

Restructuring of Bulgarian agriculture, economic condition and incomes of farms

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Abstract

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The research purpose is to carry out an analysis of the ongoing organizational-economic restructuring in agriculture and to outline its impact on the economic condition and income of agricultural holdings during the two program periods of the EU membership of our country. The used methods in the research are: systematic and comparative analysis, expert assessment, graphic method, statistical groupings method, descriptive analysis, etc.

The results from the achieved analyses have shown some general conclusions: the average economic indicators of agricultural holdings – gross output, gross income, productivity and net income have positive trends towards an increase in the period 2007-2020; The same tendency is outlined in the average amount of subsidies per farm; The expansion of agricultural holdings and the growing amount of subsidies received can be pointed out as main reasons for their increase; Fluctuations in the average net income per farm show that production is dependent on a number of factors – internal (weak risk management, inefficient production, low level of diversification, etc.) and external factors (dependence on climate changes, market and institutional environment); The subsidies support farmers' incomes, but do not lead to an increase in production efficiency: There is a trend to decrease of the rate of profitability.

Keywords: organizational-economic restructuring; agricultural holdings; gross output; farm incomes; profitability rate

Introduction

The aim of the study is an analysis of the ongoing organizational-economic restructuring in agriculture and highlighting its impact on the economic condition and income of agricultural holdings during the two program periods of Bulgaria's membership in the EU. The results of the analyzes, show that agricultural holdings are under increased competitive pressure on the market, as the levels of support in Bulgaria are still significantly lower than the EU average. The researches show that the highly unbalanced progress in the utilization of the funds and in the achievement of the goals of the individual measures of the RDP does not allow realizing the potential effect on agriculture and economic units of their overall implementation. A brief critical review

shows that the problems under consideration are current, of practical significance and of great scientific interest.

A number of authors highlight the diverse effects of the CAP on the development of agricultural holdings in EU countries (Bartolini et al., 2011; Latruffe et al., 2008; Manrique et al., 2008; Xueqin and Lansink, 2010; OECD, 2011). Research focuses on the impact of CAP reforms and its individual instruments on: farm incomes (Agrosynergie, 2011; Elsholz and Harsche, 2008); technical efficiency of farms by specialization (Xueqin and Lansink, 2010); farm investments and effects (Sckokai and Moro, 2011); farm management efficiency (Latruffe et al., 2008); farm innovation adaptability (Bartolini et al., 2011).

The elaborations are based on regression models of the obtained effects of a given CAP instrument on the studied

farms (Elsholz and Harsche, 2008; Latruffe et al., 2008; Xueqin and Lansink, 2010), on simulation models for the expected development of the farms (Bartolini et al., 2011; (Sekokai and Moro, 2011); Manrique et al., 2008), or of expertise with leading specialists (Agrosynergie, 2011). The subject of CAP implementation in European countries is persistently present in scientific periodicals (Volkov A. et al. 2019; Guth et al. 2020; Yovchevska 2021; Kirechev 2022; Mihailova et al. 2022).

The researchers are focused on the structural changes in the Bulgarian agricultural holdings covering the period before the CAP, as well as the influence of the implementation of the CAP on the efficiency and competitiveness of the economic units, the prospects for the development of the agricultural holdings under the influence of direct payments (Kaneva Kr., N. Koteva et al., 2008). The influence of the applied policies on the development of agriculture, food industry and economic units, the achievements of the new institutional economy is studied and an approach is proposed for evaluating the efficiency of farms and agrarian organizations (Koteva N. and al., 2012, Kaneva Kr., N. Koteva, Bashev et al., 2015; N. Koteva, 2016; Kaneva, 2015). Based on the overview, the article examines changes in the organizational-economic structure of agriculture, the efficiency and sustainability of agricultural holdings within the framework of the first and second program periods of the CAP.

Methodological approach

Used **methods** in the research: systematic and comparative analysis, monographic, expert assessment, graphic method, statistical groupings method, descriptive analysis, etc.

Main **information sources**: official statistical data from the census, the structure of agricultural holdings and Farm Accountancy Data Network (FADN), Ministry of Agriculture and Food, "Agrostatistics".

Analysis range: the period 2007–2020

Indicators for analysis of structural changes of farms

A significant set of quantitative indicators that characterize the ongoing restructuring in agriculture was examined. The indicators' level and dynamics in general and by types of holdings will outline the trends of the ongoing restructuring in the sector at national and regional level.

System of indicators:

- Dynamics of total number and by farms groups;
- Dynamics in average size and by types of farms;
- Changes of organizational and economics structure by size and by juridical status – dynamics in number and in relative share according the farms type.

- Change in the market orientation of agricultural holdings – number and relative share of holdings realizing production on the market;
- Change in the level of specialization – dynamics in the number and relative share of specialized farms in the general structure;
- Change in the production concentration– change in the average area of cultivated crops and the average number of animals in farms;
- Resource security: with land resources – size of the UAA, structure by management forms; with labor force – number of employees, labour input and structure of the labour force;
- Change in the economic potential of farms – level and dynamics of the economic size – average and by types of farms.

1.1. Indicators for farms economic state analysis

The level and trends of change of basic quantitative indicators characterizing the economic state and efficiency of agricultural production have been investigated.

- **Productivity** – reflects the newly created value of 1 unit of input labour. Its level is significantly influenced by the built infrastructure, the technical and technological level of production, the introduction of innovations, the qualification of the workforce, etc. The achieved productivity in farms is determined by the formula:

$$Pr = NVA (GVA)/AWU \quad (1)$$

where:

Pr – obtained labour productivity, BGN/AWU;

GVA – obtained gross added value in the farm, BGN;

NVA – the received net added value in the economy, BGN.

AWU– annual work unit as a measure for the input labour (1 AWU – the hours worked by 1 full-time worker for 1 year)

- **Output** – The achieved level of output in agricultural holdings depends on the method of production (extensive, intensive), on the type of cultivated crops and species of animals, the varietal and breed structure, etc. For indicators of obtained output we will use:

$$P_{\text{crops}} = GO \text{ or } GVA/UAA \quad (2)$$

$$P_{\text{livestock}} = GO \text{ or } GVA/LU \quad (3)$$

where:

GO – obtained gross output in the farm, BGN;

UAA – used agricultural area in the farm, ha (decare)

LU – livestock unit.

- **Production profitability** – determines the effectiveness of the costs incurred. The assessment of the production profitability is carried out according to the formula:

$$P_r = (\text{Incomes} - \text{Costs}) \times 100 / \text{Costs} \quad (4)$$

where:

P_r – profitability rate of costs, %.

- **Profitability** – The net income is the final result reflecting the economic results of the farming activity (from the production and the production realization)
The following will be used as profitability indicators

$$P_f = \text{NI} / \text{farm} \quad (5)$$

$$P_{f \text{ crops}} = \text{NI} / \text{UAA} \quad (6)$$

$$P_{f \text{ livestock}} = \text{NI} / \text{LU} \quad (7)$$

where:

P_f – average profitability of the farm, BGN

$P_{f \text{ crops}}$ – average profitability per 1 area unit, BGN,

$P_{f \text{ livestock}}$ – average profitability per 1 LU, BGN,

NI – net income generated in the farm, BGN

2. Structural changes in agricultural holdings

The analyzed period is characterized by dynamic structural changes in agricultural holdings. One of the main trends in the restructuring process is the significant reduction in the number of agricultural holdings, from 493 100 in 2007 to 132 700 in 2020. Assessments show that the number of agricultural holdings has decreased by over 70% (Figure 1).

The processes of reduction are most dynamic in farms with UAA size up to 2 ha, where the reduction is by 84%. To a smaller extent, a decrease was also reported for farms with a size of 2-10 ha – by nearly 50%. A positive trend is an

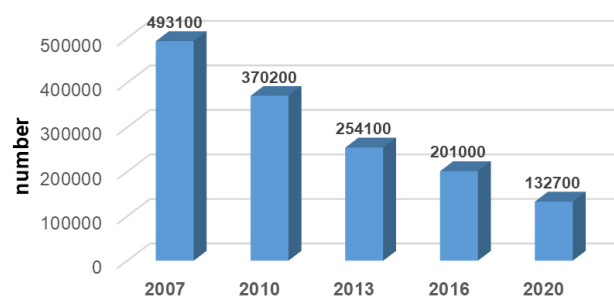


Fig. 1. Dynamics in farms number

Source: MAF, "Agrostatistics"

increase in the number of larger farms. By nearly 70% has increased the number of farms with an area of 50 ha, and the increase in farms with a size of 10-50 ha was even higher – by 98%. It is expected that the outlined trend of reducing the number of farms, mainly at the expense of small farms, will continue, albeit at a slower pace.

The data outline a permanent trend of growth in the total UAA size of the holdings after the country's accession to the EU, as a result of the increased demand for land, the accumulation of less fertile land and the presence of incentives to expand holdings in order to receive more subsidies paid out per 1 area unit (European and national) – from 3 050.7 thousand ha in 2007, to 3 957.2 ha in 2020. For the analyzed period 2007-2020 the agricultural production of farms has grown by 30% (Table 1).

As a result of the ongoing processes of reduction, mainly of the number of small farms and an increase of UAA, another characteristic trend is emerging, related to the significant consolidation of agricultural holdings – from 6 ha in 2007, to 33 ha in 2020. It is concluded that the ongoing structural changes lead to the consolidation of agricultural holdings in the country, accelerated mainly under the impact of direct payments (Figure 2).

Table 1. Dynamics in number according farms' size

	2007	2010	2013	2016	2020	Dynamics 2016/2007, %
Farms, thousand	493,1	370,2	254,1	201,0	132,7	-70
0 – < 2 xa	417,4	308,1	193,1	146,5	65,3	-84
2 – < 10 xa	49,3	41,1	38,7	29,7	25,1	-49
10 – < 50 xa	9,1	12,8	13,4	15,3	18,1	+98
>=50 xa	6,2	8,2	8,9	9,5	10,5	+69
UAA, thousand ha	3 050,7	3 617,0	3 794,9	3 795,5	3957,2	+30
0 – < 2 xa	191,1	144,2	100,9	69,5	37,4	-80
2 – < 10 xa	182,1	163,1	156,2	129,1	115,5	-37
10 – < 50 xa	179,9	278,6	299,6	362,5	438,1	+144
>= 50 xa	2 497,7	3 031,0	3 238,2	3 234,4	3366,2	+35

Source: MAF, "Agrostatistics" and own calculations

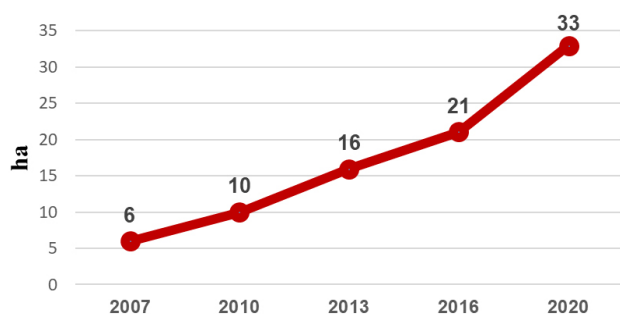


Fig. 2. Average farms' size according UAA
Source: MAF, "Agrostatistics"

The relative share of rented or leased UAA managed by agricultural holdings is still high – 91%. The predominant share of leased land is a serious limitation of the investment activity of farmers to create permanent plantations, preserve and restore the quality of agricultural lands, carry out restorative activities, ameliorations, etc., especially in the case of short- and medium-term contracts for rent or lease (Figure 3).

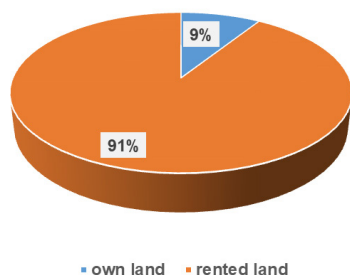


Fig. 3. Distribution of UAA by forms of farming, 2020
Source: MAF, "Agrostatistics" and own calculations

The ongoing processes of restructuring of agricultural holdings lead to changes in the organizational and economic structure of agriculture. The share of farms with UAA up to 2 ha in the total structure is decreasing, from 84.6% in 2007, to less than 50%, although they retain their dominant share. Changes are occurring in the remaining groups of farms in the direction of increasing their share. For the analyzed period the most sensitive is the increase in the share of farms of 10-50 ha from less than 2% in 2007, to nearly 14% in 2020 (Figure 4).

The comparative analysis for the period 2007-2020, shows a sensitive difference in the average sizes by groups of holdings, which is unchanged for the entire analyzed period. The data show: insignificant change in the average size of holdings up to 10 ha; increase in the average size of holdings from 10-50 ha – about twice; reduction of the average size of farms

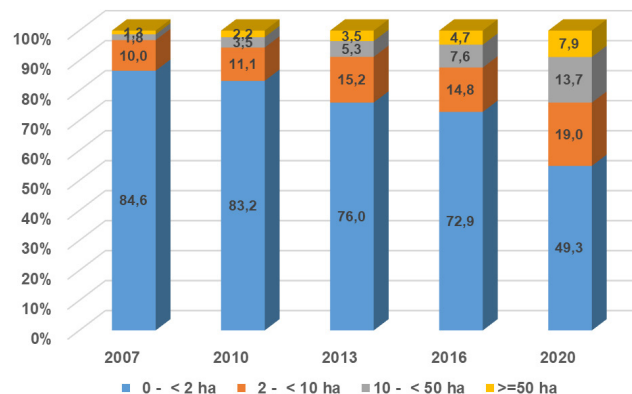


Fig. 4. Structure of farms by UAA size
Source: MAF, "Agrostatistics" and own calculations

Table 2. Dynamics of average size per farm groups

Size of farms	Average farms' size in the group, ha		
	2007	2016	2020
0 – < 2 ha	0,5	0,5	0,6
2 – < 10 ha	3,7	4,3	4,6
10 – < 50 ha	19,8	23,7	24,2
>= 50 ha	402,8	340,5	320,6

Source: MAF, "Agrostatistics" and own calculations

over 50 ha. At the end of the analyzed period, the average size of small farms was 0.6 ha, while the average size of the largest ones was immeasurably larger – 320.6 ha (Table 2).

The distribution of the labour input by groups of holdings depending on the size of the UAA is uneven. The positive trend of reducing small farms up to 2 ha is also associated with a significant decrease in the relative share of labour invested in them – for the analyzed period, from nearly 74%, it decreased to below 31%. For the period 2007–2016, the predominant share of the labour input in small farms up to 2 ha is preserved, but for 2020 – it represents only 1/3. The high share of labour input in small farms leads to high labour intensity of production, inefficient production and low incomes. In the other groups of farms, there is a trend to increase the labour input. The analysis of the data shows that the most significant increase is for the largest farms with over 50 ha of agricultural land (Figure 5).

On the one hand, there are small farms up to 2 ha, which in 2020 represent nearly half (49.2%) of all farms, 1/3 of the labour input in the industry is concentrated in them, but they manage less than 1% of the UAA in the country. On the other hand, there are the largest farms, which in 2020 represent nearly 8% of farms, with a share of labour input – 31% and manage over 85% of the total UAA in the country. The analysis of the data shows that, despite the indicated positive

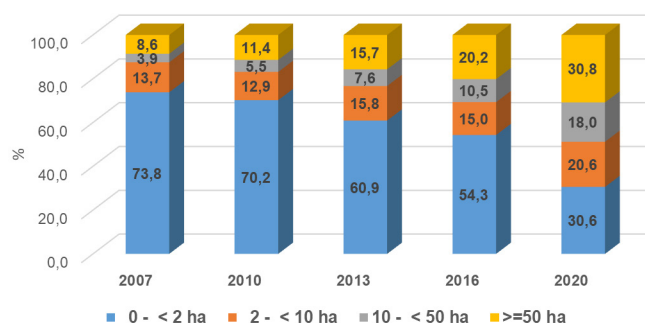


Fig. 5. Structure of labour input by size of agricultural holdings

Source: MAF, “Agrostatistics” and own calculations

trends in restructuring, the dualistic organizational-economic structure in Bulgarian agriculture is preserved.

In the period 2007-2016, the share of livestock farms managing less than 1 ha of UAA and do not receive payments under SPS remains high. The relative share in total for all livestock farms decreased from 73.7% in 2007, to 59.3% in 2016. The share of cattle breeding farms is the lowest. Despite the fluctuations, the change is towards a slight increase in their share, which in 2016 was 57.8% and corresponds to the total share of farms under 1 ha in the country – 59.2%. Regarding the farms with herbivores, the preservation of the high relative share of farms over 75% and the share of goat breeders in them is to be mentioned.

More significant changes occur in the period 2016-2020, when at the end of the period the share of farms and the number of herbivores bred in them has greatly decreased. The reduction is most sensitive in cattle and equids (Table 3).

For the analyzed period, the structural changes in agricultural holdings are associated with a decrease in the total number of livestock units (LU) in the country. The outpacing rates of reduction of livestock farms compared to the reduction of animals leads to an increase in the number of LU

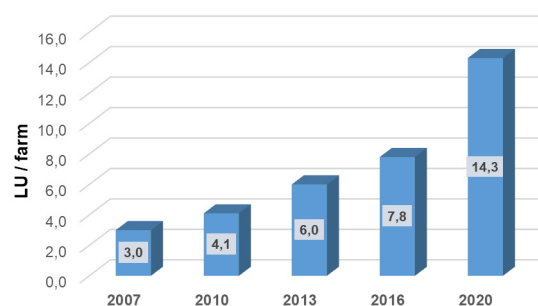


Fig. 6. Average LU number per farm

Source: MAF, “Agrostatistics” and own calculations

on average per farm, with the increase being more than four times – from 3.0 LU in 2007, at 14.3 LU for 2020 (Figure 6).

The analysis of the data shows that the density of livestock breeding, expressed by the number of livestock units per 1 ha of UAA in our country, has decreased during the period. The negative trend in the decrease in density is the result of a decrease in bred animals and an outflow of producers from the sub-sector. The results show that the land resources are not fully used for livestock breeding – a production that brings a higher added value (Figure 7).

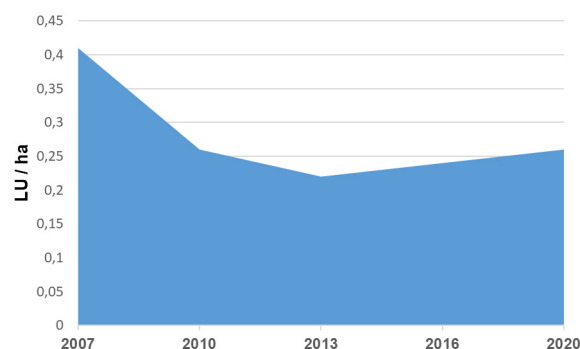


Fig. 7. Density of livestock breeding per area unit

Source: MAF, “Agrostatistics” and own calculations

Table 3. Relative share of livestock farms with UAA under 1 ha and share of bred livestock in them

Farms by livestock types	2007		2013		2016		2020	
	Rel. share of farms, %	Rel. share of livestock, %	Rel. share of farms, %	Rel. share of livestock, %	Rel. share of farms, %	Rel. share of livestock, %	Rel. share of farms, %	Rel. share of livestock, %
Cattle	54,8	32,1	51,2	24,0	57,8	23,4	14,3	1,2
Sheep	64,1	42,5	56,4	33,1	59,3	31,4	15,6	18,9
Goats	78,5	66,5	74,7	58,5	75,3	52,1	28,8	5,3
Pigs	70,8	58,3	62,8	59,5	70,0	66,5	41,9	74,1
Poultry	74,2	75,8	65,0	66,9	71,1	70,5	38,9	73,2
Equids	64,5	61,3	60,9	54,3	62,2	42,5	10,3	3,4
Total for the farms	73,7		60,2		59,3		32,8	

Source: MAF, “Agrostatistics” and own calculations

Table 4. Dynamics of farms and UAA size by legal status

Legal status	Number of farms					UAA, ha				
	2007	2010	2013	2016	2020	2007	2010	2013	2016	2020
Individuals	476956	350041	237317	175209	121372	914739	1201280	1223284	1169657	1707337
Sole traders	1828	2134	1871	1892	1751	354597	544388	542947	541448	510807
Cooperatives	1156	941	811	767	714	890870	643555	565373	510698	471903
Trade companies	1763	3639	4323	6322	8624	522559	1151451	1396945	1536373	1842096
Associations and others	217	319	272	258	281	46625	76292	66362	37359	32008

Source: MAF, "Agrostatistics"

• Evolution of holdings by legal status

The study of structural changes is supplemented with an analysis of the organizational-economic structure according to the legal status of agricultural holdings. Along with family farms, other forms of agricultural business – production cooperatives, sole traders, trade companies, associations – have been permanently established and in process of development (Table 4).

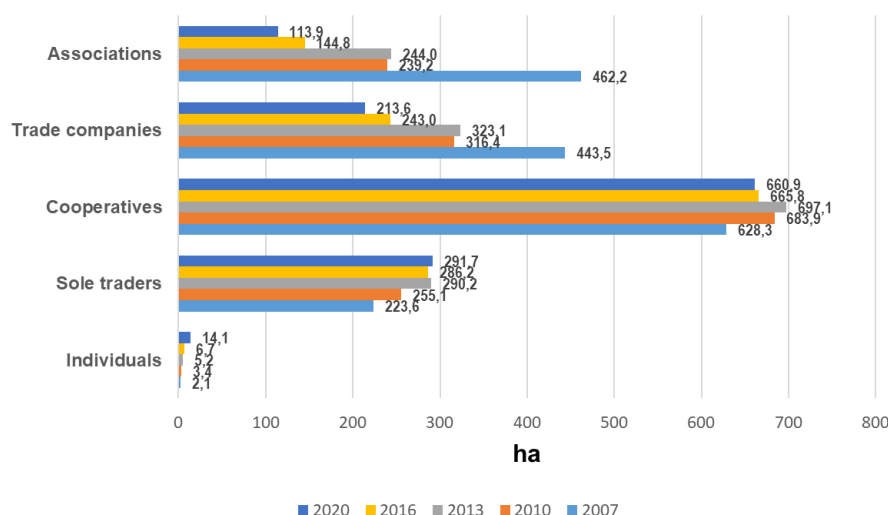
For the analyzed period 2007-2020, structural changes were related to a decrease of farms' number for all organizational forms, excluding the trade companies, and occurred with different intensity:

- the most dynamic are the processes in the group of farms of natural persons in the direction of reducing their number, mainly due to the suspension of the activity of small farms. For the analyzed period, the decrease in the number of farms was by nearly 75%, but an increase in the land managed by them was registered by 42%;
- In the case of cooperatives, there is also a trend to decrease in number. After Bulgaria's accession to the EU, the introduction of direct payments increased the price

of land and rent. With less efficient production, some of the cooperatives could not meet the expectations of the landowners to increase the rent. One of the reasons for the suspension of the activity of a part of the cooperatives is due to the withdrawal of the land by the owners for the purpose of sale or providing the parcels to commercial companies for a higher rent. The number of cooperatives from 1 156 in 2007, is reduced to 714 for 2020, which represents a decrease of 38%, also associated with a reduction of the land managed by them by almost half;

- A significant increase in the number of commercial companies, as in 2020 their number is already 8 624, or an increase of nearly 5 times, accompanied by an increase in the UAA size over three times.

The results of the analysis of farms by legal status show that the ongoing processes do not lead to significant changes in the organizational-economic structure of agriculture. The shape of our agriculture is determined by the farms of individuals, whose relative share remains dominant – over 91% of all farms and with a share of over 43% of the UAA for 2020. The share of commercial companies is increasing,

**Fig. 8. Dynamics of average farms' size by legal status**

Source: MAF, "Agrostatistics" and own calculations

which represent 6.5% of farms in the country, but they manage 46.6% of the UAA for 2020. For the same year, cooperatives represent only 0.5% of the farms and manage 12% of the UAA (Figure 8).

With the exception of commercial companies, the other organizational forms of agricultural business are characterized by consolidation of farm sizes:

- the increase in the average size of holdings of natural persons is nearly 7 times, but due to their low economic potential, their size is significantly lower than other legal forms. For the period 2007–2020, their average size increased from 2.1 ha to 14.1 ha;
- The farms of legal entities are large economic structures. They have the potential to absorb European and national subsidies and opportunities to significantly increase their sizes. Production cooperatives remain the best provided with land resources – for 2020, respectively, 660.9 ha, followed by sole traders 291.7 – 243 ha and commercial companies – 213.6 ha.

The analysis of results shows that the differentiation between farm sizes by legal status remained unchanged.

• Specialization, economic potential and market orientation of agricultural holdings

The analysis by specialization shows a clear trend towards a decrease in the number of agricultural holdings in all groups as a result of the general trend to reduce the number of holdings, but the processes take place with different intensity. The comparative analysis shows that the processes of reduction are more intensive in farms with mixed production compared to specialized farms. The reduction is the highest in farms with pigs and poultry, mixed livestock and crop farms.

In specialized farms the reduction in the number of farms with field crops and perennial crops is the least. The smaller reduction in the number of field crops farms is explained by the higher level of support relative to production costs, which stimulates farmers' orientation to these crops. In the case of farms with perennial crops, the reason is the long-term nature of the investments made and the slow process of change in specialization.

At the end of the analyzed period – 2020, the largest is the number of specialized farms with field crops – nearly 40 thousand, followed by farms raising herbivores – 39 293. The small number of specialized farms is impressive in the sectors “vegetables”, “pigs and poultry” and mixed crop and livestock holdings (Figure 9).

The ongoing structural changes of reduction and consolidation of farms are related to a clear positive trend of increasing their level of specialization. For the analyzed peri-

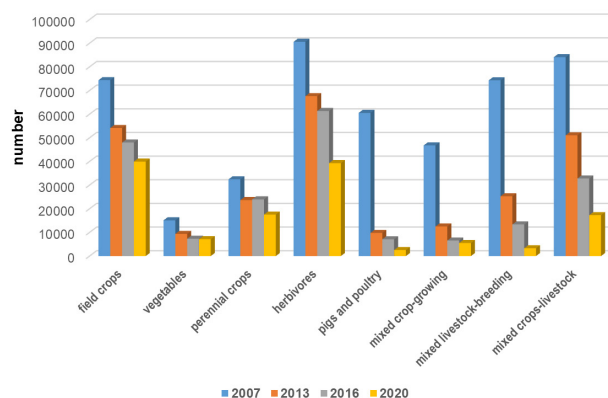


Fig. 9. Dynamics in the number of farms according their specialization

Source: MAF, „Agrostatistics”

od the share of specialized farms has significantly increased from 58, 4% in 2007, to over 80% for 2020 (Figure 10).

The analysis of the economic potential was made for the period 2010-2020, since there is no comparability for 2007, with the indicator for the economic size of agricultural holdings, which was determined in economic units.

The analysis of agricultural holdings by economic size for the period 2010-2020, was made on the basis of the indicator “standard output” (SO), which reflects the average monetary value of agricultural production at producer price and does not include values like direct payments, VAT, etc.

The farm structure forms the average economic size by types of farms, according their specialization. The average economic potential of agricultural holdings in Bulgaria for 2010 is EUR 6,640 of SO.

Three groups of farms have a higher economic size than the average for the country – farms growing field crops, vegetables, pigs and poultry.

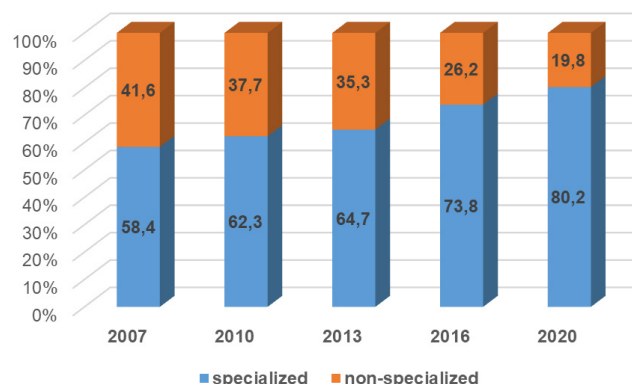


Fig. 10. Level of farms specialization

Source: MAF, “Agrostatistics” and own calculations

Farms growing field crops have the highest economic potential – 18,265 EUR of SO, which is due to the fact that in this group are the largest farms growing cereals and sunflower.

In the next place, with an average economic size of 12,204 EUR, are farms breeding pigs and poultry, which is a result of the large total size of the SO realized by the small number of large farms. This sector is characterized by a strong stratification of farms according to economic size – less than 1% (0.7%) of the farms have a very high economic potential (with an amount of SO over 250 thousand EUR), realizing 75% of the total SO in the sector. At the other pole are the small farms with SO up to 2,000 EUR, representing 74%, but realizing only 6% of the total SO in the sector. The farms with perennial crops, ruminant animals and mixed production have a lower economic potential (Figure 11).

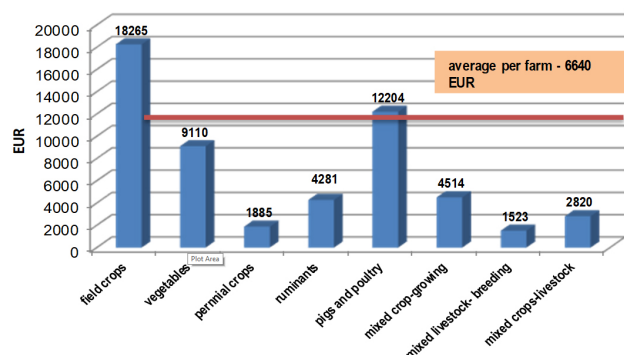


Fig. 11. Average economic size by farm types, 2010

Source: MAF, “Agrostatistics” and own calculations

Among the specialized farms with the lowest economic potential are the farms with perennial crops – on average EUR 1,885 of SO, which is due to the predominant number of small farms and the extremely small number of large farms. As regards to the non-specialized holdings, with the lowest economic size are the mixed livestock holdings – 1,523 EUR SO, which is the lowest size of all types of holdings in the country. The reason is the same – a high share of farms of the lowest economic class (up to 2000 euros) and a symbolic number largest farms with over 250 thousand EUR of SO.

From the group of non-specialized holdings, the mixed livestock holdings – 1,523 EUR SO are with the lowest economic size, which is the lowest size of all types of holdings in the country. The reason is the same – a high share of farms of the lowest economic class (up to 2000 EUR) and a symbolic number of the largest farms with over 250 thousand EUR of SO.

In the period 2013–2016, the average economic potential of agricultural holdings continued to grow and reached

18,787 EUR. An increase was registered for all groups of holdings, but for the period the most significant increase was for holdings raising pigs and poultry – 53,390 EUR, which is due to the strong concentration in the sector. In the next place are farms with field crops – 48,760 EUR. From the specialized farms with the lowest economic potential remain the farms with perennial crops the economic potential of the mixed livestock farms also remains extremely low. The comparative analysis shows the great difference in the economic potential between farms with pigs and poultry and field crops versus the other types of farms (Figure 12, Figure 13).

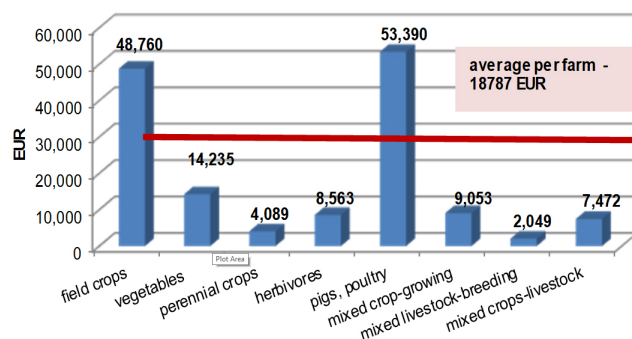


Fig. 12. Average economic size by farm types, 2016

Source: MAF, “Agrostatistics” and own calculations

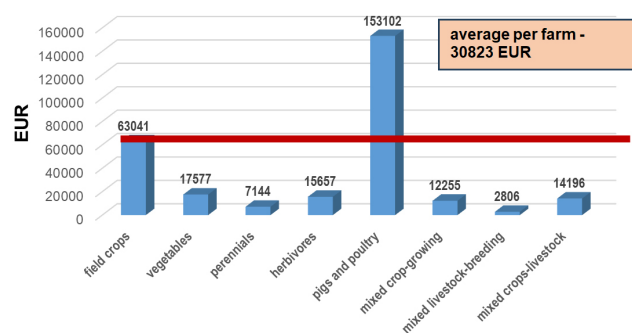


Fig. 13. Average economic size by farm types, 2020

Source: MAF, “Agrostatistics” and own calculations

Based on the analysis of ongoing changes in the organizational-economic structure of agriculture, the following general conclusions could be drawn:

- A sustainable trend to decrease the number of agricultural holdings. Reduction processes are most dynamic in the group of small farms;
- A positive trend of consolidation of agricultural holdings, which occurs at a faster pace than in a number of EU countries. At the end of the analyzed period, the average size of agricultural holdings in Bulgaria is higher than the average size of holdings

in the EU, which indicates a good supply of land resources;

- Preservation of an irrational organizational-economic structure of agriculture – a dominant share of small farms of individuals and a small number of large economic structures of legal entities;
- An alarming fact is the simultaneous decrease in the number of specialized farms growing vegetables and the restriction of the areas, with their economic size becoming lower than the average for the country;
- The economic potential of specialized farms for pigs and poultry has increased significantly, simultaneously with a decrease in small farms and the increased concentration of production in the sector;
- A positive trend towards an increase in the level of production specialization and concentration. A positive trend is the reduction of the share of livestock farms below 1 ha of UAA.
- Despite the increase of the average economic potential of farms in the country, it remains lower in comparison with the average level in the EU. The reasons are: the predominant share of small farms; the outflow of producers from productions with higher added value – extensive crops and livestock breeding.
- The sensitive difference in the economic potential by types of holdings, depending on their specialization, is preserved. Only farms growing field crops and pigs and poultry have a significantly higher economic potential than the average. From the specialized farms, the farms with permanent crops have the lowest economic size.

2. Analysis of economic state and incomes of farms

For the analyzed period 2007–2020, has been outlined a trend towards an increase, albeit with fluctuations, in the level of gross output (GO), on average per agricultural holding. After an increase in the GO for 2008, compared to 2007, in 2009, there was a decrease in the level of the indicator, but in the following years there was a tendency to increase, until 2014, after a decrease followed again until 2016. The last 4 years are characterized by a significant increase in the GO size.

The increase of the GO is accompanied by a trend to increase the costs of intermediate consumption. The GO obtained as a result of high costs invested in production also forms a high relative share of intermediate consumption from it, which affects the economic performance indicators of agricultural holdings. The data analysis shows that the relative share of intermediate consumption is most often in the

range of 56–60% with exceptions in some years, respectively the highest value was 67% in 2009, 62% in 2013 and the lowest value 55% – in 2011. The positive thing is that in the last years of the analyzed period, there is a slight decrease in the relative share of intermediate consumption compared to the previous years to about 56–57% (Figure 14).

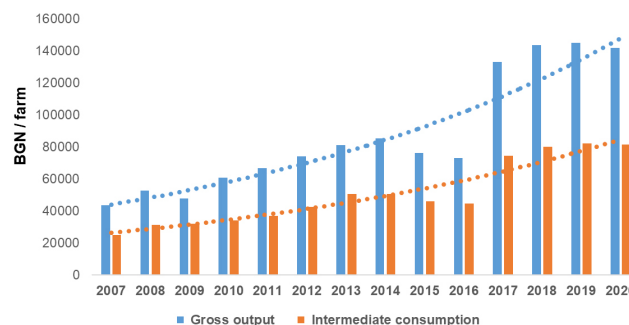


Fig. 14. Average size of GO and intermediate consumption per farm

Source: MAF, "Agrostatistics", FADN

The achieved productivity, measured as the obtained gross output per hectare of UAA, shows a steady upward trend after 2007. Its dynamics depend on the change in the levels of gross output and the average size of UAA in farms. The highest productivity was achieved in 2020. It is noteworthy that with the significant increase in the GO, on average per farm in the period after 2017, compared to previous years, the productivity per unit of area does not change significantly. This is due to the significant increase in the size of the UAA in the farms, and not to an increase in productivity. The comparative analysis shows that the growth of the gross output, on average per farm, outstrips the growth of productivity growth per area unit. It is necessary to conclude that one of the reasons for the increase in GO is due to a greater extent to the consolidation of agricultural holdings, and not so much to an increase in productivity.

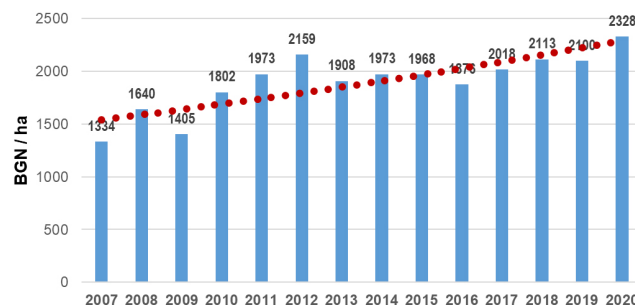


Fig. 15. Achieved productivity in farms

Source: MAF, "Agrostatistics", FADN and own calculations

Other important indicator for the economic status of agricultural holdings is the gross income. The level of gross income (GI) depends on the GO, the intermediate consumption and the balance of current subsidies and taxes. The changing trends of the indicated indicators are generally similar. Gross income follows the gross output's upward trend. In the period 2007–2013, the gross income has a clearly defined upward trend, but after that there are certain fluctuations. In the following two years, 2014–2016, there is a decrease, and after 2017, a significant increase compared to 2016. In the period 2017–2020, the changes are insignificant. The comparative analysis shows that the gross income in the current period of operation of the EU CAP is growing less significantly compared to the previous period (2007–2013). While the increase in gross income in the first period of the CAP was more than 2 times, after 2014, due to the mentioned fluctuations, the increase was about 85%.

As a result of a decrease in the share of intermediate consumption and an increase in the amount of received current subsidies, a positive trend of an increase in the share of gross income in GO is emerging. In the period 2007–2013, the relative share of gross income in GO increased from 55% to 64%, while in the shorter analyzed period 2017–2020, it moved within the limits of 71–72% (Figure 16).

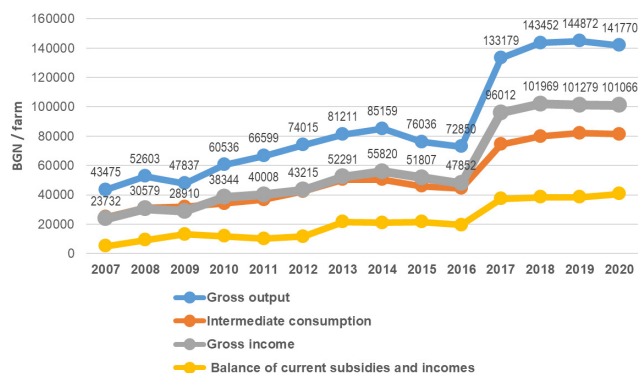


Fig. 16. Average gross income per farm

Source: MAF, "Agrostatistics", FADN and own calculations

Due to the observed significant increase in the rent paid on average by a farm, the comparative analysis of the levels and dynamics with the average amount of payments under SPS is of interest. The data show that in the period 2010–2013, the average amount of support and the cost of rent were about the same. Since 2014, the amount of the rent has been overtaken the amount of subsidies received under the SPS, and this gap is growing. This difference is particularly sensitive at the end of the analyzed period – after 2017, which shows that income is being expropriated from agricultural holdings (Figure 17).

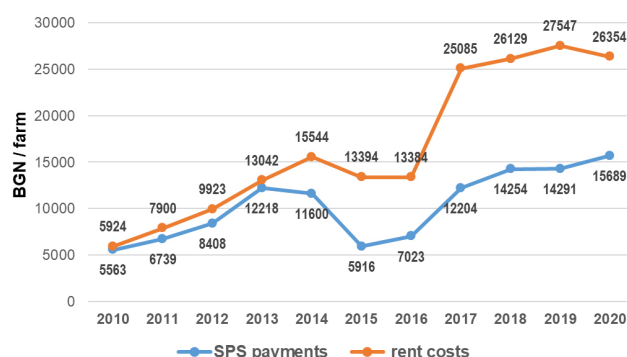


Fig. 17. Dynamics of subsidies under SPS and rent costs, on average per farm

Source: MAF, "Agrostatistics", FADN

The analysis of the achieved productivity, average for a farm, as one of the main indicators of economic efficiency, shows an upward trend, albeit with certain fluctuations. In 2007, the achieved productivity was BGN 9,475/AWU, and in 2013, the level of this indicator was already BGN 19,012/AWU, or a 2 times increase. The significant increase in labour productivity for the last 4 years of the analyzed period is impressive. The dynamics of the indicator is mainly due to the growth of the net added value, while the amount of labour input is almost unchanged. The main factors for increasing the net added value for the analyzed period are the consolidation of agricultural holdings, the increase in subsidies and the increase in profitability (Figure 18).

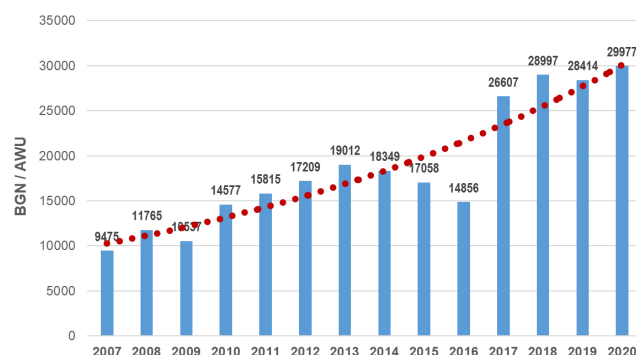


Fig. 18. Average labour productivity in farms

Source: MAF, "Agrostatistics", FADN and own calculations

Data analysis shows that during the analyzed period there were fluctuations in the level of average net income of farms. These fluctuations indicate the dependence of output on different factors – internal (weak risk management, inefficient production, low level of diversification, etc.) and external factors (dependence on climate change, market and

institutional environment). With the exception of 2009, the average net income received for the period is higher than the starting year – 2007. The comparative analysis shows that the fluctuations in net income in the period 2014–2016, are significantly more serious compared to the previous period 2007–2013, when there is generally a smooth upward trend. In the years 2015–2016, there was a significant drop in the average net income compared to the previous year, one of the reasons being the reduced amount of subsidies. With the increase in subsidies, for the period after 2017 has been noted a significant increase in net income, on average per farm. Despite the fluctuations, for the analyzed period there is a trend towards an increase in the average net income of agricultural holdings.

The dynamics in the levels of the average net income of farms without subsidies provoke some interest. The data show significant differences in net income levels with and without subsidies. The difference in levels is the smallest in the first year of the analyzed period, and in the following years this difference increases. In the period 2013–2016, the net income without subsidies was permanently negative. Only after 2017, the farms realize positive values of net income without subsidies, and their amount is extremely low. The clearly defined trend towards a decrease in net income without subsidies evokes particular concerns. Data analysis shows that subsidies play a decisive role in forming farmers' incomes and shows the strong dependence of farm incomes on support (Figure 19).

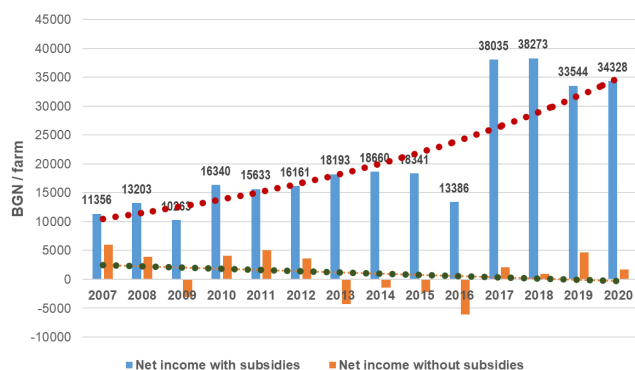


Fig. 19. Average net income per farm

Source: MAF, "Agrostatistics", FADN and own calculations

The achieved profitability, expressed by the obtained net income per unit of input labour, is characterized by certain fluctuations. Without significant changes in the amount of labour input, the level of average profitability is determined by the achieved average net income in farms and follows its trend of change. In the period 2007–2013, the highest profit-

ability was achieved in 2013 – BGN 8,269/AWU. In the period 2014–2020, the achieved profitability has been characterized by more serious fluctuations, compared to the previous period. There has been a decline for three years in a row, and the last 4 years after 2017, are characterized by a significant increase in profitability, with the increase being more than 2 times compared to 2016. Despite the fluctuations, the outlined trend in the achieved average profitability per unit of invested labour is towards growth (Figure 20).

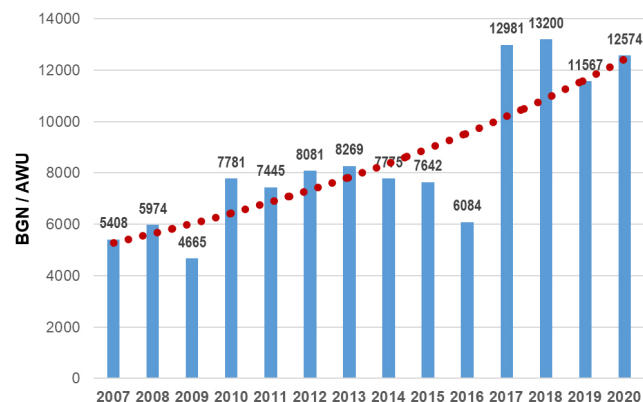


Fig. 20. Achieved average profitability per unit of labour input

Source: MAF, "Agrostatistics", FADN and own calculations

The dynamics of net income and production costs reflect on the level of the rate of profitability. The comparative analysis shows that for the entire period the profitability rate, with subsidies included, was the highest in 2007. Within the period the profitability rate was characterized by serious fluctuations. Despite the increasing amount of subsidies, in the following years, this indicator's level was not reached. The reasons must be sought in the fluctuations of the net income and the permanent trend of increasing production costs in agricultural holdings. Particularly alarming is the clearly defined trend of reduction of the rate of profitability, determined on the basis of net income with subsidies included. The results show that with an increasing amount of subsidies, production becomes increasingly unprofitable.

Significantly lower rates of profitability without subsidies indicate that they play a significant role in shaping the economic performance of agricultural holdings. The analysis shows that the profitability rate without subsidies is also highest in 2007, followed by a decline, and after 2013, the profitability rate without subsidies remains negative until 2016. In the following 4 years, the rate of return is a positive value, but it is extremely low. The indicator's level also outlines an unfavorable downward trend in the rate of profitability calculated without the subsidies received. The

comparative analysis shows that the rate of decrease of the profitability rate without subsidies was outrunning the indicator calculated with subsidies. The data show that there was no increase in the efficiency of the costs incurred in agricultural holdings. This shows that less revenue is received per 1 expenditure incurred. The internal reasons for farms should be sought in the insufficient production efficiency, low technical and technological level, lack of modernization, low investment activity and degree of innovations implementation, insufficient quality of human potential, etc. (Figure 21).



Fig. 21. Average profitability rate in farms

Source: MAF, "Agrostatistics", FADN and own calculations

Conclusions

As a result of the conducted research, the following general conclusions can be drawn:

- The average economic indicators of agricultural holdings – gross output, gross income, productivity and net income have positive trends towards an increase in the period 2007–2020. The same tendency is outlined in the average amount of subsidies per farm. The expansion of agricultural holdings and the growing amount of subsidies received can be pointed out as main reasons for their increase.
- Fluctuations in the average net income per farm show that production is dependent on a number of factors – internal (weak risk management, inefficient production, low level of diversification, etc.) and external factors (dependence on climate changes, market and institutional environment);
- The comparative analysis of indicators with and without subsidies shows the strong dependence of EU CAP support on the economic condition and income formation of agricultural producers;

- Subsidies support farmers' incomes, but do not lead to an increase in production efficiency. There is a tendency to decrease the rate of profitability;
- The overtaking growth of the rent in relation to the increase in support under the SPS after 2013 leads to the seizure of incomes from agricultural holdings.

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