per one citizen in the given year; the average wage in the district in the given year; the share of employment in agriculture, forestry and fishing in the total employment in the given year; development of employment in agriculture, forestry and fishing in the given year compared to the base year 1990; the density of habitation in the given year, i.e. the population per square meter. Levels of significance (weights) were determined for each indicator. Economically weak regions are territories characterized by a
low standard of living (the measured average wage), a high share of employment in the primary sector, a low density of habitation and the above-average unemployment rate. [3]

In other regions such comparisons are required for the government due to other reasons, e.g. the border regions, former military areas, regions affected by natural disasters, regions with the significantly impaired environment, regions with less favorable conditions for the development of agricultural production, regions with the higher-than-average unemployment rate, etc.

In 2003 the Czech Republic Regional Development Strategy document was updated. Within the scope of this update some indicators for the determination of the structurally impaired regions were adjusted: the share of employment in industries in 1995 in the total employment; the development of employment in industries in 1999, 2000, 2001 compared to the base year 1995; the summarized evaluation of the unemployment rate as of 31 December in the year 1999, 2000 and 2001; the number of private enterprisers per 1,000 citizens in 1999, 2000, 2001. The years were newly determined for particular indicators the data for calculation shall be taken from.

In 2007, the document titled "The Czech Republic Regional Development Strategy for 2007-2013" was used as a basis for a new common methodology. It was developed for the determination of regions that require a concentrated support from the government, and also for the designation of the economically weak regions. On the basis of this methodology, four indicators were determined. The first indicator is a summarized evaluation of the situation in the labour market (the unemployment rate) with a significance of 0.4, covering the unemployment rate, the long-term unemployment and the number of job-applicants per a single unoccupied job position. The second indicator is the tax revenues per 1 citizen with a significance of 0.15. The third indicator is the number of enterprisers per 1,000 citizens with a significance of 0.15 and the last indicator is the buying power of population with a significance of 0.30. [3]

In 2010 the methodology for the determination of regions seeking the concentrated support from the government was updated once again. Particular regions were evaluated on the bases of the unemployment rate, the number of job applicants for each unoccupied job position, the tax revenues of municipalities generated by undertaking physical persons, the number of enterprisers per 1,000 citizens, and the purchasing power of population.

2.2.2 Methods for the evaluation of regional disparities developed by the Czech Statistical Office

Besides the Ministry for Regional Development, also the Czech Statistical Office was engaged in the development of the methodology for the determination of indicators for measurement of regional disparities. The Czech Statistical Office came with four basic groups of regional disparities. For each group of disparities, a set of indicators was determined. The first group is aimed at the issue of the demographic environment and the settlement structure. It covers 13 indicators. The second group deals with the issue of the social environment and it covers 15 indicators. The third group is dedicated to the issues of the economic environment and it covers 14 indicators. The last, fourth, group is aimed at the issue of infrastructure, location, availability and environment. It covers 10 indicators. The results of the analyses by the Czech Statistical Office are used by state administration bodies and regional authorities for the development of strategic and program documents. [3]
2.2.3 Methods for the evaluation of regional disparities developed at regional level

Suitable methods for the measurement of regional disparities, as mentioned by Alois Kutschereauer et al. [6, page 106], are the following five: "method based on scaling techniques; traffic lights method; average deviation method; spot method; standard variable method". Particular regional authorities created their own methodology for the determination of the economically weaker areas. The following indicators were involved most frequently: the unemployment rate; density of habitation; tax revenues respectively the tax yield; the number of enterprisers; the share of employment in the primary sector; the state of technical and water-management infrastructure.

2.2.4 Methods developed by universities

Academic staff of certain Czech universities has been also dealing with the issue of regional disparities. One of them is also the project team at the Faculty of Economics, Technical University of Liberec. The goal this project team set is to develop a procedure for the evaluation of the regional disparities in a different way.

For this purpose, the team carried out an analysis of the indicators used by the Ministry for Regional Development, the Czech Statistical Office and the regional authorities. At first, the team compiled the list of 30 indicators used for the evaluation of the regional disparities so far. The Czech Statistical Office was requested to create a database for particular indicators in the period 2001 – 2006; yet the number of indicators had to be reduced in the end as the Czech Statistical Office did not have data available for certain indicators.

A database with calculated indicators for the period 2001-2006 was developed, covering all municipalities of the Czech Republic. Factor analysis was used to distribute these indicators amongst 8 factors (F1 - F8). These factors are newly used for the determination of a low dynamics of municipality development or - on the contrary - its sustainable development. The factor F1, i.e. unemployment, makes use of three indicators: the registered unemployment rate; the long-term unemployment rate and the level of interest in unoccupied job positions. The factor F2, i.e. migration, works with four indicators: the intensity of housing development; population development growth; the average annual increase/ decrease of population per 1,000 citizens of the medium rank; migration index. For factor F3, i.e. settlement, four indicators were determined: the share of employment in the tertiary sector in the total employment rate; the density of habitation (settlement); the education index; the share of employment in agriculture, forestry and fishing in the total employment - the inverse proportion. The factor F4, i.e. age structure, makes use of four indicators: the economic stress index; the average age of a citizen; the age index; the share of economically active population in the total population - the inverse proportion. For the factor F5, i.e. civic and technical facilities, the following two indicators were selected: the number of medical facilities per 1,000 citizens; the number of elementary schools per 1,000 citizens. For the factor F6, i.e. economy structure, two indicators were determined: the share of employment in the tertiary sector in the total employment; the share of employment in industry and civil engineering in the total employment - the inverse proportion. For factor F7, i.e. sustainable development, two indicators were determined: the number of enterprisers per 1,000 citizens; the coefficient of ecological stability. The last factor F8, i.e. economic activity, covers two indicators: tax revenues per one citizen; the number of job opportunities. [3, 11]

On the website of the Faculty of Economics, Technical University of Liberec, in the section dedicated to science and research - research projects - there is information on the project titled "An Innovation Approach to the Solution of Disparities on the Regional Level". It provides a database of towns and municipalities of the Czech Republic. For each municipality, the above
mentioned eight factors were published with the values of particular indicators for the period 2000-2007. Using the factor analysis, the researchers determined a limit for each factor to define a municipality with the low dynamics of development. The database may be used for a quick information search for particular towns and municipalities in the Czech Republic, with a rough determination of outcome, i.e. the dynamics of the development (the green subtext means a positive value, the red subtext means a negative value). This classification allowed for preparation of cartograms for particular regions as well as the whole territory of the Czech Republic, showing the dynamics of development of particular municipalities.

A newly developed methodology titled "the methodology for the identification of the dynamics of economic development of municipalities" was registered under the reg. No.: 03-ÚÚR-259-2011/01-WD-07-1. This methodology was prepared within the framework of the research program of the Ministry for Regional Development of the Czech Republic (WD - Research for solutions of regional disparities), particularly the project No. WD-30-07-1. As stated by Petra Rydvalová and Miroslav Žižka, this methodology [13, 7] allows for the evaluation of dynamics of the economic development of all municipalities in the Czech Republic at the level of the so called hard data available from the central source of the Czech Statistical Office.

Summary and comparison of methodologies used for the assessment of disparities in the European Union and in the Czech Republic

In the Czech Republic as well as in the European Union multiple methodologies are used for the assessment of regional disparities. The methodologies are mainly developed at national levels, for instance in the Czech Republic they are determined by Czech Statistical Office, whereas in the European Union so called "structural indicators" are used, based on the three pillars of the "Lisbon process". Amongst the most frequently used methodologies, both in the Czech Republic and in the European Union, we count the "Inter-regional Comparative Method" that compares, based on the previous analysis, particular regions and processes running across the regions. Also there is the "Method using the Geographical Information System" and the "Cluster Analysis" and "Factor Analysis" methods. In the Czech Republic the methods for the assessment of regional disparities are - besides the national level - also developed by particular regions and even some universities.

Conclusion

In analytical studies of the European Union, a significant accent has been recently put on less visible, hardly quantifiable factors, especially in terms of efficiency. These factors cover the efficient operation of public administration, the scope and efficiency of production services, availability of social facilities, the dominant business culture and other aspects of the institutional structure creating a favorable environment for changes of the measurable factors. In the Czech Republic the issue of regional disparities has recently become a frequent topic of discussions amongst citizens, politicians and experts. This concern is a result of permanently increasing differences amongst particular regions. Therefore, the aim of the regional policy is to balance these disparities, especially in cases when smaller regions are not able to deal with their problems by themselves.

In future more attention should be paid to the structurally-impaired, economically weak, rural and other regions, in order not to split the territory to the economically stagnant regions and those developing quickly. The solution of this situation is a task not only for the municipalities and regional authorities themselves, but also for the government and the particular ministries (state departments).
This article was developed from and based on the outcomes of the research project titled "An Innovation Approach to the Solution of Disparities on the Regional Level", reg. No. WD-30-07-1, financed from the research program by the Ministry for Regional Development of the Czech Republic.

Literature


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Článek se zabývá porovnáváním přístupů k měření disparit v Evropské unii a v České republice. Některé způsoby určování disparit jsou společné jak v Evropské unii, tak i v České republice, kde se regionální disparity měří na národní úrovni, Českým statistickým úřadem a na krajské úrovni, kde jsou využívány především regionálním managementem. Na úrovni obcí se v České republice dosud disparity nemohly měřit. V rámci výzkumného programu Ministerstva pro místní rozvoj ČR byla vytvořena nová Metodika identifikace dynamiky hospodářského rozvoje obcí, která získala osvědčení č. 03-ÚÚR-259-2011/01-WD-30-07-1 a která umožňuje, aby mohly být disparity měřeny i na úrovni jednotlivých obcí.

DIE BESTIMMUNG DER REGIONALEN UNTERSCHIEDE IN DER TSCHECHISCHEN REPUBLIK UND IN DER EUROPÄISCHEN UNION


OKREŚLANIE DYSPROPORCJI REGIONALNYCH W REPUBLICE CZESKIEJ I UNII EUROPEJSKIEJ