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Use of Union Funds in Developing Agricultural Entrepreneurship between 2014 and 2020 in Poland

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Abstract: The purpose of this paper was to examine the differences in using agricultural entrepreneurship support and how it relates to characteristics such as the agrarian structure, socioeconomic development level, and land use across the Polish territory. The analyses were carried out at the district (poviat) level which is an intermediate administrative unit. This study found that the decisions on co-financing the measures dedicated to non-agricultural economic activity heavily depended on the agrarian structure. The highest levels of activity were witnessed in districts where the agrarian structure was particularly fragmented.

Keywords: agricultural entrepreneurship; rural areas; European Union funds; Poland; 2014–2020 RDP; Strategic Plan for the 2023–2027 CAP

1. Introduction

Today, there is a growing importance of knowledge, innovation, and entrepreneurship in rural areas [1–4]. These are important development drivers for farms, businesses, local environments, regions, and the national economy as a whole. Therefore, it is undoubtedly crucial to develop appropriate entrepreneurial attitudes which will result in actions being taken in different spheres of social and economic life [5–7]. In accordance with the assumptions of the policy for multipurpose sustainable development, entrepreneurship is of particular importance to rural areas, both in agricultural and non-agricultural activities. Rural development and improvements to the quality of life of rural residents are complex issues. Whether and how much progress is being made in that area depends on certain determinants that have been addressed in a number of scientific papers [8–11]. The endogenous growth model and the concepts based on bottom-up initiatives are undoubtedly among the most efficient and widely promoted solutions for rural areas [12,13]. Their importance lies in the activity and entrepreneurial attitudes of local communities and in the level of human capital.

These topics are explained by the theoretical concept of multipurpose rural development, in which rural areas are not only home to farming activities but are also attractive places to live and run a non-agricultural business [14–19]. This concept takes on particular relevance in the first decades of the 21st century, when rapid socio-economic change, driven by both market forces and politics, challenges the countryside with new functions and tasks [19]. At the basis of this is the objective process of deagrarizing the rural economy, manifested by the decreasing demand for labor in agriculture itself [20]. In order not to lead to rural depopulation, it is necessary to create non-agricultural workplaces and to provide new knowledge and skills, especially in peripheral areas [21].

After joining the European Union structures in 2004, Poland embraced new opportunities for making rural areas economically active. The EU membership was a way to access new instruments to support entrepreneurship or improve the economic situation of a region. Further, the broad range of measures offered to rural residents under the 2014–2020 Rural

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Citation: Wojcieszak-Zbierska, M.M.; Sadowski, A. Use of Union Funds in Developing Agricultural Entrepreneurship between 2014 and 2020 in Poland. *Agriculture* **2024**, *14*, 83. https://doi.org/10.3390/agriculture14010083

Academic Editors: Luboš Smutka and Karolina Pawlak

Received: 19 November 2023
Revised: 28 December 2023
Accepted: 30 December 2023
Published: 30 December 2023

Development Program had a beneficial effect on their socioeconomic situation [22]. Indeed, applying for funds reveals a certain dimension of rural enterprise which can be defined as the ability to access financial resources under the national structural policy [23,24]. Today, focus is placed on the role of human capital present in rural areas because it is the very basis for the development of entrepreneurship [25,26].

As the funds allocated to supporting entrepreneurship were applied for on a voluntary basis, it can be assumed that differences in activity levels existed between regions of the country. Therefore, the research goal of this paper is to determine the socioeconomic and geo-environmental characteristics of territorial units (in this case districts) that either encourage or discourage from accessing the support instrument covered by the study, i.e., "Bonuses for setting up a non-agricultural economic activity", a sub-measure of the RDP. Pursuing that goal will also allow us to attain the utilitarian objective which is to develop policy recommendations with a view to better allocate support resources in the next financial perspectives.

This study was carried out in Poland, a country with a particularly fragmented and geographically heterogeneous agrarian structure formed by a specific historical process. Historical events are of major importance to differences in agrarian structure across the national territory and to other parameters of Poland's socioeconomic development. In the 19th century, Poland did not exist as a state [27]. Its territory was incorporated into three partitioning powers (Prussia, Russia, and Austria), and was under the influence of three different agricultural and economic policies [27–29]. It is also noted that due to the Industrial Revolution, the 19th century saw the emergence of the foundation of a modern economy, and, therefore, the consequences of decisions made at that time are still evident. This is also true for the agrarian structure.

Another reason Poland was chosen as a case study was the importance of agriculture to its national economy. Next to Romania and Greece, Poland is among the EU countries with the greatest share of labor employed in the agricultural sector. Nevertheless, non-agricultural economic activity is not something unique to Poland. It is witnessed in many European countries, and beyond, as a general symptom of the progressing shift away from agriculture in rural areas taking place in many other parts of the world [30]. As an example, Brelik [31] indicated Italy, which over recent years has seen the development of agritourism activity driven by such factors as unfavorable price relations in agriculture. In turn, ref. [32] refers to the Chinese realities and points out that, in addition to supporting agriculture itself, rural development strongly needs public funds for non-agricultural projects.

The analysis is carried out at the district level because data on the use of EU aid funds is aggregated at this level by the Polish paying agency (the Agency for Restructuring and Modernization of Agriculture). Nevertheless, in the Polish legal system, the financial management of lowest-level territorial units (communes) best reflects the condition of local finance and, thus, the region's wealth. This is because communes are the only local government units to have their own incomes (i.e., incomes other than those originating from the central budget), and a share in personal and corporate income taxes is the key source of it.

2. Materials and Methods

This study was based on public statistical data stored in the Local Data Bank of the Polish Central Statistical Office [33] and on unpublished data from the Agency for Restructuring and Modernization of Agriculture (acting as the Polish paying agency in most aid programs under the first and second pillar of the CAP). The following data were retrieved from the Central Statistical Office:

- The number of farms larger than 1 ha, grouped by size (as of 2020, Agricultural Census);
- The area used by farms larger than 1 ha, grouped by size and expressed in hectares (as of the 2020 Agricultural Census);
- The total area of the district in hectares (as of 2014);

- The area of agricultural land in the district, in hectares (as of 2014);
- The total budgetary income of communes, in PLN (as of 2021);
- The own budgetary income of communes, in PLN (as of 2021);
- The average gross monthly wage, in PLN (as of 2021);
- The number of registered employees remaining out of work for longer than 1 year (as of 2022);
- The number of economic operators per 1000 working-age population (as of 2023).

The most recent available information was used in each case. Unpublished data from the Agency for Restructuring and Modernization of Agriculture relates to the number of payments under the sub-measure "Bonuses for setting up a non-agricultural economic activity" of the 2014–2020 RDP. These are aggregate values for the entire programming period of 2014–2020. Each time, data was generated at the district level. In the Polish legal order, districts are the medium-sized local administrative unit, located between the voivodeship (the largest one) and the commune (the smallest one). On average, a district includes several communes, and a voivodeship is composed of several tens of districts. Urban districts are a specific administrative unit that delivers both commune-level and district-level functions. Usually, these are large cities with a population of over 100,000. As this study focuses on agriculture, they were not taken into account in the analysis. This study is carried out at the district level because of the specific way of administering payments under the Common Agricultural Policy in Poland. The paying agency is the Agency for Restructuring and Modernization of Agriculture which has a three-level organizational structure composed of the Head Office, 16 Regional Branch Offices at the voivodeship level, and 314 District Offices. Data collected at the district level relates to basic parameters of how funds are accessed under each CAP aid program, including the number of payments affected. The purpose of using public statistical data and the number of bonuses for setting up a non-agricultural economic activity was to assess the reasons behind geographic differences in the use of funds allocated to the development of agricultural entrepreneurship. The assumption was made that it might depend on economic or environmental conditions or on aspects related to the agrarian structure. Therefore, the following characteristics of districts were retained:

- Economy, a synthetic characteristic;
- The share of own incomes in total incomes at the commune level;
- The share of agricultural land in the area of the commune;
- The percentage of farms larger than 10 ha;
- The share of agricultural land held by farms larger than 10 ha.

The relationship between the number of payments under the measure "Bonuses for setting up a non-agricultural economic activity" and the characteristics listed above was determined by using cartograms to analyze the differences in intensity of the phenomena considered (Figures 1–6). The districts were arranged by the descending intensity of each characteristic and then allocated to quintile groups (each composed of 63 units). The strength of the relationship was analyzed using the Pearson correlation coefficient and simple linear regression.

The analysis mostly relied on simple characteristics, except for Economy, which, because of its complexity, is a synthetic structure created based on Hellwig's method. Its first stage consists of selecting the model's variables (simple characteristics) to describe a complex phenomenon, usually of a social or economic nature. These variables (which should not be correlated with one another) are then used in structuring the synthetic characteristic [27,34–36]. This method is generally used to assess complex socio-economic phenomena [37–39], but can also be applied to technical sciences [40].

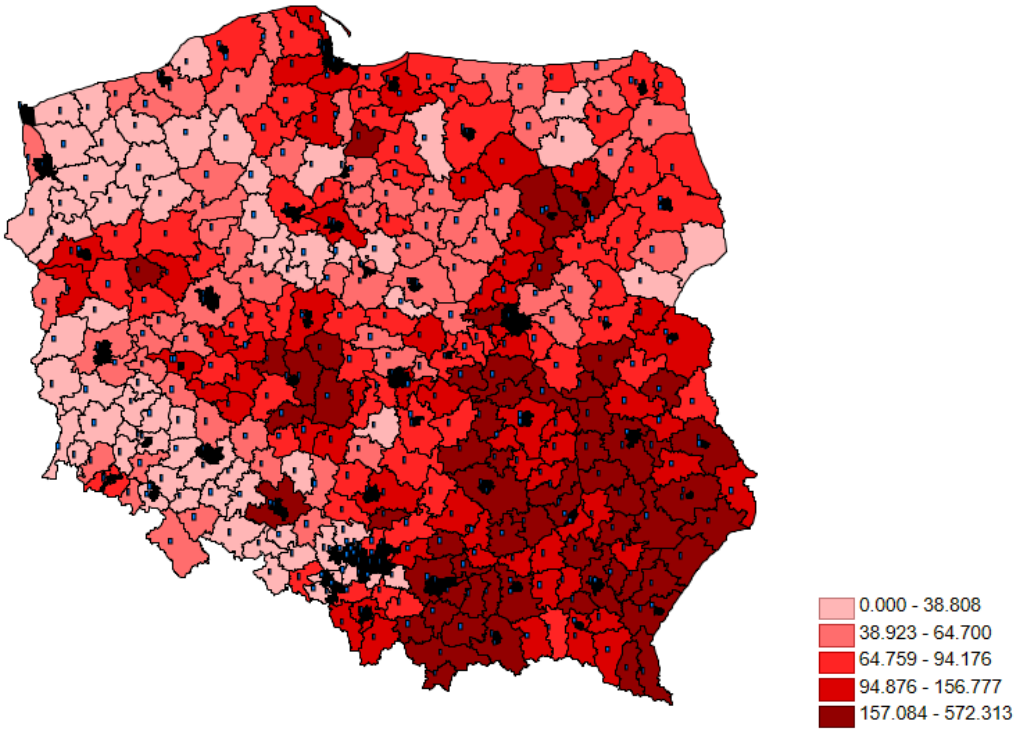

Figure 1. Payments under the sub-measure "Bonuses for the setting up of a non-agricultural activity" (PLN per hectare of agricultural land). Source: own calculations based on www.bdl.stat.gov.pl. (accessed on 01 08 2023). The detailed list of districts can be found at https://www.zpp.pl/mapa-polski (accessed on 19 December 2023).

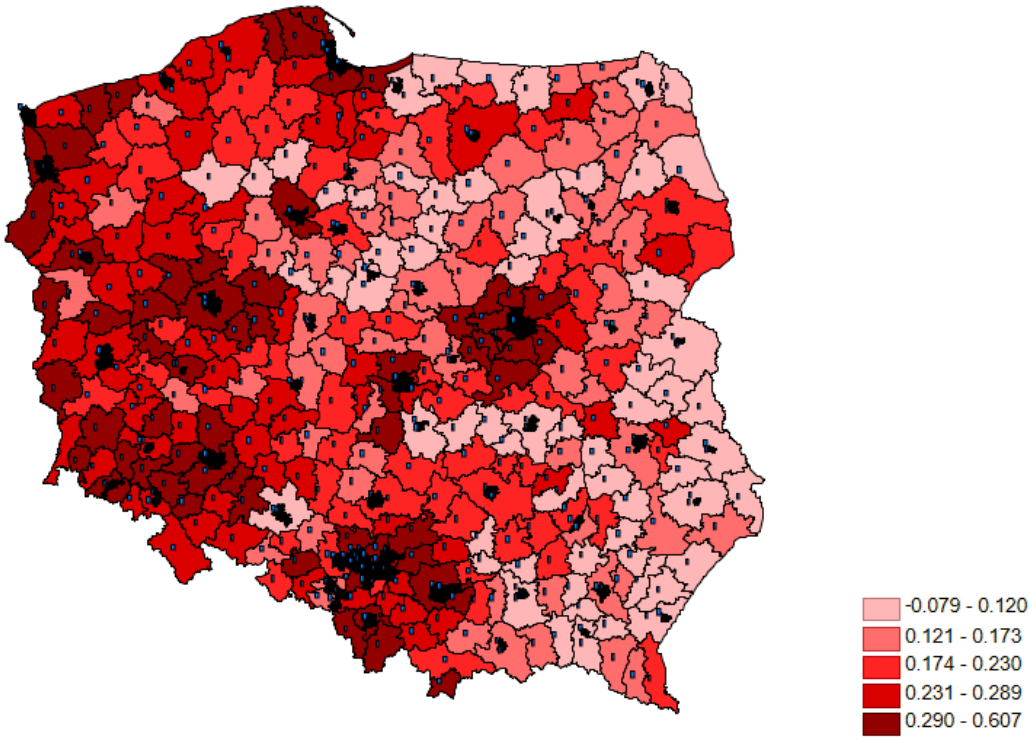

Figure 2. Geographic differences in the synthetic characteristic "Economy" at the district level. Source: own calculations based on www.bdl.stat.gov.pl. (accessed on 1 August 2023).

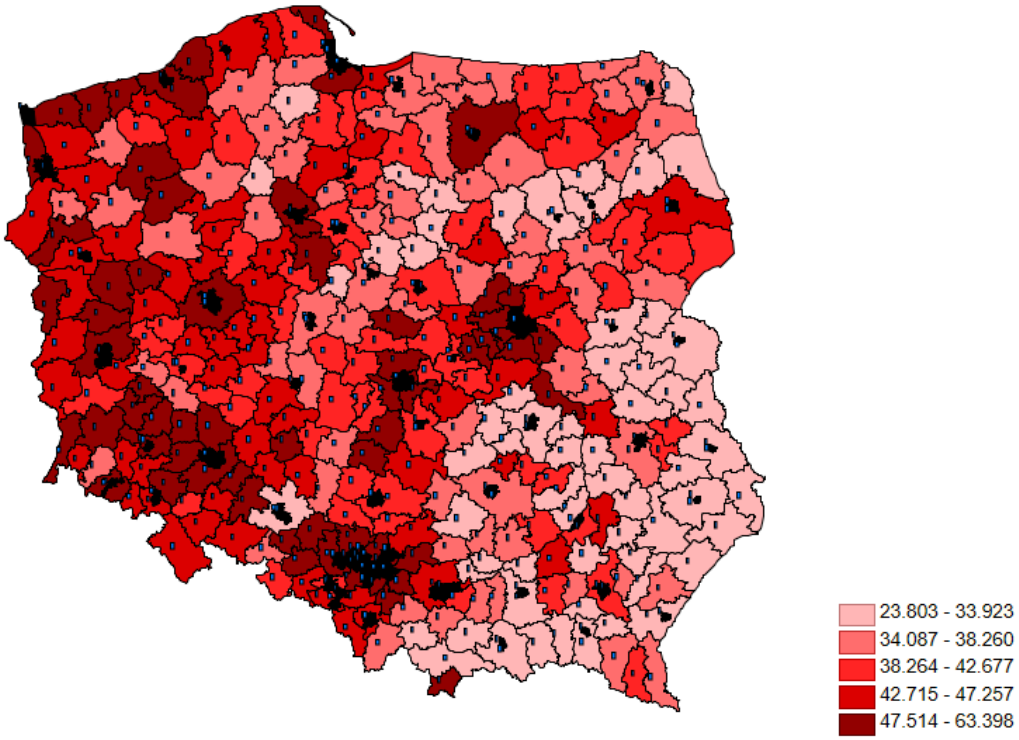

Figure 3. Share of own incomes in total commune incomes (at district level). Source: own calculations based on www.bdl.stat.gov.pl (accessed on 1 August 2023).

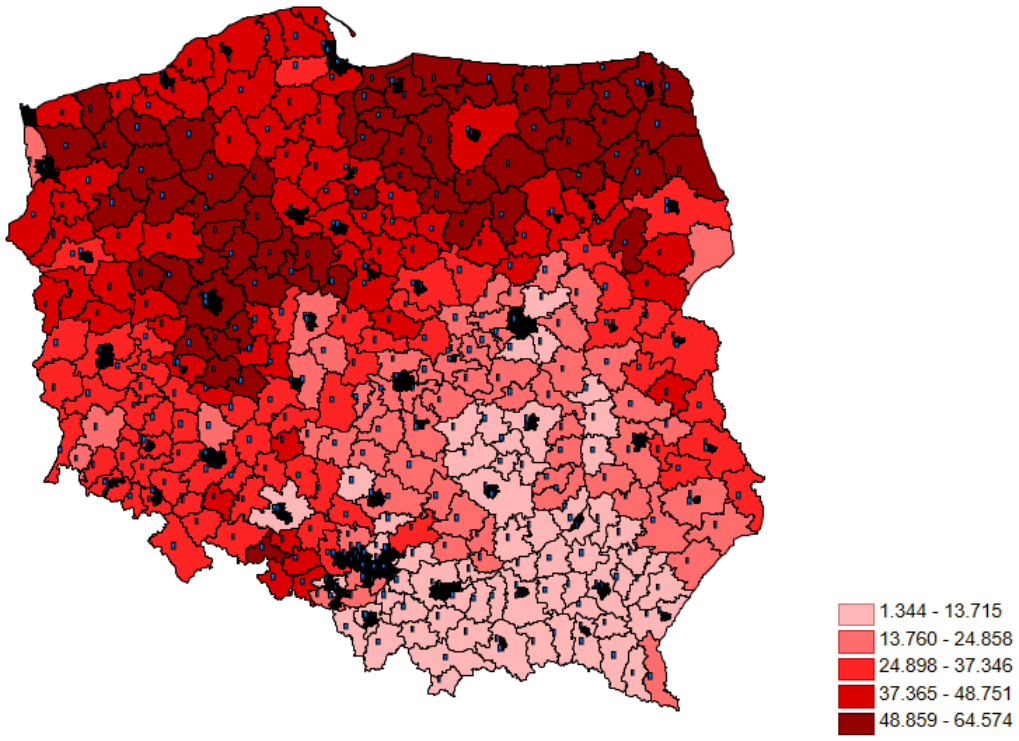

Figure 4. Percentage of farms larger than 10 ha of agricultural land at district level. Source: own calculations based on www.bdl.stat.gov.pl (accessed on 1 August 2023).

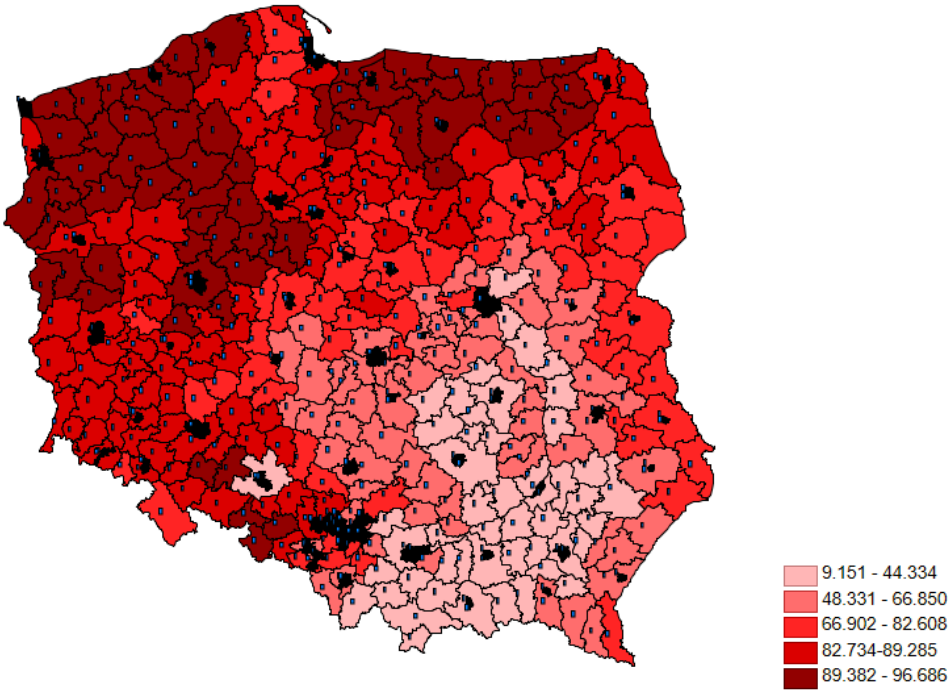

Figure 5. Share of agricultural land held by farms larger than 10 ha (total area of agricultural land = 100). Source: own calculations based on www.bdl.stat.gov.pl (accessed on 1 August 2023).

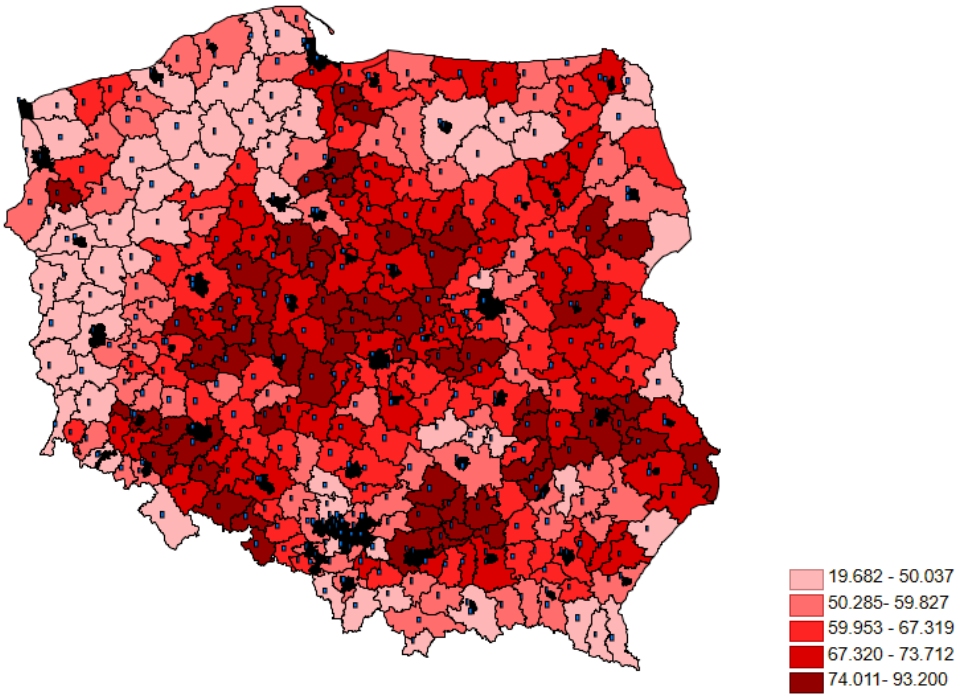

Figure 6. Share of agricultural land in districts (total area = 100). Source: own calculations based on www.bdl.stat.gov.pl (accessed on 1 August 2023).

The process was split into the following stages [41]:

1. Selecting the simple characteristics for the phenomena considered;
2. Normalizing the values of simple characteristics;
3. Determining the values of synthetic characteristics;
4. Determining Hellwig's synthetic development metric.

The simple characteristics (Table 1) were selected based on the following relevant and statistical criteria:

- The availability of statistical data at the district level;
- A high relevance;
- A low correlation with other characteristics of the same phenomenon.

Table 1. Simple characteristics are used in structuring the synthetic characteristic based on Hellwig's method.

Simple Characteristic	Type (Effect) of Characteristics	Data Source
Gross average monthly wage (PLN/month per capita)	stimulating	https://bdl.stat.gov.pl/BDL/start (accesed on 1 August2023)
Share of registered employees remaining out of work for longer than 1 year in the working-age population (%)	inhibiting	https://bdl.stat.gov.pl/BDL/start (accesed on 1 August 2023)
Economic operators per 1000 working-age population	stimulating	https://bdl.stat.gov.pl/BDL/start (accesed on 1 August 2023)

Source: own compilation.

The normalization procedure consisted of converting the values of each characteristic to ensure comparability by rescaling them and unifying their orders of magnitude. The following formulas were used for that purpose [41]:

For stimulants:

$$Z_{ji} = \frac{x_{ij} - {}_i min\{x_{ij}\}}{{}_i max\{x_{ij}\} - {}_i min\{x_{ij}\}} \quad (1)$$

For destimulant:

$$Z_{ji} = \frac{{}_i max\{x_{ij}\} - x_{ij}}{{}_i max\{x_{ij}\} - {}_i min\{x_{ij}\}} \quad (2)$$

where: x_{ij} (i = 1, 2, . . ., n; j = 1, 2, . . . m) is the value of the simple characteristic j in the district i.

The synthetic characteristics of different phenomena were determined using the ideal solution method which consisted of calculating the distance of an individual unit from the ideal solution. The distance was calculated as follows, based on the normalized values of characteristics under consideration:

$$q\_i\hat{}((2)) = \sqrt{\frac{\sum_{j=1}^{m}\left(z_{ij} - z_{0j}\right)^2}{m}} \quad (3)$$

where:

z_{0j} is the normalized value of the characteristic j of the ideal solution which is such that:

$$z_{0j} = \max\{z_{ij}\} \quad (4)$$

The Hellwig's synthetic development metrics were calculated as follows:

$$\widetilde{q}_i = 1 - \frac{q_i^{(2)}}{q_0} \quad (5)$$

where:

$$q_0 = \overline{q_0} + 2s_0;$$

$$\overline{q_0} = \frac{\sum_{i=1}^{n} q_i^{(2)}}{n}$$

$$s_0 = \sqrt{\frac{\sum_{i=1}^{n}\left(q_i^{(2)} - \overline{q_0}\right)}{n}}$$

It should be noted, however, that this study is only about the differences in agricultural entrepreneurship across the Polish territory in relation to district-level socioeconomic characteristics presented above. This means that account was not taken of characteristics such as the administrative burden, entrepreneur's age, or production lines because they are not spatial in nature and therefore do not fall within the scope of this study.

3. Results and Discussion

In Poland, rural areas and agricultural land account for 85% and 52% of the national territory, respectively. About 15 million people (i.e., nearly 38% of the country's population) are rural dwellers. Rural areas are home to about 1.4 million farms [42]. Further, Polish farmers are engaged in a wide variety of production activities. Poland has a large share of economically small farms, which is the reason behind the disparity in agricultural incomes. All of this makes farmers and rural residents seek new non-agricultural income streams that would allow them to develop their farms and improve the living conditions for their families. However, in addition to having access to capital, they need to adopt an entrepreneurial attitude in order to achieve this. Obviously, rural areas are also home to people not related to agriculture. Some of them invest their capital in developing production, service, or trading businesses, and thus boost rural entrepreneurship [42].

The literature on the subject [43–47] shows entrepreneurship as a complex, multidimensional phenomenon driven by multiple factors which are either social or economic in nature. In economic terms, entrepreneurship means characteristics relating to "the quality of human resources; organizational culture; access to knowledge and the capacity to expand it; creativity; innovativeness; and market orientation" [7]. Conversely, from the social perspective, entrepreneurship is determined by individual human characteristics, such as personality, education level, talent, intelligence, ability to absorb knowledge, etc. A comprehensive definition of entrepreneurship was presented in [48]. It uses economic activity as a reference and views entrepreneurship as both a process and an attitude. In terms of processes, it consists of "setting up and developing economic enterprises. From the perspective of entrepreneurship, the essence of this activity is to use the existing production capital to reap expected results in the future. While this involves risk and uncertainty, it allows to trigger initiative and create new attributes of entrepreneurship" [48].

As an attitude, it is equated with human characteristics and mostly relates to "the propensity to engage in new activities, and improve the existing components of the environment; and to an actively creative attitude towards the reality surrounding an individual" [7]. In turn, based on the analysis of the European Union's documents and reports, ref. [43] notes that the Regulations of the European Commission define entrepreneurship as "an individual's ability to turn ideas into action. It includes creativity, innovation, and risk-taking, as well as the ability to plan and manage projects in order to achieve objectives". In all definitions of entrepreneurship listed above, the human factor (capital) plays a major role as it is largely decisive for whether goals can be successfully achieved.

The analysis of the literature on the subject reveals a number of different approaches to entrepreneurship [49–51]. Today, more researchers emphasize that, because of its importance to socio-economic development, entrepreneurship has become a topic of interest to multiple fields of science [52,53]. According to [54], "agriculture plays an increasingly smaller role, and so do the benefits derived from agricultural production as the basic income stream for the rural population. Hence, the need arises for supplementing revenue with other activities". In turn, ref. [55] emphasizes that the Union programs implemented in rural areas are related to seeking alternative and additional income streams, including for farmers. He also pointed out that "entrepreneurship provides the ability to solve the economic problems facing many rural residents, and to properly manage rural labor resources". As [42,45] emphasized, entrepreneurial attitudes of the rural population are what drive

new rural investments which bring both social and economic benefits to farms, companies, or regions. Running a farm and undertaking additional economic activity in rural areas contributes to a better use of labor resources and to multipurpose rural development [56]. The goal of new rural jobs and rural restructuring is to counter the adverse demographic trends, including rural depopulation. The wide range of actions taken under the 2014–2020 RDP were supposed to support these efforts. Their objective was not only to stimulate rural entrepreneurship and improve the economic situation of farmers and entrepreneurs but also to deliver non-economic outcomes, such as changing the rural population's awareness or making them feel more actively adjusted to volatile market conditions.

Regarding Poland, the Report [57] states that entrepreneurship was a basic driver of the country's rapid economic growth, which continues even to this day despite the general economic slowdown. In that context, Wielkopolskie and Mazowieckie were found to be the most entrepreneurial regions.

Many researchers [58–60] emphasize the importance of promoting entrepreneurship among the rural population. Therefore, it is crucial to provide them with knowledge on instruments they can use in financing their economic projects, as it certainly is part of an entrepreneurial mindset. The 2014–2020 RDP documentation also states that "how well individuals know the structural aid toolset, and whether they have hands-on knowledge of procedures for allocating funds is an entirely new factor affecting the development of rural entrepreneurship" [61,62]. Support for rural entrepreneurship development was offered in a number of programs, including the 2007–2013 RDP. Continued efforts in that area are also reflected in the financial perspective of the 2014–2020 RDP and in the Strategic Plan for the 2023–2027 RDP [63]. The funds allocated to the development of rural entrepreneurship are provided under dedicated financing programs, in accordance with the assumptions of the Partnership Agreement.

The 2014–2020 Rural Development Program (2014–2020 RDP) was designed and incorporated into the general system of national development policies under the Partnership Agreement. The provisions thereof include the strategy for using the allocated Union funds in implementing EU-wide goals defined in the Union's growth strategy "Europe 2020: A strategy for smart, sustainable and inclusive growth" [62]. The key goal of the 2014–2020 RDP perspective was to make agriculture more competitive, ensure sustainable management of natural resources, take climate protection measures, and promote sustainable territorial development of rural areas [22].

Aid offered in this perspective was related to instruments focused on the development of farms, non-agricultural activities, and entrepreneurship, inter alia. The purpose of the measure "Bonuses for setting up a non-agricultural economic activity" was to stimulate rural and agricultural entrepreneurship. It consisted of the following sub-measures:

1. Business start-up aid for young farmers (bonuses for young farmers);
2. Business start-up aid for non-agricultural activities in rural areas (bonuses for the setting up of a non-agricultural activity);
3. Business start-up aid for the development of small farms (restructuring of small farms;
4. Enterprise development: development of agricultural services;
5. Payments for farmers eligible for support under the system for small farms (Payments for farmers handing over small farms).

The analysis carried out in this paper focuses on the sub-measure "Bonuses for the setting up of a non-agricultural activity" primarily designed to drive the development of non-agricultural activities among the population of farmers. The applicants could access Union funds to finance the following, without limitation:

- The purchase or upgrade of buildings;
- The purchase, including installation, of new machinery and equipment, including computer hardware and software.

The beneficiaries could be farmers or their family members. A bonus of up to PLN 100,000 could be granted for the setting up of a non-agricultural activity [22].

The essential characteristic of European Union aid funds is that they are used on a voluntary basis and, in the case of the second pillar, pursue specific individual and social goals. This means that aid programs must be formulated to ensure at least a basic degree of convergence between the beneficiary's private interest and general social needs. It can be assumed that the reason for accessing aid funds is the intent to attain a specific microeconomic goal which, in turn, depends on a series of endogenous and exogenous factors. This is especially true if the beneficiaries are economic operators (including farmers). In the case of farmers, endogenous factors primarily include farm size and direct production, whereas the parameters of their economic, institutional, and natural environment are the key exogenous aspects. The above also applies to using support for agricultural entrepreneurship. In this case, the key characteristic is that aid measures are targeted at the setting up or development of a non-agricultural activity, as a consequence of which at least some family members will shift away from farming.

Based on these considerations, it may be reasonably expected that geographic differences in the phenomenon covered by the study (i.e., the intensity of using support for the development of agricultural entrepreneurship) will depend on such characteristics of territorial units (in this case districts) as agrarian structure, socioeconomic development level, and land use pattern.

Source: own calculations based on unpublished data of the Agency for Restructuring and Modernization of Agriculture.

The number of payments disbursed per hectare of agricultural land at the district level under the sub-measure "Bonuses for the setting up of a non-agricultural activity" was used as the metric of interest in using aid funds for the development of non-agricultural economic activities (Figure 1). Figure 1 shows that the highest levels were recorded in southeast Poland and the smallest in the northwest and southwest parts of the country. The districts where the payments exceed PLN 156 per ha of agricultural land are mostly located in the Mazowieckie, Lubelskie, Podkarpackie, and Małopolskie voivodeships, and some of them can be found in the Łódzkie voivodeship. In turn, the lowest use of entrepreneurship development support was witnessed in the Dolnośląskie, Lubuskie, and Zachodniopomorskie voivodeships, and in a part of the Kujawsko-Pomorskie voivodeship. Slightly different findings were presented by [64,65] who indicated that the distribution of aid funds was highly uneven across the country. In 2007–2013, farm support was mainly concentrated in the western part of Poland whereas entrepreneurship development funds were mostly accessed in the north and in a few eastern districts. Note, however, that in 2007–2013, entrepreneurship development was supported under two measures: "Diversification into non-agricultural activities" and "Setting up and development of micro-enterprises". The latter was dedicated to rural operators other than agricultural holdings. This is a likely reason why the intensity of using entrepreneurship development funds across the country differed between 2007–2013 and 2014–2020.

The economic condition of districts was described with a synthetic characteristic because of how complex this phenomenon is (Figure 2). In regard to this parameter, note that the highest development levels were recorded in the territorial units located in the western part of the country (Zachodniopomorskie, Lubuskie, Wielkopolskie, Dolnośląskie, and Śląskie voivodeships). Conversely, eastern Poland districts were at the lowest levels. Additionally, districts surrounding the biggest cities, such as the capital city of Warsaw (located in central-eastern Poland), also proved to be highly developed. Similar conclusions were presented by [66] who indicated that the highest development levels can be found in western and central Poland.

The share of own incomes in total incomes, just like the synthetic characteristic "Economy", shows the wealth level of territorial units (Figure 3). More prosperous communes, i.e., those with a greater share of their own incomes in their budgets, are located in the western part of the country and around bigger cities. In turn, the ones located in southeast Poland find themselves in the least favorable situation.

The particularity of Polish agriculture is that the agrarian structure is highly fragmented and is different in a particular part of the country. This is the aftermath of historical events, namely the Polish regions being incorporated into three partitioning states in the 19th century. In this analysis, the percentage of farms larger than 10 ha (Figure 4) and the share of land held by them (Figure 5) were used as a metric of heterogeneity of the agrarian structure in each district. The threshold was set at that level because it is close to the national average farm area [67]. The smallest share of large farms and land used by them can be found in southeast Poland (the Podkarpackie, Lubelskie, Małopolskie, and Świętokrzyskie voivodeships). In the 19th century, they were part of the Russian and Austro-Hungarian Empires. Conversely, the west and northeast parts of the country have the most dense structure. Most of these territories formed part of the former Prussian Partition or were incorporated into Poland after 1945. Especially in the latter (referred to as Recovered Territories, located in the western and northern parts of the country), large state-owned farms played an important role in the economic system in the era of real socialism (1944–1990). Following the economic transformation, they served as a basis for the setting up of private holdings which also operated on relatively large areas of land [68–70].

The share of agricultural area in the total area of a district is a metric of the territory's natural attractiveness to agricultural production. It can be assumed that land particularly suitable for farming was historically transformed into agricultural land and continues to be used as such to this day. The greatest share of agricultural land can be found in districts of central Poland and in the southern part of the country, except for southern borderland districts (Figure 6). Conversely, the lowest levels were recorded in the northwest part of the country and in districts that share a border with the Czech Republic and Slovakia. Regarding the former, it results from a considerable share of land under forests which, in turn, is the consequence of it being relatively unsuitable for agricultural use. When it comes to the southernmost districts, they are largely located in mountains and foothills. In this context, note that the geographic distribution of agricultural land differs from that of the percentage of large farms. This shows that the historical processes that formed the agrarian structure are not necessarily convergent with natural processes.

Following the analysis of geographical differences in the phenomena concerned, the next step of this study was to indicate the strength of the relationship between using support for the development of non-agricultural activities (measured with payments disbursed under the sub-measure "Bonuses for the setting up of a non-agricultural activity" per hectare of agricultural land at district level) and the economic, natural and structural characteristics of the territories covered. The Pearson correlation coefficient was used as the metric. Obviously, it has to be assumed that the activity in accessing entrepreneurial funds depends on the characteristics of a territory and not the other way around.

First of all, note that the relative amount of support is independent of the districts' level of economic development (Table 2). It is correlated neither with the synthetic characteristic "Economy" (−0.17) nor with the share of own incomes in total incomes (−0.38). This is all the more puzzling since the 2014–2020 RDP measure under consideration is indeed focused on non-agricultural activities, and thus a wealthy population should be a stimulating factor (because of the potentially greater demand for goods and services offered by entrepreneurs who shift away from farming). Nevertheless, the scale of operations of businesses established through the disbursement of RDP funds is so small that the impact of local wealth could actually be of no importance to their functioning.

Likewise, no relationship exists between natural attractiveness (measured with the share of agricultural land in the district's total area) and the use of EU funds allocated to the development of agricultural entrepreneurship (a Pearson correlation coefficient of 0.09). This, however, is understandable given that there is no substantive relationship between the non-agricultural nature of activities financed under the RDP measure under consideration and natural conditions. The fact that funds disbursed under the measure "Bonuses for the setting up of a non-agricultural activity" could also be used in developing agritourism farms, which should be located in areas with outstanding natural features,

does not alter the above conclusion. However, a study [70,71] found that while the existing agritourism farms are indeed located in naturally and culturally attractive areas, businesses established through the disbursement of public funds take less account of these aspects.

Table 2. Correlations between the use of funds under the measure "Bonuses for the setting up of a non-agricultural activity" and selected socioeconomic characteristics of Polish districts.

Variable	"Economy", a Synthetic Characteristic	Share of Own Incomes in Total Incomes at Commune Level	Share of Agricultural Land in the Area of the Commune	Percentage of Farms Larger than 10 ha	Share of Agricultural Land Held by Farms Larger than 10 ha
Payments under the sub-measure "Bonuses for the setting up of a non-agricultural activity" (PLN per hectare of agricultural land)	−0.17	−0.38	0.09	−0.52	−0.63

Source: own calculations based on www.bdl.stat.gov.pl. (accessed on 01 August 2023) and unpublished data of the Agency for Restructuring and Modernization of Agriculture.

The analysis of correlation provides grounds for concluding that the agrarian structure is the only characteristic that demonstrates a strong relationship with the use of Union funds for the development of agricultural entrepreneurship. The Pearson coefficients for the share of farms larger than 10 ha and for the share of land held by them are −0.52 and −0.63, respectively. A negative correlation means that farmers from districts with a fragmented agrarian structure show greater interest in engaging in non-agricultural activity. Figures 1, 5 and 6 suggest that the above is especially true for southeast Poland. Note also that these are territories at relatively low levels of economic development (Figures 3 and 4). The important impact of structural factors on using aid instruments allocated under the second pillar of the CAP is all the more justified and understandable since the beneficiaries are farms, and the farmers' decisions are driven by their microeconomic interests. As shown by previous Polish case studies, a strong positive correlation exists between the share of farms larger than 10 ha and the level of activity in accessing investment support funds under the 2014–2020 RDP [27].

The negative relationship between the local agrarian structure and the use of support funds for agricultural entrepreneurship is also understandable because small farms are the ones affected by hidden unemployment [20,70,71]. This means that while some members of a farming family do not have any practical thing to do on the farm, they are not registered as unemployed because of being farmers. However, most importantly, small farm incomes are not enough to make a living for all family members. Under these circumstances, seeking non-agricultural income streams becomes a logical alternative, but the lack of capital often becomes a barrier for individuals to start their own businesses. As the support offered under the RDP is non-repayable, it may reduce, if not remove, that barrier. Certainly, the above also poses a threat because beneficiaries provided with "free" financing may become less prudent in assessing the economic viability of their projects. This, in turn, may result in making wrong investment decisions in some cases.

The analysis of correlation was followed by developing a simple linear regression model. The rationale behind this approach is that the "Economy" (the synthetic characteristic), the "Share of own incomes in total incomes at commune level", and the "Share of agricultural land in the area of the commune" were not correlated with the independent characteristic named "Payments under the sub-measure Bonuses for the setting up of a non-agricultural activity". Conversely, the "Percentage of farms larger than 10 ha" and the "Share of agricultural land held by farms larger than 10 ha" were strongly correlated with one another (with a correlation coefficient of 0.9).

Ultimately, the model was formulated as follows:

$$Y = -9.712 \times x + 1215.144 \pm 332.72$$

$$(0.87122)\ (63.41251)$$

where:

Y—Payments under the sub-measure "Bonuses for the setting up of a non-agricultural activity (PLN per hectare of agricultural land)".

x—Share of agricultural land held by farms larger than 10 ha.

The numbers in brackets are estimation errors for the variable x and for the intercept.

The coefficient of determination (R^2) for the model is 0.28483. This means that spatial factors can explain almost 30 percent of the intensity of using funds allocated to the development of agricultural entrepreneurship. As mentioned above, while other variables, such as the entrepreneur's age or production lines of the business were not covered by this study because of not having a spatial nature, they can nevertheless have an impact on the phenomenon under consideration. This, however, is without prejudice to the conclusion that the agrarian structure (and specifically the degree of farm fragmentation) has an effect on the use of entrepreneurship development funds.

4. Conclusions

This study found that the decisions on co-financing the measures focused on non-agricultural economic activity heavily depended on the agrarian structure. The most intense use of funds disbursed under the measure "Bonuses for the setting up of a non-agricultural activity" was witnessed in southeast Poland, a region that also demonstrated the most fragmented agrarian structure. This study also found that no relationships existed with other characteristics of territorial units (districts) covered by it. This is true both for natural conditions of agriculture (illustrated as the share of agricultural land in a total area of a district) and for socioeconomic aspects (presented through the synthetic characteristic "Economy" and the share of the communes' own incomes). Especially, the latter aspect shows that agriculture pursues its own development path which is independent of the general economic condition and local finance.

While this study was focused on showing the geographical differences in the phenomena concerned, it can be reasonably expected that the beneficiaries' decisions were based on case-by-case calculations mostly underpinned by microeconomic factors. In this context, the strong relationship between the agrarian structure and the intensity of using the sub-measure "Bonuses for the setting up of a non-agricultural activity" seems understandable from the perspective of the individual rationality of each beneficiary. Under the existing economic conditions, small farms (especially ones that manufacture conventional mass products and compete with large operators) fail to provide enough income to make a living for their owners and family members. One way to solve this problem is through entrepreneurship, which in this case means engaging in a non-agricultural economic activity. From that perspective, the sub-measure concerned proved to be at least partly effective as it allowed the members of small farming families to diversify their income streams. Obviously, it remains an open question whether the enterprises and jobs they created are sustainable, and if these businesses adequately address the demand for goods and services they offer. Answering it will require further research efforts which, however, may only be undertaken upon completion of the support program concerned. Nevertheless, based on what this study found, it may now be recommended that agricultural and regional policymakers should promote entrepreneurship among members of farming families. This includes both an entrepreneurial attitude and the ability to manage a business in its technological, economic, financial, and marketing dimensions. The above is all the more important since nearly all farmers and their family members reside in rural areas where it is usually more difficult to find a job than in a city. Therefore, running their own business could be the only reasonable alternative to not having any income-generating role on a small farm.

What this study also shows is that measures taken to promote rural entrepreneurship should be particularly intense in regions with a fragmented agrarian structure where issues related to setting up a non-agricultural economic activity are of particular importance from the social point of view. Obviously, the selection of appropriate support and promotion instruments can be left open. However, education and career counseling, the implementation of the lifelong learning concept, and tax reliefs for new enterprises set up by farmers could play an important role.

Author Contributions: Conceptualization, M.M.W.-Z. and A.S.; methodology, M.M.W.-Z. and A.S.; software, M.M.W.-Z.; validation, M.M.W.-Z. and A.S.; formal analysis, M.M.W.-Z. and A.S.; investigation, M.M.W.-Z. and A.S.; resources M.M.W.-Z.; data curation, A.S.; writing—original draft preparation, M.M.W.-Z. and A.S.; writing—review and editing, M.M.W.-Z. and A.S.; visualization, M.M.W.-Z.; supervision, A.S.; project administration, A.S.; funding acquisition, M.M.W.-Z. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: Not applicable.

Data Availability Statement: Data available in a publicly accessible repository that does not issue DOIs Publicly available datasets were analyzed in this study. This data can be found here: [www.bdl.stat.gov.pl].

Conflicts of Interest: The authors declare no conflict of interest.

Abbreviations

2014–2020 RDP: 2014–2020 Rural Development Program, SP for the 2023–2027 CAP: 2023–2027 Strategic Plan for the Common Agricultural Policy; PLN: Polish zloty; ARiMR: Agency for Restructuring and Modernization of Agriculture; GUS BDL: Central Statistical Office, Local Data Bank.

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