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REGIONAL DIVERSIFICATION OF THE INTENSITY OF IMPLEMENTATION OF SELECTED RDP 2014-2020 MEASURES AGAINST BACKGROUND ENVIRONMENTAL AND ORGANIZATIONAL CONDITIONS[1]

Key words: common agricultural policy, environmental conditions, economic conditions, RDP

ABSTRACT. The aim of the paper is to determine regional differentiation in the implementation of selected RDP measures 2014-2020 in the context of different natural and organizational conditions. After EU accession, Polish agricultural producers gained access to a large European market and European funds supporting agriculture and rural development. The Common Agricultural Policy (CAP), structural funds and other EU instruments have strengthened the increasingly multifaceted view of rural development. The material for analysis was data of the Agency for the Restructuring and Modernization of Agriculture (ARMA) and the Central Statistical Office (GUS). Analysis showed that the implementation of main environmental activities under the RDP 2014-2020 is, to a large extent, regionally differentiated. In relation to Less Favorited Areas, this is mainly due to natural criteria adopted for their delimitation. On the other hand, the intensity of implementation of Agri-Environmental/Agri-Environmental and Climate Measure (AE/AECM) and Organic Farming (OF) is directly correlated with average farm size. A common feature for voivodships with a larger share of AE/AECM and OF is a smaller simplification of crop rotation confirmed by a negative correlation with the share of cereal in the sown area. On this basis, it can be stated that the environmental activities of the RDP 2014-2020 implement the set goals.

INTRODUCTION

After EU accession, Polish agricultural producers gained access to a large European market and European funds supporting agriculture and rural development. The Common Agricultural Policy (CAP), structural funds and other EU instruments have strengthened the increasingly multifaceted view of rural development. It should be emphasized that Poland is one of the largest beneficiaries of CAP funds and EU's cohesion policy [OECD 2018].

Initially, the basic challenge for the CAP was to meet food shortages after WWII. Success in achieving this goal was associated with the occurrence of a number of side effects associated with food overproduction, but also environmental threats and food

[1] Scientific work was carried out as part of task 1.8 in the IUNG-PIB Multi-annual Program for the years 2016-2020.

safety. The awareness of emerging problems was an incentive to introducing successive changes in the CAP, mainly related to the requirements of environmental policy. As a consequence, EU agricultural policy is increasingly approaching the guidelines of the sustainable development paradigm [Majewski et al. 2018]. As a result, one of the main objectives of the currently implemented CAP is to better utilize the potential of agriculture in the implementation of Community objectives related to counteracting adverse impacts on the natural environment. Particularly strong emphasis is put on limiting and adapting to climate change, protecting biodiversity and reducing water and air pollution. The protection of soil is a key issue, both for maintaining production potential and care for the natural environment [Poczta et al. 2017]. This approach also fits into the principle of rational and efficient use of natural resources [Gołębiewski 2019].

As indicated by the research results, the absorption of financial resources and the intensity of RDP implementation in previous financial perspectives were significantly regionally differentiated [Nowak et al. 2016, Wojewodzic 2016]. Differences in directions and dynamics of Polish agriculture development, also in relation to RDP implementation, are, to a large extent, conditioned by natural and organizational factors [Kopiński and Matyka 2016].

The aim of the paper is to determine regional differentiation in the implementation of selected RDP measures 2014-2020 in the context of different natural and organizational conditions.

MATERIAL AND METHODS

The material for analysis was data from the Agency for the Restructuring and Modernization of Agriculture (ARMA) and mass statistics published by the Central Statistical Office (CSO); [GUS 2016-2018]. Due to the availability of data, analysis covered the years 2015-2017. In the case of ARMA data, they reflected the state of implementation on the basis of decisions issued on December 31 of that year. They also took into account the commitments undertaken under the Rural Development Programme (RDP) 2007-2013, but paid out from the RDP 2014-2020. The analysis covered main activities which, according to RDP assumptions, have achieved the environmental objective:

– Less Favoured Areas (LFA);
– Agri-Environmental/Agri-Environmental and Climate Measure (AE/AECM);
– Organic Farming (OF) [MRiRW 2018].

In order to characterize the natural conditions of agricultural production, the valorisation index of agricultural production space (WWRPP) developed by IUNG [Witek 1981] were used. However, as organizational indicators, the following were taken into account:

– average farm size (ha UAA);
– share of permanent grassland in the area of utilization agricultural area (UR, %);
– share of cereal, rapeseed, sugar beet and potato in the sown area (%);
– cereal, rape, sugar beet and potato yield (kg/ha);
– consumption of mineral fertilizers NPK and soil lime (kg/ha).

Regional variation analyzes were carried out at a voivodship level, on the basis of the current administrative division of the country. Indicators for individual voivodships were compared to the average for Poland, as a reference system. Cluster analysis for voivodships, according to the share of area of selected measures in total area, reported for a single direct payment, was performed using k-means methods.

The interdependence of the intensity of implementation of RDP 2014-2020 measures and selected natural and organizational conditions was determined on the basis of Pearson's linear correlation analysis.

RESULTS

From among all environmental measures, the largest share (51%), in relation to total area reported for single direct payment, is due to Less Favored Areas payments. The largest share of LFA, on average, in the years 2015-2017, was recorded in the Podlaskie and Lubuskie voivodships, while the smallest in the Opolskie voivodeship (Figure 1). The Mazowieckie, Warmińsko-Mazurskie and Zachodniopomorskie voivodships also have a relatively high LFA share. Regional variation in the implementation of this measure is a derivative of natural conditions that formed the basis of the delimitation of LFA areas. This is also confirmed by a strong negative correlation with the WRPP indicator (Table 1).

The share of LFA also correlates inversely with the share of cereal and sugar beet in the structure of cropland and cereal yield. This dependence confirms the validity of the assumptions adopted for the delimitation of LFA areas. Farms implementing this measure, due to poorer habitat conditions, to a lesser extent grow highly commercial plants and achieve lower cereal yield. In addition, along with an increase in LFA share, the share of cereal in the structure of cropland decreases.

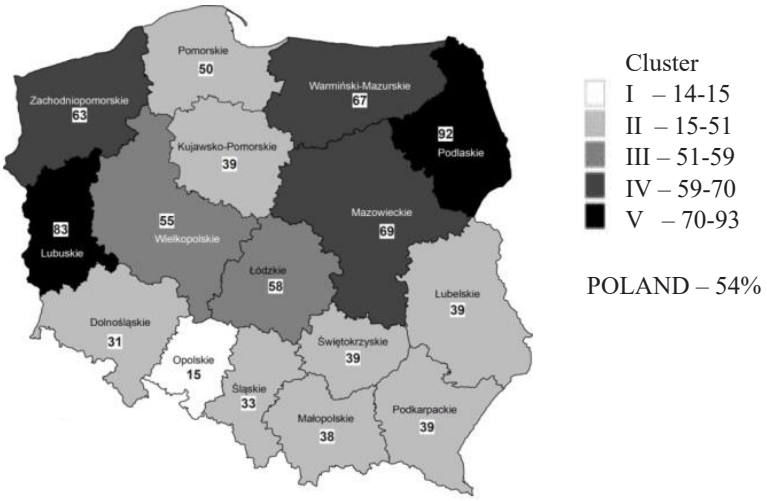


Figure 1. Share of area covered by Less Favoured Areas (LFA) in relation to total area covered by single direct payments, means for the years 2015-2017

Source: own study based on ARMA data

Table 1. Correlation matrix for the share of selected RDP 2014-2020 measures and environmental and organizational characteristics, means for the years 2015-2017

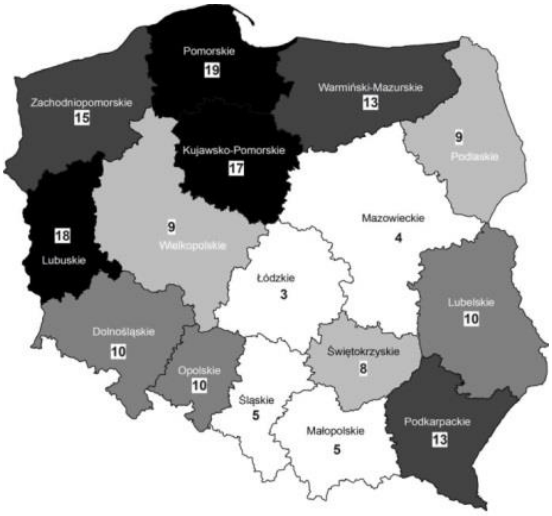
Specification		WWRPP [c]	Farm size [ha]	Share of grassland in UAA [%]	Share in sown area [%]				Yield [kg/ha]				Consumption [kg/ha]	
					cereal	rape	sugar beet	potato	cereal	rape	sugar beet	potato	NPK mineral fertilizers	CaO fertilizers
Share in UAA [a]	LFA [b]	-0.860*	0.283	0.409	-0.518	-0.262	-0.528	-0.306	-0.597	-0.379	-0.147	-0.256	-0.489	-0.367
	AE/AECM [c]	-0.288	0.727	0.310	-0.796	0.349	-0.389	-0.393	-0.026	-0.208	0.089	0.141	-0.344	-0.158
	OF [d]	0.160	0.649	-0.168	-0.635	0.623	0.318	-0.352	0.320	0.081	0.182	0.532	0.169	0.269

[a] Utilization of agricultural area, [b] Less Favoured Areas, [c] the Agri-Environmental/Agri-Environmental and Climate Measure, [d] Organic farming, [e] the Valorisation index of agricultural production space, * bolded font marked statistically significant correlations for $\alpha = 0.05$

Source: own study based on ARMA and CSO data

The Agri-Environmental and Climate Measure (AECM) consists of many packages, most of which are implemented throughout the country. Under RDP 2014-2020, the commitments undertaken in the Agri-Environmental (AE) of the RDP 2007-2013 are also financed. On average, in 2015-2017, the largest share of area covered by these measures in relation to the total area of single direct payment was characteristic of the Pomorskie, Lubuskie, Kujawsko-Pomorskie and Podkarpackie voivodships (fig. 2). While the smallest share of AE/AECM area was recorded in the Łódzkie, Mazowieckie, Śląskie and Małopolskie voivodships. Correlation analysis showed that the share of AE / AECM is strongly positively correlated with the farm size and negatively with the share of cereal in the structure of cropland (tab. 1). It can be concluded that the motivation for the implementation of AE/AECM is not only the potential environmental benefits, but also financial benefits additionally reinforced by the effect of scale.

Significant regional variation also occurs in the case of the intensity of implementation of the Organic Farming (OF) measure. The largest share of area covered by this type of support was found in the Zachodniopomorskie, Lubuskie and Warmińsko-Mazurskie voivodships (Figure 3). It is also quite significant in the Podlaskie voivodship. However, the Opolskie, Śląskie, Łódzkie, Kujawsko-Pomorskie, Wielkopolskie and Mazowieckie voivodships have the lowest share. Similarly as in the case of AE/AECM, also for the share of OF area, there is a strong positive correlation with average farm area. In a sense, it contradicts the origi-



Cluster
I – 3-6
II – 8-10
III – 10-11
IV – 13-16
V – 17-19

POLAND – 10%

Figure 2. Share (%) of the area covered by the Agri-Environmental/Agri-Environmental and Climate Measure (AE/AECM) in relation to total area covered by single direct payments, means for the years 2015-2017

Source: own study based on ARMA data

Cluster
I – 0.2-0.8
II – 0.8-1.4
III – 1.4-2.4
IV – 2.6-3.6
V – 5.3-5.8

POLAND – 1.6%

Figure 3. Share (%) of area covered by Organic farming (OF) in relation to total area covered by single direct payments, means for the years 2015-2017

Source: own study based on ARMA data

nal assumptions regarding the development of organic farming, which assumed that it would mainly develop in smaller farms, and thus it would be possible to develop existing surpluses of labor. The intensity of implementation of the OF also correlates inversely with the share of cereal in the structure of cropland, and positively with the share of rape. This may indirectly testify to a more varied crop rotation. Positive correlation also occurs with potato yield.

CONCLUSIONS

The analysis showed that the implementation of the main environmental activities under the RDP 2014-2020 is, to a large extent, regionally differentiated. In relation to Less Favorited Areas, this is mainly due to the natural criteria adopted for their delimitation. On the other hand, the intensity of implementation of the Agri-Environmental/Agri-Environmental and Climate Measure (AE/AECM) and Organic Farming (OF) is correlated directly with average farm size. This may prove that, in addition to environmental issues, farmers implement these activities due to economic benefits additionally strengthened by the effect of scale. A common feature for voivodships with a larger share of AE/AECM and OF is a smaller simplification of crop rotation confirmed by a negative correlation with the share of cereal in the sown area. On this basis, it can be stated that the environmental activities of the RDP 2014-2020 implement the set goals.

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REGIONALNE ZRÓŻNICOWANIE INTENSYWNOŚCI WDRAŻANIA WYBRANYCH DZIAŁAŃ PROW 2014-2020 NA TLE UWARUNKOWAŃ PRZYRODNICZO-ORGANIZACYJNYCH

Słowa kluczowe: wspólna polityka rolna, uwarunkowania przyrodnicze, uwarunkowania ekonomiczne, PROW

ABSTRAKT

Celem artykułu jest określenie regionalnego zróżnicowania we wdrażaniu wybranych działań PROW 2014-2020 w kontekście odmiennych uwarunkowań przyrodniczych i organizacyjnych. Po akcesji do Unii Europejskiej polscy producenci rolni uzyskali dostęp do dużego rynku europejskiego oraz do europejskich funduszy wspierających rolnictwo i rozwój obszarów wiejskich. Wspólna Polityka Rolna (WPR), fundusze strukturalne i inne instrumenty unijne wzmocniły coraz bardziej wielowymiarowe spojrzenie na rozwój wsi. Materiał źródłowy do pracy stanowiły dane Agencji Restrukturyzacji i Modernizacji Rolnictwa (ARiMR) oraz Głównego Urzędu Statystycznego (GUS). Analiza wykazała, że wdrażanie w ramach PROW 2014-2020 głównych działań o charakterze środowiskowym było w znacznym stopniu zróżnicowane regionalnie. W odniesieniu do obszarów o niekorzystnych warunkach gospodarowania wynika to głównie z kryteriów przyrodniczych przyjętych do ich wyznaczania. Natomiast intensywność wdrażania Programu rolnośrodowiskowego i działania rolnośrodowiskowo-klimatycznego oraz Rolnictwa ekologicznego skorelowana była wprost proporcjonalnie ze średnią wielkością gospodarstwa. Wspólną cechą dla województw o większym udziale AE/AECM i OF było mniejsze uproszczenie zmianowań potwierdzone ujemną korelacją z udziałem zbóż w strukturze zasiewów. Na tej podstawie można stwierdzić, że działania środowiskowe PROW 2014-2020 realizują założone cele.

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