

Corina-Georgeta DINCULESCU

*Institute of Agricultural Economics, Romanian Academy, Bucharest
corina.dinculescu@gmail.com*

HIERARCHIZATION OF COUNTIES BY RURAL LABOUR RESOURCES

ABSTRACT

In the rural development policy, the labour resources are a paramount factor for sustainable rural development. The many challenges of rural areas, in terms of social component, require a qualitative analysis of labour resources in order to determine the disparities between Romania's counties as accurately as possible. Knowing the territorial disparities, the counties hierarchy could help design optimal strategies for their development and eventually balancing strategies to narrow the gaps between them.

This paper is an analysis of human resources in rural areas, of the influence of various factors on the employment of labour resources and of regional differences (across counties), of economic and social nature, which are sometimes severe.

The paper also highlights the ranking of counties using statistical methods of territorial hierarchization (in terms of labour resources in rural areas, employment of labour resources and rural employment). For a most relevant and accurate hierarchy, the author used several specific and meaningful indicators of labour resources, using a multi-criteria analysis.

Key words: labour resources, employment, regional disparities, methods of territorial hierarchization, educational level, rural area.

JEL Classification: C16, J21, J24, I25, O15, R11, R12.

1. INTRODUCTION

The assessment of territorial gaps in Romania, between counties, in terms of rural labour resources, presupposes a qualitative analysis of these, which could lead to the identification of problems specific to each county, which must be addressed for the improvement of the respective levels of labour resources and establish priority objectives in this respect.

At the same time, it could lie at the basis of the design of strategies to respond to certain problems specific to rural areas. Thus, the hierarchization of counties in terms of rural labour resources is important for the assessment of the development stage of counties, for measuring the gaps between them and elaboration of optimum strategies for the development/balancing of counties.

The national interest is obvious, having in view that most indicators specific to labour resources are below the EU average (at national level, the more so at rural area level), and the existing gaps are large enough to pay increased attention to this area.

2. STATE OF KNOWLEDGE

As there is a lack or insufficiency of consistent and relevant data, the studies in territorial profile are limited and less detailed. Thus, the studies on the territorial disparities with regard to the labour resources are generally limited to the development regions. Out of this reason, a detailed analysis of the labour resources was considered opportune, with data coming almost exclusively from the Census of Population and Dwellings.

The hierarchization of counties, according to certain criteria, is extremely important for the harmonious development of all counties, to measure the gaps between them, and can contribute to the design of optimum development and balancing strategies. This can be done either on the basis of one indicator and its variation (and thus quantitative information limited to only one phenomenon of the analyzed collectivity at county level is obtained, given by the analyzed indicator), or through a multi-criteria analysis, in which several indicators were considered, from which aggregate indicators were created.

The utilization of only one indicator is not sufficient to establish a reasonable hierarchization, although it reflects a certain obvious state of facts (given the concrete values of a certain indicator). If several complementary indicators are also considered, rankings can be obtained, at least close to the real situation (in the evaluation of indicators there are always subjective factors, which are not taken into consideration). The results of such a hierarchization are different from those obtained on the basis of only one indicator, sometimes even contradictory. That is why a multi-criteria analysis was used for the purpose of the present paper, using a set of relevant indicators, which provide a multilateral characterization of each territorial unit in part (county).

3. MATERIAL AND METHOD

One of the methods used to prepare the raw material for analysis was the customized query of official databases available at the National Institute of Statistics (Tempo Online time series), followed by own processing. As each year a linear trend of phenomena can be noticed, with almost non-significant variations (from the data provided by surveys), data of proven origin are needed for an analysis at territorial (county) level. That is why the largest part of the information base for this study is represented by the data from the Census of Population and Dwellings of 2011.

The disparities at territorial level were revealed on the basis of specific methods (statistical and geo-reference analysis with GIS¹ systems). Along with the statistical methods used by the GIS application for producing thematic maps, statistical methods were used for the hierarchization of Romania's counties.

These were selected in accordance with the number of observation units – due to the relatively large number of observation units (the 41 counties of the country); a first hierarchization method, i.e. the *rank method* was used, as a relatively simple method, yet with certain limitations. One of these limitations is that the method does not take into consideration the distances between the two levels of a variable/characteristic that can appear in the hierarchization of the territorial administrative units (size of absolute or relative gaps that can appear in the hierarchization of counties). At the same time, some information is lost on the occasion of the “uniformization” of different characteristics: one, when the ranks for each characteristic are assigned and the other, when the ranks for total scores are assigned. Hence another method had to be used to check up and confirm the hierarchy of counties established through the rank method, namely the *real rank method*. This added additional information to the results of county hierarchization as this method had in view the relative distances between the values of each indicator from the observation units. For a most relevant hierarchization, several specific and significant indicators of labour resources were used, within a multi-criteria analysis supported by the two methods.

4. RESULTS AND DISCUSSIONS

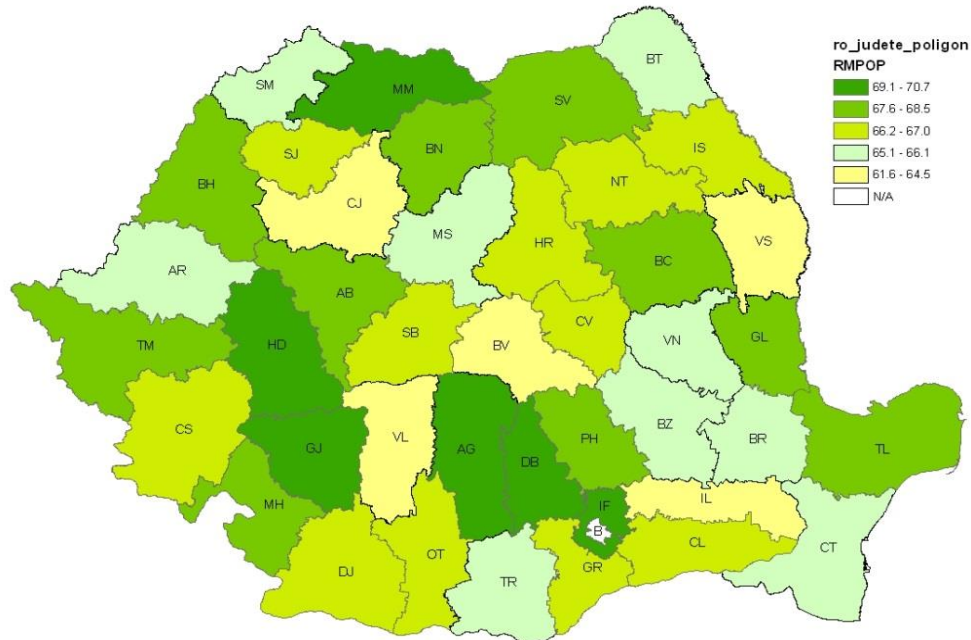
4.1. GENERAL CONSIDERATIONS ON THE RURAL LABOUR RESOURCES

Before presenting the results of the hierarchization of counties, we must briefly present certain elements that complement (together with the actual hierarchization) the overall picture of the rural labor resources. A simple hierarchization of counties in terms of *population ruralization* reveals that the most ruralized county is Dâmbovița (71.7% rural population in total population), closely followed by the counties Giurgiu (with 70.8%) and Teleorman (67.6%).

At the opposite pole, the less ruralized population is found in the county Hunedoara (only one quarter of the county's population is living in the countryside), followed at small distance by the county Brașov (with a share of rural population in total population of 27.7%).

The analysis across counties of the *distribution of rural labour resources* (share of rural labour resources in each county in total labour resources in the rural area) outlines a series of disparities and reveals a hierarchy of counties somewhat similar to that resulting from the population size (Figure 1).

¹ GIS Geographical Information System



Source: author's own calculations based on NIS, CPD 2011 data

Figure 1. Share of rural labour resources in total population, 2011

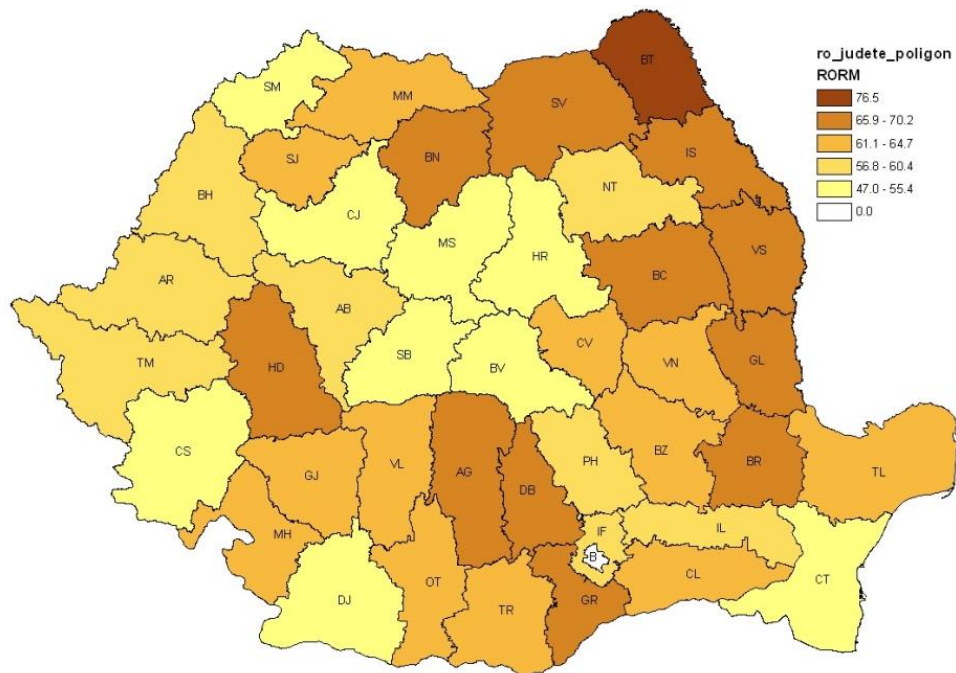
The counties Covasna, Hunedoara and Tulcea, on the last place in this ranking of counties (with a share of 1.2% in total labour resources of the rural area), are among the smallest counties in terms of population size. The county Iași is at the opposite pole (contributing by 4.5% to total rural labour resources), which also has the most numerous population (this being one of the possible explanations for the maximum value of this indicator).

These (maximum and minimum) levels of the analyzed indicator (share of labour resources in each county in total resources in rural area), between the counties at the extremes, are found in the values of labour force indicators and can have consequences on the labour market and its equilibrium, between the demand and supply of labour.

A consistent analysis of employment across counties presupposes the knowledge of labour force size by means of certain indicators by which labour market in each investigated territory (county) can be finally characterized. These indicators have a non-homogeneous territorial distribution across counties, as a result of the influence of demographic and socio-economic factors.

Knowing the amount of labour resources is not relevant in the absence of indicators specific to labour employment. For a pertinent analysis it is necessary to determine *the employment rate of labour resources*, i.e. to what extent these are utilized.

The results of the Census of Population and Dwellings (CPD) of 2011 reveal an employment rate of labour resources in the rural area (62.1%) quite similar to the national average (61.6%). The analysis across counties highlights significant disparities (Figure 2); the values of this indicator largely vary, from minimum 47% to maximum 76.5%. In two counties (Constanța – minimum value and Brașov – 49.5%), only half of the labour resources are utilized. At the opposite pole, there are other two counties (Botoșani – with a maximum value and Iași – 70.2%) where about three quarters of labour resources were utilized.



Source: author's own calculations based on NIS, CPD 2011 data

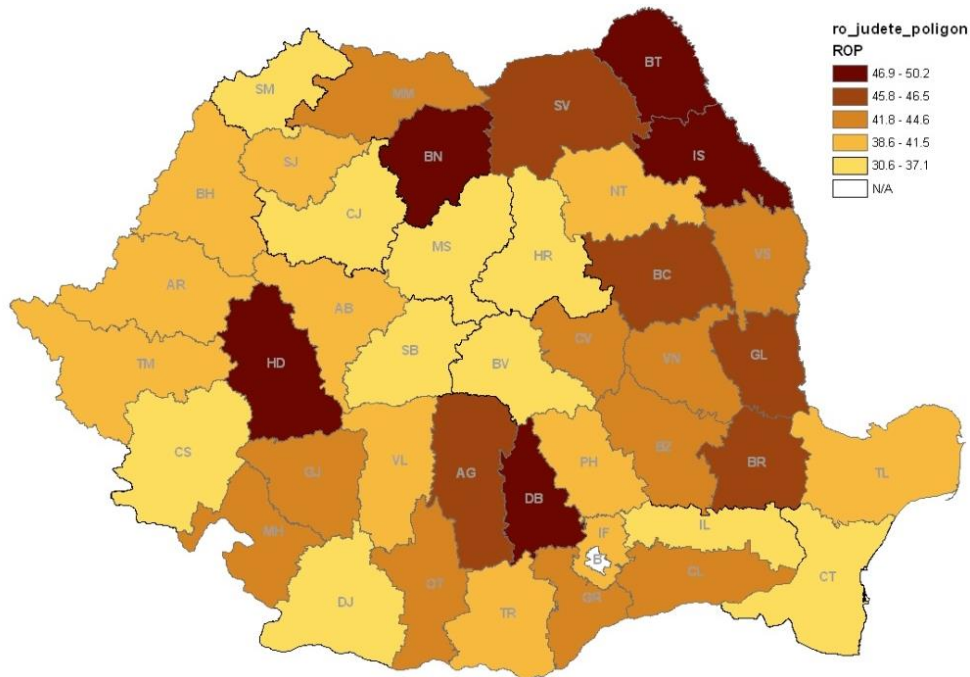
Figure 2. Employment rate of rural labour resources, 2011

In 2011, the population from the rural area had a *rural population employment rate* of 41.6%, quite similar to that at national level (42.3%).

One of the lowest rates of rural population employment (aged 15 – 64 years) was found in the county Constanța, less than one-third of the population being employed (30.6%). Three other counties from Transilvania were found in the same situation: Brașov (with 31.6%), Cluj (with 33.4%) and Satu Mare (with 33.6%) (Figure 3).

Even the counties that are found at the opposite pole, with a difference of 20%, do not represent a favourable situation (although above the national level, these are much under the EU-28 level – 64.2% in 2011). Thus, the counties in

which only about half of the rural population was employed are Botoșani (50.2%), Hunedoara (48.9%), Iași (47.1%) and Dâmbovița (47.0%).



Source: author's own calculations based on NIS, CPD 2011 data

Figure 3. Rural population employment rate, 2011

The low employment level can be explained by the fact that the persons who worked on their own household or in other households were not considered as employed persons (they did not declare themselves as such), hence they are not included in this category, or they were working in the informal sector and avoided to declare themselves as employed persons.

The population employment rate in the rural area is somehow artificial, as the persons who are working on their own household² (generally for their own subsistence) are included in the number of employed persons, and in the author's opinion these persons should not be included in the category of employed persons. In this regard, one can say that the employment rate is even lower in reality.

On the other hand, this employment rate does not reflect the employment in the informal sector; this is the situation in which many persons, who are employed in reality, are not included in the category of employed persons. In this respect, one can say that the employment rate is higher than the official rate in reality.

² According to ILO definition on employed persons.

4.2. HIERARCHIZATION OF COUNTIES

The multi-criteria hierarchization of counties presupposes going through two stages that are adjusted in accordance with the particularities of each utilized hierarchization method:

- *selecting the socio-economic indicators* that are going to be used in the elaboration of ranking – in order to ensure the comparability and correlation of different aspects, having in view a most accurate and complete characterization of investigated territorial units (counties). Because the indicators are not always homogenous, these have to be normalized, by assigning corresponding values (normalization method), which will enable subsequent aggregations.
- *selecting the aggregation method into a global (synthetic) indicator*, on the basis of which the hierarchization will be made. The purpose of aggregation into a global indicator is that it permits measuring the real gaps between counties. This stage presupposes:
 - calculating/assigning ranks, in accordance with the method used, for each selected indicator;
 - establishing the hierarchy of counties (of the position of each county in the hierarchy) – by increasing the ordering of ranks.

A first hierarchization of counties was made on the basis of the *rank method*, starting from the following indicators, under interdependency relationship:

- share of labour resources (LR) in total population – on order to see how the labour resources are distributed in each county;
- employment of labour resources – reveals the proportion in which these resources are utilized. The higher the value of this indicator, the greater the part of the population included in labour resources is able to provide the necessary income necessary for living.
- Population employment rate – reflects the labour market capacity to absorb the labour force.

The hierarchization of counties was made by each indicator in part. The ranks of counties were obtained by the decreasing ordering of individual values of each indicator for each county. Thus, for each of the above-mentioned indicators ranks were assigned from high to low (high, representing the most favourable situation, low, the least favourable situation. In our case: the highest value of each indicator was attributed the lowest rank, being denoted by 1, and the ordering was continued up to the lowest value of each indicator).

The subsequent summing up of ranks occupied by one county for each indicator selected and dividing the sum by the number of indicators led to the calculation of the county rank and then, to the determination of the position in the hierarchy of each county.

Using this approach, this method generated a simple and fast classification of counties in terms of labour resource utilization. Thus, the positions of each county

were identified in the hierarchy, in terms of population employment in an economic activity.

The county Hunedoara is on the 1st place (with an average rank of 2.3), followed at 4 points distance by the counties Dâmbovița and Bistrița-Năsăud. At a great distance from the first position in the hierarchy (of 37.7 points), on the last place, we can find the county Brașov, closely followed by the counties Constanța and Cluj (Table 1).

Table 1

Hierarchization of counties in terms of rural employment, based on the rank method, 2011

COUNTY	Employment rate of labour resources	Proportion of labour resources in total population	Population employment rate	Rank method				County position in the hierarchy
				indic 1	indic 2	indic 3	rank	
ALBA	59.7	68.2	40.7	27	9	24	20.0	21
ARAD	58.3	66.1	38.6	30	29	31	30.0	31
ARGES	66.9	69.4	46.4	10	5	6	7.0	4
BACAU	68.2	67.6	46.1	7	16	8	10.3	7
BIHOR	57.7	68.1	39.3	31	11	30	24.0	27
BISTRITA-NASAUD	68.7	68.3	46.9	6	8	5	6.3	3
BOTOSANI	76.5	65.6	50.2	1	32	1	11.3	9
BRASOV	49.5	63.0	31.2	40	40	40	40.0	41
BRAILA	69.9	65.9	46.0	3	31	9	14.3	12
BUZAU	64.7	66.1	42.8	13	28	16	19.0	19
CARAS-SEVERIN	54.1	66.2	35.8	36	27	35	32.7	34
CALARASI	63.5	66.9	42.5	15	19	17	17.0	15
CLUJ	54.2	61.6	33.4	35	41	39	38.3	39
CONSTANTA	47.0	65.1	30.6	41	36	41	39.3	40
COVASNA	62.5	66.8	41.8	18	20	20	19.3	20
DAMBOVITA	66.8	70.3	47.0	11	3	4	6.0	2
DOLJ	54.9	66.7	36.6	34	23	33	30.0	31
GALATI	67.5	67.8	45.8	9	13	10	10.7	8
GIURGIU	65.9	66.6	43.9	12	25	12	16.3	14
GORJ	61.6	70.7	43.6	21	2	13	12.0	10
HARGHITA	55.4	66.8	37.1	33	21	32	28.7	30
HUNEDOARA	69.2	70.7	48.9	4	1	2	2.3	1
IALOMITA	56.8	64.4	36.6	32	38	34	34.7	36
IASI	70.2	67.0	47.1	2	17	3	7.3	5
ILFOV	59.8	69.1	41.3	26	6	23	18.3	18
MARAMURES	61.5	70.0	43.0	23	4	15	14.0	11
MEHEDINTI	63.5	67.8	43.0	16	14	14	14.7	13
MURES	53.0	66.0	35.0	38	30	37	35.0	37
NEAMT	60.4	66.6	40.2	25	24	28	25.7	28
OLT	63.4	66.9	42.4	17	18	18	17.7	16
PRAHOVA	59.1	68.2	40.3	28	10	27	21.7	25

Table 1 (continued)

SATU MARE	51.6	65.1	33.6	39	35	38	37.3	38
SALAJ	62.1	66.7	41.5	19	22	21	20.7	23
SIBIU	53.9	66.4	35.8	37	26	36	33.0	35
SUCEAVA	67.9	68.0	46.2	8	12	7	9.0	6
TELEORMAN	62.0	65.5	40.6	20	33	25	26.0	29
TIMIS	59.0	68.5	40.4	29	7	26	20.7	23
TULCEA	61.1	67.7	41.4	24	15	22	20.3	22
VASLUI	69.1	64.5	44.6	5	37	11	17.7	16
VALCEA	61.6	64.3	39.6	22	39	29	30.0	31
VRANCEA	64.3	65.3	42.0	14	34	19	22.3	26

Source: author's own calculations based on NIS, CPD 2011 data

In the counties with the most favourable positions, the determinant rank was that of the population employment rate, which confirms that the population employment rate is one of the most significant indicators of labour force and, which is obvious, a higher utilization of labour resources.

The visual representation of this ranking can be seen in Figure 4, as compared to the ranking obtained through the real rank method, which will be presented below.

As any statistical method, the rank method has both advantages and disadvantages. One disadvantage is that it does not take into consideration the size of gaps that can appear in the hierarchization of counties. Out of this reason, another method was also necessary to verify and confirm the hierarchy of counties established by the rank method, namely the *real rank method*.

Starting from the limitations of the previous method, the real rank method was selected on the basis of certain advantages: it takes into consideration the relative distances between the values of each indicator, from each county, and it weighs the indicators that are not homogenous, by giving a higher or lower weight, depending on the importance of the indicator.

In order to achieve a reasonable hierarchization, a *multi-criteria analysis* was used, utilizing a set of specific, relevant indicators, in order to make a comparison between counties and highlight the existing disparities between them.

The hierarchization of counties by the employment of the population, using the real rank method, presupposes going through the above-mentioned stages, with several particularities.

Calculation of partial real ranks – For each county partial real ranks were calculated, using different formulae depending on what may be a favourable situation for the respective indicator:

- for indicators for which the higher the values, the more favourable the situation is (for instance, the higher the employment rate of labour resources, the more favourable the situation). In our case, having indicators whose value must be high to highlight a favourable situation, the *partial rank (R)* is calculated according to the formula:

$$R_j^i = n - \frac{a_j^i - a_j^{\min}}{a_j^{\max} - a_j^{\min}} (n - 1)$$

$$i = 1, 2, \dots, n; j = 1, 2, \dots, m$$

where:

a_j^i – level of j indicator in the county i;

a_j^{\min} – level of j indicator in the county with minimum value;

a_j^{\max} – level of j indicator in the county with maximum value;

n – number of counties (=41);

m – number of indicators included in the analysis.

In this case, the county with the maximum value of an indicator will receive the rank 1, while the county with the minimum value of an indicator will receive the rank n.

- for the indicators for which the lower the values the better the situation is (for instance, the illiteracy rate, for which the lower the value, the more favourable the situation).

$$R_j^i = n - \frac{a_j^{\max} - a_j^i}{a_j^{\max} - a_j^{\min}} (n - 1)$$

Aggregation of partial ranks – is done by weighting – the weight p_j that is given to each indicator having in view its importance (from the author's point of view³). So we have a weighted average for each county. The sum of weights p_j must be equal to one or 100%, when the values are expressed in percentage terms.

Calculation of real final ranks – for each county the weighted average of partial ranks is calculated, according to the formula:

$$\bar{R}_j = \frac{\sum_{j=1}^m R_j^i p_j}{100} \quad i = 1, 2, \dots, n$$

Establishment of final hierarchy. The final position of each county is established by increasing order, from the lowest value of the final rank (which represents the favourable situation), to its highest value (which is the most unfavourable situation).

In order to achieve the mult-criteria hierarchy of counties, the previously mentioned stages were followed, which can be noticed in Table no.2.

³ The shares were selected by the author following multiple analyses and tests.

Table 2

The hierarchy of counties in terms of rural employment, based on the real rank method, 2011

COUN- TIES	Emplo- yment level of LR	LR share in total popula- tion	Populati on employ- ment rate	Real rank method						Weighted average of ranks	Final position
				a ij – a min			Partial ranks				
				ind. 1	ind. 2	ind. 3	ind. 1	ind. 2	ind. 3		
Rural Total	62.1	67.0	41.6				0.5	0.2	0.3		
Alba	59.7	68.2	40.7	12.7	6.6	10.1	23.8	11.8	20.4	20.4	24
Arad	58.3	66.1	38.6	11.3	4.5	8.0	25.7	21.1	24.8	24.5	31
Arges	66.9	69.4	46.4	19.9	7.8	15.8	14.1	6.8	8.8	11.0	6
Bacau	68.2	67.6	46.1	21.2	6.0	15.5	12.2	14.5	9.3	11.8	8
Bihor	57.7	68.1	39.3	10.7	6.5	8.7	26.6	12.3	23.3	22.7	29
Bistrita- Nasaud	68.7	68.3	46.9	21.7	6.7	16.3	11.6	11.5	7.7	10.4	4
Botosani	76.5	65.6	50.2	29.5	4.0	19.6	1.0	23.4	1.1	5.5	1
Brasov	49.5	63.0	31.2	2.5	1.4	0.6	37.6	34.8	39.7	37.7	40
Braila	69.9	65.9	46.0	22.9	4.3	15.4	10.0	22.1	9.5	12.3	9
Buzau	64.7	66.1	42.8	17.7	4.5	12.2	17.0	21.1	16.2	17.6	16
Caras- Severin	54.1	66.2	35.8	7.1	4.6	5.2	31.4	20.9	30.4	29.0	36
Calarasi	63.5	66.9	42.5	16.5	5.3	11.9	18.6	17.8	16.8	17.9	17
Cluj	54.2	61.6	33.4	7.2	0.0	2.8	31.2	41.0	35.3	34.4	39
Constanta	47.0	65.1	30.6	0.0	3.5	0.0	41.0	25.7	41.1	38.0	41
Covasna	62.5	66.8	41.8	15.5	5.2	11.2	20.0	17.9	18.2	19.1	19
Dambovita	66.8	70.3	47.0	19.8	8.7	16.4	14.1	2.6	7.5	9.8	3
Dolj	54.9	66.7	36.6	7.9	5.1	6.0	30.3	18.7	28.8	27.6	33
Galati	67.5	67.8	45.8	20.5	6.2	15.2	13.2	13.6	10.0	12.3	10
Giurgiu	65.9	66.6	43.9	18.9	5.0	13.3	15.4	19.0	13.9	15.6	13
Gorj	61.6	70.7	43.6	14.6	9.1	13.0	21.1	1.2	14.6	15.2	12
Harghita	55.4	66.8	37.1	8.4	5.2	6.5	29.5	18.0	27.8	26.7	32
Hunedoara	69.2	70.7	48.9	22.2	9.1	18.3	10.9	1.0	3.6	6.7	2
Ialomita	56.8	64.4	36.6	9.8	2.8	6.0	27.7	28.9	28.8	28.3	34
Iasi	70.2	67.0	47.1	23.2	5.4	16.5	9.5	17.2	7.4	10.4	5
Ilfov	59.8	69.1	41.3	12.8	7.5	10.7	23.7	8.1	19.2	19.2	21
Maramures	61.5	70.0	43.0	14.5	8.4	12.4	21.4	4.3	15.7	16.3	14
Mehedinti	63.5	67.8	43.0	16.5	6.2	12.4	18.7	13.8	15.7	16.8	15
Mures	53.0	66.0	35.0	6.0	4.4	4.4	32.8	21.5	32.0	30.3	37
Neamt	60.4	66.6	40.2	13.4	5.0	9.6	22.8	18.8	21.3	21.6	28
Olt	63.4	66.9	42.4	16.4	5.3	11.8	18.7	17.6	16.8	17.9	18
Prahova	59.1	68.2	40.3	12.1	6.6	9.7	24.6	12.0	21.2	21.1	26
Satu Mare	51.6	65.1	33.6	4.6	3.5	3.0	34.8	25.4	34.9	32.9	38
Salaj	62.1	66.7	41.5	15.1	5.1	10.9	20.5	18.4	18.8	19.6	23
Sibiu	53.9	66.4	35.8	6.9	4.8	5.2	31.6	20.1	30.4	28.9	35
Suceava	67.9	68.0	46.2	20.9	6.4	15.6	12.6	12.8	9.1	11.6	7

Table 2 (continued)

Teleorman	62.0	65.5	40.6	15.0	3.9	10.0	20.7	23.9	20.6	21.3	27
Timis	59.0	68.5	40.4	12.0	6.9	9.8	24.7	10.8	21.0	20.8	25
Tulcea	61.1	67.7	41.4	14.1	6.1	10.8	21.9	14.2	19.0	19.5	22
Vaslui	69.1	64.5	44.6	22.1	2.9	14.0	11.0	28.1	12.4	14.9	11
Valcea	61.6	64.3	39.6	14.6	2.7	9.0	21.2	29.3	22.7	23.3	30
Vrancea	64.3	65.3	42.0	17.3	3.7	11.4	17.5	24.9	17.8	19.1	20

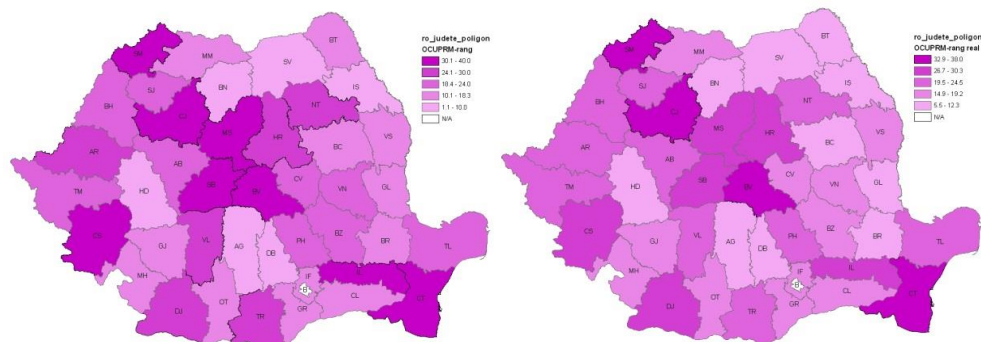
Source: NIS, CPD 2011, author's own calculations

Weights were assigned to each indicator, depending on the importance of each indicator, as follows: for the employment rate of human resources – 50%, for the share of labour resources (LR) in total population – 20%, for the population's employment rate – 30%.

The final average rank (the weighted average of ranks) indicates the position of each county in total hierarchy. By analyzing the values of average ranks, the gaps between counties can be also noticed. On the basis of the results obtained by the real ranks method, the county Botoşani stands out, ranking 1st in the hierarchy as regards population's employment (with 5.5 – the average rank value), closely followed by the county Hunedoara (with 6.7); the county Dâmboviţa ranks 3rd, at a little greater distance from the second position, by 3.2 points (with 9.8). The 1st place held by the county Botoşani results from the best utilization of rural resources and population.

At the other extreme, on the last place in the hierarchy, we find the county Constanţa, at a distance of 32.5 points from the first county.

In Figure 4 we can see the visual representation of the rural employment, combining the three indicators investigated above. While in Table no.2 we can see the ranking of counties based on the real rank method and the position of each county in this hierarchy, in Figure no.4 we can see the counties with the most favourable situation, less favourable situation respectively, in terms of rural population's employment, differentiated by colours, according to legend.



Source: Author's own calculations based on NIS, CPD 2011 data

Figure 4. Rural employment, based on the rank method, real rank method respectively, 2011

4.3. COMPARING THE RESULTS OBTAINED BY THE TWO METHODS

The results of the hierarchization of counties in terms of population's employment, on the basis of the two methods presented above, reveal the following:

- identical hierarchy, regardless of the hierarchization method used – in the case of 9 counties: Arad, Cluj, Iași, Mureș, Neamț, Satu Mare, Sălaj, Sibiu, Tulcea;
- quite similar hierarchy ± 1 point, one method versus the other – in the case of 11 counties: Bacău, Bistrița-Năsăud, Brașov, Constanța, Covasna, Dâmbovița, Giurgiu, Hunedoara, Prahova, Suceava, Vâlcea;
- in the other counties, the hierarchy is $\pm 2-3$ points;
- exception: 3 counties (Vaslui, Vrancea and Botoșani) in which the hierarchy resulting from the use of one method is at 5–9 points distance from that resulting from the second method. It can be noticed that the use of the real rank method determined a better ranking for the three mentioned counties. Thus, the county Botoșani, which is on the 9th position in the ranking based on the rank method, ranks 1st in the hierarchy by the real rank method.

A brief overview of results, yet without skipping the algorithms of each method applied, leads us to the conclusion that the real rank method provides a more refined hierarchy, unlike the first method, the rank method. On the other hand, weighting is not totally risk-free and can introduce a degree of error (based on the author's subjective opinion).

This conclusion does not mean that by using the first method we cannot obtain a correct hierarchy. The hierarchy obtained on the basis of the first method is a simple and quick one, and can give a first indication on the ranking of counties in terms of rural population's employment.

5. CONCLUSIONS

The hierarchization obtained by the *real rank method* provides a more refined hierarchy, as it takes into consideration the relative distances between the values of each indicator, in each county, and assigns, by weighting, importance to each indicator. By using the simple and quick *rank method*, we can have a first indication on the ranking of counties, but this should be completed by another territorial hierarchization method (real rank method, standard deviation method, gap/difference method, distance ratio versus average level of a feature, etc.) to confirm or deny the ranking.

Regardless of the method used, in terms of population's employment, by overlapping the maps, we can roughly notice the same hierarchy of counties.

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