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EVALUATION OF RURAL COMPETITIVENESS - CASE STUDY ROMANIA -

MONICA MIHAELA TUDOR¹

Abstract: *Regional competitiveness, understood as the ability of regions to promote, attract and sustain the economic activity, so that their population can reach and maintain a high living standard, is the object of the present analytical approach. The results of the study revealed that the economy of the predominantly rural regions is less competitive than the economy of the intermediate regions. The factors that mainly contribute to widening the territorial disparities in rural competitiveness are the following: i) size of RDI staff that provides the comparative advantage of the access to innovation and ii) value of exports, both in the non-agricultural and in the agri-food economy, certifying the competitive advantage of regional economies on the international markets.*

Key words: *regional competitiveness; rural area; Romania.*

JEL Classification: *O11, O18, R58.*

INTRODUCTION

For the purpose of the present analytical approach, *regional competitiveness* is understood as the *ability of regions to promote, attract and sustain the economic activity so that their population can reach and maintain a high living standard*. According to this definition, a region is competitive when it has a highly accessible business environment, which produces and/or is attractive for the mobile production factors (highly qualified labour, innovative entrepreneurship, etc.), thus generating economic growth. The success in attracting these factors creates positive externalities, such as the benefits generated by concentration and localization, resulting in the increase of the economic welfare of a region.

The *objective* of the present study is to evaluate regional rural competitiveness, more exactly a comparative analysis between the competitiveness of the predominantly rural NUTS III regions (counties), on one hand, and the intermediate regions, on the other hand, in order to identify the parameters that facilitate / constrain competitiveness growth at the level of each of these categories of regions in Romania.

Using a model that measures regional competitiveness developed in Croatia in the year 2012, the present study attempts to determine the rural competitiveness level in the development region South-East and by its component counties. The selection of this development region for the analysis of regional competitiveness is motivated by its balanced structure from the point of view of the types of NUTS III regions (counties) defined by their rurality level. Thus, this region consists of six counties, out of which three counties are included in the category of "predominantly rural" regions according to the OECD methodology (counties: Buzău, Tulcea și Vrancea), the other three counties being considered "intermediate" regions (counties: Brăila, Constanța, Galați).

Two *working hypotheses* were formulated and tested throughout the analysis, namely:

1. the predominantly rural regions are less competitive than the South-East region average;
2. the weak development of the RDI sectors at regional level significantly impacts competitiveness.

MATERIAL AND METHOD

There is a relatively rich literature referring to the economic competitiveness of the sectors of Romanian national economy as a whole or across the development regions. In Romania, the

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predominantly rural (PR) regions and the intermediate (INT) regions have a significant socio-economic importance compared to the other European Union (EU) member states. Thus, the rural regions in Romania, accounting for 60% of the country's territory where 45.6% of the country's population is living, contribute by 32.7% to the gross value added (GVA) and by 14.8% to labour employment; these add to the intermediate regions, which in their turn have significant contributions to the descriptive parameters of our country, making Romania be the most rural EU member state. However, the research on the rural competitiveness evaluation in Romania and on the factors determining is relatively modest, mainly referring to the competitiveness of the main sector of rural economy, i.e. agriculture (Sarris et al, 1999; Bojnec & Fertó, 1999; Fogarasi, 2008).

The present research attempts to bring a methodological and applicative contribution to the study of rural competitiveness at county level. It focuses on the development of an evaluation methodology of the *rural competitiveness index* on the basis of available statistical information and on testing the functionality of this analytical model in a case study, at the level of one development region, i.e. the South-East Region and by its component counties.

In order to evaluate the *rural competitiveness index* at the level of South-East development region and by its component counties, a statistical model developed by O. Mikuš, R. Franić and I. Grgić (2012), in order to measure the territorial disparities in regional competitiveness in Croatia, was adapted for the purpose of our present research. The Croatian model was adapted to the statistical data available in Romania.

For the model adapted to the county level in Romania, the data were extracted from statistical sources of secondary data at the level of the year 2012, having in view the concrete limitations imposed by certain indicators for which the latest available year was 2012. The only indicators for which the data were extracted at the level of previous years are *population with higher education* (source: Census of Population and Dwellings, 2011) and *average size of agricultural holding (farm)* (source: General Agricultural Census 2010).

Table 1. Adapted competitiveness evaluation model at county level

| Group / Indicators | |
|---|--|
| Group – Human resources | |
| Employed population (thou. pers.) | Young population 0-20 years (pers.) |
| Population with higher education (pers.) | Population density (pers./km ²) |
| Group – Situation of the non-agricultural sector economy | |
| Turnover (thousand euro) | Density of active local units (no. of active local units /1000 inhabitants) |
| Value of exports (thou. euro) | Net average wage (euro) |
| Group- Situation of primary sector economy | |
| Average farm size (ha UAA /farm) | Density of active local units (no. of active local units /1000 inhabitants) |
| Turnover (thousand euro) | Net average wage (euro) |
| Value of exports (thousand euro) | |
| Group – Specialization and innovation | |
| Share of population employed in non-agricultural sectors | Share of crop production value in total agricultural production value |
| RDI employees in 10000 civilian employees | |

The calculation formula for the competitiveness indicators (rural competitiveness index components) was the following:

$$X_i = 100(x_i/X)/(p_i/P)$$

where:

- the small letters are the values at county level/of the NUTS III region category, while the capital letters are the values at regional level;
- x_i represents the variable selected for county / NUTS III region category and X for region;
- p_i represents the population at county level / NUTS III region categories, and P at regional level.

Each indicator was assigned a specific weight equal to that of the other indicators in the group, and for each group an intermediate index value (SI), using the arithmetic mean; the values

that result for each group of indicators (SI) were used to calculate the value of the *rural competitiveness index (RCI) at county level and by NUTS III regions (predominantly rural or intermediate regions*, according to OECD classification), resulting from the calculation of the arithmetic mean of the SI values – it was considered that all the components are equally important for expressing competitiveness.

RESULTS AND DISCUSSIONS

The development region South-East was on the penultimate place in the year 2013 among the 266 NUTS II regions of the European Union as regards the Regional Competitiveness Index calculated according to the EUROSTAT methodology, which was the lowest rank that a Romanian region had in this hierarchy (JRC, 2013).

As the specialty literature signals out the existence of significant disparities in the territory as well as the absence of competitiveness homogeneity of the national and/or regional national economic blocks, the present study proposes the analysis of the competitiveness level of the administrative-territorial subdivisions of the development regions, i.e. the counties. As none of the six counties of the investigated development region is included, according to the OECD typology, in the category of the predominantly urban NUTS III regions, we consider it opportune to determine the rural competitiveness level in order to measure the capacity of the county economies to be competitive. Considering the fact that the six counties of the South-East region are equally classified in the categories: i) predominantly rural regions (counties Buzău, Tulcea and Vrancea) and ii) intermediate regions (counties Brăila, Constanța and Galați), the analysis of the rural competitiveness level will try to highlight the differences between these two categories of regions in order to determine whether the rurality level is associated with a lower competitiveness level.

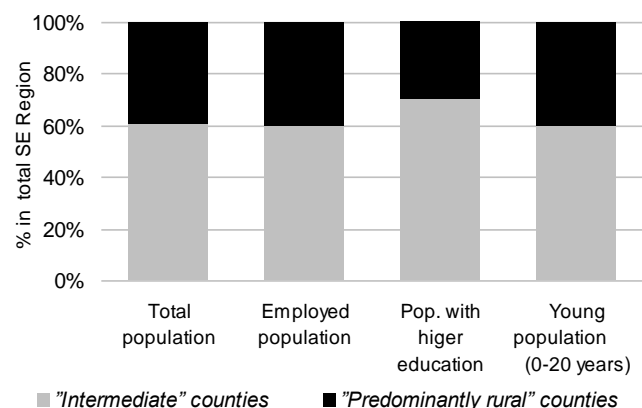
1.1. General characteristics of the South-East region

In the preamble to the regional competitiveness analysis in the area selected for the case study, we consider it useful to present a brief review of the main parameters that describe this development region from the perspective of parameters included in the competitiveness index determination model.

Human resources

The population of the development region South-East accounts for 12.6% of Romania's total population, 12.7% of the young population (age group 0-20 years) and 10.4% of the population with higher education nationwide. The economy of the investigated development region provides jobs to 11.8% of total employed population nationwide. The analysis of the human resource distribution in the SE region reveals that the majority (about 60%) of total population, of the young population and of the employed population of the region are living or working in the three counties classified in the category "Intermediate" regions from the rurality perspective. 70% of the inhabitants of the region with higher education are also living in the above-mentioned counties. Hence, it is expected that the performance of the economy of these category of counties is higher due to their higher capacity to attract highly-skilled labour resources.

Figure 1. Distribution of human resources by rural-urban typology of counties



Source: NIS, tempo on-line, www.insse.ro

The situation of the non-agricultural sector economy

11.5% of the active local units from the secondary and tertiary sectors of national economy are operating in the development region South-East. The contribution of the economic operators from the SE region to the turnover created nationwide by the enterprises from industry, constructions and services is 8.8%. Similarly, out of total value of exports from the non-agricultural sector at national level, 9.7% is the share of exports by the economy of the SE region. As the contribution to the turnover and value of the non-agricultural sector exports in the SE region is lower than its proportional share in the number of active economic operators at national level, we can remark that the size of non-agricultural enterprises in the investigated region is lower than the national average and their market share is lower than that of their competitors from other development regions.

The analysis across counties of the non-agricultural economy parameters in the SE region reveals that 67% of the active local units in industry, construction and services are operating in three counties that are considered "intermediate". The active economic operators in the counties Brăila, Constanța and Galați contribute by 74% to the turnover of regional non-agricultural economy and they export commodities and services whose value amounts to 77% of the total value of non-agricultural exports of the investigated region.

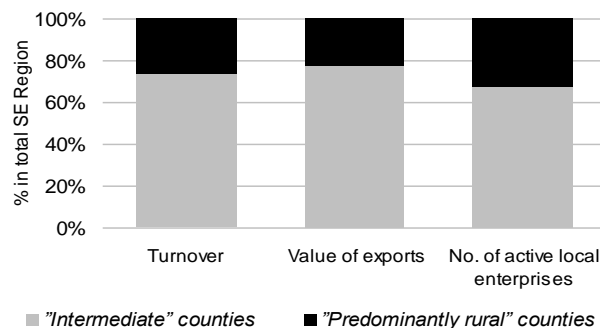
Situation of the primary sector economy

The primary sector of the economy in the SE region is much more developed than the secondary and tertiary sector and its competitiveness, mainly in exports, is relatively high. Thus, 18.1% of the local active units in agriculture, forestry and hunting nationwide are operating in the development region South-East. These economic operators produce 17.5% of the turnover obtained in the primary sector of our country's economy and their exports account for 20.1% of the total value of national agri-food exports. One of the explanations for the comparative advantage of agriculture in the region SE as compared to the national average resides in the higher concentration level in the operation of land resources. Thus, the average farm size in the region SE is 4.94 ha utilized agricultural area (UAA), higher by 40% than the national average, i.e. 3.57 ha, according to the last agricultural census.

The comparative analysis of the primary sector performance between the predominantly rural counties and the intermediate counties in the region SE reveals that the export competitive advantage is held by the active local units in the primary sector from the counties classified in the "intermediate" category, these contributing by 79% to the total value of agri-food exports of the region.

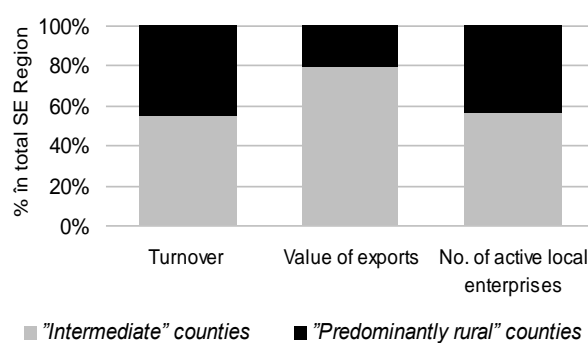
The export availability is higher in the case of active local units in the primary sector of the counties Brăila, Constanța and Galați due to the higher turnover obtained by these economic operators (55% of total turnover of active units in the primary sector of the economy in the SE region), which can be partly explained by the almost double size of the agricultural land area operated by an

Figure 2. Distribution of non-agricultural sector parameters by rural-urban typology of counties



Source: NIS, tempo on-line, www.insse.ro

Figure 3. Distribution of primary sector parameters by rural-urban typology of counties



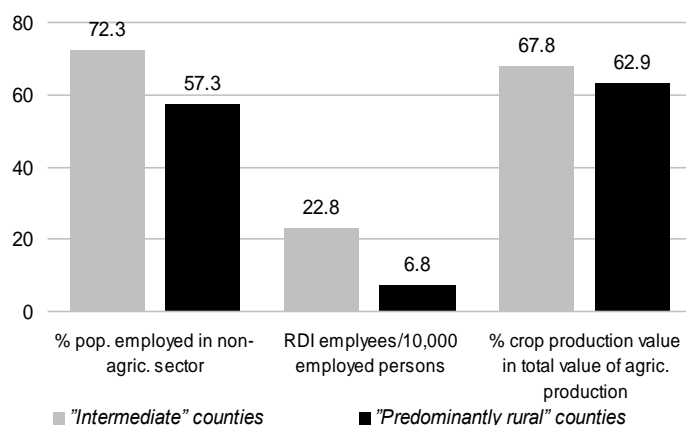
Source: NIS, tempo on-line, www.insse.ro

agricultural unit; 6.72 ha UAA/farm is the farm average size in the three intermediate counties, while in the predominantly rural counties the average farm size is only 3.68 ha UAA.

Specialization and innovation

The complexity of an economy increases with the increase of labour input allocated to the secondary and tertiary sectors. In this context, the SE region economy has a lower complexity level than the national average, as only 66% of the labour force is working in the non-agricultural sectors, compared to 70.7% at national level. As the economic complexity level increases, the vertical and horizontal integration between the economic branches and sub-branches is amplified and diversified, with specialization in production and services emerging into increasingly narrow niches, incorporating increasingly advanced technologies. For setting into motion and development of complex economies, applied research is also needed, besides highly skilled labour, which should identify innovative modalities to increase the economic performance of producers of goods and services; briefly, a research-development-innovation (RDI) sector is needed, extended and integrated in relation to the final users of innovations. With only 16.4 RDI employees / 10000 civilian employees, the SE region is much below the national average, with 49.8 RDI employees / 10000 employees. As a result, the innovative capacity, support to competitiveness growth, is deficient in the case of the region SE.

Figure 4. Distribution of specialization and innovation parameters by rural-urban typology of counties



Source: NIS, tempo on-line, www.insse.ro

in the non-agricultural sectors being 57.3% and 72.3% respectively. The innovative potential of the NUTS III predominantly rural regions is also low; with only 6.8 RDI employees in 10000 employees, the capacity to concentrate specialized labour in the research sector is three times lower than in the intermediate regions.

The specialization level in agricultural production is lower in the case of predominantly rural NUTS III regions, which results in lower agri-food export availabilities.

1.2. Rural competitiveness in the South-East region

We shall next present the results obtained with regard to rural competitiveness evaluation at the level of county categories (predominantly rural and intermediate counties) in the development region South-East, which were determined by the application of the previously described methodology. We must specify that these calculations are not definitive and they can be prone to changes according to data availability at NUTS III level and the progress of socio-economic research in measuring competitiveness.

A first result of the proposed methodology application for determining the rural competitiveness index reveals that the South-East development region is by 3.63% less competitive

The specialization in crop production, as revealed by the share of crop production value in total agricultural production value, is higher in the SE region (65.7%) than the national average of 62.5%. This specialization can create higher export availabilities, yet at the same time it generates low value added in agriculture compared to the livestock raising sector. The comparison between the specialization and innovation indicators across counties in the region SE reveals that in the "predominantly rural" regions (counties Buzău, Tulcea and Vrancea), the development level of the non-agricultural sectors is much lower than in the case of the "intermediate" NUTS III regions, the share of population employed

that Romania's average. This first conclusion is meant to validate the functionality of the model proposed in this study for competitiveness analysis, this being convergent with the conclusions of the Eurostat analyses of competitiveness across regions.

Rural competitiveness was determined for the two categories of NUTS III regions of the development region South-East, categories defined according to the rurality level, in order to test the previously formulated hypothesis by which the rurality level influences regional competitiveness. *The rural competitiveness level of the predominantly rural counties (PR) and intermediate counties (INT) was determined in relation to the South-East development region average, using the Rural Competitiveness Index (RCI) developed in the study.* The results of the application of the rural competitiveness index calculation model are presented in the table below, both for the predominantly rural regions (counties Buzău, Tulcea and Vrancea) and for the intermediate regions (Brăila, Constanța, Galați).

Table 2. Rural competitiveness index in the predominantly rural and intermediate regions in the South-East development region

| Group / Indicators | Region South-East (P=2538949) | INT* (p _i =1538117) | PR** (p _i =1000832) | Rural competitiveness indicators (X _i) for: | |
|---|-------------------------------------|-----------------------------------|-----------------------------------|---|--------------|
| | | | | INT* | PR** |
| Group – Human resources | | | | | |
| Employed population (thou. persons) | 1011 | 604.7 | 406.3 | 98.73 | 101.95 |
| Population with higher education (pers.) | 268348 | 187323 | 81025 | 115.23 | 76.60 |
| Young population 0-20 years (pers.) | 540895 | 323496 | 217399 | 98.72 | 101.96 |
| Population density (pers./km ²) | 70.8 | 94.1 | 512 | 132.91 | 72.32 |
| <i>Average of indicators in Group 1 (SI₁)</i> | | | | 111.40 | 88.21 |
| Group – Non-agricultural sector economy situation | | | | | |
| Turnover (thousand euro) | 21982843 | 16236579 | 5746264 | 121.92 | 66.31 |
| Value of exports (thousand euro) | 4129817 | 3186764 | 943053 | 127.37 | 57.93 |
| Density of local active units (no. of local active units / 1000 inhabitants) | 21.34 | 23.55 | 17.95 | 110.34 | 84.10 |
| Net average wage (euro) | 330 | 337 | 301 | 102.22 | 91.30 |
| <i>Average of indicators in Group 2 (SI₂)</i> | | | | 115.46 | 74.91 |
| Group – Primary sector economy situation | | | | | |
| Average farm size (ha UAA /farm) | 4.94 | 6.72 | 3.68 | 136.03 | 74.49 |
| Turnover (thousand euro) | 1305893 | 717871 | 588022 | 90.74 | 114.23 |
| Value of exports (thousand euro) | 542293 | 430585 | 111708 | 131.07 | 52.26 |
| Density of local active units (no. of local active units /1000 inhabitants) | 1.17 | 1.10 | 1.29 | 93.82 | 110.03 |
| Net average wage (euro) | 233 | 236 | 238 | 101.21 | 102.07 |
| <i>Average of indicators in Group 3 (SI₃)</i> | | | | 110.57 | 90.62 |
| Group – Specialization and innovation | | | | | |
| % employed pop. In non-agricultural sectors | 66.28 | 72.30 | 57.30 | 109.08 | 86.45 |
| No. of RDI employees in 10000 employees | 16.40 | 22.80 | 6.80 | 139.02 | 41.46 |
| % crop production value in total agricultural production value | 65.67 | 67.84 | 62.90 | 103.30 | 95.78 |
| <i>Average of indicators in Group 4 (SI₄)</i> | | | | 117.14 | 74.56 |
| Rural competitiveness index (RCI) | | | | 113.64 | 82.07 |

*INT – NUTS III regions considered "Intermediate" regions according to the rurality level

** PR – NUTS III regions considered "Predominantly rural" according to the rurality level

According to these data, we can draw the conclusion that in the year 2012, the predominantly rural NUTS III regions were by 17.93% less competitive than the overall South-East development region, while the counties considered as intermediate from the rurality level standpoint are by 13.64% more competitive than the regional average. Hence, the first hypothesis advanced in

our study has been confirmed, proving the fact that the *increase of the rurality level of a region has a negative influence upon rural competitiveness*.

The analysis of the four components (groups) of the Rural Competitiveness Index, as well as of their indicators highlights the strengths that support the competitiveness of the two categories of NUTS III regions as well as the weaknesses that make the predominantly rural regions have a lower competitiveness level than the regional average. Thus:

- For all the groups of indicators included in the analysis, the intermediate NUTS III regions have higher competitiveness performances than the regional average, the reverse of this statement being true for the predominantly rural counties for which the intermediate competitiveness indices, for each of the four groups, are lower than the regional average;
- The comparative analysis of all the model parameters reveals that the predominantly rural regions have the lowest competitive performance for the group of indicators *Specialization and innovation* for which the capacity of the economy of the counties Buzău, Tulcea and Vrancea to face competition is by 25.44% lower than the South-East region average. On the other hand, in the case of counties from the "intermediate" category, the intermediate competitiveness indicator for the group *Specialization and innovation* (SI₄) has the highest value (as compared to the regional average) among all the groups of indicators from the model (by 17.14% higher than the regional average);
- Significant competitiveness disparities between the categories of regions are found for all the groups of indicators in the model; however, after *Specialization and innovation*, the greatest differences are quantified for the indicators that describe the *Non-agricultural economy* for which the predominantly rural NUTS III regions have performances by 25.44% lower than the regional average, while for the three intermediate counties together (Brăila, Constanța and Galați) the non-agricultural economy competitiveness is by 15.46% higher than the South-East region average;
- The only parameters of the model for which the predominantly rural regions have a competitive performance closer to the regional average are those of the *Primary sector economy* for which the competitiveness level of the counties Buzău, Tulcea and Vrancea together is by only 9.38% lower than the regional average;
- In the case of predominantly rural regions, the factor that mainly affects in a negative way the competitiveness of both the primary economy sector and the non-agricultural economy sector is the *Value of exports* for which the intermediate competitiveness indicators (Xi) account for only 52.26% and 57.93% respectively of the regional averages. On the other hand, in the case of the group of the three intermediate counties of the South-East region, the exports of both segments of the economy have a significant contribution to the improvement of their general competitiveness parameters;
- Among all the indicators included in the model, the greatest disparities between the predominantly rural regions and the intermediate regions are found between the intermediate indicators of rural competitiveness for *Innovation*, more exactly in the case of the *number of RDI employees / 10000 civilian employees*. Thus, while for the predominantly rural NUTS III regions, the intermediate competitiveness indicator account for only 41.46% of the regional average, for the other category of counties, the competitiveness level in innovation represents 139.02% (higher by 39.02% than the regional average). Hence, the innovative capacity is the factor for which the competitiveness disparities across the categories of regions are the highest and it can be considered the main comparative advantage that leads to competitiveness increase in the investigated regions and makes the difference between the predominantly rural and the intermediate regions. Thus, the second hypothesis launched in this study according to which the *poor development of RDI sectors at regional level significantly influences the competitiveness level*, has been affirmatively validated.

CONCLUSIONS

The current study, with the goal to evaluate the rural competitiveness level, developed a first methodological approach to propose and validate the functionality of a theoretical model to measure the competitive advantages of regional economies with different rurality levels. This theoretical-methodological approach was materialized into the adaptation of a rural competitiveness evaluation model that was developed in Croatia in the year 2012; the model was adjusted according to the available statistical information at the level of NUTS III regions from Romania and to the recent theoretical approaches in competitiveness evaluation advanced by well-reputed international forums such as the World Economic Forum and Eurostat.

The area selected as case study for this research was the development region South-East, due to its balanced componentry from the perspective of the rurality level of the component counties. According to this, out of the six counties of the region, three counties belong to the "predominantly rural" category and the other three belong to the "intermediate category".

Following the application of the model for rural competitiveness evaluation at the level of the two categories of NUTS III regions, it results that the economies of the predominantly rural regions are less competitive than the economies of the intermediate regions. The results of the same model reveal the fact that the factors that contribute to the greatest extent to the amplification of the territorial disparities with regard to rural competitiveness between the two categories of NUTS III regions are the following: i) size of staff employed in RDI activities, which contributes to the comparative advantage of the access to innovation and ii) the value of exports, both in the non-agricultural economy and in the agri-food economy, certifying the competitive advantage of regional economies on the international markets.

In order to increase rural competitiveness, measures are needed to improve the performance parameters of the predominantly rural counties in the first place, with a priority focus on the transfer of innovation in all the economic sectors, which will lead to the increase of labour productivity, of the quality of products and services, of turnover and of export availabilities implicitly.

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