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THE NEW PAYMENT SCHEME FOR ROMANIAN YOUNG FARMERS: EVOLUTION AND TERRITORIAL CHARACTERISTICS

Daniela Nicoleta BĂDAN (VOICILĂ), Gina FÎNTÎNERU

University of Agronomic Sciences and Veterinary Medicine Bucharest, 59 Mărăști Boulevard, District 1, 011464, Bucharest Romania, Email: badan.daniela10@gmail.com, gina.fintineru@usamv.ro.

Corresponding author: badan.daniela10@gmail.com

Abstract

The purpose of this study is to analyze the evolution of the volume of direct payments for young farmers from Pillar I of the Common Agricultural Policy (The Young Farmer Payment Scheme) in the period of 2015 to 2019, at national and European level. The study also analyze the links between the volume of the amount authorized for this support scheme and various socio-economic indicators of rural areas in Romania. The statistical data used in the study has been taken from the structured national bases at county level and analyzed using the correlation method. The results of this study is indicating that the support of the payment scheme has contributed to the growth of the share of young farmers numbers, with strong territorial differences. Determining the intensity of the relationship between the volumes of the amount authorized for the payment of young farmers through the first pillar and certain socio-economic variables of the rural environment may contribute to the explanation of certain regional patterns.

Key words**:** *young farmers, payment scheme for young farmers, pillar I, correlation*

INTRODUCTION

The renewal of young farmers' generations it is a constant concern for decision-makers in the European Union. The research on this topic has intensified in the last decade, representing a topical issue widely debated both at European level and in the specialized literature.

The European Council has highlighted since 2014 [9] that young farmers and the renewal of the agricultural generation are key to the long-term sustainability and competitiveness of European agriculture.

On the other hand, a high number of studies indicate that the number of young farmers has decreased both in European and in global level, due to technology development, socio-economic and demographic changes (Chen et al., 2014 [7], Duesberga et al., 2017 [10]; Leonard et al., 2017 [10]; Morais et al., 2017 [21]).

According to Eurostat statistics on the farming structure [13], only about 11% of all farmers were under 40 years of age, in 2016 at European level. The share of farmers with the appropriate retirement age (54-64 years) and the share of farmers over 64 years are twice as high, each by about 27% than the category of farmers under 40 years. Is considered that the young farmers have the necessary potential to create efficient, competitive, innovative agricultural enterprises, thus becoming more profitable and sustainable (Council of the European Union, 2014; Zagata and Sutherland, 2015) [33].

The reform package of the common agricultural policy, approved by the EU on 16 December 2013, addresses the age imbalance of the farmers, introducing an additional payment for young farmers under Pillar I as a justification for overcoming the demographic challenge affecting all Member States. This payment is associated with the measure on the setting up of young farmers in the second pillar, as it will provide the necessary impetus for the activity of young farmers.

The total budget allocated by the European Union for supporting young farmers, in the period of 2007 to 2020, rose up to the value of 9.6 billion euros. This budget has doubled, from 3.26 billion euros in the period 2007-2013, provided for the measure on the installation, under the second pillar, to the value of 6.36 million euros in the period 2014-2020. This increase is due to the

introduction of the additional direct payment for young farmers under Pillar I, complementary to the support of this category of farmers through Pillar II measures.

The income support for young farmers introduced in Pillar I by the Payment for Young Farmers in 2014 (an additional payment of 25% of the direct payment) is intended for young farmers who are starting their agricultural activity. They should not exceed the age of 40 in the year of the first deposit of the application under the basic payment scheme or under the single area payment scheme (Reg. 1307/2013). The payment for young farmers is a compulsory aid scheme for all Member States of the European Union and it can represent up to 2% of the total national direct payment allocations.

The predominant flow of scientific literature has identified that there are a number of positive effects of the direct payments on rural sustainability (Smedzik-Ambrozy, 2013; Cortignani et al., 2017) [30, 8].

The idea of sustainability has been widely debated so that, for the rural environment, sustainable development is defined as meeting current needs without compromising future generations from meeting their own needs [32], and for this to happen it is necessary to build structured relations between economic growth and social factors. One of the main objectives of the financial support provided by the CAP is to support rural sustainability, the most common measures being those with an economic effect (increasing production, consumption, gross domestic product and income) [14].

A sereas of researches emphasize that the financial support in the EU has the purpose of employment in rural areas, whitch maintains the viability of these regions by contributing to increasing the sustainability of rural areas (Helming and Tabeau, 2018) [17]. One of the main threats to rural sustainability is the depopulation trend, in which case the stimulation of the economic activity would allow the reversal of this trend and the support of the living standards of the population from the rural areas, (Garcia-Llorente et al., 2016) [15]. The favorable impact on economic sustainability in the agricultural sector has also been demonstrated by Marta Guth et al., (2020) [16], with direct financial support to farmers proving to be significant for agricultural incomes and with a positive impact on increasing farm profitability.

Balezentisa et. colab, 2020 [4], analyzing the perceived benefits of the PYF scheme in Lithuania, using a questionnaire as a research tool, notes that this support scheme contributes, to a large extent, to income support, encourages investigations and the continuation of agricultural activities, the smallest perceived effect is to find new markets.

There are also a number of research studies that claim that there are doubts about the effectiveness of payments for young farmers. Carbone and Subioli (2008) [6] concluded that the level of support available to young farmers, in the case of Italy, is insufficient to attract young people to the agricultural sector or to encourage family succession on existing farms. Andersons (2015) [3] studying the phenomenon concluded that these payments to young farmers in recent CAP reforms provide a limited amount of financial support, with few long-term consequences. ECA, 2017 also argued that the overall objective of encouraging generational renewal was not reflected in the objective of Pillar 1 payments to young farmers.

Taking into consideration the specialized studies on the effects of direct payments, as well as the impact of payments to young farmers, the present study's purpose is to analyze the evolution of the Support Scheme for young farmers and the link between the volume of the amount authorized for this support scheme and the variables rural areas in Romania.

MATERIALS AND METHODS

In order to achieve the purpose of the research, the following were performed:

- in the first part of the paper were analyzed the statistical data on the Support Scheme for young farmers both in European and at national level, thus determining Romania's position between States Members, but also the

existence of a difference in the distribution of this support at territorial level;
- in order to achieve the purpose of the research, a set of socio-economic variables were analyzed, in the second part of the study (Table 1). The statistical data used were processed using the Correl function, thus determining the correlation coefficient among the variables. The statistical data processed in the paper were analyzed at the level of the 41 counties in Romania.

Table 1. Description of technical indicators used in the study

Variables	Description	Period	Source
Authorized amount	The authorized amount is the amount of money approved and debited to the beneficiaries of the Payment Scheme for young farmers	2015-2019	Agency for Payments and Intervention in Agriculture - APIA
Socio-economic indicators:			
Demographic data	The share at county level of the rural population aged 18-40, eligible for the submission of the file for the Young Farmers Payment Scheme, out of the total rural population	2015-2019	National Institute of Statistics, NIS, Statistical Yearbook of Romania
Demographic dependency	The demographic dependency ratio is the ratio between the number of dependent people (under 15 and over 64) and the number of able-bodied people (15-64 years) expressed per 100 people	2015-2019	National Institute of Statistics, NIS, Statistical Yearbook of Romania
Employed agric.	Population employed in agriculture al county level	2015-2019	National Institute of Statistics, NIS, Statistical Yearbook of Romania
Population migration	Internal migration determined by the change of domicile (arrivals, departures, balance) for the rural environment in 2015 (no. population)	2015	National Institute of Statistics, NIS, Statistical Yearbook of Romania
GDP	Gross domestic product at county level	2015-2019	National Institute of Statistics, NIS
Value of Agricultural Production (VAP)	The value of agricultural production at county level	2015-2019	National Institute of Statistics, NIS
Contracted value SM6.1	Value contracted on Sub-Measure 6.1.	2014-2020	Agency for the Financing of Rural Investments - AFIR
No. projects SM6.1	Number of projects contracted under Sub-Measure 6.1.	2014-2020	Agency for the Financing of Rural Investments - AFIR
Agricultural indicator:			
Agricultural area	Agricultural area at county level	2016	NIS, Structural Survey in Agriculture 2016
Holdings 1-10ha	Nr. holdings with areas between 1-10 ha, at county level	2016	NIS, Structural Survey in Agriculture 2016
Holdings 10-100ha	Nr. holdings with areas between 10-100 ha, at county level	2016	NIS, Structural Survey in Agriculture 2016
Holding 100 and over	Nr. holdings with areas larger than 100 hectares, at county level	2016	NIS, Structural Survey in Agriculture 2016

Source: [1, 2, 22, 23, 24].

The correlation represents the degree of statistical connection between the quantitative variables.
The correlation coefficient was determined using the formula [31]:

$$Correl(X,Y) = \frac{\sum (x-\bar{x})(y-\bar{y})}{\sqrt{\sum (x-\bar{x})^2 \sum (y-\bar{y})^2}}$$

where:
$x = x_1, x_2, ..., x_n$ and $y = y_1, y_2, ...y_3$ are the measured values;

$\bar{x}$ *and* $\bar{y}$ are the sampling averages of the respective series.

The correlation coefficient (r) has values between -1 and 1. The correlation sign indicates the nature of the positive or negative bond, and the value describes the strength of the bond that appears between the variables so that: we have a weak bond for r < 0.30; average bond for r = 0.30 - 0.50; strong bond for r > 0.50.

RESULTS AND DISCUSSIONS

Direct payments are a key element of agricultural policy, their purpose being to support incomes for farmers while promoting good agricultural and environmental practices.

Distribution of expenses with direct payments at U.E. in 2018 it was as follows: the majority share of the total was held by the Basic Payment Schemes, with 42.2% and SAPS with 29%. The lowest expenditures were registered for Coupled Support with a weight of 9.9%, Redistributive Payment with 4.1%, Scheme for small farmers with 2.2% and Payment for Young Farmers.

The payment for young farmers in 2018 accounted for 1.3% of the total direct payments at EU level (41.33 billion euros), the equivalent of 545.63 million euros (Figure 1).

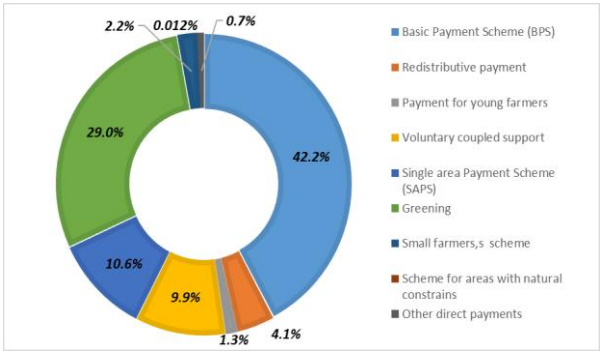

Fig. 1. Distribution of direct payments at U.E.
Source: processed data according to AGREX database (System for Agriculture Refund Expenditure) [12].

Direct payments to young farmers under Pillar I have been introduced in all EU Member States, so that in the period 2015-2018, according to EAGF reports an amount of EUR 1.59 billion has been allocated, at European level.

The amounts allocated for payments to young farmers at EU level, increased over the four years studied, thus finding that the popularity of this support has increased and the requests have been more numerous. (Special Report, EU 2017).

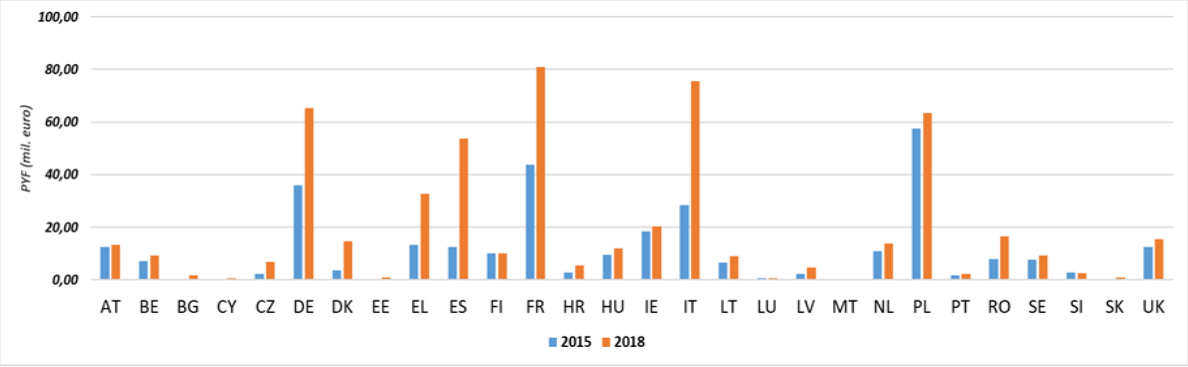

Fig. 2. Distribution of amounts allocated for payments to young farmers
Source: EAGF report data [11].

The allocated amount for the payment of support for young farmers in the period 2015-2018 for Romania varied between 7.91 million euros and 16.63 million euros, representing a share of the value allocated to direct payments at national level of 0.52% up to 0.66%. The trend of the amounts allocated to this payment is an upward one, this direct payment representing a stimulus in the takeover of new holdings by the young managers (heads of holding).

At national level, according to the GEO. 3/2015, the Young Farmers Scheme Payment involves the granting of an annual payment to new farmers installed at the head of the holding, who are entitled to the single area

payment and meet certain conditions [28]. This support is granted to each farmer for a maximum period of five years. A maximum of 2% of the annual national ceiling provided for in Annex II to Regulation (EU) No 1307/2013 shall be used to finance the payment for young farmers [29].

The amount of payment for young farmers is established annually by Governmental decision. (According to GEO no. 3/2015). The value of the scheme amount support the for young farmers per hectare, which was established on the basis of decisions taken at national level for the period 2015-2019, has registered a gradual increase, so that if in 2015, it was 19.93 euro/ha, in 2019, it reached the value of 31.24 euro/ha, with an increase of 56.8%.

Over 70% of the total funds allocated to the agricultural sector are managed by the Agency for Payments and Intervention for Agriculture, at national level, for the benefit of over 1 million users, with a funding of over 15 billion euros.

Table 1. Indicators calculated at national level on the Payment Scheme for young farmers

Specification	2015	2019	2019/2015 (%)	Mean	Annual rhythm (%)
Beneficiaries	45,512	59,096	29.84	51,168.4	6.75
Area (thousand ha)	472.04	720.21	52.70	583.65	11.14
Authorized amount (milion euro)	9.40	22.50	139.20	14.82	24.36
Average area per beneficiary (ha)	10.37	12.19	17.50	11.36	4.11
Average amount authorized per beneficiary (euro)	206.71	380.82	84.22	16.50	16.50

Source: processed according to APIA data, 10.12.2020 [2].

The number of beneficiaries who received support through the Young Farmers Scheme has been on the rise. In 2019 compared to 2015, it increased by 29.84%, from 45.5 thousand to 59 thousand, the support enjoying popularity among young newly established farmers. The largest share of beneficiaries of this scheme is held by the North-West Region and the South-West Oltenia Region with 20.4% and 15.8% respectively of the total beneficiaries at national level.

At national level, the values authorized for the support for Young Farmers Scheme increased gradually, with an average annual rate of 24.36%, ranging between 9.4 million euros (2015) and 22.5 million euros (2019).

The main counties that benefited from funds accessing the Support Scheme for young farmers in 2019 are Olt, Timiș, Dolj, Tulcea and Constanța, these totaling a percentage of 24% of the total authorized amount. Among the counties that registered the lowest authorized amounts are: Bucharest, Gorj, Ilfov, Vâlcea and Prahova, holding 2.63% of the total amount authorized at national level.

Comparatively analyzing the year 2019 with the year 2015 (the year in which this support scheme was introduced) it was possible to observe the fact that at county level the ranking was maintained, although the amounts authorized as value in the year 2015 were much lower than in the year 2019.

According to the representation in Figure 3, in 2015 the counties of Ilfov, Tulcea, Călărași and Constanța registered the highest amounts related to the number of beneficiaries.

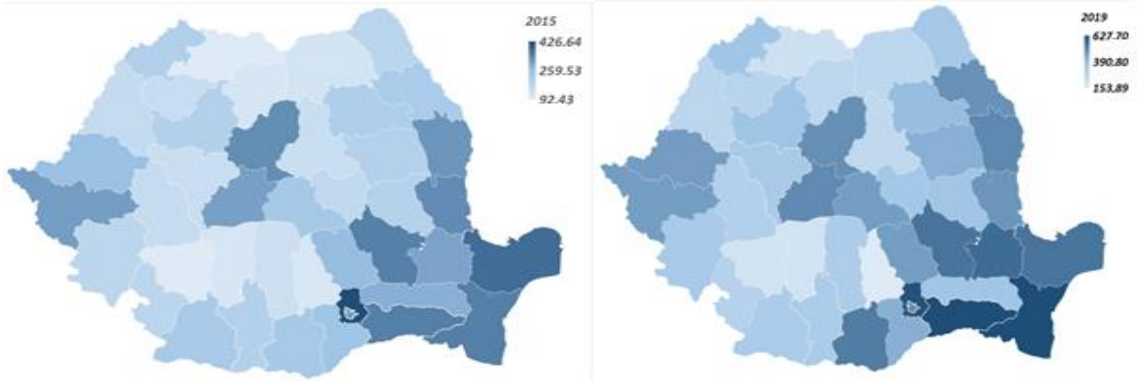

Fig. 3. Average authorized amount per beneficiary (euro) al counties level, 2015 vs 2019
Source: authors calculations, using STATA s spmap.

It is about 382.01 euro, 369.38 euro and 355.27 euro, respectively, these being much higher than the national average of 206.71 euros.

In the case of the year 2019, concerning Ilfov, Constanța,

Călărași and Tulcea counties, there are average amounts per beneficiary higher than the national average of 380.8 euros.

Maintaining the ranking at national level is due to the larger size of farms owned by young farmers in these counties, which exceed the national average.

The average area of the farming exploatation that nationally benefited from PYF varied in the time period of 2015-2019 between 10.37 ha and 12.19 ha.

Regarding the surface distribution at county level, it can be seen in Figure. 4 that in 2019 the counties that benefited from PYF with the highest average areas on the farm were Ilfov with 19.73 ha/farm, Tulcea with 17.59 ha/ farm, Călărași with 19.98 ha/farm and Constanța with 20.09 ha/farm.

Analyzing the average dimensions of farms benefiting of PYF from 2015 till 2019, it was found that 35.71% of counties recorded average values between 6-10 ha/farm, while 64.29% of counties recorded average values of areas between 10-19.4 ha/farm.

The correlation coefficient was calculated in order to determine a link between the support for the payment scheme of young farmers and the socio-economic variables specified above.

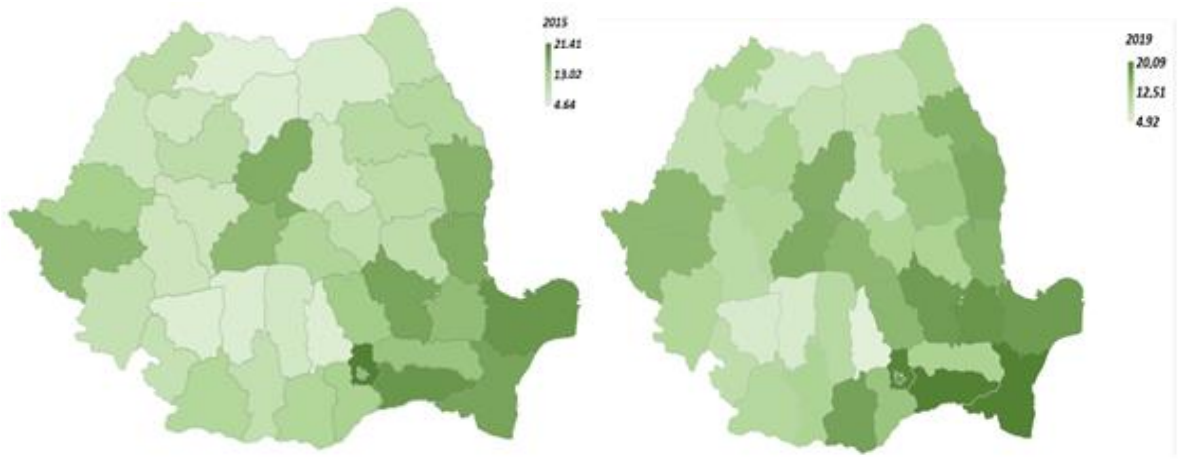

Fig. 4. The average area of the holding for which support is received, by counties (ha), 2015 vs.2019
Source: authors calculations, using STATA s spmap.

In Table 3 it can be find that there are 9 links of medium and tight intensity, between the volume of the authorized amount and the technical indicators taken into analysis.

Analyzing the correlation coefficients between the authorized amount and the demographic indicators (the share of the rural population aged 18-40 years and the employed population in the agricultural sector) it is observed that there is an average and positive link. This indicates that the Payment Scheme for Young Farmers tends to be higher in areas where the demographic indicators studied have higher values, thus meeting one of the general conditions for job creation in agriculture for the population up to in 40 years. Nordin M., (2014) [25], studied the effect of direct payments on the labor force, which is a positive and supportive job in agriculture. On the other hand, the general effect of investment support on labor productivity (Ratinger et al., 2012) [27] and labor reduction (Petrik and Zier, 2011) [26] is relatively well known.

Regarding the link between the authorized amount and the demographic dependency ratio, according to the correlation coefficient determined, a very weak link is observed (r <0.30). Payment scheme for young farmers tends to be higher in areas where the number of dependents for each person of working age has a higher value, which indicates that these areas able-bodied persons can apply for PYF, age is a considerable advantage in accessing funds.

Table 3. Analysis of the correlation coefficient

		Authorized amount	*Demographic data*	*Demographic dependency*	*Employed in agric.*	*Internal Migration Rural*			*GDP*	*VAP*	*Contracted Value SM6.1*	*No. projects SM6.1*	*Agricultural area*	*Holdings 1-10ha*	*Holdings 10-100ha*	*Holding 100 and over*
						Arrive	*Leave*	*Balance*								
Authorized amount		1														
Demographic data		0.359	1													
Demographic dependency		0.181	0.579	1												
Eemployed in agric.		0.430	0.365	0.389	1											
Internal migration Rural	*Arrive*	0.300	0.371	0.210	0.619	1										
	Leave	0.288	0.377	0.293	0.783	0.837	1									
	Balance	0.154	0.189	0.007	0.119	0.729	0.236	1								
GDP		-0.189	-0.777	-0.882	-0.294	-0.082	-0.210	0.118	1							
VAP		0.639	0.384	0.206	0.658	0.432	0.534	0.099	-0.232	1						
Contracted value SM6.1		0.537	0.198	0.015	0.276	0.204	0.195	0.118	-0.099	0.388	1					
No. projects SM6.1		0.528	0.196	0.015	0.276	0.202	0.194	0.116	-0.099	0.382	1.000	1				
Agricultural area		0.746	0.381	0.421	0.553	0.169	0.329	-0.111	-0.388	0.628	0.281	0.276	1			
Holdings 1-10ha		0.017	0.204	0.365	0.769	0.430	0.726	-0.144	-0.299	0.356	0.178	0.182	0.212	1		
Holdings 10-100ha		0.381	0.398	0.170	0.143	-0.039	-0.067	0.015	-0.238	0.193	0.148	0.146	0.371	-0.055	1	
Holding 100 and over		0.720	0.324	0.139	0.364	0.267	0.318	0.077	-0.150	0.767	0.230	0.222	0.737	-0.036	0.131	1

Source: own calculations based on APIA, AFIR, Agricultural Structural Survey 2016 and NIS using Data Analysis of MS Excel [1, 12, 23, 22, 24].

Analyzing the correlation coefficient between the authorized amount and the indicators that characterize the internal migration of the rural area (rural arrivals, rural departures, rural balance), a positive link between variables is observed. In areas where the number of people who have migrated to rural areas is higher, the amount allowed is higher, fact that may indicate that the Payment Scheme for Young Farmers may stimulate the return of young people to rural areas. This support could become a means of limiting migration trends in rural areas.

A direct correlation is found between the authorized amount and the value of agricultural production (VAP), because the two variables vary in the same direction. Also, the value of the correlation coefficient of 0.639 indicates a very close level of intensity between the two variables. In this context, it can be seen that there is a possibility that access to the support scheme for young farmers can be made in areas with predominant economic activity in the agricultural sector, thus the value of agricultural production is higher. Kravcakova Vozarova et al., 2016, confirms this link and the results indicating a close correlation between the volume of allocated subsidies and the value of agricultural production [19].

In order to identify the relationship with the general level of development, the average gross domestic product (GDP) at the level of the 41 counties was used as a variable. Analyzing the correlation coefficient between the authorized amount and GDP, a negative correlation is observed, the two variables varying in opposite directions. The value of the correlation coefficient of -0.181 indicates a weak link between the two variables. In areas where GDP is higher, the amount allowed is lower, which could indicate that the area's economy is geared towards higher value-added branches and sectors, with young people's interest in agricultural activities being lower.

The support scheme for young farmers was introduced as an income support for young farmers newly established at the head of a farm. Thus, this represents an additional income in addition to the funds allocated through Sub-Measure 6.1. ,,Support for the installation of young farmers ,, from Pillar II. Analyzing the existence of a link between the

two measures with the same recipient, a positive, strong correlation was observed, with a correlation coefficient r> 0.50. Thus, in areas where the value of projects contracted on SM6.1. it is higher and the amounts authorized by the payment scheme are higher, which indicates the complementarity of the instruments in the development of the holding at the beginning.

Analyzing the correlation coefficient between the authorized amount and the agricultural area, a positive correlation is observed, the two correlated variables vary in the same direction. The value of the correlation coefficient of r = 0.746 indicates a close link between the two variables. The data analyzed shows that if the areas in certain zones are larger then the amount authorized tends to increase, the amount allocated to the support measure being directly proportional to the size of the agricultural area owned by young farmers. Here, however, the level of accessibility of young people to agricultural lands must also be taken into account.

After calculating the correlation coefficients between the authorized amount and the number of holdings according to the agricultural size: holdings with a size between 1-10 ha, holdings with a size between 10-100 ha and holdings with over 100 ha, it was found that:

- there is a positive but very weak link between the amounts authorized for the payment of young farmers and the number of farms with the size between 1-10 ha. Taking into consideration the fact that approximately 15% of the counties registered an average size of the farm benefiting from PYF between 6-10 ha, this measure can play a structural role in integration of small areas;
- there is an average link between the authorized amounts and the farms with the size of 10-100 ha, the correlation is a positive one, taking into account the fact that the support increases depending on the number of hectares owned per farm;
- regarding the correlation coefficient between the authorized amount and the number of holdings with a size of over 100 ha, its value is 0.720, which indicates a close level of correlation between the two variables. Thus, in areas where the number of farms with a size of over 100 ha is higher, the authorized amount is higher. Duska (2012) states that the frequency of applications for payments to young farmers is higher for young owners of large farms. [18]. Stefan Bojneca et al., (2013) [5] emphasize that both the size of the farm and the performance of the farms play a substantial role in farm performance.

CONCLUSIONS

Income support for young farmers has been introduced in Pillar I by Young Farmers' Payment Scheme since 2014, representing a compulsory aid scheme for all EU Member States. The introduction of this support scheme aimed to provide a necessary impulse to the activity of young farmers, the broader objective being to rejuvenate generations of farmers and to encourage the transfer of farms between generations.

According to the study, both in European and at the national level it was found that the support scheme has contributed to increasing the share of young farmers, thus arousing the interest of young people to start an activity in agriculture.

Following the analysis, the results indicate that there is a close connection between the volume of the authorized amount for the Young Farmers' Payment Scheme and the agricultural indicators, given the fact that the support is granted according on the measure of the area owned by young beneficiaries of the support.

A positive and strong correlation has resulted between the value of agricultural production and the volume of the amount authorized. This situation indicates that it is possible for young farmers to access the support scheme in areas with predominant economic activity in the agricultural sector.

The gross domestic product, which defines the general level of development of an area/county, has a weak link with the volume of the amount authorized for PYF, the two variables varying in opposite directions, which could indicate that the economy of the area is oriented towards branches and sectors. with higher added value.

This paper analyzed the relationship between direct payments to young farmers and certain structural variables that characterize the rural areas. In order to assess the impact of these tools that encourage young people to work in agriculture for improving the age structure of farmers in the sustainable development of agriculture and rural areas, more detailed analyzes is needed.

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