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THE AGRICULTURAL HOLDINGS STRUCTURAL ANALYSIS FROM EUROPEAN UNION AND FROM ROMANIA BY CHARACTERIZING THEIR MAIN INDICATORS.

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Abstract

This paper aims to study in detail the indicators for characterizing the agricultural holdings in the European Union and in Romania, to highlight the disparities between our country and the countries with a strong assimilation and development of agriculture. Standard gross margin and other indicators calculated for crop and animal production for their use at farm level, required the understanding of their content, the calculation and use in the evaluation activities at farm level. In the European Union, as well as candidate countries to Integration, including Romania, farms are numerous and varied as they are complex reality. To facilitate the unitary analysis of the structural and economic results is necessary to use proper terms.

Key words: *agricultural holdings, gross value added. standard gross margin, standard production*

INTRODUCTION

Agriculture along with industry, is one of the sectors which had suffered most from the transition period: excessive fragmentation of land the unemployed of industrial restructuring reprofiled in agriculture (but without sufficient preparation), lack of interest in the means of mechanization and existing irrigation as well as the modest equipping with modern technologies have led to a subsistence agriculture, underperforming Given the existing potential and towards the European agriculture.

The existence of this high agricultural potential (among the most important in Europe) was one of the main factors of interest excitement of EU enlargement and the inclusion of a country with strong development gaps and offsets visible from the community, as it is Romania [3].

MATERIALS AND METHODS

Standard gross margin, an indicator of the assessment,substantiation and analysis of the agricultural holding production activities. In agricultural production, SGM is defined [7] as the difference between the standard value of gross production per hectare of crop or livestock (including the subsidies related to products and / or area) and the standard amount of variable costs of obtaining this production . According to the types of crops and livestock from the farm, SGM is determined for each farm.

Economic size of the holding in the total SGM of the holding, expressed in ESU, 1 ESU is equivalent to 1,200 euros.

Gross value added. Value added at gross basic prices corresponds to production value (at basic prices) less the value of intermediate consumption. The basic price is defined as the price received by the producer, after deduction of all taxes on products but including all subsidies on products.

The standard Gross production represents the average production per hectare or animal head averaged over five years, without subsidies. Expressed in euro per hectare or animal head [6].

To interpret the data we used the following statistical indicators: the mobile arithmetic mean, standard deviation, coefficient of variation, average annual growth rate and the statistical significance of these indicators.

The formulas used to calculate these indicators are presented below [2], [8]:

For arithmetic mean = $\overline{x} = \frac{\sum xi}{n}$, where:

$\overline{X}$ = arithmetic mobile mean; Xi = average production values on a number of year (i);
n = the number of years taken into account.
Average annual growth rate [1]

= $r2000-2008 = \sqrt[8]{\prod(p1/p0)} - 1$.

r2005-2010 = average annual growth rate;
∏p1/po = chained growth indicators

For standard deviation = $\partial = \sqrt{\frac{\sum(\overline{x}-xi)^2}{n-1}}$,

where:

∂ = standard deviation ; xi = average production values over a number of years,
n = the number of years taken into account.

For the variation coefficient = $C = \frac{\delta}{\overline{X}} x100$,

where:

C – the variation coefficient (expressed in percent)

The coefficient of variation can be: between 0-10% - low variation, between 10-20% - middle variation, over 20% - large variation.

The data used have had as source: Statistical Yearbook of Romania, statistics from Eurostat, data from the specialized literature.

RESULTS AND DISCUSSIONS

1.The standard gross margin (SGM). This notion is represented by the standard gross margin, which is the basic dimensional delineation indicator of agricultural holdings. SGM unit value is calculated, both by area and by villages, on agricultural holdings at medium potential level and extrapolated to high and low potential.

Table 1 –The agricultural holdings structure on technical economic profile, based on SGM, in some EU countries, years 2005-2010

TYPE OF FARM	Bulgaria		Germany		Spain		France		Italy		Hungary		UK	
CEREALS AND OLEAGINOUS	2005	2010	2005	2010	2005	2010	2005	2010	2005	2010	2005	2010	2005	2010
FIELD CROPS	2,7	4,9	11,9	11,9	13,3	16,6	13,7	16,8	16,5	17,7	10,1	12,9	7	10,8
PROTECTED VEGETABLES	7,3	12,2	12,4	12,4	9,1	9,7	7,7	9,3	17,8	15	4,7	7,8	18,1	18,1
FIELD VEGETABLES	0,4	1,1	1,8	1,4	2,8	2,5	1	1,1	1,2	1,5	1	1,1	1,1	0,6
OF VEGETABLES	1,1	3,4	0,5	0,3	3,1	1,6	1,2	1,3	0,6	0,8	0,3	0,4	0,3	0,1
VINEYARD	0,3	0,4	1,1	1	0,3	0,4	0,9	0,8	0,6	0,9	0,7	0,2	0,5	0,4
OF FRUIT	2,9	4,9	5,3	5,2	9,2	8,7	14,5	13,7	13,2	17,4	7,5	6,2	0	0
MIXED PERMANENT CROPS	1	3,1	2	1,9	22,1	20,7	2,9	3	10,5	12,2	5,8	6,5	1	0,8
SPECIALIZED DAIRY BOVINE	0,4	0,6	0,6	0,7	5,3	5,3	0,7	0,6	10,8	8,2	1,2	2,1	0	0,2
SPECIALIZED MEAT BOVINE	11,9	12,5	19,8	22,1	3,5	3	11,1	9,9	3,1	2,9	0,9	0,8	7,1	7,2
MILK AND MEAT BOVINE	0,5	0,4	9,1	9,2	5,9	7,1	13,3	12,2	2,4	2,8	0,1	0,2	13,7	18,5
SHEEP, GOATS AND OTHER GRAZING LIVESTOCK	4,2	1,3	3,3	3,3	0,5	0,4	3	2,1	0,5	0,5	0,1	0,1	1,1	2,8
SWINES	7,5	9,7	9,3	9,1	6,7	6,5	11,1	11,3	3,3	4,8	2,4	3,1	27,6	30
POULTRY	1,8	1,8	5,1	5,5	1,8	2,1	1,2	1,2	0,5	0,4	10,2	6,4	1	1,1
MIXED GRANIVORES	2,8	1,5	0,7	0,9	0,6	0,8	2,2	2,4	0,4	0,3	15,2	20,1	2,5	1,7
POLYCULTURE	7,2	4,4	0,2	0,1	0,5	0,5	0,7	0,5	0,1	0,1	15,9	9,5	0,2	0,1
MIXED HERBIVORES ORIENTATION	2,7	3,9	1,3	1,3	6,3	5,8	2,4	2,5	11	9	2,7	2,8	0,5	0,5
MIXED GRANIVORES ORIENTATION	12,3	7,6	3	2,1	2,1	1,1	2	1,3	0,7	0,3	1,5	1,4	0,9	0,9
MIXED LARGE CULTURE - HERBIVORE	10,3	6	1,8	1,4	0,6	0,5	1,3	1,1	0,2	0,1	1,5	1,4	0,7	0,6
MIXED VARIOUS CROPS-LIVESTOCK	6,9	5,6	6	5,9	1,2	1,3	5	5	0,9	1	0,6	0,7	2,9	3,6
UNCLASSIFIABLE	15,8	14,4	4,7	4	4,4	3	4,2	3,5	3,9	2,1	14,5	12,9	1,2	1
TOTAL	0,2	0,3	0,2	0,2	0,7	2,2	0,1	0,4	1,8	2	3,2	3,5	12,5	1
	100,2	100	100	100	100	100	100	100	100	100	100	100	100	100

Source: own calculations after data from Eurostat [4]

In Table 1 is shown a structure of agricultural works based of SGM in some EU countries for the period 2005-2010. It finds differences in farm structure both on countries but also the existence of differences for 2005 and 2010. There is a priority for field crops, specialized dairy bovine animals, mixed granivores and herbivores, mixed crop / livestock (various crops and livestock). It appears particularly for the countries considered developed a restriction phenomenon mixed farms in favor of those specialized.

The structural knowledge of farms is rendered further also for Romania through the agricultural holdings. The predominance is for field crops, poultry, mixed granivores, mixed with herbivorous orientation and mixed, field crops that in 2010 cumulates 61.8% of the total.

For the period 2005-2010 on total country there is a decrease in the number of holdings (with -10.03% fewer farms in 2010 compared to 2005).

Table 2.The agricultural holdings structure on technical economic profile, based on SGM, in Romania, years 2005-2010.

TYPE OF FARM	2005		2007		2010	
CEREALS AND OLEAGINOUS	522,710	12.3	430,860	11.0	354,760	9.2
FIELD CROPS	612,740	14.4	623,070	15.8	561,370	14.5
PROTECTED VEGETABLES	9,320	0.2	10,540	0.3	9,180	0.2
FIELD VEGETABLES	11,700	0.3	13,870	0.4	9,500	0.2
OF VEGETABLES	1,260	0.0	1,630	0.0	5,230	0.1
VINEYARD	48,860	1.1	49,050	1.2	92,940	2.4
OF FRUIT	39,770	0.9	37,420	1.0	63,490	1.6
MIXED PERMANENT CROPS	4,690	0.1	4,190	0.1	11,310	0.3
SPECIALIZED DAIRY BOVINE	160,680	3.8	171,230	4.4	108,950	2.8
SPECIALIZED MEAT BOVINE	7,370	0.2	6,890	0.2	11,200	0.3
MILK AND MEAT BOVINE	61,060	1.4	69,340	1.8	37,760	1.0
SHEEP, GOATS AND OTHER GRAZING LIVESTOCK	226,100	5.3	221,910	5.6	233,800	6.1
SWINES	56,030	1.3	65,690	1.7	172,010	4.5
POULTRY	465,800	10.9	355,600	9.0	407,020	10.5
MIXED GRANIVORES	192,100	4.5	177,880	4.5	395,680	10.3
POLYCULTURE	161,680	3.8	179,700	4.6	125,140	3.2
MIXED HERBIVORES ORIENTATION	486,270	11.4	365,060	9.3	389,900	10.1
MIXED GRANIVORES ORIENTATION	55,920	1.3	33,820	0.9	95,000	2.5
MIXED LARGE CULTURE - HERBIVORE	277,680	6.5	252,140	6.4	42,850	1.1
MIXED VARIOUS CROPS-LIVESTOCK	811,160	19.1	775,650	19.7	632,120	16.4
UNCLASSIFIABLE	43,280	1.0	85,830	2.2	99,840	2.6
TOTAL	4,256,180	100.0	3,931,370	100.0	3,859,050	100.0

Source: own calculations after data from Eurostat [4]

The most significant decrease is registered for the type of field crops, grain or oleagenous, cattle specialized in the production of milk, meat and milk, mixed large culture and herbivores. At the same time it is also found an amplification of units, with reference to the type of vegetable farms, vineyards, orchards, mixed permanent crops, swines, mixed granivores.

2.**The standard gross production (euro / ha).** The standard gross production expressed in EUR / ha for the period 2005-2010 in some European countries is shown in Table 3 from where it is apparent the differentiation level achieved in agricultural production.

Table 3. The standard production evolution (euro / ha) in some European countries for the period 2005-2012.

Country	MU	2005	2007	2010	Average /rythm
UK	euro/ha	1,172	1,105	1,158	1,145
	% from 2005	*100*	*94.3*	*98.9*	X
	% in chain		0.94	1.05	*-0.60*
Bulgaria	euro/ha	850	759	567	725
	% from 2005	*100*	*89.2*	*66.6*	X
	% in chain		0.89	0.75	*-18.33*
Germany	euro/ha	2,607	2,611	2,484	2,567
	% from 2005	*100*	*100.1*	*95.3*	X
	% in chain		1.00	0.95	*-2.39*
Italy	euro/ha	3,173	3,181	3,847	3,400
	% from 2005	*100*	*100.2*	*121.2*	X
	% in chain		1.00	1.21	*10.11*
Romania	euro/ha	756	736	783	758
	% from 2005	*100*	*97.3*	*103.5*	X
	% in chain		0.97	1.06	*1.77*
Spain	euro/ha	1,353	1,340	1,439	1,377
	% from 2005	*100*	*99.1*	*106.3*	X
	% in chain		0.99	1.07	*3.13*
Hungary	euro/ha	1,154	1,101	1,118	1,124
	% from 2005	*100*	*95.4*	*96.9*	X
	% in chain		0.95	1.02	*-1.57*

Source: own calculations after data from Eurostat [4]

If developed countries (England, Germany, Italy, Spain and Hungary), performed over 1100 euro / ha, countries such as Bulgaria and Romania obtained below this level (between 736 and 850 euro / ha). The variation characterization by dynamic rhythms made for 2005-2010 signifies a growing trend for Italy, Romania and Spain (which can be played by growth rate oscillations between 1.77 and 10.11) and a decrease in other countries (the rate of - 0.60 and -18.33).

3.The gross value added of agricultural production

It appears the necessity for knowing the variational level evolution for the GVA diferentiated calculated at the selling prices by the producer (of farmgate) and at prices that intervenes the intermediate (prices at processor). For the period 2005-2012 is analyzed for some European countries, the gross value added evolution through absolute indicators, relative resulting from comparisons, but also statistics.

Regarding the evolution of gross value added of agricultural production in European countries for the period 2005-2012 (through farmgate prices), is presented in Table 4, for some countries in Europe.

Table 4. The gross value added evolution of agricultural production in European countries for the period 2005-2012 (farmgate prices).

Country	MU	2005	2006	2007	2008	2009	2010	2011	2012	*Average /rythm*	Standard deviation (mil euro)	Coef var(%)
Germany	mil euro	12812	13169	16031	16975	13163	13949	15265	17468	14854	1717	*11.56*
	% in chain		*1.03*	*1.22*	*1.06*	*0.78*	*1.06*	*1.09*	*1.14*	*4.53*	x	x
Bulgaria	mil euro	1544	1479	1227	1886	1296	1356	1624	1686	1512.2	205	*13.57*
	% in chain		0.96	0.83	1.54	0.69	1.05	1.20	1.04	*1.26*	x	x
France	mil euro	28842	26152	29010	26761	22639	27840	28832	30955	27629	2339	*8.47*
	% in chain		0.91	1.11	0.92	0.85	1.23	1.04	1.07	*1.02*	x	x
Hungary	mil euro	2215	2189	2273	2687	1679	1979	2926	2597	2318.1	377	*16.26*
	% in chain		0.99	1.04	1.18	0.62	1.18	1.48	0.89	*2.30*	x	x
Italy	mil euro	25979	25541	25796	26230	23607	23607	25161	25500	25178	955	*3.79*
	% in chain		0.98	1.01	1.02	0.90	1.00	1.07	1.01	*-0.27*	x	x
Portugal	mil euro	2671	2714	2453	2455	2432	2418	2152	2126	2428	197	*8.10*
	% in chain		1.02	0.90	1.00	0.99	0.99	0.89	0.99	*-3.20*	x	x
Romania	mil euro	6189	7017	6244	8362	6392	6507	8023	6255	6874	804	*11.69*
	% in chain		1.13	0.89	1.34	0.76	1.02	1.23	0.78	*0.15*	x	x
EU-27	mil euro	148749	143615	156478	153301	131304	145305	154424	159412	149074	8427	*5.65*
	% in chain		0.97	1.09	0.98	0.86	1.11	1.06	1.03	*0.99*	x	x

Source: The National Strategic Framework for the sustainable development of the agri-food sector and Romanian rural area during 2014 - 2020 (National Strategic Rural Framework) CRPCIS, 2012 [5]

Regarding the annual levels of GVA, there is an increase in the period dynamics for all countries (except Italy and Portugal, where this gross value added decreases). For the whole EU in 2012 compared to 2005, it is registered an increase of 7.17%.

Regarding the average rate we found the existence of positive values, with the exception of the two aforementioned countries ,where are values of -0.27 and -3.20 respectively. The existence of these oscillations annual gross added value for all countries shows differential levels of the coefficient of variation (as an indicator of scattering).

It is reported the existence of a small variation (0-10%) for some countries (France, Italy, Portugal and total EU) oscillations being between 3.79 and 8.19, along with medium variation (10-20%) for other countries (Germany, Bulgaria, Hungary, and Romania) where the oscillations are between 11.56 and 16.26.

The prices at the processor amplifies the gross added value, situation that for the same structure of EU countries (presented in Table 5) brings differentiated arguments.The annual levels reflect, for the EU-27 increases, excepting the years 2008 and 2009. The average growth rate records a value of 2.69, standard deviation of the sequence data for EU total being of 10397 million euro.

We see a negative value at Portugal, where the average rate records a -1.94 annual decline of gross value added. In the period dynamics, Bulgaria and Hungary have the lowest values, with the annual growth rates lower than the rest of the countries.

Table 5. Evolution of GVA of agricultural production in European countries for the period 2005-2012 (processor prices)

Tara	MU	2005	2006	2007	2008	2009	2010	2011	2012	*Average /rythm*	Standard deviation (mil euro)	Coef var(%)
Germany	mil euro	12919.7	13162.9	16043.2	17101.8	13245	13967	15282	17485	14900.8	1715	*11.51*
	% in chain		*1.02*	*1.22*	*1.07*	*0.77*	*1.05*	*1.09*	*1.14*	*4.42*	x	x
Bulgaria	mil euro	1544.3	1478.8	1168	1811	1198.9	1276.5	1536	1613.8	1453.4	208	*14.33*
	% in chain		*0.96*	*0.79*	*1.55*	*0.66*	*1.06*	*1.20*	*1.05*	*0.63*	x	x
France	mil euro	21374.8	23688.9	26531	24218.7	20169.9	26659.9	27721.3	29912.1	25034.6	3071	*12.27*
	% in chain		*1.11*	*1.12*	*0.91*	*0.83*	*1.32*	*1.04*	*1.08*	*4.92*	x	x
Hungary	mil euro	1800.4	1846.3	2036.9	2616.2	1619.8	1909.6	2830.6	2493.3	2144.1	413	*19.26*
	% in chain		*1.03*	*1.10*	*1.28*	*0.62*	*1.18*	*1.48*	*0.88*	*4.76*	x	x
Italy	mil euro	24357.4	24723.5	25332.5	25815	23100.4	23210	24851.4	25187.4	24572.2	913	*3.72*
	% in chain		*1.02*	*1.02*	*1.02*	*0.89*	*1.00*	*1.07*	*1.01*	*0.48*	x	x
Portugal	mil euro	2200.7	2421.9	2232.4	2252.1	2194.4	2176.8	1881	1918.2	2159.7	166	*7.71*
	% in chain		*1.10*	*0.92*	*1.01*	*0.97*	*0.99*	*0.86*	*1.02*	*-1.94*	x	x
Romania	mil euro	6003.1	6825.3	5933.1	7856.4	5980.7	6449.9	8022.9	6255.3	6665.8	786	*11.79*
	% in chain		*1.14*	*0.87*	*1.32*	*0.76*	*1.08*	*1.24*	*0.78*	*0.59*	x	x
EU-27	mil euro	129329	134304	148393.8	145223.2	123208.6	140154.1	149839.8	155707.7	140770.1	10397	*7.39*
	% in chain		*1.04*	*1.10*	*0.98*	*0.85*	*1.14*	*1.07*	*1.04*	*2.69*	x	x

Source: The National Strategic Framework for the sustainable development of the agri-food sector and Romanian rural area during 2014 - 2020 (National Strategic Rural Framework) CRPCIS, 2012 [5]

Amplified variations and annual gains were maintained at a low level (coefficient of variation> 10%) for Germany, Italy and Portugal, and the environment (coefficient of variation between 10.1% and 20%) for Bulgaria, France, Hungary and Romania.
The variations magnified and the annual amplifications are maintained at a low level (coefficient of variation< 10%) for Germany, Italy and Portugal, and at medium level (coefficient of variation between 10.1% and 20%) for Bulgaria, France, Hungary and Romania.

CONCLUSIONS

The main resultative problem of the assembly presented is given by the degree of compatibility of the Romanian agriculture with the one in the EU, which is still low. From the analysis of the degree of (in) compatibility and (non) convergence of Romanian agriculture and rural economy with the European (EU) one it arises the differences or the discrepancies between Romania and the EU.

In terms of agricultural performance and rural development, the real current stage of the Romanian agriculture is similar to the stage it was the agriculture in the EU-6 fin the years 1965-1970, with reference to the following [5]:
- The value of primary production per hectare obtained by Romanian farmers (about 800-900 €/ha) is 2-2.5 times lower than the one obtained (European average) of their colleagues in the EU (1800-2000 € / ha);
- The intermediate consumption, as a level expression of production technology financial support, of the structure and degree of agricultural production intensification, with direct impact on yields in the EU Member States, records differences still significant from one country to another. Thus, Romania has an intermediate consumption of 715 euro / ha, compared to the Netherlands - 8369 euro / ha, Belgium - 3987 euro / ha, Denmark - 2843 euro / ha;
- The gross added value in Romanian agriculture is half of the EU-15 one, which leads to a final agricultural production of about 1400-1500 € / ha in Romania, compared to 2400-2600 € / ha in the EU-15;

The main incompatibility generating factors: the technological gap, the poor access to European funds through projects EAFRD, the shortage of intellectual capital, human, generally, the institutional incompatibility caused by market functionality, the structural and institutional functionality etc..

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