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Trends in the evolution of subsidies per hectar and per livestock unit, by classes of economic dimension of agricultural holdings, in Romania and some European countries, for the period 2007-2018

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TRENDS IN THE EVOLUTION OF SUBSIDIES PER HECTAR AND PER ANIMAL, BY CLASS OF ECONOMIC DIMENSION OF AGRICULTURAL HOLDINGS, IN ROMANIA AND SOME EUROPEAN COUNTRIES, FOR THE PERIOD 2007-2018

ILIE DIANA MARIA [1], BEREVOIANU ROZI [2], RĂDOI RALUCA-ALEXANDRA[3], DRĂGHICI MANEA[4]

Summary: *Agricultural subsidies are an important strategy of the European Union, for improving farm incomes, economic consolidation of the agricultural sector, raising living standards and thus ensuring food security. This paper tries to answer at two questions. First, if there were significant changes between 2007-2013 and 2014-2018, of the indicators: direct payments for crop production per hectare of agricultural land and direct payments on UVM (Large Cow Unit), as direct indicators and the share of direct payments in the product of the farm and the gross product per UAM (Annual unit of work) as impact indicators. Second, if the differences of these indicators compared to the European Union average deviate significantly. The statistical indicators used were: average, standard deviation.*

Keywords: *subsidy, economic size of agricultural holdings, test t*

JEL classification: *H23, O38, Q18*

INTRODUCTION

One of the first Community policies adopted by the European Union is the Common Agricultural Policy (CAP), which is the most integrated European policy. At EU level, the CAP has undergone a series of successive reforms, so that in 2013 it materialized in a set of regulations establishing the legislative framework for the period 2014-2020. Thus, the Council and the European Parliament initiated four regulations on: direct payments, the single common market organization (CMO), rural development and a horizontal regulation on the financing, management and monitoring of the CAP. All CAP reforms have sought to simplify the way grants are awarded, streamline and reduce budget costs, evolving from an agricultural policy that initially provides support for the development of production (coupled production payments), to a market-oriented policy, focused on qualitative, ecological and food security parameters (decoupled production payments), with an emphasis on efficient use and sustainable resources.

In Romania, the implementation of the CAP determined the gradual elimination of the support schemes applied until 2006. For the period 2014-2020, Romania had allocated significant amounts for the application of the new CAP. They contributed to the increase of the competitiveness of the Romanian farmers and of the rural economy, respectively the improvement of the living standard in the rural environment. The condition by which the Romanian state can absorb European funds is the creation of a system to ensure the administration and rigorous control of farmers' payment claims (IACS) and its implementation and management falls within the remit of the Agency for Payments and Intervention for Agriculture (APIA). In 2017, Romania was on the first place to access European funds, in March and August to EAGF funds and in the second quarter to EAFRD funds, say officials from Agriculture.

Legislative proposals for the future of the common agricultural policy include the following objectives: to ensure a fair income for farmers, to improve competitiveness, to restore the balance of power in the food chain, to combat climate change, to protect the environment, to preserve generational renewal, to help revitalize rural areas, to protect food quality and health [1].

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MATERIALS AND WORKING METHODS

In the evaluation of the subsidy trend, the following indicators were used: average, standard deviation, error standard, the confidence limits for delimiting the intervals for a given probability, the coefficient of variation, the annual growth rate, the coefficient of elasticity.

In order to better capture the evolution of subsidies on agricultural holdings, they were used to study them by economic size classes ((1) 2,000 - <8,000 EUR; (2) 8,000 - <25,000 EUR; (3) 25,000 - < 50 000 EUR; (4) 50 000 - <100 000 EUR; (5) 100 000 - <500 000 EUR; (6)> = 500 000 EUR) [2].

Arithmetic mean = $\bar{x} = \frac{\sum xi}{n}$; in which x was GDP/capita as an average per year or at the level of a country or as an average for one year at the level of the countries of the European Union.

An empirical picture of the data spread around the average is given by the coefficient of variation (CV%). Variable coefficient (CV%) = (Std / Xmed) * 100.

The following empirical limits for CV% were established in the applied statistics: below 10%, indicates a homogeneous average; between 10% -20%, a relatively homogeneous average; between 20% -30% indicates a relatively heterogeneous average; higher than 30%, indicates a heterogeneous average (Dragomirescu L., Drane JW, 2009) [3].

For the evaluation of the statistical significance of the data around the mean, the confidence limits corresponding to a given risk = X +/- ðx * tp were used, in which:

X = arithmetic mean $\bar{x} = \frac{\sum xi}{n}$;

ðx = standard deviation error ($\partial x = \sqrt{\frac{\sum(\bar{x} - xi)\wedge 2}{n(n-1)}}$;

tp = value given by GL (degrees of freedom) and probability of transgression (risk).

In our case, for the evaluation of direct subsidies and on UVM, the formula for delimiting the intervals of the confidence limits is:

(X + ðx * tp) for the upper limit and (X-ðx * tp) for the lower limit.

Annual growth rate (r%), calculated with the formula = ((sqrt (∏p1 / po) 1 / n) -1) * 100; where: ∏p1 / po = chained growth indicators; the number of years of the period (Anghelache C, et al., 2012) [4].

The coefficient of elasticity represents α from the equation: $Y = A.X1^{\alpha}$, in which Y is the gross product per 1 UAM; X1 is the subsidy on a farm and α is the coefficient of elasticity [5]. The solution was made by logarithm of the expression, which resulted in: lnY = ln A + αlnX1.

To determine the significance of the logarithmic equation for calculating the coefficient of elasticity and the correlation coefficient, the F test was used (Fcalculated> Ftheoretical => Sf)

The comparison method was used in the analysis of the data series that included the classes of economic dimension, by country, which were statistically compared with the European Union average, for probabilities of 95%, 99% and 99.9% (Tănăsoiu O. & Iacob Andreea , 2017) [6].

The data source was RICA (Agricultural Accounting Information Network), for the period 2007-2018 [7].

RESULTS AND DISCUSSIONS

1. The current situation

Today, and largely thanks to the CAP, European agriculture guarantees the food security of more than 500 million Europeans, provides regular employment for 22 million people (44 million if the whole agri-food chain is considered) and Europe is the first agri-food exporter in the world. The CAP has 40% of the community budget and yet benefits only 5% of the population. The subsidies are largely related to the cultivated area, so that 80% of them are intended for 20% of the owners, while small farmers practically have little or no amounts. However, the European

Commission sees the continuity of this aid system as a way to close the gap between farmers 'incomes and workers' average incomes.

Analyzing the distribution of the number of holdings by classes of economic dimension that benefited from direct payments in the period 2007-2018, in Romania it is easily observed from the data presented in table no. 1 that their number decreased in the analyzed period, so that in 2018 there are 763650 farms less than in the beginning year of the period, representing a decrease of 59%. The analysis highlighted the fact that the largest number of farms is in the class of economic size of 2000-8000 €, with a share of 89.5% in total agricultural holdings since 2007. At the level of 2018 there is a decrease of the number of holdings in this class, by 70.5%, compared to 2007 holding a share of 64.7% in the total holdings.

In the case of the other classes of economic size, the number of farms increases, so that, in 2018, compared to 2007, there are 34960 (+ 30.5%) more in the size class 8,000 - <25,000 €, by 4170 (+38, 3%) more agricultural holdings in the economic size class of 25,000 - <50,000 €, with 7010 (+ 135.9%) more farms in the size class of 50,000- <100,000 €, with 3010 (+38, 9%) more holdings in the economic size class 100,000 - <500,000 €, and in the case of holdings in the economic size class> = 500,000 € there was an increase of 790 holdings (+ 96.3%)

there are significant increases in the case of farms in the economic size class 8,000 - <25,000 €, which in 2007 had a share of 8.9% of total farms, in 2014 it increased to 13%, and in 2018 they represented 28, 4% of the total agricultural holdings in Romania.

Increases are also recorded in the case of the number of holdings in the other classes of economic dimension, so that:

- the holdings from the economic dimension class 25,000 - <50,000 €, in 2007 they represented 0.8% and at the level of 2018 they reach 2.9% of the total holdings in Romania
- the holdings from the economic dimension classes 25,000 - <50,000 € and 100,000 - <500,000 € in 2007 represented 0.4% and 0.3% respectively and at the level of 2018 they reach 2.3% and 1.4% respectively of the total holdings from Romania
- and in the case of holdings in the class of economic dimension > = 500,000 € there were increases from a share of 0.1% in 2007 to 0.3% in 2018.

Table 1. Structure by classes of economic dimension of the number of agricultural holdings in Romania, beneficiaries of Community subsidies, for the period 2007-2018

The year	**UM**	**2,000 - <8,000 €**	**8,000 - <25,000 €**	**25,000 - <50,000 €**	**50,000- <100,000 €**	**100,000 - <500,000 €**	**> = € 500,000**	**Total**
2007	No	1,153,540	114,480	10,880	5,160	4,370	820	1,289,250
	%	89.5	8.9	0.8	0.4	0.3	0.1	100
2010	No	916,210	97,330	12,650	6,180	5,450	1,000	1,038,820
	%	88.2	9.4	1.2	0.6	0.5	0.1	100
2014	No	951,290	147,400	18,730	7,770	6,830	1,500	1,133,520
	%	83.9	13	1.7	0.7	0.6	0.1	100
2018	No	339,950	149,440	15,050	12,170	7,380	1,610	525,600
	%	64.7	28.4	2.9	2.3	1.4	0.3	100

Processed after: RICA Database, 2018 [7]

Analyzing the structure of direct payments by economic size classes of the beneficiary farms in Table 2, it is observed that at the level of 2007 most of these payments, 36.5% of the total, belong to farms of economic size class 2,000 - <8,000 €. They are followed by a share of 23.4% of the total holdings in the class 8,000 - <25,000 €. In third place they benefited with a share of 13.6% of total direct payments, holdings in the economic size class 100,000 - <500,000 €. This ranking by economic size classes of farms that benefited from direct payments changed in 2018. Thus, in the first place,

holding 23.4% of total direct payments are farms in the economic size class 100,000 - <500,000 €, followed by holdings in the class of 8,000 - <€ 25,000, with a share of 22.9% of total direct payments.

Table 2. Structure by classes of economic dimension of direct payments on an agricultural holding in Romania, beneficiaries of Community subsidies, for the period 2007-2018

The year	UM	2,000 - <8,000 €	8,000 - <25,000 €	25,000 - <50,000 €	50,000- <100,000 €	100,000 - <500,000 €	> = € 500,000	Total
2007	%	36.5	23.4	10.6	6.1	13.6	9.8	100
2010	%	36.5	13.2	6.7	7.9	21.4	14.4	100
2014	%	29	16.5	7.7	7.5	20.8	18.5	100
2018	%	14.2	22.9	7.2	12.8	23.4	19.6	100
Coefficient of variation	%	23.96	42.66	49.85	26.29	15.12	32.74	42.14
Annual rhythm	%	1.77	-3.34	-6.98	1.78	-0.59	-0.64	7.67

Processed after: RICA Database, 2018 [7]

2. Subsidy Size Analysis

With regard to the subsidy per hectare, it is found that at EU level in the period 2007-2018, holdings of the economic size class >= € 500,000 received the highest amount with an average of 264.5 euros / ha (table no. 3). The weighted average at EU level in the analyzed period is 247.2 euro / ha.

Table 3. The subsidy size in the vegetal sector (euro / ha) by size classes and the significance of the difference from the European Union average, for the period 2007-2018

Country / Class	UM	2,000 - <8,000 €	8,000 - <25,000 €	25,000 - <50,000 €	50,000- <100,000 €	100,000 - <500,000 €	> = € 500,000	Total
EU (Mt)	€ / ha	215.4	248.1	244.1	226.9	256.1	264.5	247.2
BG	€ / ha	175.6	186.0	188.1	172.4	150.0	144.8	153.8
	(+/-) € / ha	-39.8	-62.1	-56.0	-54.5	-106.1	-119.7	-93.4
	SMF	N	Θ	N	Θ	ΘΘΘ	ΘΘΘ	ΘΘΘ
ES	€ / ha	249.1	223.2	196.4	184.2	186.9	256.5	201.0
	(+/-) € / ha	33.7	-24.9	-47.6	-42.7	-69.2	-8.0	-46.2
	SMF	*	ΘΘ	ΘΘΘ	ΘΘΘ	ΘΘΘ	N	ΘΘΘ
FR	€ / ha		1376.0	225.0	239.0	276.0	290.8	264.2
	(+/-) € / ha		1128.0	-19.1	12.1	19.9	26.3	17.0
	SMF		***	ΘΘ	*	N	*	*
OF	€ / ha			321.0	319.4	324.6	311.9	319.0
	(+/-) € / ha			76.9	92.5	68.5	47.4	71.8
	SMF			***	***	***	***	***
HUN	€ / ha	198.8	211.1	212.4	213.0	219.3	247.8	223.9
	(+/-) € / ha	-16.6	-37.0	-31.6	-13.9	-36.7	-16.7	-23.3
	SMF	N	ΘΘ	Θ	N	ΘΘΘ	N	Θ
PL	€ / ha	223.4	222.7	222.3	219.2	211.8	209.1	219.0
	(+/-) € / ha	8.0	-25.4	-21.7	-7.7	-44.3	-55.4	-28.2
	SMF	N	ΘΘ	ΘΘ	N	ΘΘΘ	ΘΘΘ	ΘΘ
EN	(+/-) € / ha	135.9	145.5	145.9	151.9	142.6	156.4	143.4
	€ / ha	-79.5	-102.5	-98.2	-75.0	-113.5	-108.1	-103.8

Processed after: RICA Database, 2018, Semf (GL = N1 + N2-2; tcal> t:> 0.05 *;> 0.01 **;> 0.001 ***; <0.05^{0}; <0.01^{00}; <0,001^{000})[7]

Comparing the average subsidies per hectare in some European countries with the EU average, it is found that (table no. 3):

- In Bulgaria there are differences between -39.8 euro / ha (farms in class 2,000 - <8,000 €) and -119.7 euro / ha (for farms in class > = 500,000 €) compared to the EU average,
- In the case of Spain, the holdings in the first class of economic size show significant increases compared to the EU average by +33.7 euro / ha, but there are decreases in the case of the other size classes of holdings, the most significant being -69,2 euro / ha corresponding to the class between 100,000 - <500,000 €,

- A distinctly significant increase is observed in France on farms with an economic size of 8000 - <25000 €, exceeding the EU average by 1128 euro / ha ,
- Subsidies granted to farms in Germany during the period exceeded the EU average for all classes of economic size, as shown in Table 3,
- In Hungary we find a situation similar to Bulgaria with decreases compared to the EU average between -13.9 euro / ha in the case of holdings in the class of 50,000- <100,000 € and -37 euro / ha in the case of those in the class of 8,000 - <25,000 €,
- in Poland we find a situation similar to Spain, so in the first class there is an increase in the average subsidy by 8 euro / ha compared to the EU average and in the case of the other classes there are decreases,
- In Romania, compared to the other countries studied, there are distinctly significant differences in the average subsidies granted in the period 2007-2018 compared to the EU average. The differences from the EU average of subsidies granted to farms by economy class are between -75 euro / ha for farms in the economic size class 50000- <100000 € and -113.5 euro / ha for farms in the economic size class 100000 - <500000 €.

The average subsidy granted in the livestock sector, expressed in euro / UVM, for farms in the EU and some member countries was also analyzed (table no. 4). It is found that at EU level the highest value of the subsidy as an average of the period 2007-2018 was granted for farms in the economic size class 50,000-<100,000 € of 47.4 euro / UVM and the lowest for farms in the size class economic of> = 500,000 € of 7.9 euro / UVM. The weighted average at EU level in the period 2007-2018 is 25.2 euro / UVM.

Table 4. The subsidy size in the livestock sector(euro / UVM) by size classes, in some community countries and the significance of the difference compared to the European Union average, for the period 2007-2018

Country / Class	**UM**	**2,000 - <8,000 €**	**8,000 - <25,000 €**	**25,000 - <50,000 €**	**50000- <100000 €**	**100,000 - <500,000 €**	**> = € 500,000**	**The country**
EU (Mt)	€/UVM	32.6	44.2	46.8	47.4	25.2	7.9	25.2
BG	€/UVM	42.3	72.4	76.0	71.8	52.3	12.0	42.1
	(+/-)€/UVM	9.7	28.3	29.2	24.4	27.1	4.1	17.0
	smf	N	*	*	*	**	N	*
ES	€/UVM	68.3	91.4	80.9	68.9	32.8	2.7	32.2
	(+/-)€/UVM	35.7	47.2	34.2	21.5	7.5	-5.2	7.1
	smf	*	***	***	***	**	ΘΘΘ	**
FR	€/UVM		252.7	123.6	91.6	36.1	4.8	42.5
	(+/-)€/UVM		208.6	76.8	44.1	10.9	-3.1	17.3
	smf		***	***	***	***	ΘΘ	***
OF	€/UVM			2.9	2.5	0.8	1.6	1.3
	(+/-)€/UVM			-43.9	-45.0	-24.5	-6.3	-23.9
	smf			ΘΘΘ	ΘΘΘ	ΘΘΘ	ΘΘΘ	ΘΘΘ
HUN	€/UVM	32.2	56.9	79.7	83.4	45.3	37.1	45.5
	(+/-)€/UVM	-0.4	12.8	32.9	36.0	20.1	29.2	20.4
	smf	N	N	**	**	*	***	**
PL	€/UVM	21.6	25.5	23.5	17.7	5.1	0.3	14.2
	(+/-)€/UVM	-11.0	-18.6	-23.3	-29.7	-20.1	-7.5	-10.9
	smf	N	N	Θ	ΘΘΘ	ΘΘΘ	ΘΘΘ	N
EN	€/UVM	32.7	71.8	130.0	92.8	105.2	58.8	56.5
	(+/-)€/UVM	0.0	27.6	83.2	45.4	80.0	50.9	31.4
	smf	N	N	N	N	**	**	N

*Processed after: RICA Database, 2018; Semf (GL = N1 + N2-2; tcal> t:> 0.05 *;> 0.01 **;> 0.001 ***; <0.05$^{\theta}$; <0.01$^{\theta\theta}$; <0.001$^{\theta\theta\theta}$)[7]*

Comparing the average subsidy granted by classes of economic dimension in some member countries with the EU average in the period 2007/2018 we find the following:

- In Bulgaria, the amount of subsidy granted per 1 UVM exceeds the EU average for all classes of economic size,
- In Spain they increased significantly with the exception of subsidies granted to farms in the economic size class of> = € 500,000, where there were distinctly significant differences of -5.2 euro / UVM compared to the EU average. Such a situation is also found in France,

- In Germany, subsidies on 1 UVM decreased significantly compared to the EU average for all economic size classes in the period 2007-2018, the highest being -45 euro / UVM (50,000-<100,000 €),
- In Hungary, the average subsidy decreased insignificantly, by -0.4 Euro / UVM compared to the EU average, granted for farms in the economic size class 2,000 - <8,000 €, and in the case of farms in the other classes there are very significant increases,
- We find a situation similar to Germany, in Poland where the average subsidy is below the EU average, with differences between -7.5 euro / UVM for farms in the class of> = 500,000 € and -29.7 euro / UVM for farms in the class of 50,000 - <100,000 €,
- Romania, compared to the other countries studied, exceeds the average subsidy at EU level with significant differences in the case of farms in the economic size classes included in between 25,000 - <50,000 € (+ 83.2euro / UVM) and between 100,000 - <500,000 € (80 euros / UVM).

3. Analysis of the impact of the grant

Direct payments to farms in the EU and Member States make a significant contribution to the formation of the gross product. By farm size classes, it is found that at EU level, in the period 2007-2018, the share of direct payments in GDP is on average 20.7% in the case of farms in the economic size class between 8,000 - <25,000 € and of 19.5% for holdings in the economic size class between € 25,000 - <€ 50,000. The payments granted to very large holdings of over € 500,000, of 7.7%, have a lower share. The weighted average contribution of direct payments to the formation of PB at EU level in the period 2007-2018 is 13.2%.

Table 5. The share of direct payments in the gross product, in some community countries, by size classes and the significance of the difference compared to the European Union average, for the period 2007-2018

Country / Class	UM	2,000 - <8,000 €	8,000 - <25,000 €	25,000 - <50,000 €	50,000- <100,000 €	100,000 - <500,000 €	> = € 500,000	Total
EU (Mt)	%	17.6	20.7	19.5	17.6	12.6	7.7	13.2
BG	%	11.9	**20.6**	**24.2**	**23.3**	20.4	13.8	16.6
	(+/-)%	-5.8	-0.1	4.7	5.6	7.8	6	3.4
	SMF	ΘΘ	N	N	*	***	***	*
ES	%	**27.7**	**22.0**	**20.5**	18.4	13.5	3.4	15.6
	(+/-)%	10.1	1.3	1.1	0.7	0.9	-4	2.4
	SMF	*	N	N	N	N	ΘΘΘ	**
FR	%		23.4	**25.5**	21.4	14.3	5.2	14.1
	(+/-)%		2.7	6.0	3.8	1.6	-2	0.9
	SMF		N	***	***	*	ΘΘΘ	N
OF	%			**19.5**	15.7	11.2	11.3	11.9
	(+/-)%			0.0	-2.0	-1.4	4	-1.3
	SMF			N	ΘΘΘ	Θ	***	N
HUN	%	18.8	**22.2**	**23.1**	**22.1**	18.6	13.1	17.1
	(+/-)%	1.2	1.5	4	4	6	5	4.0
	SMF	N	N	**	***	***	***	***
PL	%	**26.9**	**21.4**	16.8	13.8	9.8	9.2	15.3
	(+/-)%	9.3	1	-3	-4	-3	2	2.2
	SMF	***	N	ΘΘΘ	ΘΘΘ	ΘΘΘ	*	**
EN	%	10.4	13.1	17.1	**21.3**	**20.5**	15.0	13.8
	(+/-)%	-7.2	-7.6	-2.4	3.7	7.8	7	0.7
	SMF	ΘΘΘ	N	N	*	***	***	N

*Processed after: RICA Database, 2018; Semf (GL = N1 + N2-2; tcal> t:> 0.05 *;> 0.01 **;> 0.001 ***; <0.05$^{\theta}$; <0.01$^{\theta\theta}$; <0.001$^{\theta\theta\theta}$)[7]*

Referring to the average contribution of direct payments on gross product formation (GDP) in some Member States compared to the EU average, showed significant differences between countries.

Thus, in Bulgaria the highest share of direct payments in GDP is 24.2% for farms in the economic size class 25,000 - <50,000 €, exceeding the EU average by 4.7%. In the case of Spain, the share of direct payments in GDP is higher for first-class farms of economic size, with a period average of 27.7%, exceeding the EU average by 10.1%. In France, Germany and Hungary, we find the largest

share of direct payments in PB for farms in the economic size class between 25,000 - <50,000 €, of 25.5%, 19.5% and 23.1% respectively. In Poland we find a situation similar to Spain in which the largest share of direct payments to PB is 26.9% for farms in the first class of economic size.

In the case of Romania, the situation is totally different from all the countries studied, the contribution of direct payments to PB being higher (21.3%) in the case of large farms with economic size between 50000- <100 000 €, and 20.5% in the case of holdings in the class 100,000 - <500,000 €.

The link between direct payment and Gross Product per 1 AWU (Annual Work Unit) is given in Table 6 by calculating the correlation coefficient at EU and Member State level. At the level of the European Union for the analyzed period 2007-2018, the correlation coefficient is significant with values between 0.26 for the economic dimension class 8000 - <25000 € and 0.54 for the class> = 500000 €. The weighted average in the EU in the period 2007-2018 of the correlation coefficient is 0.98.

Table 6. The correlation and coefficient of elasticity between the Gross Product per 1 AWU and the total subsidy per holding in some European countries, by classes of economic dimension, for the period 2007-2018

Country / Class	**UM**	**2,000 - <8,000 €**	**8,000 - <25,000 €**	**25,000 - <50,000 €**	**50,000- <100,000 €**	**100,000 - <500,000 €**	**> = € 500000**	**Total**
EU (Mt)	Elastic coefficient	0.24	0.15	0.58	0.62	0.79	1.53	1.27
	Corel coef	0.43	0.26	0.83	0.82	0.65	0.54	0.98
	semf	St.	St.	St.	St.	St.	St.	St.
BG	Elastic coefficient	0.75	0.14	-0.03	-0.06	0.60	1.54	0.89
	Corel coef	0.89	0.20	0.03	0.07	0.42	0.80	0.99
	semf	St.	N	N	N	St.	St.	St.
ES	Elastic coefficient	0.96	0.83	0.97	1.05	0.57	0.50	1.02
	Corel coef	0.91	0.78	0.92	0.93	0.64	0.37	0.86
	semf	St.	St.	St.	St.	St.	St.	St.
FR	Elastic coefficient		0.55	0.83	0.69	0.71	1.73	0.99
	Corel coef		0.97	0.97	0.90	0.60	0.91	0.99
	semf		St.	St.	St.	St.	St.	St.
OF	Elastic coefficient			0.94	0.99	1.11	1.01	0.96
	Corel coef			0.69	0.83	0.96	0.70	1.00
	semf			St.	St.	St.	St.	St.
HUN	Elastic coefficient	0.42	0.26	0.51	0.56	-0.14	-0.14	1.03
	Corel coef	0.50	0.32	0.66	0.78	0.21	0.21	0.92
	semf	St.	St.	St.	N	St.	N	St.
PL	Elastic coefficient	0.67	0.74	0.77	0.61	-0.14	-0.32	1.03
	Corel coef	0.98	0.96	0.97	0.90	0.21	0.18	0.92
	semf	St.	St.	St.	St.	St.	St.	St.
EN	Elastic coefficient	0.17	-0.21	0.04	-0.25	0.60	1.54	0.89
	Corel coef	0.12	0.23	0.06	0.15	0.42	0.80	0.99
	semf	St.	St.	N	N	St.	St.	St.

Processed after: RICA Database, 2018; Semf (Fcalculated> Ftheoretical => Sf) [7]

With regard to the coefficient of elasticity, its value indicates that an increase in direct payments of 1% leads to an increase in gross product per 1 AWU by 0.24% in the case of holdings with an economic size between 2000 - <8000 €, 0.15% for class 8 000 - <25000 €, by 0.58% for holdings in class 25 000 - <50000 €, by 0.62% for holdings in class 50000- <100000 €, by 0.79% for holdings in class 100000 - <500000 €, and by 1.53% in the case of holdings> = 500000 €, as can be seen in the figure below.

Analyzing the coefficients for the studied countries, the following were highlighted:

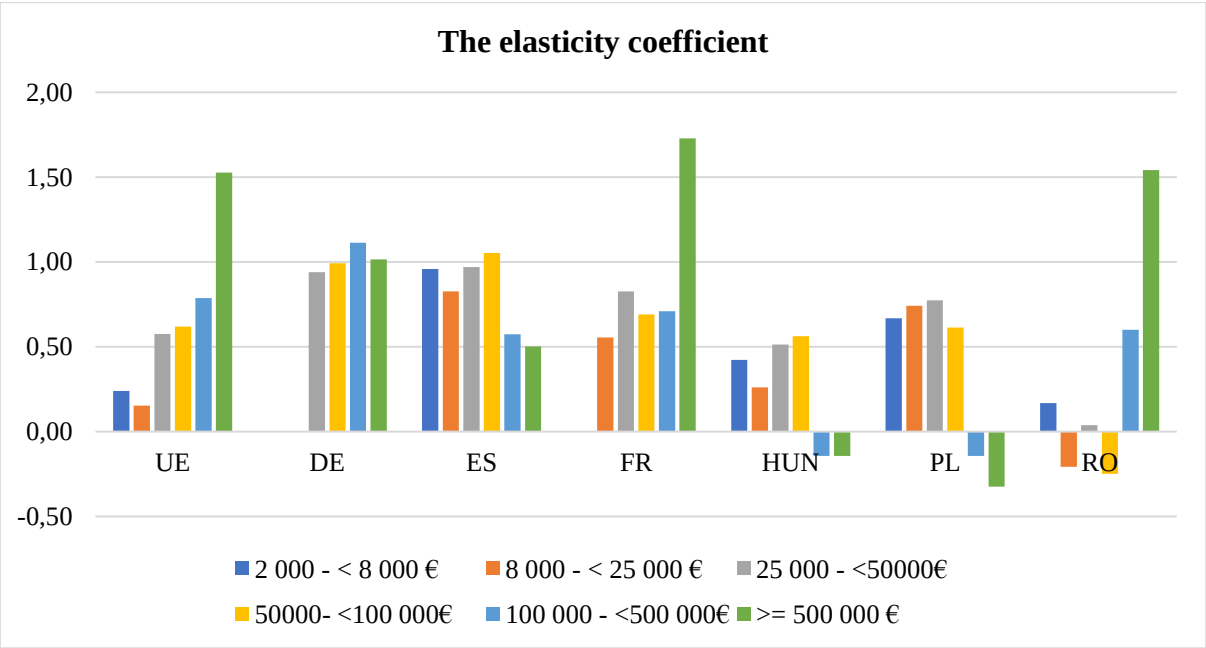
In Bulgaria the link between direct payments and gross product per 1 AWU is significant for holdings in economic size classes between 2000 - <8000 € (0.89) between 100000 - <500000 € (0.42) and> = 500000 € (0.80). The coefficient of elasticity indicates that by increasing direct payments by 1%, PB / 1AWU also increases by 0.75% for first class farms of economic size and 1.54% for last class farms. For holdings in the classes 25 000 - <50000 € and 50000- 100000 € indicates a negative influence of the increase of direct payments by 1% on PB / 1AWU decreasing by -0.03% and -0.06% respectively.

In Spain, the correlation coefficient indicates a significant link between direct payments and gross product per 1 AWU on holdings of all classes of economic size. Also, the coefficient of elasticity indicates a positive influence of the increase of direct payments by 1% on PB / 1 AWU , at the holdings from all classes of economic dimension, the highest being the increase of 1.05% for the class 50000- <100000 €. The same situation is encountered in France and Germany, the elasticity coefficient indicating an increase of PB / 1 AWU by 1.73% in the case of holdings of the last economy class and 1.11% for holdings in the class 100000 - <500000 €, in case of increase of direct payments by 1%.

In Hungary, the correlation coefficient shows a significant link for holdings in the first three classes of economic size and for those in the class of € 100,000 - <€ 500,000. The elasticity coefficient has a positive influence of the increase of direct payments by 1% on the increase of PB / 1AWU in the case of holdings from the first four classes of economic dimension, and instead for the last holdings this increase would have a negative influence.

In the case of Poland, the correlation coefficient indicates a significant link between direct payments and PB / 1 AWU for holdings of all economic size classes, and in the case of the elasticity coefficient we find the same situation described above in Hungary.

Finally, the analysis of the coefficients calculated for Romania highlighted a significant link between direct payments and PB / 1AWU for the first and last two classes of economic dimension and the elasticity coefficient indicates an increase of PB / 1 AWU by 0.17% for farms from class 2,000 - <8,000 €, by 0.04 for holdings from class 25,000 - <50,000 €, by 0.60% and 1.54% for holdings from classes 100,000 - <500,000 € and respectively> = 500,000 €, in the case of increasing direct payments by 1%.



Processed after: RICA Database, 2018 [7]

CONCLUSIONS

Based on the analysis, we conclude that the number of farms decreased in Romania in 2018, registering 59% less compared to the first year of the analyzed period. The highest share of the total holdings is held by the economic size class 2,000 - <8,000 €, which in 2007 occupied a percentage of 89.9%, decreasing until the end of the period to 64.7%. The share of holdings in the second class of economic dimension increased considerably, from 8.9% in 2007 to 28.4% in 2008.

Also, analyzing the structure of direct payments granted to farms, it is found that most of them in 2007 belong to those in the class 2,000 - <8,000 € (36.5%), but this changes in 2018 when most direct payments are received by farms in the class of 100,000 - <500,000 € (23.4%) and those in the class 8,000 - <25,000 € (22.9%).

Regarding the subsidies received in the plant and animal husbandry sector (euro / ha and euro/ UVM), the analysis showed that in the period 2007-2018, the largest amount in the plant sector belongs to farms in the size class economic> = 500,000 € with an average of 264.5 euro / ha, and in the case of the zootechnical sector it was granted for the farms from the class of economic dimension 50,000- <100,000 € of 47.4 euro / UVM. In Romania, compared to the other countries studied, there are distinctly significant differences in the average subsidies granted in the period 2007-2018 compared to the EU average, between -75 euro / ha for farms in the economic size class 50,000- <100,000 € and -113, 5euro / ha in the case of farms in the economic size class 100,000 - <500,000€.

In the livestock sector, subsidies granted in Romania exceed the EU average for all holdings, but the highest value is recorded for holdings in the class 25,000 - <50,000 € with 83.2euro / UVM and for holdings between 100,000 - <500,000 € of 80 euros / UVM.

At EU level, the highest share of direct payments in gross product, in the period 2007-2018, is 20.7% for holdings in the economic size class between 8,000 - <25,000 €. In most European countries, the contribution of direct payments to the formation of the gross product is oriented towards small and medium-sized farms, compared to Romania where they are directed to large and very large farms.

The calculation of the correlation coefficient in the EU indicated a significant link between direct payments and gross product per 1 AWU for holdings analyzed by economic size classes. The coefficient of elasticity indicates that an increase in direct payments of 1% leads to an increase in gross product per 1 AWU for all holdings. In Romania, the analysis of these two coefficients highlighted a significant link between direct payments and PB / 1AWU for the first and last two classes of economic dimension. The coefficient of elasticity indicates that an increase in direct payments of 1% has a negative influence on the gross product per 1 AWU for holdings in classes 8,000 - <25,000 € and 50,000- <100,000 €.

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