

Prospects for the Development of Small Farms in Poland

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Abstract. The aim of the paper is to present the directions of changes in the group of small farms in Poland resulting from the influence of the instruments of the Common Agricultural Policy. The results of our own surveys, carried out on a representative group of 296 small farms in 2016, were used. The results of the empirical studies presented in this paper show that the assistance rendered to small farms within the framework of selected instruments of the Common Agricultural Policy was conducive to their transformation into modern entities, due to the support of their modernization processes, changes in the scale and structure of agricultural production, thus contributing to the economic strengthening of the farms. The investments concerned the extension of the land area and manpower resources in farms only to a small extent, but they resulted in a more efficient use of the resources obtained so far. Positive changes were also made in the degree of the yield of marketable agricultural output of the farms analyzed. Due to the great heterogeneity of small farms in Poland, in the future, they may step onto different paths of change, focusing on the development of agricultural activity, its continuation, or liquidation.

Keywords: Small Farm, Common Agricultural Policy, Prospect for Development

1 Introduction

The lack of a uniform definition of the notion of a small farm, both at the level of the European Union as a whole and in its individual Member States, constitutes a major problem which hinders both the analysis of data regarding a group of small farms and shaping of the policy for the group of farms. Defining and counting small farms is difficult as their size can be expressed either in physical units or with the use of economic terms [1, 5, 7, 10]. Both in the European Union and in Poland, the most commonly used criterion is surface area, i.e. the criterion based on the number of hectares of UAA (Utilised Agricultural Area) owned by the farm [2]. This is not a perfect criterion, primarily due to huge differences between farms among the EU countries and agricultural production areas, but it is relatively the easiest to use due to the availability of data.

It is most frequently assumed that small farms are those with less than 2 or, in a different take, less than 5 hectares of UAA. Statistical data indicate that in 2013, there were slightly more than 7 million small farms in the European Union with less than 5

hectares of agricultural land, including 2 million farms with less than 2 hectares of land. However, there are large differences between individual countries in the size of a group of small farms. In 2013, farms with less than 5 hectares of land accounted for 64.71% of all farms in EU-28, but in the EU-15, this percentage was only 45.82%, whereas in Member States that joined the EU in 2004, 2007 and 2013, the percentage was 77.80% of all farms. The new EU Member States are characterized by greater fragmentation of farms. In absolute terms, the largest number of small farms with up to 5 ha were found in Romania, Poland, Italy and Greece. In relative terms, the largest share of farms with up to 5 ha was in small States, such as Malta and Cyprus, as well as in Romania and Bulgaria. A high proportion of small farms in the total number of farms is not unique to the countries which joined the European Union in 2004, 2007 and 2013. Small farms predominate in the southern States of the EU-15, where a large proportion of them are farms with less than 2 ha. This situation is in stark contrast to the land structure of farms located in the north-western part of the EU-15 [3].

As a result of Poland's accession to the European Union in 2004, Polish agriculture and rural areas have been included in the system of support within the Common Agricultural Policy (CAP). The operation of farms in the single internal market and the implementation of the CAP instruments have resulted in favorable changes in the agrarian structure of farms. The number of farms in Poland has decreased while their average land area has increased. These changes, however, had different directions in the cross-section of particular groups divided on the basis of the size of the land owned. The number of farms in Poland is still strongly diversified depending on territory and, in spite of positive changes, there are still mini farms and small farms whose area of agricultural land does not exceed 5 ha [12].

Agriculture and farms in Poland are characterized by a large spatial variation in regional terms. This diversity is a result of numerous diverse factors, such as environmental, demographic or economic [8]. In the territorial system of the country, at least three agricultural subregions, based on the size of the farms, can be distinguished. The first subregion covers the south-eastern territories of Poland. These areas are characterized by heavily fragmented agriculture. It is home to a large number of small farms, frequently social or residential in nature, while the share of medium and large farms is small in the subregion. Another subregion covers the central part of Poland and the Lower Silesian and Podlaskie Provinces, in which the statistical farm owns between 8 and 16 ha of land. In contrast, the third subregion consists of provinces located in the western and northern parts of the country, and their land area is statistically the largest [6].

2 The purpose and methodology of research

The aim of the paper is to present the directions of changes in the group of small farms in Poland resulting from the effects of the Common Agricultural Policy (CAP) instruments. The results of our own survey which was carried out in 2016 on a representative group of 296 small farms in Małopolskie Province, were used. The main objective of the research was to identify the CAP instruments used by small

farms between 2004-2015, as well as to identify the changes made in the analyzed small farms under the influence of the instruments, in the scope of equipping them in production factors, the scale of production and directions of its use. Due to a wide range of the issues studied, empirical research was limited to selected instruments implemented within the framework of the Common Agricultural Policy which supported the investment activity of farms [11].

The relationship between the change in the share of production destined for the market of the farms analyzed in 2015 in relation to 2004, and the changes which occurred in these farms under the influence of the CAP in 2004 - 2015 in the resources of labor, land and livestock assets, was also analyzed. For this purpose, Pearson's correlation coefficient was estimated, as it allows for the estimation of the strength and type of relationship between two statistical features X and Y. This was calculated according to the following formula [4]:

$$r_{XY} = \frac{\sum_{i=1}^n (x_i - \bar{x})(y_i - \bar{y})}{\sqrt{\sum_{i=1}^n (x_i - \bar{x})^2 \sum_{i=1}^n (y_i - \bar{y})^2}} \quad (1)$$

where x_i, y_i ($i=1,2,\dots,n$) is the realization of the features X, Y, respectively, while \bar{x}, \bar{y} - are the arithmetic mean of the features X, Y.

The reason for choosing the spatial scope of the research was the fact that the Małopolskie Province in Poland belongs to the group of regions with a very fragmented agrarian structure of agriculture. It is home to a large number of small farms, often social or residential in nature, while the share of medium and large farms is insignificant. The basic agriculture characteristics show that the position of the Małopolskie Province is worse compared to other parts of Poland. Apart from the large fragmentation of the agrarian structure of agriculture, the specificity of the Małopolska agriculture stems from agrarian overpopulation, a predominant lack of specialization in agricultural production, and a low level of the yield of marketable agricultural output and labor productivity in agriculture. The agriculture of the Małopolskie Province is characterized by a large spatial diversity, which is largely determined by environmental conditions. Good soil and climate conditions occur only in the northern and central parts of the Province, while in the southern part, none of the elements of the environment are favorable to agriculture [13].

Entities with the area of agricultural land of 1 to 5 ha (the size at the time of the survey) were subjected to the analysis as small farms. In defining small farms, the economic criterion was rejected due to the lack of possibility to obtain a priori, the data regarding the economic size of a farm when determining the population studied. However, the adoption of such assumptions led to the situation when also small-sized, but specialized farms have been included in the research. Still, it is worth noting that, in analyzing the problem of the state of agriculture and farms in Poland, it is

important to consider predominantly the size of the land owned, as it is the size of the land that exercises a decisive influence on the production and economic possibilities of numerous farms.

The probability sampling technique (random selection) was used in order to obtain a representative sample of small farm population units. In random sampling, stratified sampling was used. The sampling scheme applied and the sufficient sample size ensured the representativeness of the research results.

3 Changes in small farms under the influence of selected instruments of the Common Agricultural Policy

In analyzing the changes which occurred between 2004 and 2015 in the analyzed small farms under the influence of selected instruments of the Common Agricultural Policy, it must be stated that the influence of the instruments on the functioning of small farms in the area of production factors was rather one-sided and consisted mainly in the increase of the physical capital resources.

In the case of small farms, the expected effect of changes in the scope of the production factor (i.e. the land) is the enlargement of the area, which allows for production growth and creates the opportunity for some small and semi-subsistence farms to be transformed into more commercial farms, more closely linked to the market. A parallel, desirable scenario of changes is the reduction or withdrawal of a part of small farms from agricultural production with simultaneous taking over of their land by other farms.

The results of the research conducted indicate that, in the period between 2004-2015, the examined CAP instruments had a relatively small impact on the changes in the resources of the land owned by the farms subjected to analysis. Only 18.2% of farmers introduced changes in the resources of the land used, while in one case, the area of the farm was reduced, while the remaining farmers, i.e. 17.9% of the total respondents expanded the area of their agricultural land. The total extension of the area of agricultural land declared by the surveyed farmers was 41.1 ha. Taking only those farms which have expanded their area into account, it can be stated that the area of agricultural land owned by these farms increased by 3.7%, which is, on average, less than 0.8 ha per farm (among those which expanded the area of land), but it's only 0.14 hectares per farm, if we take the entire population analyzed into consideration. The results of the research of other authors also acknowledge the fact, that farmers are reluctant to changes in the land area of their farms [9].

The implemented CAP instruments had positive effects in the form of changes in the cultivation area in the examined farms. As many as 60.5% of farmers indicated that due to the investments made, they expanded their cultivation area. The total extension of the cultivation area was 136.6 hectares, which is an increase of 11.8% and 0.46 ha per one farm analyzed. With respect to the population of farms which expanded their cultivation area, the increase reached 18.7%, which was, on average, less than 0.8 ha per farm (of those which expanded their cultivation area). It should be emphasized that, when expanding their cultivation area, farms were more inclined to

launch specialized production which yields higher income, than to increase the production of industrial plants, or cereals and potatoes, which require a larger area of agricultural land for the production to be profitable.

The development activities, carried out in small farms under the influence of the CAP support, have led to an increase in the scale of not only plant production, but also animal production. Of 80 farms which carried out livestock production during the research, 67, i.e. 22.6% of the total number of farms analyzed, launched or developed this type of production in connection with the use of the CAP instruments. Most often, they increased the number of dairy cattle and pigs, as the breeding of these animals is most popular in small farms. A much smaller percentage of respondents indicated an increased number of slaughter cattle or poultry.

The analysis of changes in the labor force has shown that the support in the form of the Common Agricultural Policy instruments which are the subject of the analysis, did not contribute to significant changes in equipping farms in labor resources. During the period under analysis, almost 84% of farmers did not make any changes in the level of employment on their farms that would be a result of the implementation of the Common Agricultural Policy instruments. Only 15.5% of farmers increased their employment under the influence of the CAP, indicating growth in production and the extension of the area of crops as the most common reason for these changes. Of the respondents, 0.7% indicated that the employment on their farm was reduced. The farmers who increased the employment, mainly wage laborers which accounted for 63.2% of newly-employed workers, while 36.8% constituted family labor force. In the group of farms which declared an increase in the number of jobs, an average of 1.2 of new jobs per farm was created, which constitutes just 0.2 of new jobs per all of the small farms analyzed. Taking the results of the research into account, showing the more efficient use of land which resulted in an increase in the scale of production on the farm, it can be concluded that, as regards labor resources, small farmers have also striven to make more effective use of their labor resources without increasing employment on their own farms.

In order to carry out any economic activity, one must have appropriate assets, among which material resources play an important role. The size and quality of material resources are an important factor which determines the economic efficiency of using other production factors. When analyzing the changes which took place between 2004 and 2015 in the analyzed small farms in Poland under the influence of selected CAP instruments in the scope of the level of equipment of small farms in the physical capital, it was found that investments consisting in supplementing and modernizing the machinery park were among those most frequently implemented on the farms. Some of the respondents also used aid funds for the construction or modernization of farm buildings. Such expenditure was incurred by a total of 90.6% of the farmers surveyed. These investments, undoubtedly, contributed to the increase in the physical resources owned by the farms analyzed, and led to the growth and modernization of the production carried out on the farm, which may have an impact on their competitiveness on the market. The investments co-financed from the EU funds concerned an increase in the land owned by farms only to a small extent, which may be due to objective conditions, such as the lack of possibility to reimburse land

purchase costs, or the lack of possibility of purchasing them in the vicinity of the farm owned. This can be considered a disadvantage, especially in the conditions of high agrarian fragmentation of farms.

In the course of the research, the impact of selected CAP instruments on the directions of allocating agricultural production in the analyzed small farms was also determined. The relationship between the change in the share of production of the farms analyzed in the year 2015 in relation to 2004, and the changes which occurred on these farms under the influence of the CAP between 2004 - 2015 in terms of labor resources, land area and livestock assets, was also examined. The manner of distributing agricultural production has a major influence on the income of the farm, thus deciding not only on the personal income of a farm family, but also on the possibilities of undertaking development projects on the farm. Therefore, it is important whether and, if so, which part of the farm's production is destined for the market and which is stored for self-supply.

The research results show that in 2015, as many as 82.1% of the farmers surveyed declared that, compared to 2004, they increased the percentage of marketed production. In the case of 16.2% of farmers, the proportion between the production for self-supply and the production for the market did not change during the period under analysis. In contrast, only 1.7% of respondents indicated that, in percentage terms, a larger share of production was allocated to self-supply in 2015, than in 2004. It can, therefore, be concluded that the changes which took place in the period between 2004-2015 in the analyzed small farms have led, in most cases, to an increase in the degree of their connection with the market.

In order to determine, on the farms analyzed, the dependence between the changes in the share of production destined for the market in 2015 compared to 2004, and the changes which were made in these farms under the influence of the CAP in the period between 2004 - 2015 in labor resources, land area and livestock assets, Pearson's correlation coefficient was calculated.

The value of the correlation coefficient for variables describing changes in the following:

- X_1 - the number of workers,
- X_2 - the area of agricultural land,
- X_3 - the size of the land area destined for plant production,
- X_4 - the number of animals held,
- Y_1 - the volume of production destined for the market,

in comparison with 2004, is presented in Table 1.

The calculations have shown that a statistically significant positive correlation is only between the change in the land area destined for plant production and the change in the share of production destined for the market. The change in the share of the production destined for the market by small farms is not dependent on the change in the number of people working on the farm, or the change in its area of agricultural land, or the change in the number of animals held on the farm. Therefore, the use of land owned by the analyzed small farms affects the volume of sales on the market. The expenditures in the analyzed farms, co-financed by the CAP, contribute to a

greater and better use of the land owned by the farms, which, in turn, translates into an increase in the share of production destined for sale on the market, and may result in an increase in the degree of the yield of marketable agricultural output of small farms.

Table 1. The values of Pearson's correlation coefficient between the features analyzed.

Specification		Quality			
		X_1	X_2	X_3	X_4
Feature	X_1	1.000			
	X_2	0.224*	1.000		
	X_3	0.218*	0.348*	1.000	
	X_4	-0.033	-0.055	-0.141*	1.000
	Y_1	0.102	0.063	0.341*	0.009

* means a significant dependence with $\alpha = 0,05$.

And so, the use of aid funds within the framework of the CAP has contributed to numerous changes in farms. Among the most important changes observed in the period between 2004 – 2015 in the farms analyzed under the influence of the CAP, the respondents indicated changes related to the modernization of the machinery park (63.9%) and production growth (55.7%). In addition, it was pointed out that the CAP instruments constituted a stimulus for the extension or modernization of the farm infrastructure (27.7%) and implementation of new technologies and production methods (26.7%). For 25.0% of farmers, the CAP instruments have become a stimulus for undertaking non-agricultural activities. Farmers' activities undertaken in connection with the support received, often resulted also in the improvement in animal welfare and introduction of changes in the production structure, as indicated by 19.3% and 15.5% of respondents, respectively. Under the influence of the CAP activities, one in ten respondents chose to increase their professional qualification, while for nearly one in ten respondents, the money transfers created the conditions for increasing the area of the farmland owned. Launching cooperation with other farms in the field of distribution of raw materials or commodities, or changes related to increasing the level of environmental protection, employment growth or implementation of agri-environmental measures were mentioned most rarely as the result of the impact of the CAP. The negative impact of the CAP on the activity of small farms was also indicated. Negative changes caused by the analyzed CAP instruments included a reduction in employment and the reduction of the agricultural area. However, these changes were only indicated by several respondents.

4 The directions of changes in a group of small farms in Poland

When analyzing the changes occurring in the functioning of small farms in Poland on the basis of the subject literature and own research among small farms in the Małopolskie Province, it should be stated that there is not a sole appropriate direction of changes in the group of small farms in Poland, as the group is not homogeneous. For this reason, the changes will take various directions (Fig 1.).

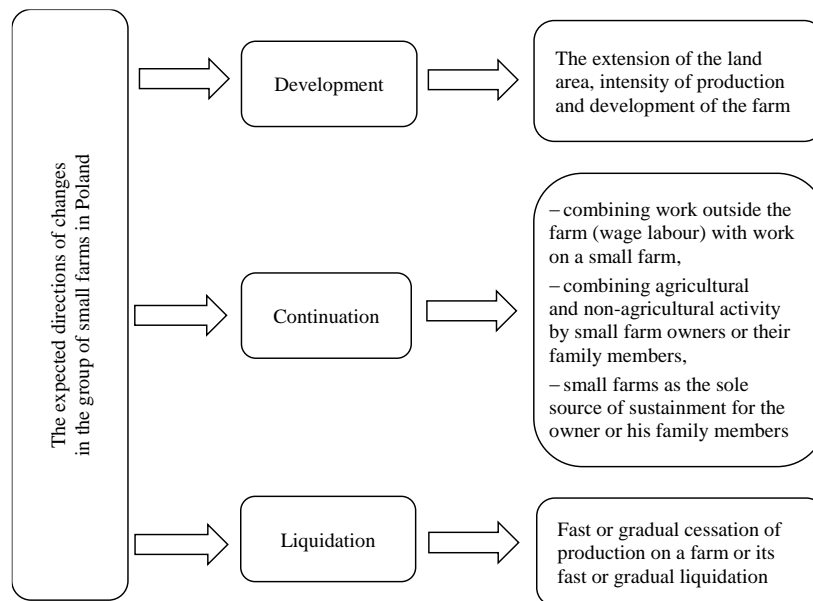


Fig. 1. The expected directions of changes in the group of small farms in Poland

Undoubtedly, the small farms which aim for development, will have a greater chance of surviving in the market and will be more capable of competing. As part of the development path, Polish small farms can implement a strategy of specializing in a given type of agricultural production, e.g. field vegetables, crops under shelter, fruit or organic production. Small farms can take the path of development by collaborating with other small farmers, e.g. by forming a group of farmers or a marketing group. In this way, they can improve their competitive position and increase their income. The production potential of small farms can also be increased by their owners by a means of modernizing and increasing the land area of the farm.

Among the group of small farms which will continue their current activity, there will also be farms which will provide only an additional source of income to their owners. Agricultural activities will be carried out to a limited extent, as their owners will continue or undertake paid work outside of agriculture. Other owners of small farms will diversify the activities of their small farms by implementing projects of

both an agricultural and non-agricultural nature. For some part of small farm owners, the farm will remain the sole source of sustenance for the owner and his family. Therefore, despite the lack of possibility for its development and low profitability, the activity of such farms will continue.

Undoubtedly, a part of small farms will be liquidated. This will be the case for those land users who will not see prospects for development of their farms and will seek sustainable income outside of them. And so, this type of small farms will gradually be liquidated as a result of the abandonment of agricultural production, and the land of such farms will be set aside or taken over by other farms. It should also be noted that the liquidation of small farms in Poland will also take place in connection with the lack of successors to the farm and the retirement or disability of their current owners.

Our own research has confirmed that changes in the group of small farms in Poland will take place in the indicated directions. Over the next five years, almost half of the analyzed farms (49.7%) plan to maintain production and maintain it unchanged, and so, they intend to continue their current activity. The respondents pointed to the current volume of production being adjusted to the size and capacity of the farm, as the main reason for this decision. The second largest group of respondents was farmers who plan to increase their farm production within the next five years, and so, they intend to expand their farms. They constituted 44.3% of the respondents. As the main reasons for this decision, they pointed to the possibility of subsidizing further investments on the farm in the time perspective of 2014-2020, mainly from the Rural Development Program for 2014-2020, as well as the possibility of increasing the land area owned by the farm. The group of respondents who plan to reduce or discontinue agricultural production in the future (liquidate the farm) was much smaller. Only 5.7% of the respondents plan to completely abandon agricultural production, which is most often caused by the lack of a successor to the farm, or the farmer's opinion that there is no prospect for development of such a small farm.

5 Conclusions

The situation in agriculture and rural areas in the last twenty years has been mostly influenced by Poland's preparations for accession and subsequent accession to the European Union. They were the stimulus for various types of processes aimed at adjusting Polish agriculture and farms to the EU standards and the rules of functioning in the single European market. Undoubtedly, the instruments of the Common Agricultural Policy, implemented in Poland, ensured a great support in the processes of changes. Still, despite many positive changes, Poland has remained a country with a diversified and fragmented agrarian structure with a large number of farms with less than 5 ha of agricultural land.

The results of the empirical studies, presented in this paper, show that the assistance provided to small farms within the selected instruments of the Common Agricultural Policy contributed to their transformation into modern entities due to the support of their modernization processes, changes in the scale and structure of

agricultural production, thus being conducive to the economic strengthening of these farms. Small farms invested primarily in the development of their machinery park, as well as the construction and modernization of farm buildings, thereby increasing the resources of the physical capital at hand. Only a small share of investments concerned the extension of the land area; still, they resulted in a more efficient use of the land previously owned by small farms. The same conclusion should be drawn with regard to the changes which have taken place in these farms in the area of labor resources. Positive changes have also occurred in terms of the degree of the yield of marketable agricultural output of the farms analyzed, most of which increased the share of production destined for the market.

Due to the great heterogeneity of the group of small farms, they may pursue different paths of changes in the future, focusing on the development, continuation or discontinuation of their agricultural activities. The relative advantage of these paths in particular regions of Poland will be diversified due to a number of factors. The factors may include external factors which are beyond control of individual farms (e.g. regional environmental and economic conditions, the current economic situation in the agricultural sector and agribusiness), and internal factors which are directly related to particular farms. These include the production resources available to the farm, the age and level of education of its owner, the matter of having or not having a successor to the farm.

It is worth noting that not all the owners of small farms in Poland will include work on the farm in their plans for the future. Therefore, it is crucial to encourage owners of small farms to sell or lease their land to those farms which have the potential of development and carry out the activities, aimed at consolidating land. The persistent relatively high level of unemployment and rural inhabitants' low professional qualification, unadjusted to the needs of the market, also poses a significant development problem for rural areas in Poland. It limits the opportunities of finding employment outside agriculture. Therefore, it is crucial to support rural inhabitants not only in the agricultural sector, but also in the sphere of obtainment of new skills and undertaking non-agricultural activities. It will serve to create new jobs unrelated to agriculture, and will help farmers engage in non-agricultural business activities. Also, the support of education activities and advisory services in the field of agriculture will also play an important role as it will contribute to the improvement of human capital in rural areas, as well as to a more efficient management of farms.

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