

ROMANIAN AGRICULTURE - SOURCE OF COMPETITIVE ADVANTAGE

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Abstract

The work includes a macroeconomic analysis of the primary sector, the agriculture of Romania in the European context. The goal is to identify which are the agricultural resources that represent a real competitive advantage. There were analyzed the following resources: natural resources (climate, land fund etc.), capital resources, labor resources, technical resources, organizational resources and market resources. Resource evaluation was performed through synthetic indicators, namely: used agricultural area per capita, used agricultural area per farm, climate uncertainty, financial capital per hectare, agricultural area per agricultural equipment, labor consumption per hectare, intensification factors consumption per hectare, the typology of farms and trade balance. The indicators value places the Romanian agriculture on the first 5-7 place in terms of natural resources and in the bottom of the leaderboard for the other resource types. Results that the main source of competitive advantage of Romanian agriculture is represented by the natural resources and in part on the type of farm. These resources determine the cost advantage in a field of prime economic importance and the competitiveness increase of agriculture on the European market.

Key words: agriculture, competitive advantage, resource

The starting point in the work is the answer to the questions:

- Which are the key factors that define the competitive advantage?

- Which is the position of the Romanian agriculture in the European context?

MATERIAL AND METHOD

In this work it is used as research method the qualitative and quantitative analysis of the agricultural sector by calculating various synthetic indicators.

The material used for the calculation of the indicators was mainly selected from the publications of the National Institute of Statistics (NIS), Eurostat and of the Ministry of Agriculture and Rural Development (MARD).

RESULTS AND DISCUSSIONS

The Romanian Agriculture seen as strategic economic sector can be the source of competitive advantage at European level through the resources at its disposal. The resources were analyzed quantitatively, qualitatively and in terms of the dynamics over time.

For the identification of agricultural resources that determine the competitive

advantage of agriculture in Romania, were calculated the following synthetic indicators:

- used agricultural area per capita;
- used agricultural area per farm;
- climate uncertainty;
- financial capital per hectare;
- agricultural area per agricultural equipment;
- labor consumption per hectare;
- intensification factors consumption per hectare;
- the typology of farms;
- trade balance.

Natural resources

Following the studies relating to the suitability of the natural factors for agricultural production, it was found that Romania is placed into the most favorable agricultural areas of the world (which occupies the North America, Europe and the Far East), characterized by the following parameters:

- soils with very good productive potential - 42% of the total arable land, 31% respectively of the total agriculture and soils with good productive potential - 44% of the total arable land, or 33% of the total for agriculture;
- radiant energy-specified, 1-1.4 Gcal/m²;

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- heat (the sum of higher than of 10°C temperatures), 1000-18000C;

- the medium temperature of July, 18-25°C;

- the medium annual rainfall, 425-920 l/m².

The Land Fund of Romania has an area of 23,839.1 thousand hectares.

In the 2010 year, the farmland owned a share of 61.4% of the total land fund. Of them, 64.3% were arable land.

Over 45% of the arable land are included in the Ist and IInd quality classes, which indicate the high agricultural potential of these lands for cultivation. On these lands there are obtained the biggest agricultural production, with a high quality, and the production unit costs are minimal (no need for additional technological works, intensification factors etc.). At EU-27 level, the agricultural areas are found in the middle and

lower basin of the Danube, in Northern Italy, Southern France and Northern Spain.

So on the whole, the diversity and quality of natural resources leads to a performing agriculture and heterogeneous. For example, in South-Western France, is obtained an optimum ratio between heat and the water resources, and to the South and East of this area, the report is misbalance and gradually the phenomenon of drought increases in intensity, duration and frequency.

To assess the natural resources, were calculated the following indicators:

- used agricultural area per capita;
- used agricultural area per farm;
- climate incertitude CI (%)= number of registered years with climate risc/ 25 (medium number of years of land capitalization) * 100.

Table 1

Indicators for evaluation of natural resources (2010)

| Nr. crt | Country | Population - total | UAA - hectares | Exploitations | UAA/ cap | UAA/ farm | Climate incertitude (%) |
|---------|-------------------------------|--------------------|----------------|---------------|----------|-----------|-------------------------|
| 1 | Romania | 21,355,849 | 13,306,130 | 3,859,000 | 0.62 | 5.53 | 54.25 |
| 2 | European Union (27 countries) | 503,930,191 | 171,604,320 | 11,966,400 | 0.34 | 14.34 | 45.42 |
| 3 | Share (%) Romania/EU-27 | 4.24 | 7.75 | 32.25 | 182.97 | 38.56 | 119.44 |

Source: Eurostat: Agriculture, fishery and forestry statistics Pocketbooks- Main results – 2010-11

For lack of space, we presented in Table 2 only the data relating to Romania in comparison with the EU-27, without including the other EU member countries. We still refer to EU-27, because the 28th country (Croatia) has just been joined the EU.

Note that the used agricultural area per capita is in Romania of 0.623 ha, with 82.97% higher than in the EU, which constitutes a competitive advantage for our country. According to this indicator, Romania was rank on the 5th position, after Ireland (1.089-ha/capita), Lithuania (0.912 ha/ capita), Latvia (0.880 ha/capita) and Estonia (0.702 ha/capita). The last places in the rankings are occupied by the Netherlands (0.112 ha/capita) and Malta (0.027 ha/capita). In terms of average size of exploitation, that is in Romania of 5.53 hectares representing only 38.56% of medium size at Union level.

In terms of the climate incertitude, Romania has a climate risk by 54.25%, with 19.44% higher than the EU average. This indicator shows the probability that once at two years to register poor agricultural conditions, such as drought. In the top of the European countries with the lowest climate risk is positioned France (28%), Britain (32%) and Germany (35%). To reduce the climate risk, the farmers must invest in irrigation systems, hail

protection equipment, frost protection equipment etc.

The indicators value placed Romania in 5-7-th place, in terms of natural resources. This position indicates the competitive advantage of romanian agriculture in the european context.

Capital resources

In this category are included the financial resources needed by agriculture for investment (purchase of machines, equipment, the establishment of plantations, agro-zootechnical constructions etc.) and for operation (acquisition of raw materials, consumables, labor etc.). The necessary liquidities for farmers may come from their own financial sources or from attracted sources (refundable or non-refundable). The current main source of investment financing in agriculture is represented by the European Agricultural Fund for Rural Development (EAFRD), trough programmes and measures included in the Axis I. In the period of 2007-2013 (august), had been concluded contracts for financing 69,890 projects with a value of a non-refundable public aid of 2,792,131,562 euros (about 2,7 billion euros). The current activity financing is from agricultural subsidies, contracting of short-term loans or from own sources.

To characterize the capital resources, it was calculated the indicator: financial capital/ ha. Financial capital is considered equal to intermediate consumption per hectare. Their share in the value of the outputs differ in animal and crops productions. According to Eurostat, the medium share of intermediate consumption in 2011 was 19.4% in the EU-27 and 15.9% in Romania - for crops and 64.3% - EU-27, respectively 82.2% in Romania for the zootechnic sector. Noted that in crops, Romania has intermediate consumption lower than the EU average, ranking in the top at 5 level after Greece, Italy, Malta and Portugal. In livestock activity, intermediate consumption exceed 30% EU average, ranking Romania in last places. On top are the United Kingdom (41.1%), Finland (41.8%) and Slovakia (50.7%).

In the same period, the final output was 18,455 million euros in Romania, representing 4.8% of the value of EU-27 (385.038 million).

Labor resources

Romania's total population is 21.35 million inhabitants, representing 4.23% of the total population of the EU-27, over 503.93 mill. inhabitants. In the Romanian agriculture are working 7.1 mil. people, which represents 33% of the total population of the country. By comparison, in the EU-27 agriculture there are working 24.96 mil. people representing 4,95% of the total population. These differences explain the economic development level of a country as a whole and the productivity of the agricultural sector in particular (*tab. 2*). Analysis of the labor resources has been carried out through the following indicators (calculated for all 27 EU member countries in 2010):

- labor consumption per hectare;
- used agricultural area per capita.

Table 2

Estimation of agricultural labor (2010)

| Nr. crt | Country | Population total | UAA - hectares | Labour Input: (1 000 annual work units) | Labor input/ UAA | Farm workers | Percentage of population occupied in agriculture |
|---------|-------------------------------|------------------|----------------|---|------------------|--------------|--|
| 1 | Romania | 21,355,849 | 13,306,130 | 1,598.0 | 0.120 | 7,156,930 | 33.513 |
| 2 | European Union (27 countries) | 503,930,191 | 171,604,320 | 10,134.7 | 0.059 | 24,960,390 | 4.953 |
| 3 | Pondere (%) Romania/ UE-27 | 4.24 | 7.75 | 15.77 | 203.35 | 28.67 | 676.60 |

Source: Eurostat

Analyzing the labor resources in agriculture we notice a high disparity between Romania and the other European countries. Thus, the very high percentage of the occupied population in Romanian agriculture (33.51%) shows the economic importance of agriculture for the nation, but also the dependence of population on this strategic sector. As the share of this indicator decreases, there is economic development and raising of population living standards. The labor consumption per hectare is 0.12 units of work, with 103.35% higher than the average of Union (0.059 units/ ha). This indicator places Romania in tail position, respectively ranking 23, ahead of Poland, Slovenia, Cyprus and Malta. In the first five places with the lowest consumption/ha are the following countries: Sweden, United Kingdom (0.018 units/ ha), Denmark (0.020 units/ ha), Estonia (0.026 units/ha) and France (0.028 units/ha). The indicators value that characterize the labor in agriculture shows that this resource does not constitute for Romania a competitive advantage at european level.

Technical resources

The level of endowment of agriculture with factors of intensification represents a source of competitive advantage among the Nations which compete on a single market (in our case the

European Union). These factors include: technical equipment (tractors, machinery, equipment, installations and equipment for mechanization of various work processes), biological means, chemical and irrigation facilities. In the 2008-2010 period the endowment with machinery of the Romanian agriculture was according to Table 3.

Table 3

Park of tractors and of main agricultural machinery

| Agricultural machinery | 2008 | 2009 | 2010 |
|--|----------------|----------------|----------------|
| Physical agricultural tractors | 174,790 | 176,841 | 180,433 |
| Tractor-drawn ploughs | 141,512 | 142,519 | 142,671 |
| Mechanical cultivators | 27,522 | 27,675 | 27,795 |
| Mechanical seeders | 68,308 | 68,916 | 69,337 |
| Mechanical sprayers and dusters | 5,876 | 5,865 | 5,680 |
| Self-propelled combines for cereals harvesting | 24,769 | 24,900 | 25,285 |
| Self-propelled combines for fodder harvesting | 795 | 779 | 797 |
| Total | 443,572 | 447,495 | 451,998 |

Source: Statistical Yearbook 2011

The agricultural machine park, also called "dead stock" has increased from 174,790 tractors in 2008 to 180,433 in 2010, the agricultural area per tractor has decline form 76.0 ha to 73.7 ha.

The technical equipment load (regarded as a consumption of intensification), in Romania and the European Union is shown in Table 4.

Table 4
The utilised agricultural area /tractor or agricultural equipment-Romania and the main EU countries (2010)

| Nr. crt. | Country | UAA ha /tractor | UAA ha/agricultural equipment |
|----------|----------------|-----------------|-------------------------------|
| 1. | Luxembourg | 13.8 | 4.7 |
| 2. | Denmark | 19.6 | 6.3 |
| 3. | France | 23.1 | 6.0 |
| 4. | Germany | 13.9 | 6.0 |
| 5. | Greece | 24.1 | 10.2 |
| 6. | Ireland | 26.8 | 7.0 |
| 7. | Italy | 11.5 | 9.3 |
| 8. | Portugal | 26.4 | 4.0 |
| 9. | Spain | 32.1 | 14.4 |
| 10. | Sweden | - | 12.5 |
| 11. | United Kingdom | 37.0 | 8.3 |
| 12 | EU-25 | 18.5 | 7.3 |
| 13 | Romania | 73.7 | 48.9 |

Source: Eurostat-processed data

The loads on the agricultural equipment in Romania is about six times higher than the European Union average. The best indicators of technical equipment were registered in Germany, Denmark and Italy. As a result, the technical equipment of the Romanian agriculture is still poor and needs massive investment in order to compete with countries with a developed technical infrastructure. The intensification factors consumption per hectare take into account the quantities of irrigation water, fertilizers, etc., used in the agricultural technologies.

Table 5
Average consumption of intensification/ha UAA

| Factor of intensification | RO | EU-27 | SHARE (%) Romania/EU-27 |
|---|---------|---------|-------------------------|
| CHEMICAL FERTILIZERS (active substance) | 36.15 | 159.06 | 22.73 |
| Nitrogenous | 23.00 | 87.76 | 26.20 |
| Phosphatic | 9.24 | 34.54 | 26.76 |
| Potassic | 3.91 | 36.76 | 10.63 |
| NATURAL FERTILIZERS | 1144.74 | 1654.98 | 69.17 |

Source: Eurostat-processed data

The chemical fertilizers consumption per hectare reached in Romania, the percentage of 22.73% of the EU average. This shows on the one hand the low technical capacity to obtain high productions, and on the other hand, the use of low amounts of chemicals lead to getting healthier

products and of a better quality. This can be a source of competitive advantage for the Romanian agriculture, in accordance with the policies of environmental protection and consumer protection.

Organizational resources

Farm can have the meaning of an actor from agriculture economical activities in which, under the authority of a decision center, brings together a number of certain resources and techniques for the production of goods that are generally offered on the market and which allows obtaining profit. The production resources of agriculture and the agricultural land are spread over farms of different types and sizes. On the structure of agricultural holdings predominate the farms without legal status, representing over 99% of the total.

Romania participates with 32.25% of the total number of farms from the European level. It is the country with most farms at Union level.

In terms of typology of farms, the largest share of the Romanian agricultural holdings is owned by small farms with size less than 1 hectare (2017.6 thousand farms), and the number of large holdings of over 100 ha, is 525.2 thousand. Even though, small holdings represent 97.7% of the total number of holdings, they hold only 38.7% of total agricultural area. The result of researches shows that large farms of over 100 ha, which represents only 0.4% of the total number of farms, occupy about 50% of the agricultural area (UAA). The presence of these large farms, industrial type, represents an edge of competitiveness for Romania, helping to supply the Romanian market as well as the international, with agricultural products on high quality and at affordable prices. The medium area of agricultural farms with legal personality was in 2010 by 310 ha, which shows the competitiveness of these farms on the national and international market. The industrialized farms at EU level are using an agricultural area of 82,300 thousand hectares, representing 50% of the total area of the EU-27. Romania participates with 6,498, 9 thousand hectares, representing 8% of the total or.

We can appreciate that Romanian agriculture occupies an important place in the agriculture of the Union, and this constitutes a competitive advantage for our country.

Market resources

The resources of the agricultural market has the significance of a mechanism for regulating the exchange of goods through permanent changes in supply and demand, price or volume of transactions.

Agri-food goods (customs nomenclature of the harmonized system) were, in 2011, 9% of the value of exports of Romania and 8.1% of the imports. The trade deficit of these products has increased continuously between 2000 and 2007,

and in the second year after enjoying the EU it began to decrease. For the entire period 2000-2011 it had registered an aggregate value of 14.6 billion. euros, of which 9.2 billion. euro with EU Member States.

Table 5

Trade in agri-food products of Romania

-million euros, nominal prices-

| Year | Exports (FOB) | Imports (CIF) | Trade balance surplus/ deficit | The degree of coverage of imports by exports (%) |
|-------------------------------|---------------|---------------|--------------------------------|--|
| 2000 | 367.6 | 1015 | -647.4 | 36 |
| 2001 | 484 | 1350.7 | -866.7 | 36 |
| 2002 | 460.6 | 1245.6 | -785.0 | 37 |
| 2003 | 497.9 | 1535.3 | -1037.4 | 32 |
| 2004 | 587.4 | 1713.9 | -1126.5 | 34 |
| 2005 | 673.2 | 2021.9 | -1348.7 | 33 |
| 2006 | 853.9 | 2424.8 | -1570.9 | 35 |
| 2007 | 1122.3 | 3338.9 | -2216.6 | 34 |
| 2008 | 2165.2 | 4346.9 | -2181.7 | 50 |
| 2009 | 2242.4 | 3823.2 | -1580.8 | 59 |
| 2010 | 3126.1 | 3926.6 | -800.5 | 80 |
| 2011 | 3993.5 | 4427.6 | -434.1 | 90 |
| Dynamic (%) 2011/ 2000 | 1086 | 436 | 67 | 250 |

Source: NSI - data processing by Tempo.2011- International Trade Bulletin 12/2011

Note that in the 2000 - 2011 period from, Romania has stepped up foreign trade activity by increasing exports of agri-food products by about 10 times, from 367.6 million in 2000 to 3993.5 million euros in 2011. The value of imports increased over the same period to a lower extent, about 4 times. Trade balance in this sector still remains at negative values, but dropped by about 35 percent in the period under review.

Is registered an increase of the level of imports of agri-food products, in particular in the 2009-2011 period, when this indicator has reached the maximum of 90%.

From the perspective of geographical orientation, dependence on EU partners has grown continuously, by virtue of the principle of Community preference. If Romania's agri-food imports from Member States meant 32% of the total in 2000, they reach almost 80 per cent in 2010. Intra-Community exports, in turn, evolve from a share of 48% to 72% during the analyzed period.

CONCLUSIONS

1. The Romanian agriculture is placed on 5-7th level in the EU, in terms of natural resources, which are the main source of competitive advantage.

2. The result of researches shows that large farms of over 100 ha, which represents only 0.4% of the total number of farms, occupy about 50% of the agricultural area (UAA). The presence of these

The final products represent only 32% of agri-food exports of Romania. In the context of regional review, Hungary exported final products at the rate of 52%, Poland of 82%, and Bulgaria, of 33%. In the total value of the goods imported by Romania, 54% are final products (and from those that originate in the EU, 60% are in this category). However, exports of finished products to the EU increased by almost 25% in 2011 compared with the previous year, while imports of such goods with high processing originating in the European Community has increased by only 10%.

A separate analysis of the international trade situation of the two sectors of activity (agriculture - food industry), highlights the asymmetry between the two branches, meaning that Romania is net agricultural products exporter of and net food-importer.

large farms, industrial type, represents an edge of competitiveness for Romania.

3. The resources of labor, capital and technology places the Romanian agriculture on the last places in the ranking. Low labor productivity, high percentage of the population employed in agriculture, poor technique are minuses of Romania in front of the European market.

REFERENCES

- Anghel, I., Dinu E., 2000** -*Strategy and economic-financial analysis - case studies*, ASE Publishing.
- Cojanu, V., 2007** - *Integration and competitiveness: models of economic development in South-Eastern Europe*, ASE Publishing, Bucharest.
- Davidovici I. and Dinu G.** – co-ordinators, 2002 - *Agri-food growth economy*, Expert Publishing, Bucharest.
- Ștefan, G., 2001** - Methodological aspects regarding analysis of the viability of agricultural holdings, Scientific papers USAMV Iasi, Agronomy series CD.
- Ștefan, G. and contributors, 2001** - Income farmers and the pesticide market in Romania, Scientific papers USAMV Iasi, Agronomy series CD.
- Ștefan, G. and contributors, 2006** — *Economics and agri-food policy*, ALPHA Publishing, Iasi.
- ***Statistical Yearbook of Romania- The National Institute of statistics.
- *** Statistical Pocket-Romania at a glance-2012- National Institute of statistics.
- ***Eurostat- "Focus on the Common Agricultural Policy: 50 years in 2012"
- * **INS-International Trade Bulletin 12/2011
- ***National Institute of research-development for Agrochemistry and pedology, ecology
- ***Ministry of agriculture and rural development