Structural Developments in Agricultural Activity after Romania's Accession to the European Union

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Abstract

This paper presents the evolution of agricultural sector in Romania for the period 2008-2020 based on statistical data provided by INSSE. In the analysis we used indicators to reflect the structure and the dynamics for the number of companies in agriculture sector, the number of companies in agriculture depending on the number of employees, the agricultural personnel according to professional status, labor productivity in agriculture, the importance of agriculture in regional GDP, the population employed in agriculture and population employed in agriculture by region. The total number of companies activating in agriculture had an increasing evolution during 2008-2018 representing a 55,37% increase. In *Romania there are regions more developed regarding the agriculture and there are regions where the development is lower The productivity of labor in agriculture is lower than the productivity of the activities of the national economy and registered the maximum value of 15.3 lei per hour in 2019. In the West region, the highest increase in labor productivity took place from 21,84 lei per hour in 2009 to 118,9 lei per hour. We could notice that in the regions where the productivity is higher the proportion of population employed in agriculture is lower and where the proportion of population employed in agriculture is higher, the productivity is smaller.*

Key words: number of agricultural units, labour productivity in agriculture, the personnel structure in agricultural units
J.E.L. classification: O13, Q10

1. Introduction

Romania is one of the EU countries with the most pronounced agricultural character. Unfortunately, this does not imply an appropriate contribution of agriculture to GDP formation, which is 3,84% in 2020. According to the official statistics of the European Parliament, European Parliament Briefing (2017), the population employed in agriculture at EU level is poorly educated (only 8.5% of farmers have received specialized and complete training) and aged (56% of all farmers are over 55 years), and this trend is evident in the statistics of the last 10 years of agriculture in Romania and has begun to be a concern for agricultural policies adopted by recent governments. Therefore, starting from the general framework offered by the CAP in financing agriculture through multiannual programs, non-reimbursable financing was introduced for small farmers in order to develop, modernize, make the business profitable and reduce the dependence on climate conditions.

There are some papers in the literature that try to analyse different aspects of the evolution of the Romanian agriculture, but in our paper a more important part will be addressed to the aspects regarding the regional evolution of the agriculture in Romania.

2. Literature review

Burja and Burja (2010) analyze the financial viability of Romanian farms as compared with the average of EU farms at the level of 2007 and highlight some of the causes that generate gaps between the Romanian agriculture and that of EU. The main causes identified by Burja and Burja (2010) are the small scale of production and the insufficient sources of financing, including the credit and the European funds for agriculture.

Bercu and Botănoiu (2012) analyze the evolution of agriculture in Romania after the 1989 and consider that the weak results are generated by factors such as "the low level of mechanization, outdated irrigation systems", low intensity of exploitation of land area or small spendings for fertilizers and pesticides and suggest that some of the most important measures to be taken are: stimulating the farmers' cooperation, a better acces to financing and more funds for irrigation.

Meiță (2015) analzye some quantitative indicators evolution for the Romanian agriculture in the period 2007-2014 and suggest that the European integration put a significant pressure on the Romanian farms, confronted with a market where more eqquipped and modern farms was acting. The opinion of the author ist hat only some structural and legislative changes, along with an easier acces to financing could improve the results of the Romanian agriculture.

Mituko et al. (2015) analyzed some structural and financial indicators regarding the agricultural activity in four of the development regions for the 2007-2011 period and for all the regions for 2012 and noticed the different evolutions in the analyzed areas.

Burja and Burja (2016a) show that the sustainable performance of the agricultural holdings in Romaniain 2008-2012 period vary with the economic size of holdings and find that the medium-sized farms are the most viable systems, so as they suggest that structural changes are required for better results of Romanian agriculture.

Burja and Burja (2016b) analyze the relationship between the size of farms and the performance of the agricultural production factors in Romania for 2010-2012 period and find that the verz large farms are the most efficient in terms of input use. Also, their analysis show that the very small farms could reach the frontier efficiency and contribute to the development of multifunctional agriculture (Gallutio, 2013), but they need to become commercial.

Feher et al. (2017) analyze the structure of the Romanian farms as a starting point of a comparative view on the value of agricultural production per hectare, gross value added per hectare, value of intermediate consumption per hectare for Romania and respectively, for Germany, France and Hungary. They show that are important gaps between Romania and the other analyzed countries, and even under different scenarios of growth for Romania these gaps remains significative so there are needed important structural measures to be taken, such as „amalgamation of land, expansion of irrigated surfaces, growth of animal production shares, development of agricultural research, expansion of financing opportunities" (p. 670).

Bularca and Toma (2018) analyze some technical and financial indicators regarding the agricultural exploitations in Romania for the 2005-2016 period. Their analysis focus mainly on the production (livestock and crops) for the four macro-regions of Romania, trying to find discrepancies between them, but also for different kinds of livestock or crops, to highlight the evolution of the structure of production in Romanian agriculture during time. Based on their analysis, the conclusion is that „the Romanian agriculture is optimally structured, but has a low profitability" (p. 75)

Feher et al. (2022) also analyze the evolution of some key indicators (number of farms, average areas, economic size) of agriculture of the EU countries, but an in-depth analysis is done for Romania, Germany and France. Based on the historical data regarding the period 1998-2019, of the new aspects introduced by the new European agricultural policy and on the assumptions regarding the growth of the Romanian economy, the authors show that Romania will not be able to recover until 2040 the gaps of Output of the Agricultural Industry, Intermediate Consumption, and Gross Value Added of agriculture compared with France and Germany and suggest some measures of real restructucturation of agricultural activity.

3. Research methodology

In our study, we aim to complement the existing literature on the structural evolution of Romanian agriculture. For this reason, we use empirical evidence and the data provided by National Institute of Romania (tempo-online statistical data) regard the 2008-2018 period. These data, which include Agriculture, forestry and fishing, have been statistically processed and analysed.

For characterizing the evolution of the agricultural sector in Romania, we used a number of indicators such as: number of companies in agriculture sector, the number of companies in agriculture depending on the number of employees, the agricultural personnel according to professional status, labor productivity in agriculture, the importance of agriculture in regional GDP, the population employed in agriculture and population employed in agriculture by region. For the indicators mentioned there is underlined the structural and dynamic evolutions.

4. Findings

The total number of companies activating in agriculture had an increasing evolution during 2008-2018, this increase being of 5563 new companies in 2018 compared to 2008, representing a 55,37% increase. But in 2019 compared to 2018 this number decreased by 706 companies (by 4,45%), and this decrease is for all types of companies activating in agriculture, but especially for the small ones, where the decrease is more noticeable.

The share of companies activating in agriculture in the total number of companies in the national economy has the same evolution, this share registering values between 1,84% in 2008 and 2,75% in 2018, but in 2019 this share had a decreasing evolution reaching 2,56%.

Table no. 1 The evolution of agricultural companies in total companies by size classes

Year		Agriculture companies	0-9 people	10-49 people	50-249 people	> 250 people
2008	No.	10190	8836	1146	175	33
	%	1,84	1,78	2,38	1,76	1,76
2009	No.	11105	9708	1209	157	31
	%	2,05	2,00	2,64	1,83	1,92
2010	No.	11161	9761	1211	163	26
	%	2,27	2,23	2,76	2,03	1,67
2011	No	11231	9628	1416	160	27
	%	2,48	2,44	2,97	1,86	1,68
2012	No	11966	10237	1530	176	23
	%	2,53	2,47	3,17	2,06	1,40
2013	No	12439	10641	1595	178	25
	%	2,56	2,49	3,30	2,12	1,56
2014	No	12918	11095	1623	176	24
	%	2,55	2,47	3,39	2,10	1,43
2015	No	13821	11926	1688	184	23
	%	2,69	2,62	3,52	2,14	1,34
2016	No	14574	12618	1737	197	22
	%	2,76	2,69	3,59	2,24	1,27
2017	No	15230	13246	1766	195	23
	%	2,75	2,68	3,62	2,25	1,32
2018	Nr.	15833	13861	1767	183	22
	%	2,75	2,68	3,60	2,13	1,25
2019	No.	15127	13186	1738	182	21
	%	2,56	2,48	3,49	2,16	1,19

Source: calculated data based on INSSE date

We believe that the growing trend of this decade is directly related to the enlargement of the EU in 2007, when Romania and Bulgaria were co-opted into the union, an enlargement that generated a massive infusion of European funds through the Common Agricultural Policy (CAP) with the multiannual exercises 2007-2013 and 2014-2020. Until the early 2000s, farmers and economic agents in the agricultural field suffered greatly due to the very low level of financing, the lack of interest of state institutions in the maintenance and development of irrigation systems, outdated technology that farmers still had to use, very difficult access to new discoveries in the field of genetics, computer science, technology. Access to the EU market, successful examples from the EU's developed countries in the field of agriculture and last, but not least much easier access to European non-reimbursable funds have led to a boom in agricultural business.

To show the importance of the companies from agriculture in the economy, we also evidenced the weight of the number of the companies from this field in the total number of companies from the economy. The data from table no. 1 shows that the share of agricultural companies in total economy companies and the share of companies with 0-9 employees in total economy companies of the same size class, followed the same increasing evolution from 2008 to 2013, these weights increasing from 1,84% to 2,56% for total of companies and from 1,78% to 2,49%, respectively, for very small ones. In 2014 these weights registered a slight decrease to 2,55% and 2,47% respectively, after which from 2015 to 2018 they increased again, reaching at values of 2,75% and 2.68% in 2018, respectively. In 2019 these weights decreased again reaching at values recorded in 2013 of 2,56% and 2,48% respectively.

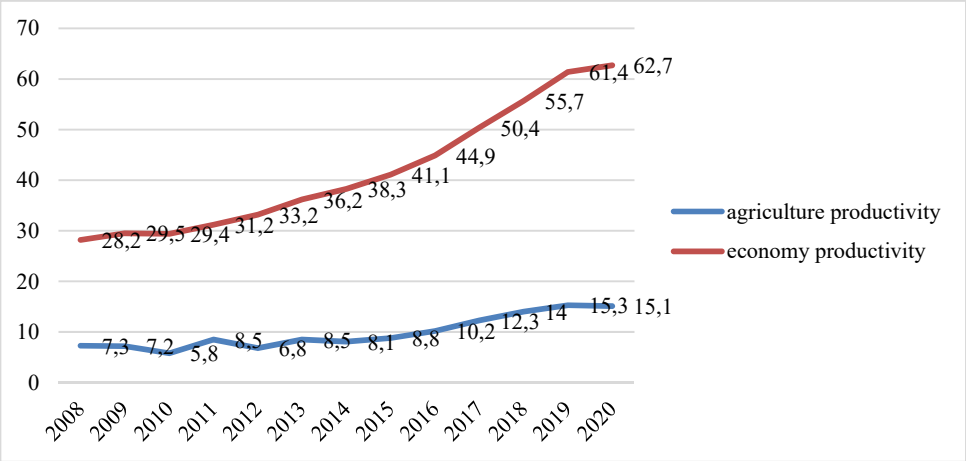
The share of companies with 10-49 employees in companies of the same size category had an increasing evolution during 2008-2017 registering values from 2,38% in 2008 to 3,62% in 2017, after which it registered a decreasing evolution until 2019 when it registered the value of 3,49%.

The other shares of companies with more than 50 employees in the total number of companies in the same size class had an oscillating evolution during the period, falling between 1,76% minimum value registered in 2008 and 2,25% maximum value registered in 2017 for companies with 50-249 employees and 1,92% (2009) and 1,19% (2019) respectively for companies with over 250 people.

The importance of agriculture in the economy is influenced also by the productivity of the production factors in the agricultural activities. The productivity reflects the efficiency with which factors of production are used to produce a certain volume of goods and services in each company/economy. At the macroeconomic level, labor productivity is often used (as in the case of the OECD) in terms of hours worked, which is considered to be more representative than that calculated according to the number of employees or the number of people employed, the latter being able to be full-time employees. time or part-time, respectively self-employed (according to Eurostat).

Figure no. 1 reflects the difference of labor productivity in the agriculture and in the economy.

Figure no. 1. Evolution of labor productivity, by total activities of the national economy and of agriculture calculated as gross value added to the number of hours worked



Source: Own design based on the data provided by INSSE tempo on-line date based, 2008-2020

The productivity of labor in agriculture is lower than the productivity of the activities of the national economy. The gross value per hour worked in agriculture registered the lowest value in 2010, this value being 5.8 lei per hour, 5 times lower than the gross value per person employed in economic activities. During 2010-2014 the hourly productivity had an oscillating evolution reaching 8.1 lei per hour in 2014 after which in the following period it had an increasing evolution until 2019 when the hourly productivity registered the maximum value of 15.3 lei per hour.

Some explanations for this evolution regard the fact that the vast majority of personnel employed in agriculture had and, unfortunately, still have a low level of qualification, in many cases being reduced to the personal experience of the farmer and his family. This factor is of major importance in the survival and development of the small farmer, who relied exclusively on his and his family's work. This kind of farmer cannot have access to the latest achievements in genetics, technology, even meteorology and, therefore, will achieve a very low labor productivity, which brings him in many situations to the limit of subsistence. Also, he does not have access to high-performance equipment and, generally, is very dependent on the weather conditions. Therefore, state have to think of programs to rejuvenate farmers, to stimulate young people with the most advanced studies in the field to settle in rural areas, by developing infrastructure, technology and by stimulating small farmers to develop their businesses, to technologize them, to digitize them, to hire qualified personnel in order to obtain a superior labor productivity, in order to obtain surplus value.

The structural evolution of the companies from agriculture is analyzed in the table no. 2.

Table no 2 The structure of the companies in agriculture according on the number of employees

Year	0-9 people	10-49 people	50-249 people	> 250 people
2008	86,71 %	11,25%	1,72%	0,32%
2009	87,42%	10,89%	1,41%	0,28%
2010	87,46%	10,85%	1,46%	0,23%
2011	85,73%	12,61%	1,42%	0,24%
2012	85,55%	12,79%	1,47%	0,19%
2013	85,55%	12,82%	1,43%	0,20%
2014	85,89%	12,56%	1,36%	0,19%
2015	86,29%	12,21%	1,33%	0,17%
2016	86,58%	11,92%	1,35%	0,15%
2017	86,97%	11,60%	1,28%	0,15%
2018	87,55%	11,16%	1,16%	0,14%
2019	87,17%	11,49%	1,20%	0,14%

Source: own calculation based on INSSE tempo on-line date based 2008-2019

Within the agricultural companies, the largest share (over 85%) is represented by small companies with up to 9 employees, companies with 10-49 people having a share of about 11%-12% all the years, and the rest being companies with over 50 employees. The share of companies with over 250 employees is very small, decreasing in the analyzed period from 0,32% in 2008 to 0,14% in 2019, the number of these companies decreasing from 33 companies in 2008 to 21 companies in 2019.

Analyzing the structure by size classes of agriculture companies in dynamics, we notice a clear tendency of decrease for the companies bigger than 50 employees, as for the small ones (with less than 50 employers) the evolution is sinuous.

Another important indicator for analysis regards the number and the structure of the persons working in the companies from agriculture and the data regarding this indicator are reflected in table no. 3.

Table no. 3 The structure of agricultural personnel according to professional status

Thousands of people

Year	Agricultural personnel	Employee		Owners		Self-employed		Unpaid family workers	
	No	No.	%	No.	%	No.	%	No.	%
2008	2407,4	103,6	4,30	3,4	0,14	1204,9	50,05	1095,5	45,51
2009	2410,7	106,2	4,41	2,4	0,10	1142	47,37	1160,1	48,12
2010	2439,9	95	3,89	1,3	0,05	1122,7	46,01	1178,7	48,31
2011	2442	98	4,01	1,6	0,07	1051,9	43,08	1290,5	52,85
2012	2510	105,2	4,19	1,9	0,08	1115	44,42	1287,9	51,31
2013	2380,1	108,2	4,55	5,4	0,23	1072,6	45,07	1193,9	50,16
2014	2304,1	113,8	4,94	13,1	0,57	1085,8	47,12	1091,4	47,37
2015	2003,1	119,1	5,95	11,7	0,58	972,9	48,57	899,4	44,90
2016	1726,8	124,4	7,20	10,6	0,61	846,2	49,00	745,6	43,18
2017	1741,7	128,6	7,38	9,7	0,56	894,6	51,36	708,8	40,70
2018	1759,5	129,3	7,35	12,4	0,70	851,7	48,41	766,1	43,54
2019	1747	131,4	7,52	15,6	0,89	875,7	50,13	724,3	41,46
2020	1681,2	129	7,67	14	0,83	834,8	49,66	703,4	41,84

Source: own calculation based on INSSE tempo on-line datebase

The number of the population employed in agriculture had an increasing evolution from 2008 to 2012 by 4,26% and after that this number decreased registering 1681200 people, ie a decrease by 30,16% in 2020 compared to 2008. Regarding the structure of the persons working in the agriculture according to the professional status, agricultural personnel consist mainly of 90% of self-employed and unpaid family workers, the rest being employers and employees.

In evolution, this structure has changed, some of these changes appearing because of the decreasing of the total number of personnel employed in the agriculture, but also because of the decreasing number of the self-employed and of the unpaid family workers.

We observe that since 2010 the share of employees has started to increase from year to year, from 3,89% in 2010 reaching 7,67% in 2020. The share of business owners had the same evolution, their share being 0,05% in 2010 and 0,83% in 2020. The share of self-employed workers decreased from 50,05% in 2008 to 43,08% in 2011, after which it increased from one year to another until 2017, when the maximum value of the share was registered. of 51,36%. The share of unpaid family workers had an increasing evolution in the period 2008-2011, in 2011 registering the maximum value of 52,85%, followed by a decrease of the share until 2007 when it registered the minimum value of 40,47%. In the following years, the share of unpaid family workers had an oscillating evolution, reaching in 2020 the value of 41,84%.

But the agriculture is uneven developed in Romania. There are regions more developed regarding the agriculture and there are regions where the development is lower. To highlight the importance of the agriculture in the economy of the different Romanian regions we underlined the proportion of regional GDP coming from agriculture in the regional GDP (table no. 4).

Table no 4 The importance of agriculture in regional GDP

Year	% of agriculture GDP in total GDP	% of agriculture region GDP in region GDP						
		Nord-Vest	Centru	Nord-Est	Sud-Est	Sud-Muntenia	Sud-Vest Oltenia	Vest
2008	6,30	7,20	6,63	10,03	10,51	0,57	9,22	6,58
2009	6,12	6,93	6,53	9,58	10,01	0,48	8,96	6,20
2010	5,00	5,33	5,22	7,70	7,88	0,54	7,13	5,97
2011	6,25	6,55	6,43	10,18	10,30	0,63	9,47	6,69
2012	4,68	4,83	4,46	7,51	7,03	0,54	6,80	5,83
2013	5,38	5,37	5,40	8,79	8,32	0,58	7,79	6,20
2014	4,71	4,93	5,16	7,95	7,12	0,54	7,19	5,48
2015	4,19	4,33	4,39	6,79	7,00	0,54	6,39	4,42
2016	4,07	4,05	4,09	6,39	7,05	0,87	6,12	4,53
2017	4,31	3,96	4,07	6,61	7,62	1,08	7,08	4,77
2018	4,33	4,10	3,95	6,71	7,58	1,22	6,66	5,02

Source: own calculation based on INSSE datebase

The table no. 4 shows that for Romania in 2008 the agricultural sector contributed 6,3% to GDP, the maximum value of the analyzed period and the lowest contribution of the agricultural sector to GDP was recorded in 2016, which was 4,07%.

It is noted that the agricultural sector contributes differently to the formation of GDP by region. The largest contributions of the agricultural sector to the regional GDP were registered in all regions except the South-Muntenia region in 2008, the highest contribution being in the South-East region with 10,51%, followed by the South region - West Oltenia with 9,22% and the North-West region with 7,20%. Compared to the contribution of regional agriculture to the regional GDP in 2008, in 2018 all regions had much smaller contributions, the South-East Region 7,58%, the North-East Region 6,71%. The South Muntenia region is the region where the contribution of the regional agricultural sector to GDP was the lowest, although this contribution increased from 0,48% in 2009 to 1,22% in 2018.

The share of agriculture in GDP decreases over time as a percentage, following more and more faithfully the trend of the common market, where percentage of agriculture contributes less and less to the EU economy, but does not decrease in importance as a sector in the national economy. We consider this decrease to be due to the emergence and exponential development of new economic, digital sectors, the growing importance of the pharmaceutical industry, artificial intelligence and, more recently, the aeronautics and space industry, and all this reduces the percentage of agriculture in GDP of a nation, but do not reduce at all the importance of this vital sector for any national economy.

In this analysis we eliminated the Bucharest-Ilfov region because this area is predominantly urban and the area used in agriculture in this region is very small compared to other regions.

The different importance in the agriculture in various regions is accompanied by different shares of persons employed in agriculture in total persons employed in that regions (table no. 5).

Tabel no. 5. Evolution of the rate of the population employed in agriculture, forestry and fishing in the total population employed by region

Year	% in total *population employed*	Regiunea Nord-Vest	Regiunea Centru	Regiunea Nord-Est	Regiunea Sud-Est	Regiunea Sud-Muntenia	Regiunea Sud-Vest Oltenia	Regiunea Vest
2008	27,52	30,55	23,09	39,17	30,73	35,33	37,68	23,51
2009	28,66	31,40	24,25	40,50	32,28	36,63	39,19	24,53
2010	29,15	31,55	24,17	41,50	33,10	37,09	40,24	25,06
2011	29,19	31,77	24,24	41,54	33,74	37,21	40,09	24,95
2012	29,29	31,78	24,17	41,51	33,72	37,44	40,27	25,06
2013	27,90	30,13	22,89	40,06	32,26	35,86	38,86	23,78
2014	27,33	29,25	22,46	39,46	31,91	35,27	38,41	23,10
2015	24,02	25,60	19,58	35,13	28,31	31,48	34,37	20,14
2016	20,76	22,18	16,78	31,01	25,08	27,71	30,64	17,54
2017	20,82	22,19	16,80	30,99	25,16	27,76	30,72	17,81
2018	20,93	22,36	16,89	31,07	25,44	27,80	30,66	17,97
2019	20,57	22,00	16,73	30,58	25,05	27,55	30,28	17,97
2020	19,92	21,29	16,21	29,57	24,29	26,75	29,29	17,42

Source: own calculation based on INSSE datebase

The highest shares of the population employed in agriculture in the total employed population were registered in 2012 (29.29%) and its lowest value was registered in 2020. However, by regions this share registers different values as follows:

- in the North-East region the population employed in agriculture as percent of the total employed population in the region is the highest, and the highest value, of 41.54%, was registered in 2011, after which it registered a decreasing evolution reaching at 29,57% in 2020;
- in the South-West-Oltenia region, the highest share of the population employed in agriculture of 40,27% was registered in 2012 after which it registered a decreasing evolution reaching in 2020 29,29%;
- and in the South East region the share of the population employed in agriculture in the total employed population had the same evolution as the North East region only that the registered values were slightly lower, from the maximum value in 2011 of 33,74% to the minimum value of 24,29% in 2020;
- the other two regions (Center and West) had slightly lower share values as opposed to the previously mentioned regions from 24.24% in 2011 to 16.21% in 2020 the Center region and from 25,06% in 2010 to 17,42% in 2020 the western region;
- The northwestern region registered the highest value of the share in 2012 of 31,78% and in 2020 this share reached 21,29%.

There is a close link between capital endowment and the degree of technological development, on the one hand, and labor productivity, on the other. Increasing labor productivity can only be achieved by increasing the capital intensity of production processes and by technological advancement.

Table no. 6 presents the proportion of the gross fixed capital formation in GDP for the agriculture sector for Romania and for the development regions.

Table no 6 Evolution of Gross fixed capital formation in GDP for the agricultural sector

Year	% in total GDP	Regiunea Nord - Vest	Regiunea Centru	Regiunea Nord – Est	Regiunea Sud-Est	Regiunea Sud – Muntenia	Regiunea Sud -Vest Oltenia	Regiunea Vest
2008	20,14	9,58	12,09	10,85	20,15	23,25	9,46	39,92
2009	15,60	9,90	9,54	8,48	16,30	20,62	6,90	25,75
2010	29,63	15,73	26,92	20,73	35,03	40,71	15,39	27,08
2011	19,09	11,47	14,71	10,67	24,37	24,94	10,80	20,46
2012	25,01	21,43	20,07	13,34	31,36	27,14	13,55	25,29
2013	33,98	23,96	25,46	16,84	48,18	34,93	20,41	37,99
2014	25,16	16,20	17,51	15,56	32,28	27,77	14,14	31,51
2015	27,71	21,06	19,28	16,85	33,38	24,28	14,52	37,56
2016	19,99	14,85	16,92	12,37	24,11	21,16	11,37	23,64
2017	28,60	18,69	21,50	18,77	26,41	25,78	13,39	55,83
2018	16,10	15,37	11,19	11,71	19,16	18,57	9,80	22,42

Source: own calculated based on INSSE datebase

Gross fixed capital formation in GDP for the agricultural sector registered the highest value of 33.98% in 2013 and in 2018 this rate decreased to 16.10%. There is a significant increase in this rate in all regions in 2010 compared to 2009, after which these values have an oscillating evolution, registering both increases and decreases. There are differences by regions as follows: The West Region registered in 2017 the highest share of 55.83% of gross fixed capital formation in the GDP of agriculture and in 2018 this share decreased to 22.42%. The south-eastern region registered the highest value of the rate of 48.18% in 2013 and in 2018 it reached 19.16%. The region with the lowest recorded rate values is the South East Oltenia region (max value 20.41% in 2013 and min value 9.8% in 2018).

Table no. 7 presents the evolution of the hourly labor productivity, calculated as production per worked hour, for Romania and the development regions.

Table no 7 Evolution of hourly labor productivity by regions

RON/hour

Year	Agriculture Labor Productivity	Regiunea Nord-Vest	Regiunea Centru	Regiunea Nord-Est	Regiunea Sud-Est	Regiunea Sud-Muntenia	Regiunea Sud-Vest Oltenia	Regiunea Vest
2008	14,465	17,351	26,703	8,669	19,171	15,877	9,240	25,474
2009	13,342	16,229	26,845	8,082	16,672	15,297	8,401	21,849
2010	14,114	14,534	26,767	8,406	18,482	16,087	8,594	27,644
2011	18,706	20,162	40,414	10,202	25,267	27,305	10,554	33,200
2012	15,678	14,969	34,117	8,791	19,487	22,999	9,186	31,172
2013	19,560	17,037	41,466	10,890	27,533	28,462	11,870	33,600
2014	19,073	18,725	42,141	10,656	29,409	24,342	11,229	32,263
2015	20,315	21,712	44,131	9,504	29,510	26,998	13,907	54,965
2016	22,715	23,275	45,721	10,183	34,013	29,706	16,094	74,173
2017	26,096	25,268	48,847	11,553	42,307	35,321	18,683	89,554
2018	29,369	29,978	58,912	12,957	44,609	38,775	20,437	118,962

Note: Hourly productivity is calculated as the value of production divided by the number of hours worked by the agriculture personnel

Source: own calculation based on INSSE datebase

Labor productivity in agriculture is influenced by natural and production conditions. The different conditions of geographical location, soil, climate, etc., make that at the same labor consumption different production results are obtained depending on the favorable conditions. Climate conditions, expressed in temperature and precipitation, differ from year to year, causing variations over time in the volume of agricultural production and thus in agricultural productivity. These factors make labor productivity differ by region.

Labor productivity in the Center region records for the entire period analyzed, except for 2012 increases from 26,70 lei per hour in 2008 to 58,91 lei per hour in 2018. The lowest value of hourly productivity was registered in the North-East region in 2009, this being 8,082 lei per hour and in 2020 the maximum value recorded was 12,95 lei per hour, the lowest value among all regions. In the West region, the highest increase in labor productivity took place from 21,84 lei per hour in 2009 to 118,9 lei per hour. We could notice that in the regions where the productivity is higher the proportion of population employed in agriculture is lower and where the proportion of population employed in agriculture is higher, the productivity is smaller.

5. Conclusions

With Romania's accession to the EU and the common market, the country's agriculture began to follow more closely the trends of EU countries, even if Romania's position in terms of digitalization, labor productivity, access to technology and labor productivity and profitability is much lower.

In agriculture in Romania the climatic conditions still greatly influence the business, in some cases even leading to the bankruptcy of some farmers due to unforeseen weather conditions (prolonged drought, hail, floods, etc.). In this sense, it is necessary with priority to expand the national irrigation system, dams and land improvements, and to stimulate the small farmer will have to implement financial programs to promote technological development, purchase of high-performance equipment, easier access to cost-effective software of the activity, including the programs and calculations of exact meteorological predictions and, last but not least, the information and stimulation from the state of the farmers regarding the insurances for crops, animals, goods, businesses in the agricultural field.

On the other side, agriculture's expanding has become a major factor in the decline of biodiversity, with increasingly significant effects on human communities. That is why the need to move from the current system, which pursues only productivity and profit, to a new system, with an emphasis on sustainability and environmental conservation, is increasingly obvious. Therefore, an aspect of major importance for the future, in EU agriculture, but also worldwide, new terms, visions and new trends regarding the future in the agricultural field have started to be more and more present: food security, biodiversity, sustainability, bio, "Green". These terms are being promoted more and more obviously, they represent the obvious trend for the future, it is already visible in the agricultural policies of the EU common market states, but in our country they are in an incipient phase, partly due to the ignorance of micro farmers and rulers, at macroeconomic level, on the other hand due to the unsatisfactory promotion of these new policies, but also due to the low level of qualification of farmers, limited access to information.

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