

## **ECONOMIC EFFECTS OF AGRICULTURAL INTEGRATION OF ROMANIA INTO THE EUROPEAN UNION. CASE STUDY: THE CONTRIBUTION OF AGRICULTURE TO ECONOMIC GROWTH OF THE NORTH-WEST REGION**

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### **Abstract**

*Regional development, by its magnitude, includes several fields, making many institutions are involved in the development and implementation. Structural Funds are the main financial instruments used by the European Union to reduce disparities and promote economic and social cohesion in Europe. For Romania, the regional development policy is a relatively new concept. Using multi-criteria method was attempted an analysis of the level of agricultural development and North-West agricultural sector contribution to economic growth in the region.*

**Key words:** cohesion, economic development, North-West region, regional policy

### **INTRODUCTION**

Regional development policy aims to reduce economic and social disparities between different regions of Europe, acting on significant areas for development, economic growth, agriculture, urban development, environmental protection, employment and training, education, which is why the region development policy is one of the most important and most complex policies of the European Union.[1] The legal basis of EU regional development policy is established by the Treaty establishing the European Union, which defines the objective of regional policy - "reducing disparities between levels of development of different regions and the backwardness of the less developed regions, or islands including rural areas" - and the principles underlying its achievement. Cohesion Policy is one of the key instruments for achieving the fundamental objectives of the European Union. Implementation of the interventions financed by cohesion policy has proven long-term beneficial effects in the harmonious and balanced development of Union and increased its overall competitiveness, even if economic and financial crisis has generated an increased

socio-economic challenge for most of the EU regions. [9]

Moreover, the policy will contribute decisively to achieving Strategy Europe 2020, emphasizing its role as a true mix of policies for Europe. Romania must strongly support maintaining a significant share of cohesion policy in the EU budget after 2013 [11], considering its scope, funds and instruments, as well as allocation of financial resources adequate for the scope of the defined objectives, essential for an intelligent and inclusive development, sustainable on a European, national and local level. [10]

Regarding Romania, a more harmonious development of regions is required, to better adapt to European requirements and competition in the Single Market, given the fact that regional development policy is a relatively new concept for Romania. In this context, an analysis of the level of agricultural development of North-West has been made. North - West (including counties: Bihor, Bistrita-Nasaud, Cluj, Maramures and Satu Mare Salaj) provides 12% of national GDP. In structure, agriculture region participates with 7.4% to the gross domestic product. In terms of industry, it occupies a share of about 26% above the national level. Buildings have a share

of 9.2%, slightly below the national level. In this region services play an important role, with over 47% of the regional domestic product.

## MATERIAL AND METHOD

First a SWOT analysis of the region was made and then a simplified method for multi-criteria analysis was used in order to determine the stage of agricultural development of North-West region. The method allows quantification of the state of an economic process according to its real parameters of developing, which are expressed through a variety of specific technical and economic indicators, backed by the data and information of a qualitative nature. [2]

For use in the analysis of regional development of North-West region agriculture of a diagnosis multicriteria method, available indicators were ordered into 10 groups: (I) The way land was used, (ii) the structure of the main crops applied, (iii) the crop production obtained, (iv) production plant yields, (v) livestock animals, (vi) animal density per 100 hectares, (vii) yields in livestock production obtained, (viii) fleet of tractors and agricultural machinery, (ix) macroeconomic indicators, (x) the value of crop production. Each of these groups is in fact an aggregate for comparative evaluation of branch development stage for the analysis of regional agriculture competitiveness. Each group of indicators was attached a note aggregate (aggregate class); this can be determined either as an average ranking criteria or linking place (rank) held the importance or role agreed for each of the indicators belonging to a group of characterization of the general development of the industry. [4]

$$Nag_l = \frac{\sum_{i=1}^n R_i x k_i}{\sum_l k_i}$$

where:

*Nag* - note the aggregate to characterize a group of indicators for determining the level of development, this serves as a complex indicator at a level of group/criteria;

*l* - number of groups of indicators used to assess the level of development which at this stage is 10;

*R<sub>i</sub>* – rank of indicator (criterion) or the place of each region compared to the others, depending on the size indicator considered, so each compared region will correspond to a certain rank;

*k<sub>i</sub>* - importance factor attributed to each indicator (criterion) of the development assessment research;

*i* - scale of values of importance coefficients, in this case the value scale is from 1-13.

The gap between aggregate rankings notes related to each group of indicators and areas indicates the report between compared units.

Determination of the estimator/indicator of overall performance of the entity that is to be compared is based on correlation of grades (ranks) aggregate or average grades for each criterion related to the specific weight assigned to each criterion adopted. [12]

The relationship indicator for setting size or **overall performance estimator of regional agriculture** is the following:

$$EstGL = \sum Nag_l x G_{S_l}$$

and

$$\sum G_{S_l} = 1$$

where:

EstGL - estimator of overall performance of regional agriculture;

*Nag<sub>l</sub>* - Note aggregate for each group of complex indicators;

*G<sub>S<sub>l</sub></sub>* - specific weight for each of the groups of complex indicators characterizing the analyzed proces.

Coefficients of specific importance/weight on criteria for calculating global estimator of regional development of agriculture [13] :

GDP - 0.15

Acreage - 0.10

How to use the land - 0.09

Value of agricultural production - 0.12

Total crop production - 0.05

Crop yield - 0.15

No. of animals - 0.06

Animal density - 0.06

Average production - 0.14

Fleet of tractors and agr. machinery - 0,08

Total - 1.00

## RESULTS AND DISCUSSIONS

### SWOT Analysis – North-West Region

STRENGTHS	WEAKNESSES
<p>Good accessibility by air (airports in Cluj-Napoca, Oradea and Satu - Mare), high density network of roads and railways;</p> <p>Significant investments in business infrastructure and the formation of clusters of firms with brands and tradition in construction machinery and equipment, furniture and textiles;</p> <p>Underground resources (minerals complex, bauxite, natural gas), IT sector share in creating GVA is growing, expanding ICT sector thank to private companies;</p> <p>Increasing entrepreneurial capacity;</p> <p>Availability of basic services in rural areas;</p> <p>Traditional cultural centers with well structured cross-border relations (Satu Mare, Oradea, which, Salonta, Baia Mare);</p> <p>Natural and human tourism resources of great value to national and international level;</p> <p>The existence of a town with a long universitarian tradition (Cluj Napoca), the other two growing universities in recent years (Oradea and Baia Mare), and other town with potential academic development (Satu Mare);</p> <p>Tradition of performant health services.</p>	<p>Lack of investment for infrastructure development of related roads, railways and airports in the region;</p> <p>Small number of firms in the region who have certifications in quality management and environment;</p> <p>Low productivity, especially in industry;</p> <p>Low investment in research and development;</p> <p>Very few services and products with high added value;</p> <p>Failure and degradation capacity of the sewerage system and water purification;</p> <p>Many urban centers affected by serious social problems and damage to infrastructure;</p> <p>Poor diversification of rural tourism accommodation infrastructure, low labor specialization in tourism, lack of tourism products and brand development support, local and regional;</p> <p>High stiffness/lack of flexibility of the education system (not offering tools for lifelong learning);</p> <p>Small number of healthcare professionals, especially in rural areas and inadequate utilities of health units.</p>
OPPORTUNITIES	THREATS
<p>Using European funds for construction/rehabilitation of access;</p> <p>The existence of several niche market for industrial products, services and furniture;</p> <p>Reorientation and development</p>	<p>Although the region is crossed by seven European roads, there is a regional area to be bypassed by the major European corridors;</p> <p>Transferring</p>

<p>banks to support the SME sector through diversification;</p> <p>Development of border regions;</p> <p>increasing social and economic relations with Hungary and Ukraine;</p> <p>Increased international interest in tourism in natural parks and cultural tourism;</p> <p>Interest for the development of metropolitan areas;</p> <p>Increased public investment in education.</p>	<p>production capacity of companies to Moldova and Ukraine, with increasing labor costs as a result of EU membership;</p> <p>Poor training of most SMEs in relation to environmental issues, quality, communication, management practices;</p> <p>Low competitiveness of enterprises in the region in the EU market;</p> <p>High level of emigration, especially of skilled labor;</p> <p>Neglecton of cultural heritage;</p> <p>Poor quality of public utilities, reducing the attractiveness of the region;</p> <p>Cancellation of schools in small villages with few students, favoring the occurrence of illiteracy.</p>
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### Indicators

#### (i) Main macroeconomic indicators.

With a gross domestic product of \$ 18.0 billion, North West ranked No. 4, below average by 4.8%. Gross added value was 16.2 billion RON, North-West region assuming the place/rank 4 compared with other regions and is 4.5% below average.

Gross domestic product in agriculture, hunting and forestry represented 4.6% of total (2.64 billion USD), which places North-West region on one of the top positions (rank 7), this level of gross domestic product in agriculture, hunting and forestry was 21.9% higher than average (2.16 billion USD).

#### (ii) The agricultural production

Total agricultural production made by the North-West region totalled 6034.6 billion Ron, out of which 63.49% being the value of crop production, 36.15% animal production and 0.36% were services.

Both total and as components, the value of agricultural production carried out by North-West region held higher than average ranks, except the value of services. In these conditions, compared to regional average, the

total value of agricultural production was higher by 19.5%, the plant production by 18.3% and animal production by 23.6%;

### **(iii) Way of using the land**

Compared to other regions, the North-West region has a high rank (6) in terms of area (3.4 million hectares), which is 14.6% higher than the national average (3.0 million hectares).

### **(iv) Acreage**

In North-West region were cultivated 958,200 hectares, 13.7% less than the regional average. Comparing the acreage in the North-West with those of regional media have highlighted the following main aspects:

- Rank acreage in the North-West from barley, potatoes and vegetables were above the regional average, 77.4% higher for potatoes, 9.4% in barley and 4.3% for vegetables;

- In other cultures considered, ranking acreage in the North-West was below the regional average; acreage situation in the North-West, compared to the regional average, was as follows: they cultivated 559,000 hectares of cereal grain, 19.3% less than the regional average, sugar beet were cultivated on 4400 hectares, with 22.0% less, with corn were seeded 310,600 acres (22.4% more less), with wheat and rye were cultivated 138,300 hectares, 36.7% below average, with plants that oil and sunflower acreage in the North-West totalled 65.7 and 61.7 th. hectares, being with 61.9% and 58.5% below average respectively.

NAG established group of indicators considered for analysis of North-Western cultures structure is 3., a level which is 24.8% below the regional (5203).

### **(v) Total vegetal production**

Aggregate grapes, sunflower, maize and cereal grains were below the regional average of the total vegetable production related to these crops (to -56.3% in grapes, with -47.4% for sunflower, with -11.1% of maize, with -2.0% in cereal grains).

Over the regional average stood wheat and rye crops (by 15.1%), barley and barley (by 16.2%), fruit (by 48.2%), sugar beet (by 50%) and potatoes (by 75.3%).

NAG obtained for total crop production in the North-West is 5.556 and is similar to the regional average of indicators related to this group.

### **(vi) Yields in crop production**

Average production in the North-West crop sector were over the national average in all cultures.

Comparing the yields obtained in the North-West vegetable sector with regional average we notice that the largest differences were recorded for sugar beet (with 92.3%), wheat and rye (with 81.8%), grains (with 68.9%), sunflower (with 26.7%).

NAG corresponding average production crop production in North-West was 7.429, this level being above the regional average by 33.3%. The gap between NAG corresponding average production and crop production in North-West NAG is 1 to 0.75 for yield in the analyzed region.

### **(vii) Number of animals**

Northwest region, compared with other regions, recorded the highest ranking (9) in pigs and breeding sows, respectively. Compared to the regional average, pigs and breeding sows in North-West are higher with 49.1% and 40.0% respectively.

The total herds of cattle (326,200 heads) and that of cows, buffaloes and heifers (318,700 heads) existing in the Northwest region ranks a leading position compared with other regions, above regional average with 35.8% and 24.1 times respectively.

With 1,039,700 sheep heads, North-West is situated near the regional average (1,015,600 heads).

NAG determined for the group of indicators characterizing livestock in North-West is 8.159, the gap with the regional average is 1 to 0.42 for livestock in North-West.

### **(viii) Animal density per 100 hectares**

Analyzing the density of livestock belonging to different species per unit area reveals the following important aspects:

- In sheep and sheep-mother was a density of 7.7% and 9.9% lower than the regional average;

- In cattle and dairy cows with 24.15 heads/100 ha and 15.65 heads/100 ha, North-West region recorded a relatively high density (rank 8);

- compared to regional media these levels are higher by 19.5% and 27.7%;

- Average density of pigs and the stock of sows in herds (94.84/100ha, 5.79/100ha,

respectively) was above the regional average (with 72.9% and 62.3% respectively).

NAG related to animal density in the North-West is 6500 with 50.0% above the regional average size corresponding NAG; gap with the regional average is 1 to 0.67 for NAG related animals of the North-West.

#### **(ix) Efficiency in livestock production**

The average production in the livestock sector in the Northwest region was slightly above the national average except wool product.

The highest levels (rank 8) were egg productions, higher than the regional average with 13.0%.

Cow's milk and sheep's milk productions (rank 7 each) were only 3.0% and 10.4% above the regional average.

In these conditions the level of North-West NAG is 6.714, with 80.8% higher than the national average. The gap to the regional average is 1 to 0.55 for yields prevailing in North-West.

#### **(x) Fleet of tractors and agricultural machines**

Fleet of tractors and agricultural machines owned businesses from North-West region is above the regional average.

Regarding the number of tractors and plows, the North-West has the highest ranking (9).

Fleet of tractors and agricultural machines in the North West compared to regional average was higher by 36.9% to individual agricultural tractors, with 36.7% in tractor plows, 30.9% for self-propelled combine harvesters straw, corn fodder and 1.8% in mechanical seeders.

Synthesis of the size of tractors and agricultural machinery park in Northwest Region is the area for one tractor, which was of 33.1 hectares. With this level, North-West is the second smallest (rank 2), and compared with the national average (52.5 ha/tractor), this indicator is 37.0% lower.

Note aggregate set for tractors and agricultural machinery park in the North-West was 6.400 - a level that is 45.5% above the regional average (4400), the gap is 1 - 0.96 for fleet of tractors and agricultural machines from North-West.

#### **Overall estimator of the agricultural sector efficiency**

Using the specific notes of the analyzed North-Western indicators on the importance given to

each estimator, a specific regional overall efficiency of agriculture was determined. After calculations, the overall efficiency of the estimator specific regional agricultural sector of the North-West is 6.326 and is 26.2% higher compared to the average regional level.

## **CONCLUSIONS**

Although regional agriculture gives only 7.4% to the gross domestic product, for the North-West region the overall efficiency estimator of the agricultural sector is 6.326 and ranks the higher place between development regions (rank 9) and is 26.2% higher compared to the average regional level.

## **REFERENCES**

- [1] Aprodu, I.C., *Decalaje agricole si dezvoltare economica regionala in Romania*, Teza de Doctorat, ASE, 2006.
- [2] Gavrilescu, D. (coord.) Davidovici, I., *Economia cresterii agroalimentare*, Editura Expert, Academia Româna, Bucuresti, 2002.
- [3] Gavrilescu Dinu, Davidovici Ioan, Giurcă Daniela, *Economia României - lecții ale tranziției - spațiul rural și sectorul agroalimentar românesc*, Editura Expert, București, 2001
- [4] Dona Ion, *Economia rurală*, Editura Economică, București, 2000
- [5] Iancu, Aurel, *Problema convergenței economice*, 'Oeconomica', nr.4, 2006.
- [6] Idu, Pompilia, *Instrumentele structurale și convergența statelor în Uniunea Europeană*, 'Oeconomica', nr.3, 2006.
- [7] Quah, Danny T., *Twin Peaks: Growth and Convergence in Models of Distribution Dynamics*, 'The Economic Journal', vol.106, nr.437, July 1996, p.1045-1055.
- [8] Sala-I-Martin, Xavier, *Regional Cohesion: Evidence and Theories of Regional Growth and Convergence*, 'European Economic Review', vol.40, 1996, p.1325-1352.
- [9] Schreyer, Paul și Pilat, Dirk, *Measuring Productivity*, 'OECD Economic Studies', nr. 33, 2001.
- [10] Solow, Robert M., *Perspectives on Growth Theory*, 'Journal of Economic Perspectives', vol.8, nr.1, Winter 1994, p.45-54.
- [11] Ungureanu, M.D., *Analiza echilibrului la nivelul bugetului comunitar din perspective Statutului României de țară membră a Uniunii Europene*, Teza de doctorat, ASE, 2011.
- [12] Zahiu Letiția, Dachin Anca, Alexandri Cecilia, *Agricultura în economia României - Între așteptări și realități*, Ceres, 2010
- [13] Institutul National de Statistica, *Anuarul statistic al României*, 1990-2010.