

MULTICRITERIAL APPROACH TO REGIONAL COMPETITIVENESS. CASE STUDY: REGION SOUTH-MUNTENIA

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Abstract: *Measuring the competitiveness level in the rural area has acquired increased importance in recent years, generated both by the rural area size and the available socio-economic resources, as well as by the need to identify certain local development poles, generating added value. Starting from these considerations, the present approach intends to address rural competitiveness through a multicriterial approach, on the basis of relatively limited public statistical data, as support in building up a system of indicators that reveal competitiveness structure, dynamics and behaviour, both in quantitative and qualitative terms. In this respect, the design of this system of indicators reflects the specificity of economic processes, the evolution trends, the factors with positive and negative impact, as support in the knowledge of the economic potential and competitiveness level.*

Key words: *competitiveness, rural area, development region*

INTRODUCTION

The competitiveness issue at regional level has suscitated many debates in time, both in the scientific research and business environment or among decision-makers. The results of the studies were useful in formulating certain strategic development projections, as well as in the design and implementation of local projects.

Starting from these considerations, we consider that the present approach adds further knowledge in measuring the local competitiveness level, completing the current information stock.

State of knowledge

In the last 2-3 decades, regional competitiveness became one of the key-concepts used in the regional socio-economic analysis. Since the first EU reports on competitiveness that signalled out alarming trends concerning the competitiveness advantage both in global and local context, up to the present strategic guidelines of the Community giving priority to regional competitiveness, the subject was “on top of the list” at the level of European policy formulation. There are numerous studies that calculate competitiveness indices, but most of them are at national level. Besides, there are also competitiveness studies at regional level, which include fewer indicators than the national competitiveness indicia. Obviously, it is not easy at all to select what to include in a competitiveness index, as this is quite a vague concept and cannot be directly measured. Furthermore, in reality all the relevant indicators for competitiveness are intercorrelated, and the causality is quite difficult to evaluate.

Starting from the above considerations, in order to measure competitiveness at the level of the region South-Muntenia, the present approach was based on the data supplied by the National Institute of Statistics (NIS), Tempo-online database, as well as on the Eurostat information on the evolution of certain value indicators at NUTS 3 level.

RESEARCH RESULTS

From the methodological point of view, the attempt to construct a model that expresses the competitive potential of the region South-Muntenia is constrained by the unavailability of necessary information at county and sometimes even at regional level. Analyzing the different information sources and models determining the competitiveness level of a region, the present approach intended to construct a matrix of indicators, depending on data availability, the aggregation and interpretation of which make it possible to draw pertinent and relevant conclusions regarding local competitiveness. We must specify that some of these indicators represent elements of the basic and efficiency levels of the EU regional competitiveness index model.

Practically, in estimating the local competitiveness level, the following matrix of indicators was considered:

- Total population at regional level and by component counties, with the share of rural population;
- Labour force indicators (employed population in total economy, in the agricultural sector and in industry, active civilian population, employment rate, specialization index);
- Infrastructure indicators (length of public roads);
- Healthcare system quality indicators (number of healthcare units, number of physicians and beds in hospitals);
- Education system quality indicators (from the perspective of the number of graduates by forms of education);
- Indicators referring to the market size (number of active local units);
- Result indicators: GDP, GVA (total, agriculture, industry), labour productivity.

Compared to the period 2000-2014, the analysis of modifications produced in the population reveals that in a 15-year period, the total population of the region South-Muntenia was down by 5.5%, the same tendency being also found at the level of component countries. From this point of view, the most significant population decrease was found in the county Teleorman (-14.2%).

In the year 2014, 14.8% of the total number of Romania's inhabitants were registered in the region South-Muntenia. From the perspective of the rural area, in the year 2014 the region South-Muntenia had 19.3% of the total rural population, with the highest shares by component counties in the counties Dâmbovița (67.8%), Giurgiu (67.3%) and Teleorman (63.7%).

Throughout the period 2000-2014, the rural population was down by 6.2% at regional level, with oscillations by counties ranging from -2.3% (Argeș) to -15.5% (Teleorman). Practically, in the ranking of counties, it can be noticed that the counties with the largest number of inhabitants also have the highest share of rural population. We speak here about the counties Prahova, Dâmbovița and Argeș (Table 1).

Table 1.

Ranking of counties by the population number

	Total population	Pop. in the rural area
Argeș	6	5
Călărași	3	3
Dâmbovița	5	6
Giurgiu	1	2
Ialomița	2	1
Prahova	7	7
Teleorman	4	4

Source: Calculations based on NIS data, 2015

In relation to the employed population, the period 2000-2014 is characterized by a noticeable decreasing trend nationwide, which was mainly the result of involutions in the agricultural sector. Thus, while at the level of the region South-Muntenia, the employed population was down by 11.4%, the decrease in the farming sector reached more than 35%, while in industry the decline was by about 12.7% (Table 2).

Table.2.
Modifications produced in the employed population, 2014 compared to 2000 (%)

	Total economy	Agriculture*	Industry
TOTAL	-2.3	-35.5	-11.1
MACROREG. THREE	13.2	-35.6	-16.6
SOUTH-MUNTENIA	-11.4	-35.6	-12.7
Argeș	-14.3	-36.2	-26.3
Călărași	-15.4	-36.3	5.5
Dâmbovița	-9.4	-36.0	-6.7
Giurgiu	-15.1	-35.5	3.8
Ialomița	-6.5	-33.6	39.3
Prahova	-1.8	-35.7	-11.1
Teleorman	-22.0	-35.6	-15.4

* agriculture, forestry, fisheries. Source: calculations based in NIS data, 2015.

The significant regional diminution of the population employed in agriculture is the effect of the diminution in all the seven counties. However, it is worth mentioning the increasing tendency of the population employed in industry in three counties, i.e. Ialomița, Călărași and Giurgiu; the other counties continued to follow the same decreasing trend, yet with lower intensity compared to the agricultural sector. On a cumulated basis, in the year 2014, per total employed population, the county Giurgiu had the lowest level in total region, which places it on the first place both per total and at the level of industry. A particular case is represented by the county Prahova, which has the largest number of employed population in the region, being also on top of the list with regard to the active population in industry (Table 3).

Table 3.
Ranking of the component counties of the region South-Muntenia by the employed population

	Total	Agriculture	Industry
Argeș	5	6	6
Călărași	2	3	3
Dâmbovița	4	5	5
Giurgiu	1	2	1
Ialomița	2	1	2
Prahova	6	4	7
Teleorman	3	7	4

Source: Calculations based on NIS data, 2015.

As an expression of the potential labour supply, the active civilian population, calculated as sum of the employed civilian population and of the number of the unemployed, followed a decreasing trend in the period 2000-2014, both per total region (-14.4%) and at the level of component counties, with an oscillation range from -10.3% (Prahova) to -18.8% (Călărași). In the year 2014, the highest level of active civilian

population was found in the county Prahova (7th place), followed at small distance by Argeş (6) and Dâmboviţa (5); in decreasing order, the ranking included the counties Teleorman (4), Călăraşi (3), Ialomiţa (2) and Giurgiu (1). The same decreasing tendency can be also noticed in the employment rate, which in 15-year time was down by 5.9% per total region South-Muntenia, due to the decline in five out of the seven component counties, namely: Argeş, Călăraşi, Dâmboviţa, Giurgiu and Teleorman. In the year 2014, the highest employment level was found in the county Teleorman (71.7%); the county Giurgiu lay at the opposite pole, with an employment rate of only 50.7%.

An interesting evolution can be noticed as regards the industrial specialization index. Calculated as ratio of employed population in an economic sector to total employed population, the index reveals the propensity to a certain sector of activity. From this point of view, in the present approach, this index was calculated for agriculture and industry. In the period 2000-2014, the share of the population employed in agriculture in total employed population decreased by 13.3% per total region South-Muntenia, as a result of the same decreasing trend in the 7 counties of the region. However, the percentage of the population employed in agriculture in total employed population by counties oscillated from 26.9% (Argeş) to 53.9% (Teleorman) in the year 2014.

Unlike the agricultural sector, the share of the population employed in industry in total employed population had the tendency to increase in five out of the seven counties in the same period, the exceptions being the counties Argeş (-0.3%) and Prahova (-2.9%). Compared to the year 2000, there is a noticeable decreasing tendency of the propensity for farming activities, although in absolute values, this continues to prevail in certain counties. It is obvious that the counties found in the plain areas are mainly oriented to the development of farming activities and less to industrial activities.

A particular situation can be noticed in the counties located both in the plain area and in the hills and mountains. This is the case of the counties Argeş and Prahova, where there is a relative balance between the agricultural and industrial activities, with similar percentages of these activities, even though under slight decrease (Table 4).

Table 4.

Comparative evolution of main activities in the component counties of the region South-Muntenia, 2000-2014

	% population employed in agriculture /total employed population			% population employed in industry/total employed population		
	2000	2014	2014/2000 (pp)	2000	2014	2014/2000 (pp)
Argeş	36.1	26.9	-9.2	34.1	29.3	-4.8
Călăraşi	64.0	48.2	-15.8	12.9	16.1	3.2
Dâmboviţa	49.5	35.0	-14.5	23.1	23.8	0.7
Giurgiu	65.8	50.0	-15.8	7.7	9.5	1.7
Ialomiţa	62.6	44.5	-18.2	10.4	15.6	5.1
Prahova	32.1	21.0	-11.1	30.7	27.8	-2.9
Teleorman	65.3	53.9	-11.4	14.1	15.3	1.2

Source: Calculations based on NIS data, 2015.

Such counties have a high specialization level as well as a high diversification of the range of economic activities. Unlike the other counties where the propensity for a certain activity is quite noticeable, in the county Dâmboviţa the period 2000-2014 is characterized by the change in the economic orientation, in the sense of declining propensity for agriculture in favour of the activities in the field of services, while the industrial activities are maintained relatively constant.

Yet the development of any economic activity is not possible in the absence of adequate infrastructure, at least in terms of access in certain localities, i.e. of national road network expansion. From this point of view, the period 2000-2014 is characterized by the tendency to expand the national road network, by about 9% in the region South-Muntenia. The counties Argeș and Călărași stand out in this respect, with 18.5% and 15.1% respectively, exceeding not only the regional and Macroregion III average but also the national average.

Furthermore, the county Argeș has the longest national road network, accounting for about 27% of the road network of the region South-Muntenia in 2014. The county Prahova comes next, on the 2nd place, the two counties together accounting for about 44% of the total road length in this region in 2014. From the road infrastructure point of view, the last counties on the list are Giurgiu, Călărași and Teleorman, their cumulated road length exceeding only by 604 km the road length from the county Argeș in 2014.

One of the main indicators considered in assessing the local competitiveness level, i.e. the healthcare system, had an oscillating evolution in the last 15 years. Thus, the number of hospitals, which was already low, diminished by about 3% in the region. Unlike the other counties, Argeș and Prahova are characterized by an increasing trend of the number of hospitals, i.e. by 25% (Argeș) and 29.4% (Prahova). The number of hospital units in the two counties represents 64.6% of total hospitals in the region South-Muntenia.

As regards the number of physicians, this increased by 3.2%, with the largest increase in the county Argeș (from 1052 physicians in the year 2000 to 1395 physicians in the year 2014). Even though the hospital infrastructure slightly improved in the county Prahova, the number of physicians was down by 21.3% in the year 2014 as against the year 2000; one of the causes for this situation was the low level of incomes. Even in this situation, the two counties together have 54.1% of the total number of physicians in the region South-Muntenia.

As regards the number of active physicians in the year 2014, the ranking of the seven counties (in decreasing order) is the following: Ialomița (312 physicians), Giurgiu (322), Călărași (326), Teleorman (579), Dâmbovița (598), Prahova (1121) and Argeș (1395).

The number of hospital beds had a negative evolution in the healthcare system. In the year 2014, compared to 2000, the number of hospital beds was down by 23% per total region; all the seven counties had the same negative trend. Like in the case of the previous indicator, the counties Prahova and Argeș have slightly more than 50% of the total number of hospital beds in the region South-Muntenia.

As expression of healthcare quality, the density of physicians (total number per 1000 population) had an oscillating evolution in the seven counties, generated both by the changes produced in the number of physicians and by the population decline. From this point of view, at the level of the region, the number of physicians /1000 inhabitants was up by 9.3%; this average was exceeded by two counties – Teleorman (38.5%) and Argeș (37.6%). Practically, except for the county Argeș where this indicator is close to the national average and exceeds the regional average, as well as the counties Teleorman and Prahova, in the other four counties the indicator is below the regional average.

A dramatic situation is also noticed in the case of the number of hospital beds /1000 inhabitants. From this point of view, the regional average is significantly exceeded by the counties Ialomița, Călărași, Prahova and Teleorman, while in the other three counties the same diminution tendency can be noticed, yet more attenuated.

As indicator of the education level, in the period 2000 – 2013, the total number of graduates followed a noticeable diminution trend, both per total region and by component counties. Thus, the 27.7 % diminution at regional level is the result of negative changes

produced across counties, with an oscillation range from -18.2% (Giurgiu) to -29.8% (Teleorman).

The same situation, yet with a higher intensity, can be noticed with regard to the number of primary and secondary education graduates. From this point of view, in the 14-year period, the number of graduates from this category was down by 38.3% throughout the region South-Muntenia. Among the seven counties, 4 counties exceed not only the regional average but also the national average. This is the case of the counties Dâmbovița, Ialomița, Prahova and Teleorman, where the diminution of the number of primary and secondary education graduates ranged from -38.9% to -41.2%.

The number of high school graduates was down by 6.1% throughout the region in the period 2000-2013, the most significant decrease being found in the counties Argeș (-26.3%) and Prahova (-18.8%). Although in percentage terms, the two counties, together with Dâmbovița county (-1%) follow a decreasing trend, in numbers, the number of graduates in the three counties account for 60.5% of the total number of graduates. In the counties Călărași, Ialomița and Giurgiu, although the number of high school graduates increased in nominal terms, in the year 2014, their number does not exceed half of the number of graduates in din Argeș.

A particular situation is represented by the number of higher education graduates, up by 50.5% throughout the region South-Muntenia, with significant increases in Călărași and Prahova. Yet on a cumulated basis, three out of the seven counties (Argeș, Prahova and Dâmbovița) have 93.7% of the total number of graduates in the region (Table 5).

Table 5.

Comparative evolution of the number of higher education graduates in 2013 compared to 2000

	2000	2013	2013/2000
TOTAL	76230	95022	24,7
MACROREGION THREE	28877	33546	16,2
Region SOUTH-MUNTENIA	3283	4941	50,5
Argeș	1445	2151	48,9
Călărași	29	72	148,3
Dâmbovița	1044	1102	5,6
Giurgiu	:	:	
Ialomița	:	76	
Prahova	765	1419	85,5
Teleorman	:	121	

Source: Calculations based on NIS data, 2015.

The number of higher education graduates in 1000 inhabitants increased per total region from 0.94 graduates (2000) to 1.49 graduates (2013), with higher shares in the counties Argeș (3.29), Dâmbovița (2.06) and Prahova (1.73).

As regards the economic size of the region South-Muntenia, the present approach had in view the number of active local units, on one hand, and the gross value added and the obtained GDP value, on the other hand.

The number of active local units was up by 43% throughout the region in the period 2000-2013, while across counties the increase ranged from +19,4% (Teleorman) to +64.1% (Argeș). Compared to the average of the seven counties, i.e. 7556 active local units in the year 2014, only two counties have values above this average, namely Prahova (15833

units) and Argeș (13342 units), which together account for 55.2% of the total number of local units in the region.

The same increasing trend can be also found in the case of active local units in the farming sector. Thus, in the 14-year period, in the farming sector, the number of local units increased by 80% per total region, the most significant increase being noticed in the county Argeș (+130.8%). As share in total local units, the number of units in the farming sector significantly increased in the counties Ialomița, Călărași and Teleorman, by percentages above 10% of total, the same trend being also found in the other counties, yet with lower intensities.

As an expression of the efficiencies in the utilization and combination of existing resources, the value of GDP per capita, expressed in mil.euro, followed an increasing trend in the period 2000-2012, due to the increase of the GDP nominal value and to the changes produced in the population structure. Thus, compared to the regional average of 4727 thousand euro/capita, the counties Argeș and Prahova significantly exceed this average. The regional gross value added also followed the same increasing trend. Thus, per total economy, GVA doubled its value per total region in the period 2000-2012, with the component counties following the same trend. A similar situation, yet with more moderate trends, is found in GVA in agriculture. In this case, in the 13-year period, in total region, sectoral GVA increased by 84.4%, the most significant increase being found in the counties Ialomița and Călărași (Table 6).

Table 6**GVA evolution in the farming sector in 2012 as compared to 2000 (%)**

	2000	2012	2012/2000
TOTAL	4,406.13	6,253.40	41.9
MACROREGION THREE	733.56	1,336.08	82.1
Region SOUTH-MUNTENIA	673.63	1,241.85	84.4
Argeș	110.03	183.21	66.5
Călărași	102.70	214.14	108.5
Dâmbovița	116.55	214.94	84.4
Giurgiu	66.16	119.64	80.8
Ialomița	89.85	197.74	120.1
Prahova	91.21	134.44	47.4
Teleorman	97.13	177.74	83.0

Source: Calculations based on Eurostat data, 2015.

The significant increase of the regional GVA was generated both by GVA increase in agriculture and mainly by GVA increase in industry. From this point of view, GVA in industry significantly exceeds GVA in agriculture. For instance, while in the year 2000, the regional GVA in industry was 2.29 times higher than GVA in agriculture, in the year 2014, the regional gross value added in industry was 4 times higher than that obtained in agriculture (Table 7).

Table 7.
Differences between GVA growth in industry versus GVA growth in agriculture

	2000	2012
TOTAL	2.31	5.2
MACROREGION THREE	4.39	8.0
Region SOUTH-MUNTENIA	2.29	4.0
Argeş	4.12	6.1
Călăraşi	0.71	1.4
Dâmboviţa	1.72	4.0
Giurgiu	0.56	1.1
Ialomiţa	0.98	1.2
Prahova	5.85	14.2
Teleorman	1.60	2.3

Source: Calculations based on Eurostat data, 2015.

Following the analysis of data presented above, it results that the general tendency is GVA increase in industry, the most significant increases being found in the counties Prahova and Argeş. The significant GVA growth, both per total and in the agricultural and industrial sector, by a net higher rate compared to the changes produced in the employed population, also resulted in the labour productivity increase. In this respect, per total regional economy, labour productivity increased more than twice in the year 2012 as compared to the year 2000; this increase was noticed at the level of all component counties. A similar tendency can be also found at the level of labour productivity in agriculture. Thus, in the seven component counties of the region South-Muntenia, the largest labour productivity increase was found in the county Ialomiţa, followed at small distance by the county Călăraşi. Labour productivity increase in industry by a higher rate than in agriculture generated a net favourable difference for the industrial sector. Thus, in the year 2012 compared to the year 2000, labour productivity in industry increased by about 2.7 times in total region, with county oscillations ranging from + 85.6% (Ialomiţa) to more than 3.5 times in Dâmboviţa. Compared to the year 2000, labour productivity in industry in 2012 was about 7 times higher than labour productivity in agriculture; this increase could be noticed in all the seven counties. We must specify that in the county Prahova, labour productivity in industry was 12 times higher than labour productivity in agriculture (Table 8).

Table 8.
Differences between labour productivity increase in industry and in agriculture

	2000	2012
TOTAL	4.1	7.4
MACROREGION THREE	5.8	8.9
Region SOUTH-MUNTENIA	4.9	6.9
Argeş	4.4	6.2
Călăraşi	3.5	4.6
Dâmboviţa	3.7	6.4
Giurgiu	4.8	6.0
Ialomiţa	5.9	3.5
Prahova	6.1	12.0
Teleorman	7.4	8.9

Source: Calculations based on Eurostat data, 2015.

As a result of our analysis of the pluses and minuses by each component county of the region South-Muntenia, we can draw the conclusion that the most competitive counties are Argeș and Prahova, followed at a small distance by the county Dâmbovița. Generally, the counties with a diversified organizational structure and various weather conditions have higher sectoral performances and competitiveness than the counties located in the plain area (Table 9).

Table 9.

Pluses and minuses by the seven component counties as revealed by the indicators that characterize the local competitiveness level, in relation to the regional average (2014)

	Argeș	Călărași	Dâmbovița	Giurgiu	Ialomița	Prahova	Teleorman
Total population	+	-	+	-	-	+	-
Rural population	+	-	+	-	-	+	-
Employed population per total	+	-	+	-	-	+	-
Population employed in agriculture	+	-	+	-	-	-	+
Population employed in industry	+	-	+	-	-	+	-
Employment rate (%)	+	-	+	-	+	-	+
Specialization index	+	-	-	-	-	+	-
Length of public roads	+	-	+	-	-	+	+
No. hospitals	+	-	-	-	-	+	-
No. physicians	+	-	-	-	-	+	-
No. graduates	+	-	+	-	-	+	-
Higher education graduates	+	-	+	-	-	+	-
Local active units	+	-	-	-	-	+	-
Local active units in agriculture	+	-	-	-	-	-	-
GDP total	+	-	-	-	-	+	-
GVA total	+	-	+	-	-	+	-
GVA agriculture	+	+	+	-	+	-	+
GVA industry	+	-	+	-	-	+	-

Source: Calculations based on NIS and Eurostat data, 2015.

CONCLUSIONS

From the local competitiveness perspective, evaluated by a set of indicators, our present approach made it possible to draw the following conclusions:

- Located in a geographical and climate area different from the point of view of relief units, the county Argeș has a high competitiveness level compared to the other six counties for all the investigated indicators;
- The same tendency can be noticed in the county Prahova, where, out of the 18 analyzed indicators, 14 were above the regional average in the year 2014;
- A special situation can be found in the county Dâmbovița, which, although apparently located in similar conditions from the spatial and environment standpoint like

Argeş and Prahova, had a high performance level in only 12 of the 18 analyzed indicators in the year 2014;

- The high heterogeneity level of the region South-Muntenia as regards the characteristics of component areas resulted in a fluctuating competitiveness level, generated, in the first place, by the higher share of counties that are mainly located in the plain area;

- From this perspective, the plain counties fall into a vicious circle, both as regards their characteristics and the sectoral performance level;

- In the case of counties whose general evolution is significantly influenced by the geographic location, we can notice a general involution of indicators with direct impact upon the local competitiveness level; yet the real problem is represented by the changes produced in the population structure and its educational level; for these areas, characterized by a high demographic ageing and an extremely low educational level as well as a poor technical and transport infrastructure, to raise the local competitiveness problem means to identify the actions and the potential implementation measures in order to narrow the existing gaps between the component counties of the region South-Muntenia;

- Practically, with four out of the seven component counties, the competitiveness of the region South-Muntenia is mainly based on the counties Argeş, Prahova and Dâmboviţa, whose local economy imprints on the general regional development trend, in the sense of the development of activities in all the economic sectors;

- With a GDP of 15731 mil.euro, out of which 68% is obtained in the three counties, the region South-Muntenia practically contributed by 11.8% to national GDP in the year 2014. In other words, about 61% of the population in the region, found on 45.7% of the region's territory, contributed to the creation of gross value added in the third largest region of Romania.

Even though at first sight the economic performance of the region is quite relevant, we must not overlook the pressures created on the environment by the development of activities with strong ecological impact. In these conditions, maintaining a relatively fragile ecological equilibrium in the counties with low economic development does not generate an adequate local competitiveness level for these and hence does not result in the improvement of the population's living standard.

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