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EFFECTS OF CAP MEASURES FOR INCREASING COMPETITIVENESS ON THE CEREAL CHAIN IN ROMANIA

ABSTRACT

The paper analyzes the post-accesion effcects of Common Agricultural Policy (CAP) measures for enhancing competitiveness in the cereal sector in Romania, in the period 2007–2016. The competitiveness of the European cereal market is at the core of debates in the context of the Common Agricultural Policy reforms, trade liberalization and EU enlargement. The most recent CAP reforms in particular have increased the awareness for a competitive agriculture in the European Union. Competitiveness improvement in agriculture is a priority, as in most EU member states with modern agriculture, the importance of industry, trade and services increased in the rural areas. In order to best capture this phenomenon, we have in view competitiveness measurement by approaching the competitive advantage from empirical perspective, presenting the main indicators used in the literature, meant to reveal the complex competitiveness phenomenon. The analysis of national competitiveness for the cereal market will be made in relation to factor intensity: in natural resources, labour, capital and technology. The results lead to certain conclusions referring to the effects of competitive growth measures under CAP on the cereal chain in Romania.

Key words: agriculture, competitiveness, agri-food chain, cereals, Romania.

JEL Classification: Q01, Q10, Q12, Q13.

1. INTRODUCTION

Worldwide, in general, in an agricultural system, the goal is to obtain the highest achievable yields, at lower costs. Competitiveness is a complex economic phenomenon and a controversial issue. The concept does not have a general accepted definition, as well as a large consensus on the proper empirical measures. The competitiveness concept can be applied at different aggregation levels. At national level, competitiveness generally refers to a country's ability to produce goods and services, which pass the test of foreign competition, while increasing its real domestic income. A measure of competitiveness at national level is economic growth. Nevertheless, competitiveness at national level is not very interesting in broader terms (Lundberg 1999, Krugman, 1996). Even though the economic growth could be very interesting from the welfare point of view, what it points out in terms of competition is questionable. According to Lundberg (1999 and Porter (1990) it is more interesting to investigate competitiveness at sectoral level. Furthermore, the

competitiveness of companies is also linked to the country's competitiveness. More relevant is to study competitiveness at sector or sub-sector level. In order to study competitiveness, this is often defined as the ability of a country to gain and maintain profit on the market, on the domestic market and/or the export market.

The competitiveness of the European cereal market is at the core of many debates in the context of the Common Agricultural Policy, trade liberalization and EU enlargement. In particular, the most recent CAP reforms have increased awareness on competitive agriculture within the European Union.

The rural development policy aims at enhancing competitiveness in agriculture and forestry; improving the rural area and rural life quality and diversification of rural economies. These issues are a priority as in most EU Member States, with a developed and modern agriculture, the importance of industry, trade and more recently, of services has increased in the rural area.

2. STATE OF KNOWLEDGE

Over the last years, a significant and increasing number of empirical studies referring to the regional economic growth indicators were based (explicitly or not) on the convergence theory (Iancu A., 2008). The measuring of the effects of pre- and post-EU accession transformations on economic and social development of the East-European Member States, on the convergence process and diminution of disparities between the EU member states is a special field of interest in the economic research (Toderoiu F., 2009).

For the period 2014–2020, it is foreseen that around 20 billion euro will be invested in the agricultural sector and in the rural areas in Romania through the CAP. At European level, certain key policy priorities were defined for which the CAP funds should be used: jobs and economic growth, sustainability, modernization, innovation and quality. Nevertheless, Romania has also the flexibility to adjust both direct payments and its rural development program to its own specific needs. For instance, Romania has decided to transfer 112 million euro from its allocation for direct payments to rural development. The allocation of direct payments in Romania for the period 2014–2020 is up to 11.6 billion euro. In order to support smaller or medium-sized farms, with 30 hectares or less, Romania has opted for re-distributive payments (a first supplementary payment for the first 5 hectares, to which a supplementary payment for the next 5.01–30 hectares is added). However, Romania has opted for non-applying the 5% diminution of the direct payments value that farmers receive over 150,000 euro, as it generally happens in other countries. For the period 2014–2020, a total public contribution of over 9.5 billion euro (8.1 billion euro from the EU budget, including 112.3 million euro transferred from the allocation for direct payments for the period 2015–2017 and 1.34 billion euro from the national co-financing) was allocated for measures that will benefit the rural areas in Romania.

Romania's national rural development program 2014–2020 is based on the following priorities:

- competitiveness improvement in the agri-food sector;
- ecosystem preservation and efficient utilization of natural resources;
- fostering the economic and social revitalization of rural areas.

In the period 2007–2013, CAP invested more than 10 billion euro in the agricultural sector and in the rural areas in Romania to stabilize farmers' incomes, to modernize and increase farm sustainability in Romania and to supply safe, quality food at accessible prices to its citizens.

3. MATERIAL AND METHODS

The paper tries to identify the problems and blockages in the evolution towards the European competitive agriculture model and on this basis to outline some ways of action towards the strengthening of the competitive position of Romania's agriculture, and also to highlight the effects of CAP measures to enhance competitiveness on the cereal chain in Romania.

In order to define and delimit the subject of our investigation, we made a review of the literature to identify specific materials, books, articles and other documents that have been published.

The data on areas, production and average yields in cereals, average consumption per capita, prices in Romania and trade, as well as on farm size were supplied from the National Institute of Statistics, the Ministry of Agriculture and Rural Development and Farm Accountancy Data Network (FADN). For international comparisons we have used and processed EUROSTAT data, as well as international databases from the United States Department of Agriculture, Foreign Agricultural Service, Office of Global Analysis, General Directorate for Agriculture and Rural Development of the European Commission (DG AGRI), Farm Accountancy Data Network (FADN), FAO and from other web-sites.

In the paper we use data series for a 10-year period (2008–2017). Comparisons are made between Romania and some EU countries producing cereals, for example countries with low volatility (France, Germany), countries with economic policies that are quite similar to our country's. At the end of the paper a few conclusions are drawn on the effects of the CAP measures enhancing competitiveness on the cereal chain in Romania.

4. RESULTS AND DISCUSSIONS

European context. The total EU cereal production in the period 2007–2017 increased by 18%, while in Romania cereal production increased more than 2.5 times

mainly due to the increase of average yields. The average yields per hectare in cereals, though on the rise, are still low compared to the EU average; it is only in the year 2017 that the average cereal yield was closer to 94.5% of that in EU-28. Nevertheless, we must mention that in the year 2007 the lowest cereal production in the last 17 years was obtained, due to the unfavourable weather conditions, as we can see in Figure 1. Romania ranks 8th in the EU in terms of its cereal production, while in the year 2017 it ranked 4th in the EU. This happens in the context in which the area cultivated with cereals was maintained relatively constant in the period 2007–2017. Romania ranked 5th in terms of the area cultivated with wheat, but it ranked 1st by area cultivated with maize, and the rank was maintained over the entire period 2007–2017.

In Romania, the average wheat yield production was 50% of the EU average cereal yield in the period 2007–2009, and the average wheat yield increase was not at the EU rate, so that in the period 2012–2015 the average wheat yield was only 42% of the EU average. The average maize yield increased more significantly, so that in the period 2007–2009 it accounted for 36% of the EU-28 average, to reach 53% of the EU-28 average in the period 2013–2015 (Table 1).

In the year 2017, the cereal production value of the EU totalled 46 billion euro, out of which wheat represented 51% and maize 21%. The first five producers in EU-28 obtain 67% of the total wheat production value and 71% of the maize production value.

Table 1

Cereals – area, average yield and total production

	MU	2007–2009			2010–2012			2013–2016		
		Average Romania	**EU28 average**	**Ranking in EU28**	**Average RO**	**EU28 avrg.**	**Ranking in EU28**	**Average RO**	**EU28 avrg.**	**Ranking in EU28**
Total cereal production	mill. tons	5208	59546	5	5236	57124	5	5456	56685	5
Wheat production		2078	25850	4	2036	25936	5	2115	26094	5
Maize production		2435	8765	1	2473	9156	1	2556	9301	1
Average cereal yield	kg/ha	2500	4900	26	3200	5100	24	3400	5100	22
Average wheat yield		2500	5000	25	2400	4900	24	2400	5000	24
Average maize yield		2700	7500	20*	3700	8000	22	4100	8100	21
Total area under cereals	thou ha	13171	291468	8	16793	286739	7	21005	314413	6
Wheat area		5143	136099	8	6080	137113	7	7819	149415	5
Maize area		6559	58675	4	8904	63487	2	9578	63583	2

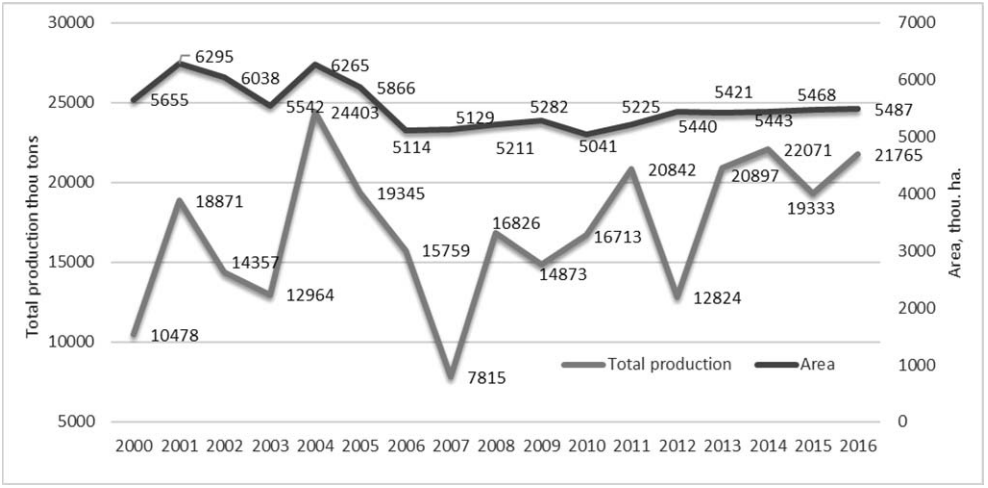
Source: Calculations by Eurostat [apro_acs_a].

* Without Denmark and Great Britain, which did not report the maize production in 2007–2009.

These results reveal a very high degree of cereal production concentration. The value of the Romanian cereals production in the year 2017 was 4.2 billion euro, out of which wheat accounted for 34.2 % and maize 54%. By the value of cereals production, Romania ranks 3rd in the EU. With a value of wheat production of 1.43 billion euro, Romania ranks 6th in the EU, while in maize it ranks 1st, with 2.26 billion euro.

The total wheat production in the year 2015 in EU-28 was 152.3 million tons, Romania ranking 6th with 9.8 million tons; by comparison, France ranked 1st in the EU, with 38.7 million tons. The low average yields per hectare in Romania's case compared to the great cereal producers in the EU are caused, on the one hand, by the extreme weather conditions, such as: drought, floods or frost, as well as by the lack of efficient breeding measures, through the development of irrigation systems mainly in the areas that are mostly exposed to drought effects. We must also have in view some other measures that should result in higher average yields per hectare, such as: increase of performant tractor and agricultural machinery fleet, optimization of fertilization application and pests control practices, as well as the selection of hybrids to ensure higher resistance to the external environmental factors and pests. Another cause of the low average yields is the very high land fragmentation.

The present situation in Romania. In Romania, the area under cereals totalled 5486.9 thousand hectares in 2016, out of which 39% were cultivated with wheat, 47% with maize, 5% with barley, 3% with oats and 5% by other cereals. The cultivated areas remained somehow constant, with smaller variations after the year 2007, while the average yields had an increasing trend, which is also reflected in the total wheat productions obtained (Fig. 1). The dependence of yields on the weather conditions made the cereal production present important variations, in the period under investigation.



Source: Tempo-online data, NIS 2016 and DG AGRI 2016 data.

Figure 1. Evolution of areas under cereals and cereal production in Romania.

In terms of cereal farm structure by size classes, in Romania, we can notice a constant tendency for land consolidation into medium-sized farms (20–99.9 ha) and into large-sized farms, of over 100 ha. Thus, the number of medium and large-sized wheat farms increased by 14.5% and by 56.4% respectively in the period 2003–2013, while the operated areas increased by 37.6% on the medium-sized farms and by 44.3% on the large farms.

At the same time, significant increases were noticed of farms specialized in growing maize in the period 2007–2013, by 18.8% in medium-sized farms and 60.6% in the large farms; the maize areas also increased by 82.8% and by 100.3% respectively on the large-sized farms.

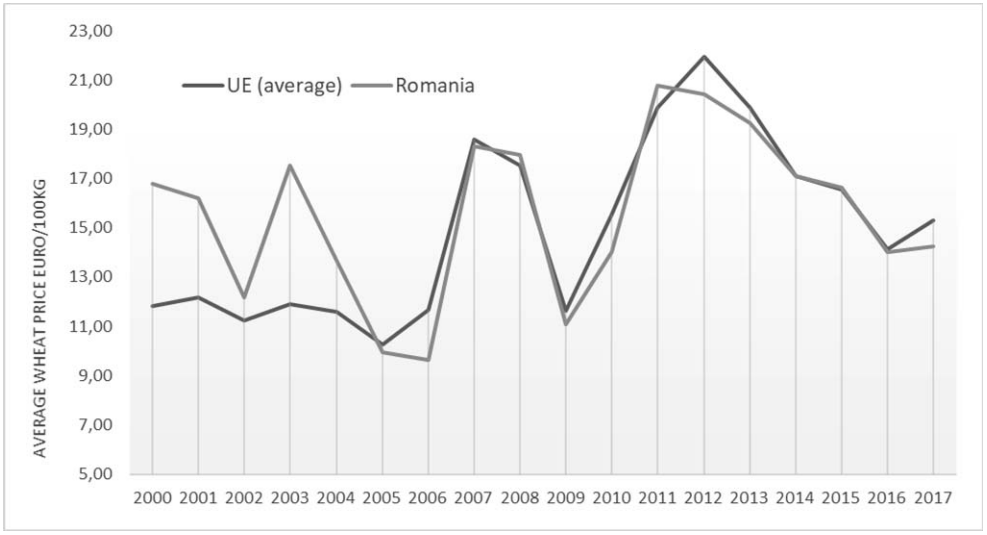
It is easy to understand that the average yields per hectare are much higher in the case of consolidated land areas, on the farms with large land areas, due to centralized management, to hiring experts, to a better technical endowment than in the case of small farms; these large farms have easier access to investment credits used for technological revamping and for storage facilities, obtaining a higher value added. On the other hand, the pre-accession funds (SAPARD) and subsequently the National Rural Development Program, facilitated the acquisition of performant agricultural machinery alongside with the know-how transfer, finally leading to land consolidation into medium and large-sized farms.

The economic performance also positively correlates with the economic size of farms, so that a farm from the class smaller than 2000 euro averagely produces a value of 2709 euro/year per one work unit, while a farm producing 500000 euro creates 59740 euro/year per one work unit on the average, 22 times more than a small farm. This fact is explained by the high technologization level of the large farms, as it results from the calculations based on Eurostat statistics. Labour productivity has increased in all classes of economic size, but by different percentages. The highest increased was noticed on the farms from the class 500000 euro and over (by 110%). In the period under investigation, 2005–2017, there was a trend of production concentration into large-sized farms, as revealed by all the investigated indicators.

Prices. The average producer price for wheat, in the period 2000–2017 (Fig. 2) oscillated in relation to the domestic market conditions (e.g. limited supply because of the unfavourable weather conditions) and to the world market price evolution. While in the period 2000–2007 there were significant differences between the prices practiced in Romania and the EU prices, our country's accession to the EU and also the cereal surplus destined to export resulted in the removal of these gaps. This can be noticed both in wheat and maize crops (Fig. 3).

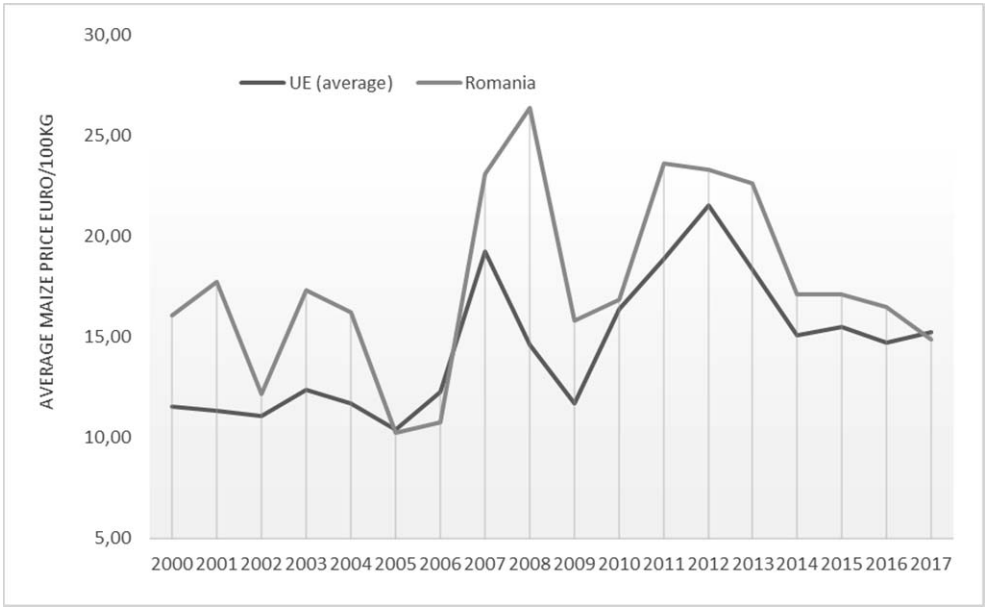
Self-sufficiency. Cereals are part of the group of products in which self-sufficiency degree was reached starting with the year 2005; 2007 is the only year when the self-sufficiency level was under 100%, as production in that year was severely affected by drought. Self-sufficiency in wheat and maize had a steady increasing trend, with maximum values for wheat in the year 2016, namely 225%,

and for maize in the year 2015, with 144%. For the total cereal group, the same trend is maintained, with maximum 163% in the year 2014 (Fig. 4).



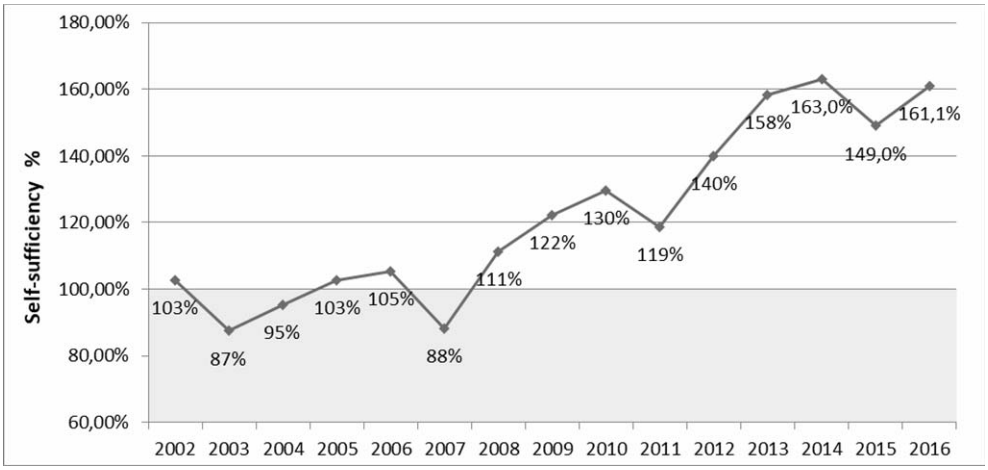
Source: Eurostat [apri_ap_crpouta].

Figure 2. Average wheat producer price, in the period 2000–2017.



Source: Eurostat [apri_ap_crpouta].

Figure 3. Average maize producer price, in the period 2000–2017.



Source: Calculations and processing of data based on Food Balance Sheets 2002–2016, NIS, Bucharest.

Figure 4. Self-sufficiency degree in cereals and cereal products, in the period 2002–2016.

Per total cereals, the domestic availabilities for consumption had a decreasing trend in the period 2000–2016. Once self-sufficiency was reached, under the background of a tendency to limit the cereal imports and of significant cereal export increase, mainly in the period 2007–2016, the domestic consumption availabilities decreased. The human cereal consumption is relatively constant, at 158 kg/capita/year on the average; the availability for human consumption had small variations in the period 2000–2016, the average being 4416 thousand tons. The net average annual wheat consumption per capita decreased by 14% since 2000, to 122 kg/capita/year in the year 2016.

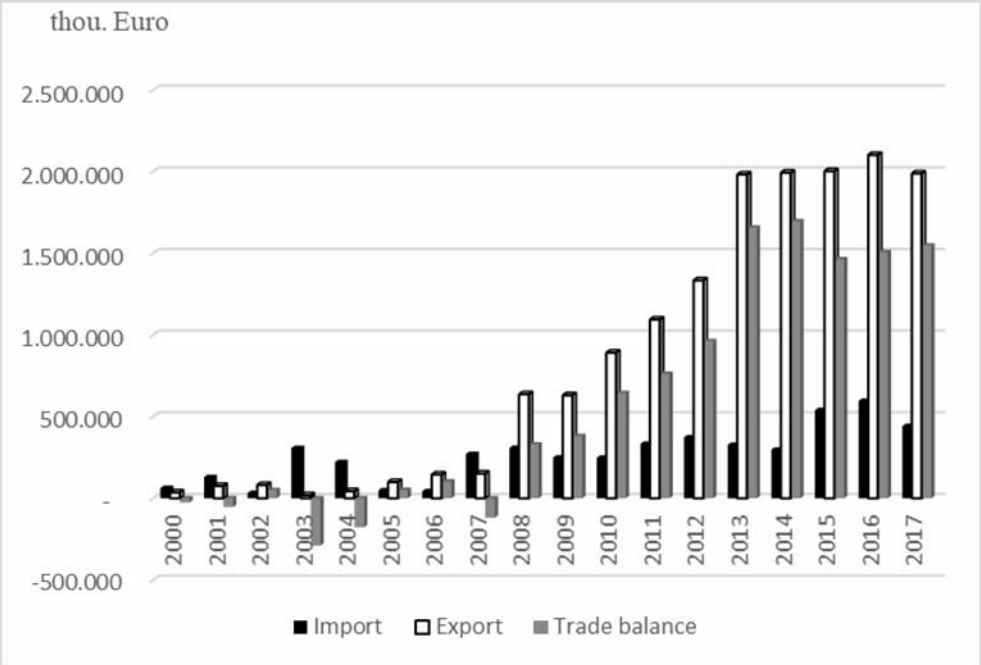
At the same time, small variations are noticed in the case of cereal seeds for planting, these being correlated with the areas on which this type of crop is cultivated; as these have small variation coefficients, they generate a relatively constant consumption. An increasing tendency is noticed in the cereal quantities destined to industrial processing; in the year 2016, 731 thousand tons went to processing, which represented an increase by 133% compared to the year 2000.

The significant variations of consumption availabilities, mainly caused by environmental factors, are taken over by animal feed consumption. Maize has a significant share in cereal feed consumption, accounting for 84.4% of total consumption of feed cereals, while wheat accounts for 9.1%. Maize consumption per capita had a slightly increasing trend in the investigated period, with 30 kg/capita/year in 2016.

Cereal import and export. In the period 2000–2007, the cereal trade balance fluctuated, with deficits (in the year 2003: –289.6 million euro; in the year 2004: –177.7 million euro and in 2007: –118.8 million euro), also resulting from the contraction of domestic supply caused by unfavourable weather conditions, but also with surpluses, the highest surplus being reached in the year 2006, i.e. 84.2 million euro.

Starting with the year 2008, the trade balance was positive, shifting from a deficit of 118.8 million euro to a surplus, on the rise throughout the investigated period. In the year 2014, the surplus reached 1.7 billion euro. Together with the intra-community market liberalization, trade has intensified and its structure was modified. Thus, while in the period 2000–2007 the intra-community imports did not exceed 60%, after 2008 these were around 93%. Exports to the European Union market diminished starting with the year 2007, from 62% in 2007 to 38.6% in 2017, the main markets for cereals being the extra-Community markets, i.e. North-African and Oriental market. Romania has a competitive advantage at export on these two markets due to low transport costs.

The trade balances for wheat and maize are positive, with an obvious increasing trend in the period 2008–2015, the surplus in total cereals being 1.5 billion euro in 2016 and 1.547 billion euro in 2017 (Fig. 5).



Source: processing of data from COMEXT database, * Code 10: Cereals.

Figure 5. Import, export and trade balance in the trade with cereals, 2000–2017.

Wheat imports from the intra-Community market had an yearly average percentage of 94% in the period 2008–2015, with a maximum of 97% in the years 2008, 2009 and 2014. In general, our country imports planting wheat seeds from the intra-Community area. Wheat export structure also changed, the extra-community/ intra-community export ratio being reversed. While in the period 2000–2007, exports to

the EU accounted for 64%, in the period 2008–2015 they were down to 36%. In value terms, trade has grown significantly in the period 2008–2015, with an annual average value of 550.3 million euro, with peaks in the years 2013 (976.9 million euro) and 2014 (959.3 million euro) as against 2000–2007, when the annual average was 33.04 million euro (own calculations based on COMEXT).

Number and dynamics of farms specialized in cereal crops. At national level, the structure of farms specialized in cereal crops suffered important changes in the period 2005–2016; a decline in the case of small-sized farms was noticed, while in the medium and large-sized farms a constant increase was noticed under all aspects: number, utilized agricultural area, standard output and annual work units.

The EU accession brought about, together with the advantage of having an easier access to new markets, technologies that had been tested in the member states, alongside with the free circulation of citizens from the member states. This resulted in an intense workforce migration phenomenon from Romania to the EU developed countries. The main factors involved in the dynamics of farms are technological factors, labour force dynamics either in the sense of work force migration to other industrial branches or its increase within the same industry to increase efficiency, political, demographic, sociological factors, managerial or economic capacity such as: market structure or the overall economic environment (Zimmerman et al. 2009). These factors do not exclude each other, and their mixed influence determines the main changes in the farm structure dynamics.

In Romania's case, beside the above mentioned factors, a particular important event with structural implications was the accession to the EU; these implications affected both the demographic changes through the opening of new perspectives for the Romanian citizens to migrate from the less-favoured areas to the urban areas, while another important part of the population chose to migrate to EU countries for work. Similar situations were also noticed in other ex-communist countries. The natural increase of the population, with a decreasing trend in the period 1990–2017, also had significant differences between the urban and the rural areas. Thus, the negative natural population increase of –4.4 persons/1000 inhabitants, in the period 2005–2017, also contributed to the de-population of the rural areas, putting pressure on subsistence farm sustainability and making it difficult to find local labour force for the farms. Yet, together with the migration of the population, there was also a strong capital flow to our country. The dynamics in this sector was very volatile, through the inflows and outflows of capital, labour force and technologies.

By analyzing the farm dynamics at national level in the period 2005–2016, it can be noticed that not only the migration of labour force can be responsible for the diminution of the number of small-sized farms, but we must have in view some other factors as well, namely the effects of the economic crisis of the year 2008 and also the drought of 2007, which largely affected the small farms. The lack of adequate

financial means and the difficult access to crediting instruments determined many small businesses, including farming businesses, to go bankrupt or led to the decision to sell the business with all its related production means.

After processing the Eurostat data (Table 2), we found out that out of the total number of farms specialized in cereals crops, at national level at present, 61% are farms with utilized agricultural area (UAA) under 2 ha, 26% with 2–4.9 ha UAA and 7% farms with 5–9.9 ha UAA. The farms with UAA bigger than 20 ha account for 3.3% of total.

Table 2

Structure of farms specialized in cereal production by utilized agricultural area (hectares)

Farms	2005	2007	2010	2013	2016
Very small: < 2 ha	273860	229230	177030	209850	249570
Small: 2–20 ha	891000	755330	375330	550390	679410
Medium: 20–100 ha	228600	235690	372440	398330	335900
Large: over 100 ha	2251870	2394830	3420220	3564070	3464150
Total	3645330	3615080	4345020	4722640	4729030

Source: Own calculations based on Eurostat [ef_m_farmleg].

As regards the evolution of areas, we can notice an increase of total area by about 30% nationwide, in the period 2005–2016. Although in the farms with UAA smaller than 2 hectares a significant decrease was noticed in the period 2007–2010, at present, the area under cereals represents 91% of the area in the year 2005. A significant decrease of areas was also noticed in the very small-sized farms category.

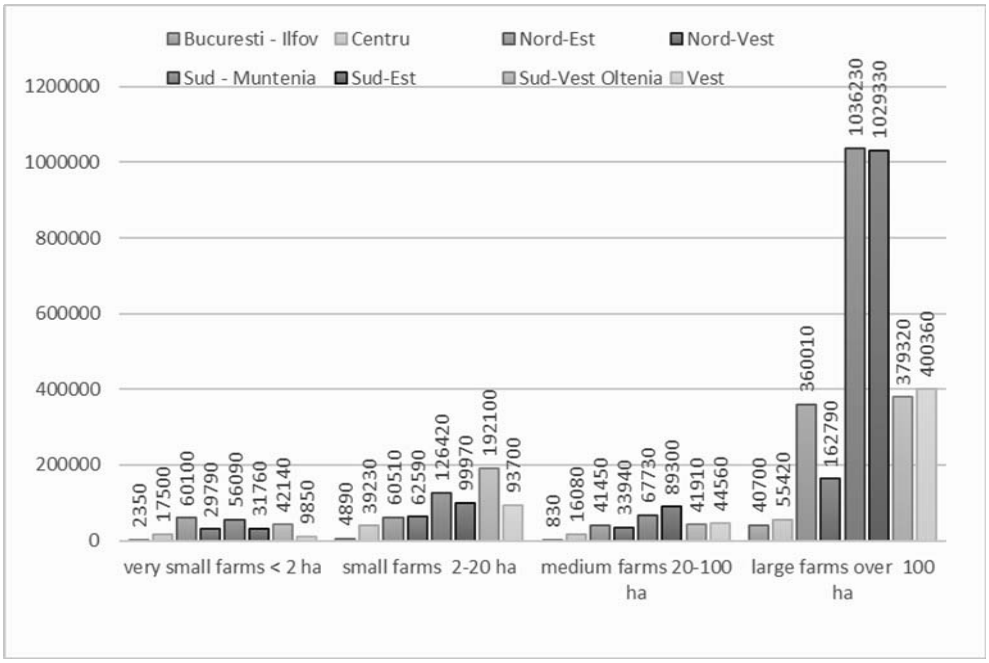
These evolutions show that although small farms faced difficulties caused both by the economic crisis, extreme weather phenomena and lack of labour force, through a reconsideration of the management plan, a better allocation of available resources, by access to the European funds for both support to the current activity and modernization of farms, the farms that could resist have also managed to increase their efficiency. To support the small farms, Measure 141 "Support to semi-subsistence farms" was implemented, over 75% of the beneficiaries of this measure being farms smaller than 5 ha.

The very high land fragmentation on the small farms, small farmers' reluctance to establish producer association (most often subsistence or semi-subsistence farmers), are limiting factors to their access to the necessary finance to buy agricultural machinery, performant technologies or high quality seeds, in their case the standard output/AWU ratio being very low, around 3500 euro/AWU/year.

These farms, mainly small family farms, receive support from NRDP under incentive measures for farm modernization (Measure 4.1 "Investments in agricultural holdings") as well as for the diversification of incomes through non-agricultural activities (Measure 6.2 "Business start-up aid for non-agricultural activities in rural

areas") or for the development of current activities (Measure 6.3 "Support to small farm development").

Romania's accession to the EU has also contributed to the decline in the number of small farms. The liberalization of the capital, goods and services has resulted in the increase of the number of EU investors, who developed businesses in the farming sector in Romania. At the same time, we can notice the tendency for land consolidation into medium and large-sized farms, alongside with a significant increase in number of these farms; the highest increase was in the category of farms over 100 ha, by 53.8% compared to their number in 2005. Significant increases were also noticed in the categories of farms with 30–49.9 ha UAA (52.1%) or 50–99 ha UAA (34.5%). The highest increase was in the category 100 ha and over, by 66.67% at the end of the investigated period (Fig. 6).



Source: Own calculations based on Eurostat [ef_m_farmleg].

Figure 6. Distribution of areas across regions by farm size classes.

The large-sized farms, which had enough finance or easier access to the crediting instruments, developed even under crisis conditions, buying land at prices that were lower compared to the prices before the crisis.

An important role in overcoming the crisis effects was the accession to the EU and the elaboration of the National Rural Development Program 2007–2013, which, through the adopted measures targeting different categories of economic

operators, led, for example, to farm modernization by the purchase of performant machinery and technologies (Measure 121 "Modernization of agricultural holdings").

Across regions, we can notice that the largest land areas are operated by the large-sized farms. The largest areas are found in the regions South-East, South-Muntenia and West, as we can see in Fig. 6.

Following the pattern of a strong decreasing trend of the number of farms with UAA between 2 ha and 19.9 ha in the period 2007–2010, a decrease of land areas operated by these farms could be noticed, which at present reached about 78% of the area in the reference year 2005 (Table 3).

Table 3

Standard output (SO)/Annual work unit (AWU) and the growth index, farms specialized in cereals crops

Farms	2005	2016	Growth index 2005 = 100
very small: < 2 ha	1503	2822	187,8
small: 2–20 ha	3441	5877	170,8
medium: 20–100 ha	11396	21150	185,6
large: over 100 ha	26165	55211	211,0

Source: Own calculations based on Eurostat [ef_m_farmleg].

In order to determine the size classes with the highest efficiency, we calculated the SO/AWU ratio. At national level, the dynamics was positive over the entire investigated period, with an increase of this ratio in all size classes. Analyzing the output dynamics nationwide, we can notice that this constantly increased, mainly due to productivity increase. Although the number of small farms decreased in the period 2005–2016, we can notice a transition trend from small economic sizes to larger economic sizes.

The subsistence farms represent the greatest part of these farms, 91% of these consuming more than 50% of their own production. The greatest number of annual work units is found on these farms. If we look at the dynamics of the medium-sized farms over the period 2005–2016, we can see that although their number decreased together with the other indicators, the SO/AWU continuously increased, although it has very small values compared to those of the farms from higher size categories. The increasing trend of productivity is stronger in the case of large-sized farms. The transition towards higher economic size classes can be noticed in all the farm size classes. Although land fragmentation is still high in the small-sized farms, we can see a land consolidation tendency into medium and large-sized farms. Only the farms with physical size over 100 ha use 71% of the total area under cereals, obtaining over 73% of the total SO of farms specialized in cereal crops; at national level, the SO/AWU is 55210 euro/AWU according to the author's processing of Eurostat data [ef_m_farmleg].

Warehousing. In order to benefit from higher prices for their cereal crop after the harvesting period, farmers have built storage facilities, like metal silos or warehouses. Thus, the farmers producing over 8–10 thousand tons of cereals prefer to store them on their own storage facilities on the farm. As a rule, these are sized to cover around half of the obtained cereal production. Farmers' demand for installing metal silos on the farm increased with the funding received from the EU through the National Rural Development Program 2007–2013.

That is why at national level there is a surplus of storage spaces for cereals compared to the cereal production obtained each year. In 2016, this surplus accounted for 21%, so that for a total cereal production of 19.3 million tons, the storage capacity was 23.4 million tons, in facilities owned by 4879 authorized economic operators. The cereal warehouse capacity in Romania increased by over 50% compared to the year 1990, from 10.3 million tons to 23.4 million tons at present. Developing the warehouse capacities contributes to productivity increase, as farmers can choose the right moment to sell their products to obtain competitive prices, avoiding the sale of cereals right after harvest when prices are relatively small due to the large supply.

Support measures. In the EU pre-accession period, the main financing instrument for the activities in agriculture was SAPARD, this program targeting competitiveness increase and technological revamping through the purchase of performant farm machinery and equipment. The main measure targeting the modernization of cereal farms was Measure 3.1 "Investments in agricultural holdings", sub-Measure Field crops (1,186 approved projects representing 19% of total projects), having mainly in view the procurement of machinery and equipment, with a total allocated value of 112.5 million euro.

After the accession to the EU, through the Rural Development Program 2007–2013, the cereal sector benefited from funding with a total value of 4111 million euro, as a result of accessing the following measures: (a) Measure 112 "Setting up of young farmers"; 83.7 million euro were allocated under the sub-Measure "Field crops"; (b) Measure 121 "Modernization of agricultural holdings – Field crops" had mainly in view the procurement of machinery and equipment, with a total value of 382.0 million euro; (c) Measure 123 "Adding value to agricultural and forestry products" with a total value of 206.7 thousand euro; (d) Measure 142 "Setting up producer groups – Field crops", with a value of 8.2 million euro.

The farmers who grow cereals have benefited from the following forms of support starting with the year 2007, as a result of the Common Agricultural Policy implementation, such as: Single Area Payment Scheme (SAPS); re-distributive payment; payment for agricultural practices beneficial for the climate and the environment; young farmer payment; small farmer simplified scheme; transitional national aids and state aid for diesel oil. All these forms of support obtained by cereal growers permitted them to better manage the cash flow on the farm and to be able to buy inputs without asking for supplier loan, yet they had the possibility to obtain guarantee letter from APIA for banking loan.

The Transitional National Aid (TNA) represents a payment scheme supplementing the SAPS payment and it is made by the Agency of Payments and Intervention in Agriculture (APIA), through the European Agricultural Guarantee Fund (EAGF) having the national budget as funding source. TNA is the only component of subsidies in agriculture that is covered from the national budget, both for the crop and livestock production sectors. Payments are made in national currency (RON) at the at the exchange rate established by the European Central Bank at the end of September each year. The value per hectare of the transitional national aids in the crop production sector is calculated by APIA, based on the amounts established and eligible areas in the databases. The payment under the schemes is made while complying with the general conditions of SAPS scheme and the specific conditions imposed by the European and national laws for the respective crops.

According to the current legislation, transitional national aid (TNA 1), decoupled from production, at a fixed value per hectare, is granted to crop farmers who comply with the provisions of Chapter II from O.M.A.R.D. no. 619/2015, with subsequent amendments and completions, and the conditions foreseen in Art. 33 of the same normative act, who are growing the following arable crops: cereals (common wheat, durum wheat), rye, barley, oats, maize, sorghum, rice, triticale, sweet corn and other cereals), protein crops (peas, beans, fava beans, lupine, lentils, other dry pulses), industrial crops (sunflower, rapeseed, conventional soybean, flax and hemp for fibre, flax for oil, medicinal herbs, other industrial crops), roots (fodder beet, sugar beet), potatoes, vegetables, strawberries, melons, flowers and ornamental plants, fodder crops, seed lots, other crops on arable land.

The value per hectare for the transitional national aid in the crop production sector, TNA 1, respectively for the crops in arable land, paid in the year 2018 for the application year 2017, is 16 euro/ha. Among the arable crops for which transitory national aid is received, we find grain cereals like wheat, rye, barley, two-row barley grain maize, sorghum, rice, other cereals. Payments are made through the European Agricultural Guarantee Fund (EAGF), from the total allocation of 1.8 billion euro. For arable crops, the amount of 110,891,950 euro was distributed for payments in the year 2018. In 2017, for the application year 2016, the transitional national aid for arable crops was decoupled from production, with a value of 17.72035 euro/ha.

5. CONCLUSIONS

In Romania, the average of the last 25 years shows that over 65% of total arable area is cultivated with cereals, so cereals are the most cultivated crop.

Although the average yields are significantly under those obtained by the great cereal producers in the European Union, after the year 2007 we can notice a

constant increasing trend of average yields due to the easier access to technological resources from the Community market, as well as to the land consolidation tendency, these advanced technologies being used more efficiently.

The trend is decreasing in the case of small-sized farms, while the number of medium and large-sized farms increased quite significantly. Even in these conditions, the domestic production of cereals is relatively strongly influenced by weather, by drought in particular, which leads us to the conclusion that effective ways for stimulating irrigation on larger land areas should be found, also taking advantage of the increase in the number of large-sized farms. Labour productivity by economic farm size increased in all economic size classes, yet by different percentages; labour productivity increased more in the case of large farms due to the coherent management of crops and technologies used in cereals crops, the high economic capacity, used for the renewal of the machinery fleet and utilization of high genetic material, but also through the possibility of easier access to European funds for the development of activity.

Accessing the projects under NRDP targeted the attraction of young farmers in the rural area and the modernization of agricultural holdings as well as the establishment of producer groups. These projects also benefitted the economic operators who had in view adding value to their agricultural and forestry products, as well as the subsistence farms.

The foreign trade in cereals was restructured in the period 2007–2017 opposed to the previous period, the trade flows intensified, the cereal trade balance was positive and had an increasing trend starting with the year 2008. Thus, while cereal imports are mainly made from the Community market, the destination of exports are mainly to countries outside the Community area.

Starting with the year 2005, self-sufficiency reached 100% and followed a steady increasing trend. Thus, the higher dynamics of cereal production and the constant decreasing trend of cereal consumption led to a self-sufficiency degree of over 100% starting with the year 2008.

The accession to the EU, through the measures adopted under CAP, determined an increase of competitiveness of farms specialized in cereal crops. In the case of farms with a large economic size, this increase, though significant compared to the year 2005, is still below the European average. Although the standard output is close to the values reported by the big cereal producers in the EU, the big number of annual work units necessary to obtain this output places Romania still on the last places in the EU. The major competitiveness gaps at the moment of Romania's accession to the EU could not be recovered in the period from the accession moment until present, although significant progress has been made in this respect. There is a need to accelerate the convergence towards the average competitiveness level of the EU, while taking into consideration the specific weather conditions and the present re-technologization level of this economic sector.

REFERENCES

1. Cecilia Alexandri coord., (2017), *Agricultura şi spaţiul rural – evaluări la 10 ani de la aderare*, Editura Academiei Române, București.
2. Davidovici I., Davidovici A.S., Kruzslicika Mihaela, (2008), *Reflecţii pe marginea potenţialului competitiv al agricultorilor români*, Revista „Economie agrară şi dezvoltare rurală", Anul V, nr.1/2008, Editura Academiei Române, Bucureşti.
3. Davidovici, I, Davidovici, A.S., Kruzslicika Mihaela, (2009), *Productivitatea şi competitivitatea producătorilor agricoli români*, în Lucrări Ştiinţifice Seria I, Vol XI (1) „Management agricol", Editura Agropoint Timişoara, p. 43–50.
4. Davidovici, I, Davidovici, A.S., Kruzslicika Mihaela, (2009), *Criza agrară din România – o restricţie majoră a competitivităţii,* în volumul simpozionului internaţional „Competitivitatea agriculturii româneşti în procesul de integrare europeană", Editura Ars Academica, p. 169–175.
5. Gereffi, G, Fernandez-Stark, Karina, (2016), *Global Value Chain Analysis: A Primer*, Center on Globalization, Governance and Competitiveness at the Social Science Research Institute, Duke University, USA.
6. Iancu, A., (2008), *Convergenţa economică*, Editura Academiei Române.
7. Otiman P.I., coord., 2006, *Dezvoltarea rurală durabilă în România*, capitolele 3 şi 4, ISBN (10)973-27-1461-1, Editura Academiei Române, Bucureşti.
8. Otiman P.I., (2009), *Agricultura – factor de atenuare a crizei economico-financiare de reluare a creşterii economice*, Revista Profitul agricol nr.11/18 martie 2009, Bucureşti.
9. Simion, E., coord., (2001), *Integrarea României în Uniunea Europeană competitivitatea agriculturii şi integrarea în UE*. Grupul de reflecţie, Evaluarea Stării Economiei Naţionale ESEN – 2, INCE-Academia Romana, CIDE. Capitolul 2. Competitivitatea agriculturii Româneşti în context european, autori: Chivu, Luminiţa, Ciutacu, C., Ioan Franc, V., Constantin, M. Toderoiu, F., (2009), Real Economic Convergence – European and National Dimensions, în: *Agricultural Economics and Rural Development*, Volume 6, No. 2, Romanian Academy Publishers, Bucureşti, pp. 159–180.
10. Zimmermann, A., Heckelei, T., Domínguez, I., (2009), Modelling farm structural change for integrated ex-ante assessment: Review of methods and determinants. Environmental Science & Policy. 12. 601-618. 10.1016/J.ENVSCI.2009.01.014.
11. *** 2017, National Rural Development Program for the Period 2014–2020.
12. *** 2017, EC Report Romania – CAP in Your Country, European Commission.
13. *** 2014, National Competitiveness Strategy 2015 – 2020, approved by Government's Decision no. 752 of September 16, 2015.
14. *** 2017, *Farm Structure Survey 2017*, NIS, Bucharest.
15. *** 2018, Tempo online, NIS, Bucharest.
16. *** 2015, European Commission, European Commission Report *Monitoring and Evaluation Framework for the Common Agricultural Policy in the Period 2014–2020*, ISBN 978-92-79-48202-1 (under electronic format).
17. *** 2019, FADN public database, http://ec.europa.eu/agriculture/rica/database/database_en.cfm
18. *** 2018, FAO.
19. *** 2018, DG AGRI.
20. *** EUROSTAT, *Annual detailed enterprise statistics for industry*, http://ec.europa.eu/eurostat/statistics.
21. *** *Food Balance Sheets in the Year 2008*; *2016*. National Institute of Statistics, Bucharest.
22. *** *Population Consumption Availabilities in the Year 2016*. National Institute of Statistics, Bucharest.
23. *** *Strategy for the Agri-Food Sector Development on the Medium and Long Term – Horizon 2020–2030* – Project – Ministry of Agriculture and Rural Development, Bucharest, 2015. (http://www.madr.ro/docs/agricultura/)
24. *** *National Rural Development Program for the Period 2014–2020*, version approved in May 2016.
25. *** *Ex-post Evaluation of NRDP 2007-2013*. Ministry of Agriculture and Rural Development, Bucharest, 2017.