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A MULTICRITERIA ANALYSIS ON REGIONAL DISPARITY OF ECONOMIC AND DEMOGRAPHIC DEVELOPMENT IN THE REPUBLIC OF SERBIA

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Review paper

Abstract: The disparities between the regions are the main obstacle to a balanced and harmonious economic and social development. Increasing regional disparities in the countries in transition has led to the increasing attention paid to multicriteria analysis of regional disparity of economic and social development. The regional development in Republic of Serbia, as a country in transition, after wave of recession faced with additional challenges, such as: increasing the economic gap between regions and increasing regional demographic regression. The purpose of this research is to evaluate the regional disparity of economic development as well as the regional disparity of demographic development in the Republic of Serbia. The aim is to analyze the interdependence between economic and demographic development of the regions. According to the six indicators of economic development and the six indicators of demographic development, this paper makes the analysis by VIKOR and the method of ENTROPY as well as correlation analysis. The results of research indicate that there is a statistically significant relationship between economic and demographic development of regions in the Republic of Serbia. This paper indicates the need for a further research in order to identify the main obstacles that countries face within the process of economic and demographic development.

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1. Introduction

Unequal economic development manifests itself in different forms. One of those forms manifests itself through different degrees of the economic development of some parts of the country, and/or the regions. Regional differences have always been present and that is why, in the theory of economic development, it is pointed out that they represent the phenomenon that is old just as much as the human society. In large part, the answer is that the development process that took place in developed nations or regions is the flip side of the same process of underdevelopment in underdeveloped nations or regions (Henriot, 1979). That is to say, the development of prosperous nations or regions has caused the slow development of the underdeveloped nations or regions. To be exact, the developed countries grow by exploiting the underdeveloped countries.

Regional aspect of the development represents one of the most important forms of expression of inequality of economic development. In many countries, economic growth on the national level is followed by significant polarization among the regions and by increasing disparity among them. Experience and a plenty of regional studies show that between the different territories of the regions there are sufficiently clear social (socio-cultural, demographic and ethnic distinctions), economic, natural (soil, topography, climate, landscape distinctions), and territorial differences (Simanaviciene et al., 2014). The authors pay special attention to the analysis of regional disparities in the European Union (Graham, 1998; Magrini, 1999; Fontela & Hingel, 1993; Hart, 2007; Melnikas, 2008; Lakstutiene, 2008; Ciegis et al., 2008) and in transition countries (Snieska & Bruneckiene, 2009; Ginevicius & Podvezko, 2009; Tvrdon & Skokan, 2011).

The increase of regional disparities in the transition period represents a rule in all countries in transition as a result of the impact of the following factors: inherited imbalances from the previous period, effects of privatization, lack of coordination sectoral and development policies. Regional disparities of the Republic of Serbia have increased substantially during the transition process. Specifics of the regions in the country have affected their ability to adapt to changes in the economy and society. The process of transforming the economy and society of the Republic of Serbia emphasized the regional imbalances that manifest themselves in the big differences between the regions by the unemployment rate, national income, effects of privatization and realized investments.

The economic development of the regions in Serbia has affected their demographic development. In the last two decades, the development of the population in the Republic of Serbia is characterized by extremely negative trend. This trend is evident in four demographic processes: total depopulation (population decline), negative population growth rate, demographic aging and unbalanced regional demographic development.

The transition process of the economy led to the collapse of the most of the businesses, which disrupted socio-economic stability. The reduction in per capita income, high unemployment, disrupted social protection system and its institutions have caused reducing the number of population, as well as unbalanced demographic development of the regions in the Republic of Serbia. In order to improve enterprise business in Serbia, it is necessary to implement a large number of measures at local and regional level (Ivanovic-Djukic & Lepojevic, 2015).

Bearing in mind that many authors pay more attention to the issue of unbalanced regional development, and regional disproportions that recorded a significant increase in the observed country, the author pays special attention to determining the level of economic and demographic development of the regions in the Republic of Serbia. The research methodology includes application of the VIKOR method, the ENTROPY method and correlation analysis using the SPSS software.

The purpose of the paper is to point out the possibility and importance of the application of the VIKOR method for determining and analyzing regional inequalities. The aim of this paper is to propose measures to macroeconomic and regional policy makers whose implementation may decrease regional disparities in relation to level of economic development and would affect the demographic development of economic underdeveloped regions.

Based on indicators of economic and demographic development of the regions, authors will try to establish a correlation between economic and demographic development of the regions. In this paper, the following hypotheses are formulated:

H1: Region that includes capital city records the most significant and economic development in the relation to the other regions;

H2: There is a significant correlation between economic development and demographic development of the regions in the Republic of Serbia.

2. Theoretical background

A lot of empirical research is focused on spatial distribution of income, and/or uneven spatial distribution of variables that show “level of development” or “level of prosperity” (Smith, 1987). We can single out three main schools that have studied whether the regional disparities decrease or increase over time, as well as

whether the government intervention is necessary in order to reduce these disparities: the spatial-equilibrium school, the spatial-disequilibrium and radical school. According to the first theory, the regional disparities decrease over time by the development of economy. Its authors described the trends of regional disparity as an inverted U-curve, as Williamson (1965) expressed regional income differentials increase in early development stages, then stabilize, and then diminish in mature period of growth.

According to the second theory, the government intervention is necessary to reduce the gap among the regions from the standpoint of their economic development (Hirschman, 1958; Richardson, 1973; Lipshitz, 1992). "Thus, local governments have an important role in creating a favorable business environment. Local governments provide significant support for economic development in different areas" (Radukić & Stanković, 2015, p. 355).

However, some representatives of this school emphasize the factors which, according to them, show significant influence on the development of the region in relation to government intervention. The reduction of regional disparities, according to Myrdal (1957), can affect capital and human resources, while according to Friedmann (1973), population migration, flow of capital investment, spatial diffusion of technological innovation and spatial organization of political power.

Representatives of the third theory (Veltmeyer, 1978; Gilbert & Gugler, 1982; Matthews, 1983; Brodie, 1990) consider that the market trends influence on the increase or decrease of the regional disparities, as well as that some activities or measure of the government can influence on the increase in regional disparities. According to Matthews (1983), letting market forces do the planning will perpetuate regional disparities.

"The intensity of centralization and imbalance are the characteristics of polar growth policy" (Fanni et al., p. 80) not only in the development countries but also in transition countries. In the recent years, Serbian development policy followed the growth pole theory because the development of some cities becomes priority, with the goal of their economic development spreading to other parts of the country. But evidence shows that the implementation of "the growth pole" policy caused migration labor from low income regions in Serbia to capital city. Thus, labor mobility has great influence to further widening of the income disparity and on the development of the regional economy (Liu, 2011).

There have been a number of studies done in the field of determining the regional inequalities. These studies usually use statistical methods such as factor and cluster analysis. The research on the regional economic development by multicriteria analysis has attracted more attention because the analysis of regional inequalities represent the analysis of problem that "consists of optimizing (maximizing or minimizing) several objective functions within a feasible set of

solutions or alternatives" (Perez-Moreno et al., 2016, p. 400). "The data obtained in multicriteria analysis of economic development of the states or region show the effectiveness of this approach to studying complex processes mainly because it can provide an unbiased view of the actual economic situation" (Ginevicius et al., 2006, p. 918). Although "a large number of MCDA (Multi-Criteria Decision Analysis) methods have been developed to sort, rank or evaluate decisions alternatives" (Saarikoski et al., 2016, p. 3), for ranking of the regions from the standpoint of their development, the authors usually use TOPSIS method. Xiajing and Zhang evaluate the regional disparity of economic development in Zhejiang Province using TOPSIS method. "This evaluation showed that there exists regional disparity of economic development among the 11 cities" (Xiajing & Zhang, 2011, p. 135). Xiajing and Zhang use economic indicators for ranking of the regions, while Fanni et al. (2014) use cultural, health sector and infrastructure indicators and Soares et al. (2003) use economic, demographic, health, education, employment and cultural indicators. "Therefore, there is no accord formed in scientific literature concerning selection of indicators of social and economic development for interregional comparison" (Kilijoniene et al., 2010, p. 69).

In contrast to the above-mentioned researches, the authors of the paper will conduct the ranking of the regions based on demographic and economic development, and/or by the application of the indicators of demographic development. Also the authors will conduct the ranking of the regions in the Republic of Serbia, as well as by the application of the indicators of economic growth, and then we will determine the correlation relationship between the level of demographic and level of economic development of the regions in the country. For ranking of the regions, the authors will apply the VIKOR method, and for determining of weight coefficients the authors will apply the method of ENTROPY.

3. Methodology

3.1. Method of multicriteria decision-making – the VIKOR method

The essence of the VIKOR method is reflected in the ranking of alternatives according to the value Q_i and the choice of the alternative for which this value is the lowest (i.e. the minimum distance from the "ideal point"). Starting point in application of the VIKOR method is the initial decision matrix:

$$w_1 \quad \dots \quad w_j \quad \dots \quad w_n$$

$$A=\begin{matrix} A_1 \\ \vdots \\ A_i \\ \vdots \\ A_m \end{matrix}\begin{bmatrix} f_{11} & \cdots & f_{1j} & \cdots & f_{1n} \\ \vdots & \ddots & \vdots & \ddots & \vdots \\ f_{i1} & \cdots & f_{ij} & \cdots & fa_{in} \\ \vdots & \ddots & \vdots & \ddots & \vdots \\ f_{m1} & \cdots & f_{mj} & \cdots & f_{mn} \end{bmatrix} \quad (1)$$

"The best and the weakest values are especially determined for each criterion, f_j^* and f_j^- for all criterion functions, *j=1,2,…,n*;

$f_j^* = \max_i f_{ij}$, $f_j^- = \min_i f_{ij}$, if the *j-th* function represents a benefit;

$f_j^* = \min_i f_{ij}$, $f_j^- = \max_i f_{ij}$, if the *j-th* function represents a cost" (Opricović & Tzeng, 2007, p. 515).

On the basis of the value d_{ij}:

$$d_{ij}=\frac{f_j^*-f_{ij}}{f_j^*-f_j^-} \quad (2)$$

and weight criteria, the pessimistic solution Si and expected solution R_i is determined by the application of following formulas:

$$S_i=\sum_{j=1}^{n} w_j \frac{f_j^*-f_{ij}}{f_j^*-f_j^-}=\sum_{j=1}^{n} w_j d_{ij} i = 1,2,\ldots..,m$$

$$R_i = \max_j w_j d_{ij} i = 1,2,\ldots\ldots,m \quad (3)$$

On the basis of these values, the values S^* and S^- and R^* and R^- are determined and defined as:

$$S^*=\min_i S_i \ , \qquad R^*=\min_i R_i$$

$$S^-=\max_i S_i, \qquad R^-=\max_i R_i \quad (4)$$

And then the values QS_i, QR_i and Q_i (compromise solution) are calculated for each alternative, thereby three independent ranking lists are formed.

$$QS_i=\frac{S_i-S^*}{S^--S^*}, \ QR_i=\frac{R_i-R^*}{R^--R^*} \ Q_i=v\cdot QS_i+(1-v)\cdot QR_i \quad (5)$$

"The value Q_i combines the values QS_i and QR_i (third ranking list). By the choice of the value for v (weight satisfying of most criteria), the influence of the value QS_i or QR_i can be favored in the compromise ranking list Q_i. The value v which represents the weight of the criterion of maximizing of group characteristic or "maximizing of group usefulness" can have the following values 0.25; 0.50 or 0.75" (Opricović & Tzeng, 2007, p. 516).

Ranking of the alternatives is performed by sorting of the values on the ranking lists *QS*, *QR* and Q_i according to the descending order. The alternative Ai that has

the lowest value on the ranking list Q_i (v=0.5) is the best alternative if the following conditions are satisfied:

The condition *C1* – condition of "sufficient advantage"

$$Q(A_2) - Q(A_1) \geq DQ \quad (6)$$

Where A_2 represents the alternative that takes the second position on the ranking list Q_i (v=0.5), and it amounts: $DQ = \frac{1}{m-1}$.

The condition *C2* – condition of "acceptable sustainability in decision-making".

"The alternative A_1 except on the ranking list Q_i (v=0.5) must be best rated, and/or have the lowest value on at least one of the following ranking lists *QS*, *QR*, Q_i (v=0.25) and Q_i (v=0.75). If A_1 does not satisfy stated conditions, then the compromise solution contains" (Opricović & Tzeng, 2007, p. 516):

1) Alternatives A_1 and A_2 if the condition *C2* is not satisfied;

2) Alternatives A_1, A_2,… A_m if the condition *C1* is not satisfied, where A_m is determined by the relation $Q(A_m) - Q(A_1) < DQ$ for the maximum m.

3.2. The ENTROPY method

The essence of the VIKOR method is reflected in the ranking of alternatives according to the value Q_i and the choice of the alternative for which this value is the lowest (i.e. the minimum distance from the "ideal point"). Starting point in application of the VIKOR method is the initial decision matrix.

One of the most important steps in the application of VIKOR method is the determining of the weight of criteria. The importance of their determining is reflected in the fact that they influence on the final solution of the concrete multicriteria problem. For determining of the weight of criteria, several methods that are usually classified on subjective and objective have been developed. Unlike the subjective methods, the objective methods exclude the influence of the decision-maker on the value of the weight of criteria. For this reason, in this paper, the objective method is applied, and/or the method of ENTROPY.

Shannon and Weaver proposed the entropy concept, which is a measure of uncertainty in information formulated in terms of probability theory (Shannon & Weaver, 1964). It quantifies the probability density function of the distribution of values (Bruhn et al., 2001). Since the entropy concept is well suited for measuring the relative contrast intensities of criteria to represent the average intrinsic information transmitted to the decision maker, conveniently it would be a proper option for our purpose (Bruhn et al., 2001).

In this method, starting from the initial decision matrix, determining of the weight of criteria w_j is implemented through three steps. In the first step the normalization of criteria values of variants a_{ij} is performed by the application of the pattern:

$$r_{ij}=\frac{a_{ij}}{\sum a_{ij}} \tag{7}$$

In this way, the normalisation decision matrix is obtained:

$$\mathrm{R}=\begin{array}{c} \\ A_1 \\ \vdots \\ A_i \\ \vdots \\ A_m \end{array}\begin{array}{c} \begin{array}{ccccc} w_1 & \cdots & w_j & \ldots & w_n \end{array} \\ \begin{bmatrix} r_{11} & \cdots & r_{1j} & \cdots & r_{1n} \\ \vdots & \ddots & \vdots & \ddots & \vdots \\ r_{i1} & \cdots & r_{ij} & \cdots & r_{in} \\ \vdots & \ddots & \vdots & \ddots & \vdots \\ r_{m1} & \cdots & r_{mj} & \cdots & r_{mn} \end{bmatrix} \end{array} \tag{8}$$

Starting from the normalisation decision matrix, the value of entropy e_j can be calculated in the following way:

$$e_j = -k\sum_{i=1}^{n} r_{ij} \ln r_{ij} \tag{9}$$

By the introduction of the constant $k=\frac{1}{\ln n}$ is ensured that all values e_j are within the interval [0,1]. In the second step, the degree of divergence is determined d_j with regard to average amount of information contained in every criterion:

$$d_j = 1 - e_j \tag{10}$$

d_j represents the characteristic intensity of criterion contrast C_j. The higher the divergence of the initial criteria values a_{ij} of variants A_i for given criterion C_j, the value d_j for given criterion is higher, so it is concluded that the importance of criterion C_j for given problem of decision making is greater (Zeleny, 1982). Since the value d_j represents a specific measure of the intensity of the criterion contrast C_j, the final relative weight of the criterion, in the third step of the method, can be obtained by simple additive normalization:

$$w_j = \frac{d_j}{\sum_{j=1}^{m} d_j} \tag{11}$$

4. Data – determining the criteria for forming the initial table of decision making

After the generalization of variety of development level indicators in the scientific literature, two main groups of indicators are distinguished: indicators of demographic development (Table 1) and indicators of economic development (Table 2).

Table 1. Indicators of demographic development of the regions in Serbia

Regions	Change the population, 2011 (base year 2002) (f_1)	Share region in total population, 2018 (in %) (f_2)	Density of population, 2011 (population /km^2) (f_3)	Population growth rate, 2018 (in %) (f_4)	Working age population, 2018 (in %) (f_5)	Illiterate, 2011 (in %) (f_6)
Belgrade (a_1)	104.00	24.21	511.59	0.18	65.8	0.83
Vojvodina (a_2)	94.30	26.66	88.79	-5.00	62.30	1.59
Šumadija and Western Serbia (a_3)	94.20	27.57	76.02	-5.60	61.20	2.38
Southern and Eastern Serbia (a_4)	88.50	21.56	59.23	-7.40	59.60	3.05

Source: Statistical Office of the Republic of Serbia. Available from internet: http://webrzs.stat.gov.rs/WebSite/

Note: Relative change in population refers to the period between last two censuses. The data which refer to the density of population are available for year 2011 when the last census was performed.

Demographic indicators refer to quantitative and qualitative characteristics of the population, while the economic refer to horizontal and vertical structure of the economy of the country and its regions, employment/unemployment and investments in the regions of the Republic of Serbia.

Table 2. Indicators of economic development of the regions in Serbia

Alternatives	Participation of the employees in working age population, 2018 (in %) (f_1`)	Unemployment rate, 2018 (in %) (f_2`)	Participation of the regions in GDP, 2018 (in %) (f_3`)	GDP per capita, 2018 (thousands of dinars) (f_4`)	Participation of the regions in total investments on the level of the Republic of Serbia, 2018 (in %) (f_5`)	Participation of the tertiary sector, 2018 (in %) (f_6`)
a_1	64.55	11.0	40.4	1139.0	36.42	78.85
a_2	44.17	10.7	26.5	674.0	26.53	50.45
a_3	40.01	14.9	19.2	470.0	14.72	52.05
a_4	27.37	17.3	13.8	431.0	13.53	52.34

Source: Statistical Office of the Republic of Serbia. Available from internet: http://webrzs.stat.gov.rs/WebSite/

5. Analysis and discussion of the results

The weight coefficients were calculated by the application of the method of entropy, as well as maximum and minimum requirement for each criterion. In the criterion with the requirement for the maximum, the highest value is the best value, and in the criterion with the requirement for the minimum, the lowest value is the best value.

According to the pattern (1), starting from weight coefficients, the value d_{ij} is calculated according to all criteria. Starting from the values d_{ij} and weight coefficients and by the application of the patterns (2), (3) and (4), three ranking lists are formed in table 3. According to the criteria QS_i, QR_i and Q_i (v=0.5), the best region is a_1, and/or the Belgrade region.

Table 3. Ranking of the regions from the standpoint of the level of demographic development

Alternatives	S	R	QS_i	QR_i	Q_i (v=0.5)	Q_i (v=0.25)	Q_i (v=0.75)
a_1	0.1262	0.1214	0.0000	0.0000	0.0000	0.0000	0.0000
a_2	0.7093	0.6234	1.0000	0.9201	0.9601	0.9401	0.9801
a_3	0.6857	0.6422	0.9595	0.9546	0.9570	0.9558	0.9583
a_4	0.6840	0.6670	0.9566	1.0000	0.9783	0.9892	0.9675

Source: The calculation of the authors

Testing of the condition C1:

The condition *C1* is fulfilled because:

$Q(a_3)-Q(a_1)$=0.9570-0.000=0.9570>0.25

$DQ=min\ (0.25, \frac{1}{4-1})$=0.25

The region a_1 has "sufficient advantage" with regard to the region a_3, which is in the second place on the ranking list. In the third place is the region a_2, which occupies the third place on all ranking lists, and the region a_4 is in the fourth place on all ranking lists.

Testing of the condition C2:

The condition *C2* is fulfilled because the region a1 has "sufficiently" stable first place according to the two criteria:

1. Region a_1 has the first position on the ranking list according to QS_i and QR_i;

2. Region a_1 has the first position on the ranking list according to Q_i for v=0.25, v=0.5 and v=0.75.

On the basis of the above-stated it can be concluded that there is a regional difference according to the level of demographic development of the regions. The highest degree of demographic development has been achieved by the Belgrade region, and the lowest is achieved by the region of Southern and Eastern Serbia.

According to the pattern (1), starting from weight coefficients, the value d_{ij} is calculated according to all criteria. Starting from the values d_{ij} and weight coefficients, and by the application of the patterns (2), (3) and (4), three ranking lists given in Table 4 are formed. According to the criteria QS_i, QR_i and Q_i (v=0.5) the best region is the region a_1 or the Belgrade region.

Table 4. Ranking of the regions from the standpoint of the level of economic development

Alternatives	*S*	*R*	*QS*	*QR*	*Q (v=0.5)*	*Q (v=0.25)*	*Q (v=0.75)*
a_1	0.0191	0.0191	0.0000	0.0000	0.0000	0.0000	0.0000
a_2	0.6357	0.5038	0.6431	0.6480	0.6455	0.6468	0.6443
a_3	0.9090	0.7248	0.9281	0.9435	0.9358	0.9397	0.9320
a_4	0.9779	0.7670	1.0000	1.0000	1.0000	1.0000	1.0000

Source: The calculation of the authors

Testing of the condition C1:

The condition *C1* is fulfilled because:

$Q(a_2)$-$Q(a_1)$=0.6455-0.000=0.6455>0.25

$DQ=min\ (0.25, \frac{1}{4-1})$=0.25

The region a_1 has a "sufficient advantage" with regard to the region a_2, which is in the second place on the ranking list. In the third place is the region a_3, which occupies the third place on all ranking lists, and the region a_4 is on the fourth place on all ranking lists.

Testing of the condition C2:

The condition *C2* is fulfilled because the region a_1 has "sufficiently" stable first place according to the two criteria:

1. Region a_1 has the first position in the ranking list, according to QS_i and QR_i;

2. Region a_1 has the first position in the ranking list, according to Q_i for v=0.25, v=0.5 and v=0.75.

On the basis of the above-stated, it can be concluded that there is also a regional difference according to the level of economic development of the regions. The highest level of economic development has been achieved by the Belgrade region, and the lowest is achieved by the Region of Southern and Eastern Serbia.

By the application of the VIKOR method, it has been proven by the calculation that the Belgrade region has achieved the highest growth of population and economy because it has the first position in all the ranking lists, which can be clearly seen in Tables 3 and 4. The hypothesis H1 is proven because the Belgrade region has the most significant demographic and economic position from the other regions in the Republic of Serbia.

Table 5. Coefficient of correlation between economic and demographic development

Correlations			
		Q_{dr} (v=0.5)	Q_{pr} (v=0.5)
Q_{dr} (v=0.5)	Pearson Correlation	1	.945*
	Sig, (2-tailed)		.028
	N	4	4
Q_{pr} (v=0.5)	Pearson Correlation	.945*	1
	Sig. (2-tailed)	.028	
	N	4	4
*. Correlation is significant at the 0.05 level (1-tailed).			

Source: The calculation of the authors (SPSS Statistics 20)

From the standpoint of demographic and economic development, the Belgrade region is in the first place because it has achieved the highest level of development of population and economy with regard to the other regions. On the basis of Tables 3 and 4, we can conclude that the regions with higher level of economic development record higher level of demographic development. Starting from the values inn the ranking list Q_{dr} (v=0.5) and Q_{pr} (v=0.5) on the basis of which the regions are ranked with the aim of determining the level of demographic and regional development, the authors will determine quantified influence of economic development on demographic development of the regions by the application of SPSS program.

On the basis of the coefficient of correlation (r=0.945), we can conclude that the relationship between observed phenomena is positive, as well as that there is a strong correlation relationship between the level of economic and demographic development of the regions in Serbia. Because the Sig. value is less than 0.05, the variable gives a significant unique contribution to the prediction of dependent variable. The results of correlation analysis indicate that hypothesis H2 is proven.

The coefficient of determination has shown that the level of economic development of the regions has the dominant influence on the level of demographic development. For this reason, the regions that have achieved the high level of economic development have also achieved the high level of population growth.

6. Conclusion

Socio-economic change in the Republic of Serbia contributes to the increasing gap between their regions according to demographic and economic development. All regions in the Republic of Serbia except of Belgrade region record negative demographic trends. That is the consequences of low fertility rate, aging of population and negative net migrations but also unemployment and low economic growth.

Results of research in this paper indicate that the Belgrade region or region with capital city has achieved the highest level of economic development and the highest level of demographic development as well as that there is positive and strong correlation relationship between economic and demographic levels of development of the regions. It can be concluded that the city of Belgrade represents the most important "pole" of growth and development of the region. In order to achieve economic and demographic development of the region, it is necessary for the government to identify strategic directions of development of regions and cities that would be "poles" of regional development in the Republic of Serbia.

To achieve regional and economic development, the following regional policy measures are necessary: solving the problem of unemployment in undeveloped regions, structural reforms in underdeveloped regions with a focus on increasing the production and export of products and services, regional economic diversification and greater social cohesion and improving the quality of life of residents of Republic of Serbia. Solving the problem of unemployment or promotion of employment requires a coordinated approach to the implementation of various measures. The state needs to allocate more resources for the promotion of various employment programs. It is necessary to implement active employment measures that would help in achieving balanced regional development.

Bearing in mind that the VIKOR method can be successfully applied to the rank the regions based on certain indicators, the subject of future research will be the application of the VIKOR method in order to rank the districts in the Republic of Serbia according to the demographic and economic indicators.

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VIŠEKRITERIJUMSKA ANALIZA REGIONALNOG DISPARITETA EKONOMSKOG I DEMOGRAFSKOG RAZVOJA REPUBLIKE SRBIJE

Rezime: Dispariteti među regionima predstavljaju glavne prepreke za uravnotežen i skladan ekonomski i društveni razvoj. Povećanje regionalnih disparitета u državama u tranziciji uticalo je da se sve veća pažnja posvećuje višekriterijumskoj analizi regionalnih disparitета ekonomskog i društvenog razvoja. Regionalni razvoj Republike Srbije, kao države u tranziciji, se nakon recesionih talasa suočio sa dodatnim izazovima, a to su: povećanje ekonomskog jaza između regiona i trend povećanja regionalne demografske regresije. Svrha ovog istraživanja je evaluacija regionalnog disparitета ekonomskog razvoja, kao i regionalnog disparitета demografskog razvoja u Republici Srbiji. Cilj rada je da se analizira međuzavisnost između ekonomskog i demografskog razvoja regiona. Na osnovu šest indikatora demografskog razvoja i šest indikatora ekonomskog razvoja, u radu se primenjuje VIKOR metod i ENTROPY metod, kao i korelaciona analiza. Rezultati istraživanja su ukazali da postoji statistički značajna međuzavisnost između ekonomskog i demografskog razvoja regiona u Republici Srbiji. Ovaj rad ukazuje na potrebu za daljim istraživanjem kako bi se identifikovale glavne prepreke sa kojima se države suočavaju u okviru procesa ekonomskog i demografskog razvoja.

Ključne reči: Višekriterijumska analiza, VIKOR metod, ENTROPY metod, demografski razvoj, ekonomski razvoj, regioni, Republika Srbija.

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