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Small Farms in Italy: What Is Their Impact on the Sustainability of Rural Areas?

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Abstract: Small farms are gaining space and importance within the agricultural policies implemented by the European Union, mainly for the role that they play for the preservation of the territory and for the economic development of local rural areas. Small farms represent a new opportunity to guarantee the permanence of populations and agricultural workers in rural areas, contributing to the formation of the income of farming families. Therefore, in this study, after identifying small farms as those farms that have a Standard Output (SO) of less than EUR 25,000, their structural characteristics were defined, as well as their economic and financial situation. The analysis was performed using the Italian FADN data for the years 2018–2020 and using a set of structural and economic–financial indicators. Furthermore, the study analyzes the relationship between farm performance and agricultural resources and also with farmer demographics and farm size. The principal Component analysis was used to reduce the number of variables used in the Ordinary Least Square (OLS) regression model which was applied to identify the factors contributing to the small farms' profitability. The territorial distribution of small farms shows a polarization: 37% of them are in Southern Italy, and more than 34% of them are in Northern Italy. The analysis also reveals that about 67% of the Italian small farms are specialized, in particular, in arable land (37.6%) and herbivores (16.8%). They are mainly conducted by men with a high school education level and with an age that is between 40 and 65 years. The economic results also show a good performance, however, there is a wide district differentiation: while the Northern regions have the best results in terms of farm net income, those of Southern Italy are more dependent on the public support they receive. The results of the multiple linear regression analysis revealed which variables (e.g., land size, labor, public aid, etc.) had a direct relationship with the profitability of small farms. The research provides interesting insights to stakeholders on the public support (specific measures) that needs to be designed and implemented to favor the survival of small farms in rural areas.

Keywords: small farms; sustainability; FADN; OLS regression models; principal component a nalysis (PCA)

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1. Introduction

The agricultural systems in Europe face economic, ecological and social challenges that raise concerns about their resilience to shock and stress [1]. In recent years, resilience has been the subject of political debates on the financial future of the European Union in the programming period and also for agriculture: it is in fact included as one of the main objectives of the next aid program. However, despite the growing popularity, the concept of resilience is still highly abstract and multifaceted, and it is characterized by a great variety of interpretations [2]. Resilience is a concept that is widely used in many scientific disciplines, ranging from physics to ecology to psychology. Regardless of the discipline, it refers to the ability of individuals or socio-ecological systems to recover from a disorder of any kind and maintain its original function [3]. From a socio-ecological perspective, the notion of resilience has integrated the notion of sustainability [4], which has been fundamental in the study and evaluation of various domains of human activity. While sustainability

is primarily a matter of public good with a concern for the well-being of future generations, resilience is more focused on the ability of a current system and/or individual actors to adapt to ongoing changes and accommodate various stresses and shocks, internal and external [5]. It is worth emphasizing that, in Italy, the number of small farms is substantial, and they play a strategic role in the defense of the environment, the protection of the territory, quality production, in maintaining employment levels in rural areas and in allowing small producers to survive in difficult conditions [6]. In the past, small farms were seen as an obstacle to rural growth as they were believed to have low productivity efficiency with weak integration in the markets, resulting in an insufficient family income. In recent years, however, the role played by small farms in the development of rural areas and the entire economy of a region has been re-evaluated, and the Common Agricultural Policy (CAP) has also paid particular attention to small farms. This is also due to a changed vision on the development of the agricultural sector, which from the promotion of industrial agriculture has been more oriented towards more sustainable agriculture, which considers the three areas of sustainability: (1) economic, which is correlated to the production factors: land, labor and capital and the income of agricultural producers; (2) social, which determines the quality of life in rural areas; (3) environmental, which aims to safeguard natural resources.

The future and survival of small farms have long been the subject of analysis in the scientific literature on agricultural economics, and in this context, there are many authors who agree on the fact that, in the long term, they would disappear. Despite this dire forecast, small farms continue to dominate agriculture in developing and transition countries. In the EU, they continue to play an important role [7–10]. This is evident following the enlargement of the European Union to the east. As a result of these, their presence and contributions cannot be ignored.

In particular, the design of the Common Agricultural Policy (CAP) of the European Union has ignored small farms from the beginning as they are perceived to be an obstacle to the modernization of agriculture. This has led to a structural change in small farms. That is, they are forced to merge and/or to leave the sector. This has contributed to a delay in the conceptual definition of small farms. However, the growing public opinion and awareness of the importance of safeguarding and conserving the natural environment has led European public decision makers to review their positions on small farms. Consequently, an attempt has been made to define the role and the function that are performed by small farms in agriculture at the European level [11].

Over the years, the CAP reforms have, in fact, questioned the traditional role of the agricultural sector, proposing new development prospects in the context of a dynamic economy which are aimed at globalization. However, starting especially from 2014, the CAP has begun to pay particular attention to small farms which play a strategic role with respect to the objectives set by the European Agricultural Policy, which is increasingly committed to the defense of the environment and the protection of the territory, quality production and in maintaining employment levels in rural areas [12]. In particular, within the Rural Development Plans (RDP) from 2014–2020, developed by the Italian Regions, six aims were created to encourage the development of the various rural areas by strengthening the economic fabric of agricultural activities, supporting new professional young farmers, promoting the growth of small agricultural businesses and diversifying the rural activities. Therefore, this measure aims to support the development and improve the competitive capacity, also, of small-sized farms, which particularly characterize the economic/productive fabric of Italy, and which in addition to the typical challenges of small agricultural enterprises of a family nature, must face specific problems affecting rural areas.

There is no universally accepted definition of a small farm in the literature [13]. The agricultural dimension can be assessed using the structural dimensions of the farm, the economic dimension, the workforce and the farm's market participation (for example, the inputs purchased and/or the sale of their products), etc. [14], although the most common criterion used for this purpose is the farmland area. Small farms are usually defined using thresholds on these different farm size indicators [13,15]. Considering the structural

size, small farms are defined by EUROSTAT and the Food and Agriculture Organization (FAO) as those with an agricultural land that measures less than 5 ha [7], and this threshold has been used in several publications (for example, [16–18]). However, the definition of the threshold is strongly influenced by the geographical context of the analysis since the distribution of farm sizes is very heterogeneous across regions and countries (for example, [15,19]). Nevertheless, as evidenced by Guiomar et al. (2018) [9], while the definitions that refer only to the criterion of farm size have a universal appeal as they are easy to apply, they fail to capture all the complexities of agricultural systems [20]. In general, small farms are associated with low-income farm groups, which produce mainly for their own consumption and are not economically sustainable. Often, therefore, they are accompanied by the presence of subsistence or semi-subsistence agriculture which is characterized by the presence of farmers who do not produce for the market, but for themselves. However, the heterogeneity and complexity of farms make this comparison a very difficult and demanding task. Therefore, to facilitate the comparison between the different criteria used for the definition of small-sized farm, in this work, it was preferred to use that of Standard Output (SO) which, in a certain sense, expresses the potential income produced by the farm itself, as well as its ability to innovate in order to favor its own development. As the same cut-off threshold for small farms has been applied in various scientific studies (e.g., [6,20–31]), all those with a standard output of up to EUR 25,000 were therefore considered to be small farms.

While small farms make an important contribution to the agricultural sector and the food system, their potential may not be used optimally, so the overall goal is to help document and better understand the role they play in the Italian agricultural and food system. This work aims to identify the microeconomic factors (variables that describe a farm), institutional factors (integration of the farm with the market) and factors related to agricultural policy (income share/support) which affect the resilience of small farms. They will be used in a multiple regression model to verify the strength, direction and significance of their impacts on corporate net income. At the same time, as small farms are beneficiaries of public support under the CAP, a comparative analysis of the impact of the level of support, in relation to agricultural income, on resilience is really valuable. The information necessary to carry out the aforementioned analysis was obtained from the database of the Farm Accountancy Data Network (FADN), an annual survey on the economic performance of farms, which was realized at European level. Furthermore, the problems of resilience must be addressed with particular attention given to the regional context in which the agricultural systems operate. Therefore, the small farms, the farmers' organizations, the service providers and the actors in the supply chain were integrated into the environments and in the local functions of agriculture [1], and we proceeded with the evaluation of the differences existing in the various Italian geographic districts.

This paper is structured as follows. Section 2 describes the source of the data and the methods used for the analysis, the Ordinary Least Square (OLS) regression model and principal component analysis (PCA). Section 3 describes the results obtained in terms of the structural and socio-economic aspects and those of the econometric analysis that was performed. Discussions are made in Section 4, and the main conclusions are summarized in the final section.

2. Materials and Methods

2.1. The Database Used

The information used for the analysis that is proposed here was taken from the database of the Farm Accountancy Data Network (FADN) which, at present, represents the only source of data at the farm level on the structures, production, and economic results, as well as a range of information that goes beyond the primary production.

The FADN database is the only harmonized archive of data on agricultural holdings, which covers the entire EU, and thus, allows a comparative analysis to be conducted at the European level.

Established with EEC regulation no. 79/1965 and recently replaced by EU reg. no. 1652/2020, the FADN was created to meet the knowledge needs of the European Union regarding the economic operation of farms. It is a survey of an economic and accounting nature that was carried out on a sample of farms with the aim of collecting the information necessary to measure the evolution of the incomes of agricultural entrepreneurs and the functioning of farms in the EU, through a methodology that is common to all of the EU countries.

In Italy, the Council for Research in Agriculture and Agricultural Economic Analysis—CREA—is the official liaison agency between the Italian State and the European Commission, and it coordinates the collection and processing of farm accounting data.

The selection of the farms that make up the FADN sample starts from the accounting year 2003, and it was conducted on a random basis, i.e., the extraction of the farms from the reference universe was of an equi-probabilistic type, while the allocation of the farms of the sample between the different strata was such as to minimize the expected error at the regional level of some of the economic variables that were considered to be particularly relevant for the purposes of the survey, namely the Standard Output (SO), the Utilized Agricultural Area (UAA), the days of work and the Adult Livestock Units (ALU). This data collection method allows for the integration of technical-accounting information (collected by community obligation) with other information, with them being both of an accounting and non-accounting nature (such as, for example, those of an environmental and social nature).

The FADN field observation is made up of the farms that achieved a certain threshold of economic size (since 2014, which is set at EUR 8000 of SO), therefore, it excludes the smaller farms. The information base consists of the Agricultural Census, which has been updated through the Farm Structures Surveys (FSS).

In accordance with the EU guidelines, the stratification adopted in the sample design was carried out according to the three main dimensions: the geographical region, the economic size and the type of farming (ToF). Therefore, the strategy for defining the FADN sample, in addition to providing for the representation of the different types of production (ToF) and sizes present on the national territory, pursues various objectives:

- To establish coverage of the most significant part of the agricultural activity: at least 90% of the Standard Output (SO) of the FADN field of observation;
- To detect a sufficient number of farms to estimate the main national accounting aggregates with an appreciable level of statistical significance, or with a sampling error of no more than 3% at national level on strategic variables;
- To determine a sample size, to contain the survey costs, and at the same time, reduce the expected non-sampling error of the estimates and the extent of statistical harassment.

However, even if the FADN was created as a survey tool that was mainly oriented to the economic, financial and structural aspects of the farm, today, the objectives pursued by the FADN have diversified and expanded, by adding several information of non-accounting nature. The amount of information available therefore allows us to achieve new goals ranging from the monitoring of the evolution of agricultural incomes to the development, updating and evaluation of the EU and/or regional agricultural policies, as well as the environmental impact of the agricultural businesses.

In particular, the data used refer to the accounting years 2018–2020, and we focused only on farms that had an SO of between EUR 8000 and EUR 25,000. In this way, 6771 farms were extracted in the period that we considered, and Figure 1 shows their distribution at the regional level.

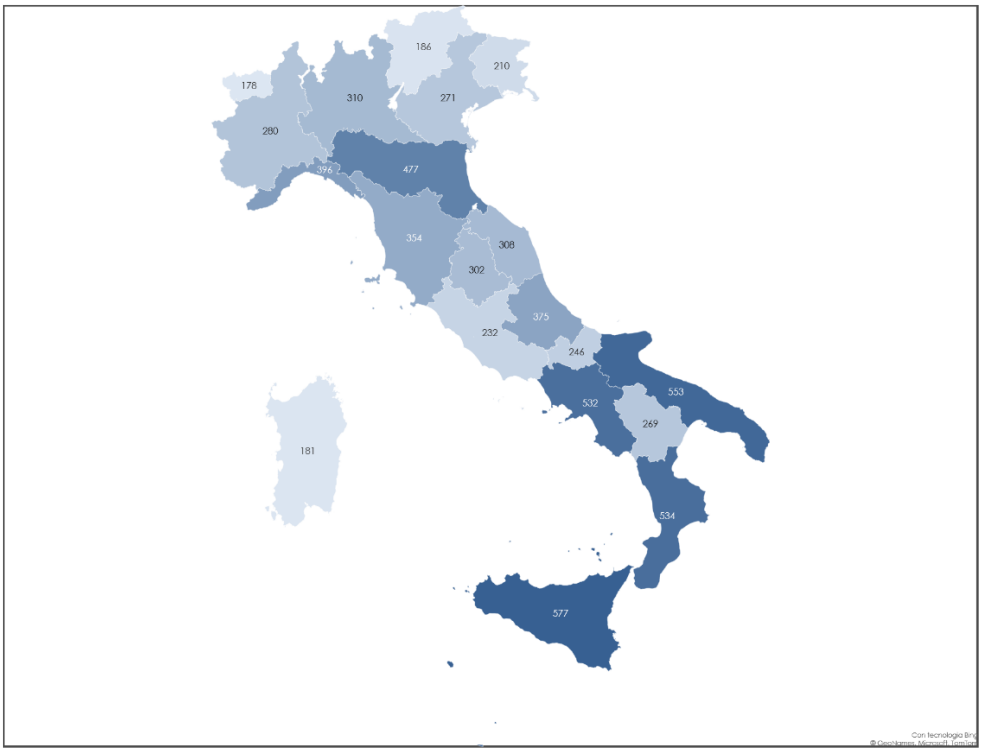

Figure 1. Distribution of number of small farms per region.

Furthermore, in this work, reference is made to the performance of the farms in their complexity, and it does not take into account the individual production processes.

The FADN variables taken into consideration were: the number of farms (it was decided that we should proceed with the analysis only for those groups that include at least 5 observations), the Utilized Agricultural Area (UAA), the share of UAA that is owned, the Irrigated Area (IA), the Adult Livestock Units (ALU), the Annual Working Units (ALU), the Family Working Units (FWU), as well as all the economic–financial variables useful for the survey, as will be seen later in this paper.

2.2. *Analysis*

Estimating the farms' performance requires an in-depth analysis of the economic results of the financial statements, which is crucial for defining the farm's net income and the other indices capable of estimating the degree of profitability and productivity achieved by the farms, that is, the ability of the income earned to remunerate all of the inputs involved in the production of goods and/or services within the farm. Therefore, the information deriving from the farm financial statements has been associated with a set of indicators that have made it possible to interpret both the economic and equity situations.

In this regard, a group of technical parameters was used to describe the farms' structure that represents the quantity of the various fixed factors that the farms have in the short term. They constitute the basic elements for the determination of the structural indices necessary to complete the description of the farm structure (see Table A1 in Appendix A). In addition, in order to take into account the results for the year, another group of indices was used that allow to complete the analysis of the structure of farms, with some economic considerations being given. They measured the profitability of the farms or the ability of the income to compensate for the resources that were invested. The results of the financial statements were then used for the calculation of economic indices which allowed us to express some evaluations about the remuneration capacity of the production factors used in each type of farm. Finally, the percentage incidence of the public subsidies on the formation of total farm revenues and farm net income was also analyzed (see Table A2 in Appendix A).

However, the objective of this research was to evaluate the variables that led to the adoption of a more sustainable agriculture in the period 2018–2020, favoring the survival of Italian small farms. To achieve the factors contributing to the small farms' profitability, an Ordinary Least Squares (OLS) regression model was used to determine the factors. In particular, in this study, the OLS models were implemented using the information contained in the Italian FADN database.

The multiple regression model was therefore used to analyze the relationship between the dependent variable (in our case farm net income) and the several independent (explanatory) variables listed in Table A3 in Appendix A. In other words, the regression model explains the dependent variable (Y) as a function of the explanatory variables (X). By translating everything into algebraic expressions to obtain the operational formulas for estimating the parameters, the relationship between the explanatory variables and the dependent variable can be written as:

$$Y = f(X1, X2, \ldots, Xn) + \varepsilon = f(X) + \varepsilon \quad (1)$$

where

Y = profitability (farm net income—FNI), which is the dependent variable, while the X1, . . . , Xn are the explanatory variables.

Assuming that there is a linear relationship, the previous equation becomes:

$$Yi = \beta 0 + \beta 1X1 + \beta 2X2 + \ldots + \beta nXn + \varepsilon i \quad (2)$$

where the parameters βi will have to be estimated. For this purpose, it is necessary to observe the explanatory variables and the dependent variable on a sample of n observations.

Specifically, β0 represents the intercept, β1 . . . βn indicate the slope (or angular) coefficients of the line, X1 . . . Xn are the independent variables (that is the factors contributing to sustainability of the small farms), and finally, εi represents the error.

On the error term and on the explanatory variables, in order to apply the ordinary least squares method, the following hypotheses are assumed:

E[ε_i] = 0 for any i, i.e., the expected value of the errors is zero for any xi value of X;

Var(ε_i) = σ^2 for any i (homoskedasticity), indicates that the errors have the same variance σ^2 for any value xi;

Cov(ε_i,ε_j) = 0 for $i \neq j$, implies that the errors εi and εj, corresponding to two different values xi and xj of X, respectively, are uncorrelated;

X is a deterministic variable; therefore, its values are assumed to be under the control of the researcher.

In this way, it is possible to estimate the parameters β1 and β2, that is the values of the parameters to which the line that best interpolates the data corresponds. The values obtained for β ^_1 and β ^_n therefore constitute the least squares estimates obtained for a particular sample.

While running the OLS model, the potential problems of heteroskedasticity, multicollinearity and endogeneity were taken into account. Therefore, the results obtained were subjected to validation and verification tests. In particular, to measure the heteroskedasticity, we used the White and Breuch–Pagan tests. To consider multicollinearity, the variance inflation factor (VIF) was calculated for each of the independent variables. Finally, to address the potential endogeneity, we used the RESET Ramsey test, which is a general specification test for the linear regression model. Finally, the distribution of the residues was also analyzed, and the appropriate tests were performed (Testuhat—residual normality). The results of the assumption test of multi-linearity (VIF value of the coefficients) on the model show that there is no correlation between the coefficients (multicollinearity does not occur). Furthermore, the hypothesis tests on heteroskedasticity show that the model is devoid of heteroskedasticity. The results of the assumption test on the residual model show that the residuals are not normally distributed. The software used to carry out the

OLS model is Gretl (Gnu Regression, Econometrics and Time-series Library), which is an open-source software.

However, since the FADN database contains several interconnected variables, we aimed to reduce their number by trying to lose as little information as possible. Therefore, before proceeding with the multiple regression analysis, we subjected our dataset to a principal component analysis (PCA). It is a multivariate statistical technique that create new uncorrelated variables that successively maximize the variance. In particular, the PCA method is a linear orthogonal transformation that transforms the original dataset into a compressed dataset of uncorrelated variables known as the principal components (PCs) which represent the important information of the primary dataset.

However, it must be reiterated that, for the purposes of this work, our attention was focused on the results of the regression model, while the principal component analysis was functional only for the sole purpose of reducing the number of variables that were to be used in the regression model. The software used to carry out the PCA is jamovi, which is an open-source statistical software built on top of the R statistical language.

The study areas are represented by the 5 geographical districts which group the 20 Italian regions. The results obtained are, therefore, represented by district, and in some cases, there was an in-depth study at the regional level. Table 1 shows the composition of the districts, while in Figure 2 the districts are represented on the map of Italy.

Table 1. Composition of Italian district by regions.

North-West	North-East	Center	South	Islands
Liguria	Alto Adige	Lazio	Abruzzo	Sardegna
Lombardia	Emilia Romagna	Marche	Basilicata	Sicilia
Piemonte	Friuli Venezia Giulia	Toscana	Calabria	
Valle D'Aosta	Trentino	Umbria	Campania	
	Veneto		Molise	
			Puglia	

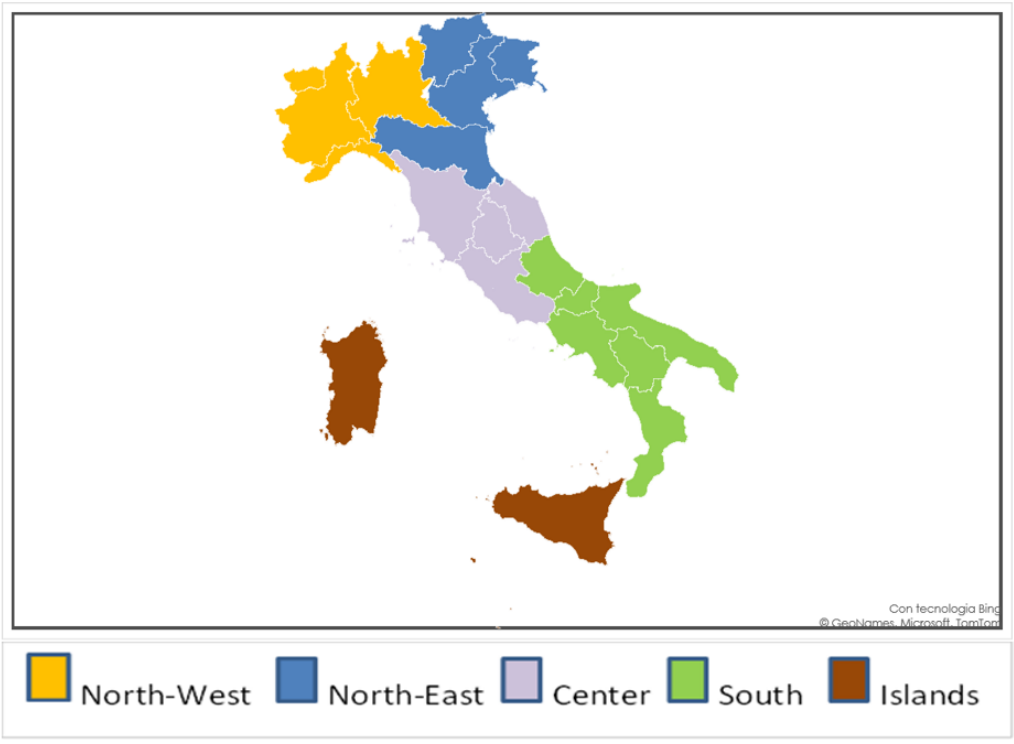

Figure 2. Representation of geographical Italian districts.

3. Results

The analysis methodology was used allowed to highlight both the structural and organizational aspects of the various small farms identified and the differences that characterize them in the various geographical areas.

3.1. The Structural Aspects

The data analysis shows that just over 37% of the small farms (equal to 27.3% of the entire FADN sample) are located in the southern part of Italy, while 34% are located in the north. In particular, 17.2% of them (i.e., 18.8% of the total FADN farms of the district) are located in the north-west district, while the north-east hosts 16.9% of the small agricultural holdings (the 15.5% of total FADN farms in the district). In the center, however, 17.7% of the small farms are located, representing 20% of the entire FADN sample. Finally, only 11.2% of the small farms are located on the islands, and they represent 21.1% of the total number of FADN farms located in the islands (Table 2).

Table 2. Distribution of small farms by district and values of the main structural variables.

District	Number of Farms	%	Average UAA (ha)	% of Owned UAA	% of Rented UAA	% of Irrigated UAA	Average Livestock Units
North-West	1164	17.2	5.1	41.1	39.7	44.5	6.8
North-East	1144	16.9	7.1	64.5	22.5	32.0	4.7
Center	1196	17.7	11.2	55.1	40.5	6.7	5.9
South	2509	37.1	9.5	63.8	27.3	11.0	7.0
Islands	758	11.2	12.3	54.6	21.9	16.1	8.9
Italy	6771	100.0	9.0	57.5	30.4	20.1	6.6

District	Power of machines (KW)	Degree of mechanization (KW/UAA)	Annual working units	Family working units	Labour intensity (AWU/UAA)	Family managment index (FWU/AWU)
North-West	95.5	44.6	1.0	1.0	0.6	1.0
North-East	120.0	27.9	0.8	0.8	0.3	1.0
Center	123.9	20.5	1.0	0.9	0.2	1.0
South	83.6	12.1	0.9	0.8	0.2	0.9
Islands	74.8	9.3	0.8	0.7	0.1	0.9
Italy	99	22	0.92	0.84	0.28	0.95

The analysis of the indices in Table 1 shows that the average percentage of UAA owned in the small farms of the FADN sample in Italy is approximately 57.5%. The lowest percentage (41.1%) is found in the north-west district, which has the highest percentage of rented UAA (39.7%), after the center (40.5%). Conversely, the highest percentage of UAA in ownership is recorded in the north-east district (64.5%). While the lowest percentage of UAA rented is in the islands (21.9%). The percentage of irrigated area is just over 20%. The highest percentages of irrigated areas are recorded in the northern area of the country, while the center represents the geographical area with the lowest percentage of irrigated UAA at just 6.7%.

The quantity of the performance of work is rather low, i.e., just under one work unit (0.92 AWU) is largely supplied directly by the tenant and/or his family (0.84 FWU). In fact, in almost all of the farms, the work is performed by the farming family; the incidence of family work on the total is over 0.90 in all of the districts. However, it must be borne in mind that the information relating to work collected by the FADN survey denounces, in the first place, the underemployment that occurs in the small farms, and this influences the surveys to lead to an estimate of the work available in place of the real needs of the crops. Therefore, it would be more appropriate to speak, in this case, about the availability of work, rather than employment.

The availability of UAA per work unit, which was measured by the intensity of the work, shows how, on average, the agricultural area for each work unit is equal to 0.28 hectares of UAA. In particular, the highest intensity of the labor factor is found in Northern Italy: 0.6 of it is in the north-west and 0.3 of it is in the north-east.

Finally, despite the small size of the farms, there is a discreet degree of mechanization. The regions in the center–north have an endowment of machines with an average power of around 96–120 Kw, while in the couth and in the islands, the average power of the machines is lower: 75–84 Kw. On the other hand, Northern Italy is characterized by having the highest levels of mechanization, in fact, on average, the degree of farm mechanization, expressed in terms of available power, is equal to 45 Kw per hectare in the north-west, while in the north-east, it is equal to 28 Kw/ha. On the other hand, the islands have the lowest average power available at just 9 Kw per hectare.

In terms of the type of farming in the small farms, it emerged that specialized farms represent about 67% of the farms belonging to the analyzed sample, and the most represented specialized systems have arable land (37.6%), which are followed by the farming of herbivores, representing 16.8% of the FADN sample.

Approximately 33% of the small farms have a mixed type of farming, and from the geographical distribution (Figure 3) shown, it can be seen that about 45.1% of the mixed farms are located in the center, which are followed by those in the north-east, where non-specialized small farms account for 44.8%, and then those from the islands, where there is 29.4% of the non-specialized small farms.

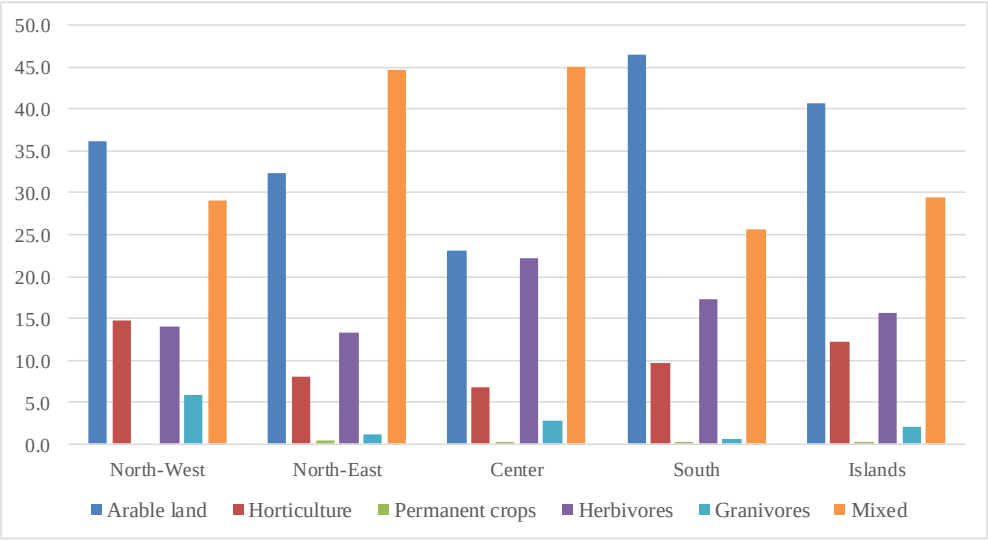

Figure 3. Percentage distribution of small farms by type of farming and district. Source: Our elaboration on FADN data, 2018–2020.

Table 3 presents the indices that measure the average investments made by the small farms. In particular, the degree of land intensity (Gif) shows how small farms invest on average just over EUR 25,000 per hectare in land improvements, with there being particularly high values in the north-east, where the average Gif is approximately EUR 56,000. The degree of operating intensity (Gie) shows a lower average value which is equal to just under EUR 13,000 of working capital that is employed on a hectare of the surface, and also, in this case, the highest values are recorded in the north. Once again, the lowest values of the index are shown in the south (EUR 6128) and in the islands (EUR 6391).

Table 3. Small farms investments by district.

District	Land Intensity (€/ha)	Operating Intensity (€/ha)	Farm Intensity (€/ha)	New Investiments (€/ha)
North-West	36,879	32,062	68,940	890
North-East	55,880	17,150	73,030	868
Center	18,358	8272	26,630	384
South	13,715	6128	19,843	110
Islands	11,143	6391	17,534	167
Italy	25,353	12,857	38,210	427

Naturally, the degree of farm intensity (Gia), being the average total investment per hectare (given by the sum of the two previous indices), reflects the trend seen for both the Gif and the Gie. It is, on average, equal to EUR 38,210 per hectare.

Instead, the trend of the investment index appears more interesting, which in fact represents a measure of the farms' dynamism as it estimates the value of new investments per hectare of area. The value assumed by the investment index is equal to EUR 427 per hectare. In particular, even though we are facing very low values, this index clearly highlights the strong gap that exists between the farms in Northern Italy and those in the rest of the country.

3.2. The Socio-Economic Aspects

The majority of the small farms selected (about 73%) are run by men while only the remaining ones are conducted by women. The north-east holds the largest percentage of farms headed by tenants who are men (78.6%), which is followed by the south which holds 72.5% of the companies headed by tenants who are men. On the other hand, the small farms run by women show a more uniform distribution, varying their percentage distribution between 27.5% in the south and 29.6% in north-west. Obviously, the north-east is an exception, where their percentage weight is equal to 21.4% (Figure 4).

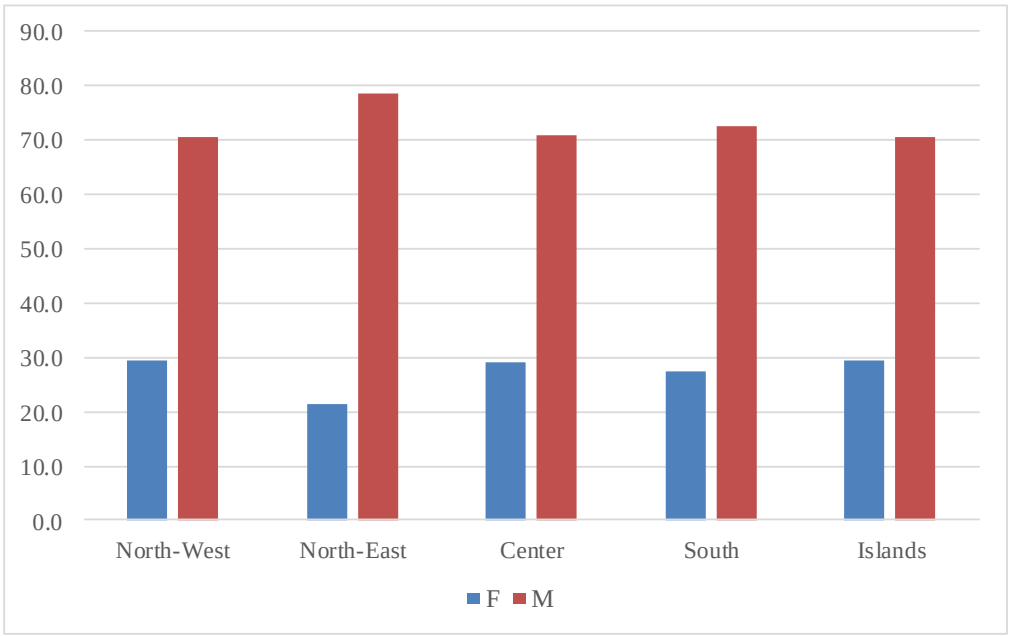

Figure 4. Percentage distribution of small farms by sex of tenants and by district. Source: Our elaboration on FADN data, 2018–2020.

In general, about half of the farmers (53%) are aged between 40 and 65 (Figure 5). Young tenants, i.e., under the age of 40, represent 16.8% of the heads of the small farms

located in the north-west, and 15.6% in the islands. Finally, about 35% of the tenants are over the age of 65, and they govern 48.8% and 43.6% of the small farms located in the north-east and in Central Italy.

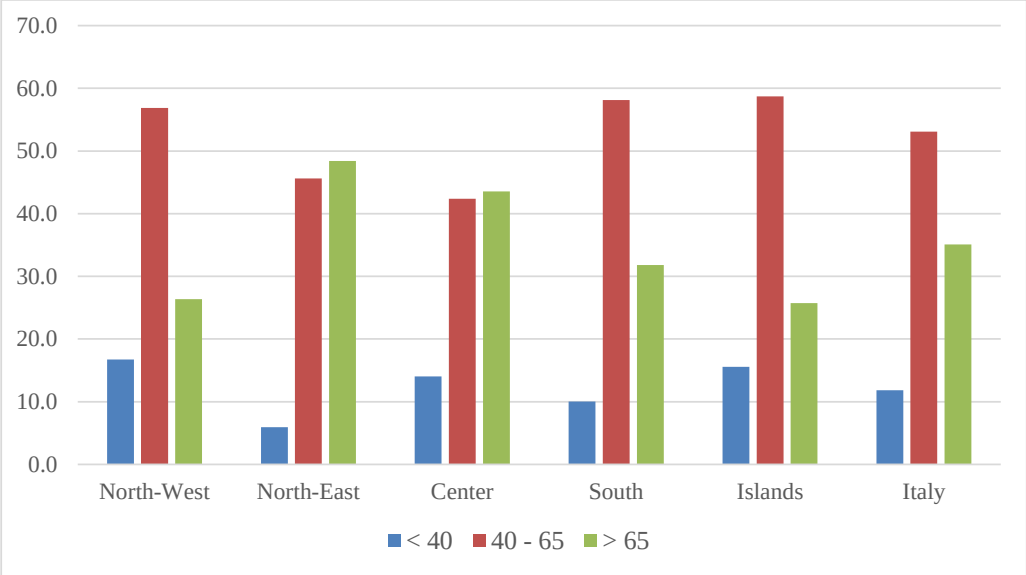

Figure 5. Percentage distribution of small farms by age group of tenants and by district. Source: Our elaboration on FADN data, 2018–2020.

In general, the level of education is low–medium, and in fact, only 8.6% of the entrepreneurs have a degree (and 0.1% post-graduate) as a qualification, which represent a concentrated density of 19% in the islands and 9.1% in the center and 8.4% in the south. On the other hand, about 73% of them have the middle school and/or high school diploma, and finally, those with only primary school education are equal to 15.8% of the total (Figure 6).

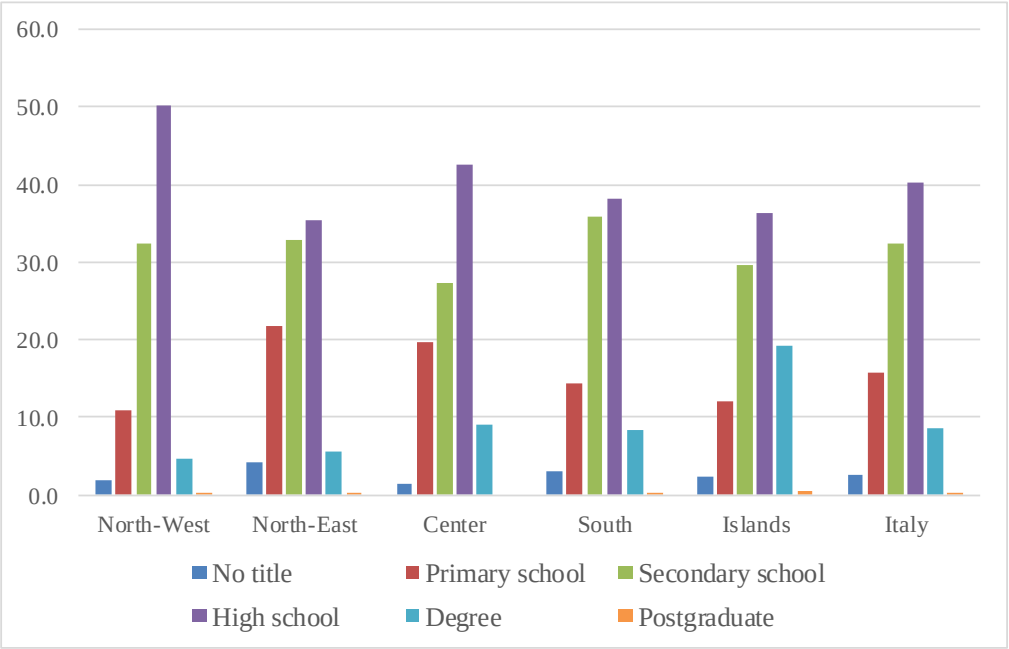

Figure 6. Percentage distribution of small farms by qualification of tenants and by district. Source: Our elaboration on FADN data, 2018–2020.

The graduated entrepreneurs present the disparities between men and women. In particular, the percentage of women tenants that are the heads of the small farms is always higher than that of the men tenants in each district, except for Southern Italy, where men tenants with degrees outnumber the women (37.9% vs. 30.4%).

The percentage distributions of the tenants of the small farms by qualification varies according to the age class. The highest percentages of graduate small farms tenants are found in the intermediate age class (40–65 years), while the tenants who have a high school diploma as a qualification represent the highest percentage in the under 40 age class.

The analysis of the economic indices of the small farms was conducted both by relating the performance of the small farms to the utilized agricultural area (UAA) (Figure 7), and by relating them to work employment (Figure 8). This analysis shows that, as it is logical to expect given the logic behind the reclassification of the income statement adopted by the FADN, their value tends to decrease as they flow between them (from the TFR to the FNI).

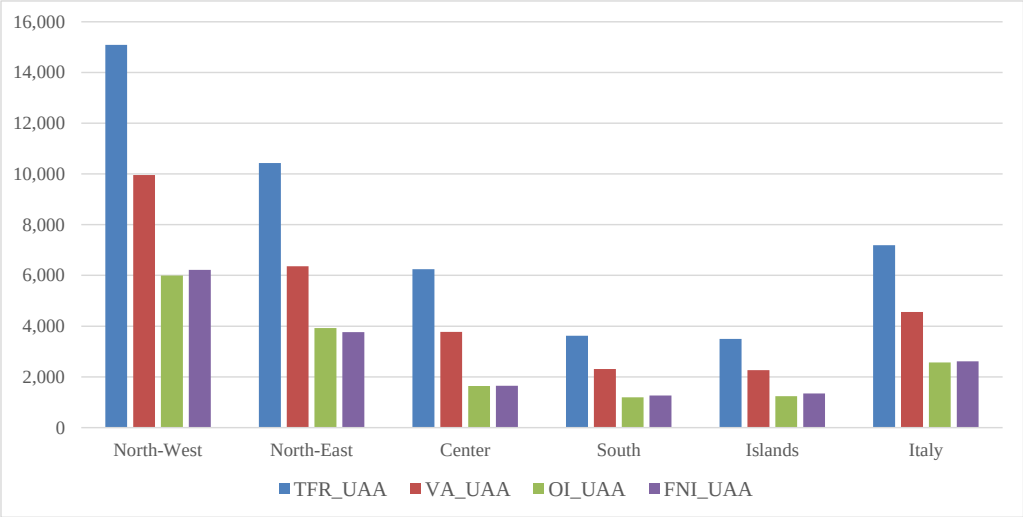

Figure 7. Economic indices of small farms by utilized agricultural area (UAA) and by district. Source: Our elaboration on FADN data, 2018–2020.

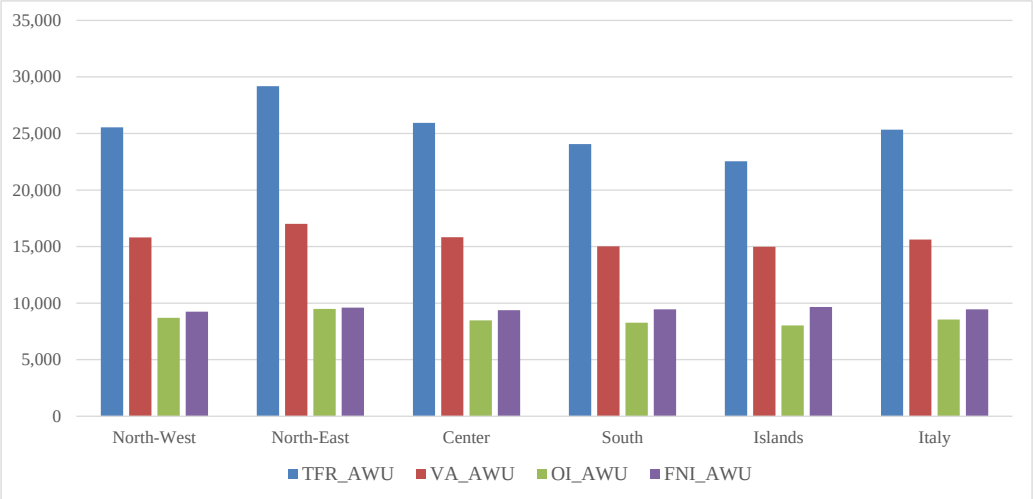

Figure 8. Economic indices of small farms by total work unit (AWU) and by district. Source: Our elaboration on FADN data, 2018–2020.

The economic indices related to the worker units are higher than the other economic indices are compared to the hectare of UAA since, unlike the latter, they refer to the worker

units (whose national average is equal to less than one) and not the number of hectares of the surface (the average UAA, at national level, is approximately 9 hectares).

Our attention was focused on the farm net income index per hectare of surface (FNI/UAA), since it represents the set of income due to the agricultural entrepreneur as well as the economic indicator, summarizing the technical and commercial choices and organization of production within the farm. Therefore, it measures the ability of the farm to remunerate all of the production factors used in the production cycle.

The district with the highest average value of the index is the north-west with a net income per hectare of UAA of just over EUR 6200 per hectare. This is followed by the north-east district, where the index assumes an average value of approximately EUR 3800/ha. In the south, with just EUR 1265/ha, the worst performance is recorded.

If we go into regional detail (Figure 8), we note that the best performances of the small farms are found in the northern regions, where the values of Trentino Alto Adige stand out, with over EUR 17,000/ha, and that of the Valle D'Aosta with more than EUR 10,000/ha. On the contrary, the southern regions show much lower results, and this is particularly true for the regions of Basilicata, which record the lowest value of profitability per hectare (EUR 738), Molise (EUR 913/ha) and Calabria (EUR 968/ha).

In the case of the farm net income per working unit index (Figure 9), the best performance is recorded in the islands with EUR 9657 per worker unit. The north-east follows with an index value of approximately EUR 9601/AWU and then, the south where there is an index value of EUR 9460 per worker unit. In this case, the lowest value of the index is found in the north-west district (EUR 9247/AWU).

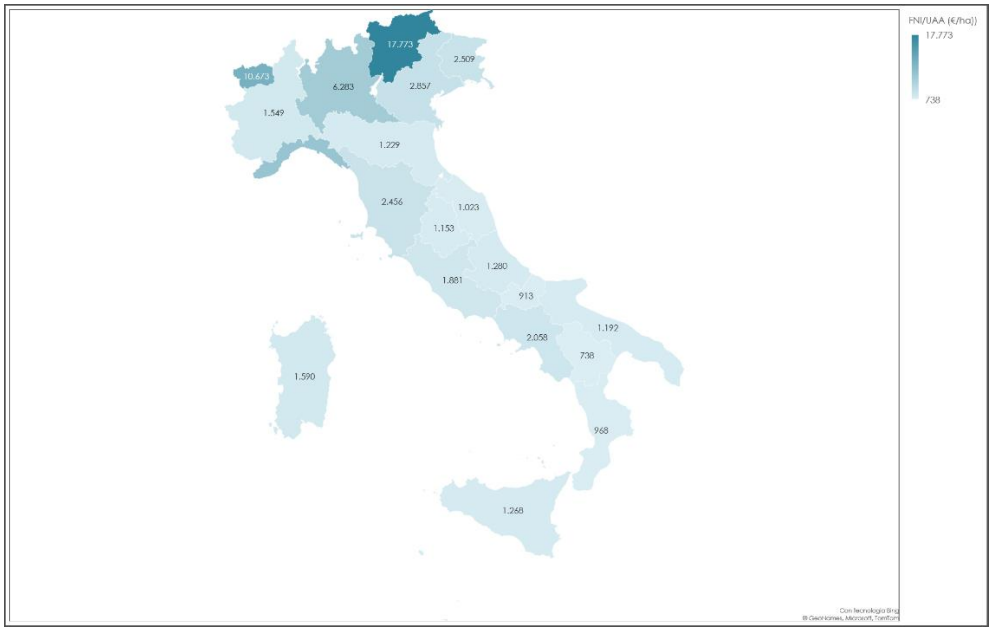

Figure 9. Net Income per hectare in the Italian regions.

At the regional level (Figure 10), this index increases from more than EUR 16,000 of Trentino Alto Adige, located in the north-east, to about EUR 3000 of Lombardia.

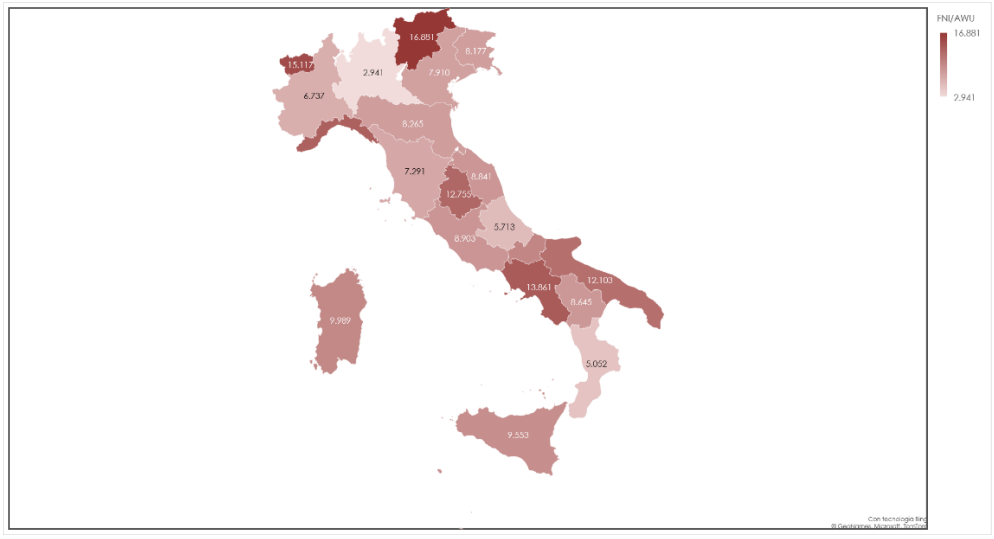

Figure 10. Farm net income per annual working unit in the Italian regions.

Figure 11 shows the percentage incidence of public aid, deriving from the First Pillar of the Common Agricultural Policy (CAP), which was received by the small farms in relation to their total farm revenues and farm net income. The analysis of the figure shows that the average incidence of aid on the farms' total revenues is approximately 5%, while that on the farms' net income is over 13%. This highlights, as was in the case of the farm net income of the small farms, that the public aid received contributes significantly to its formation. At the district level, it is the south that shows the highest percentage incidence (33%), which is followed by the islands with about 20% of it.

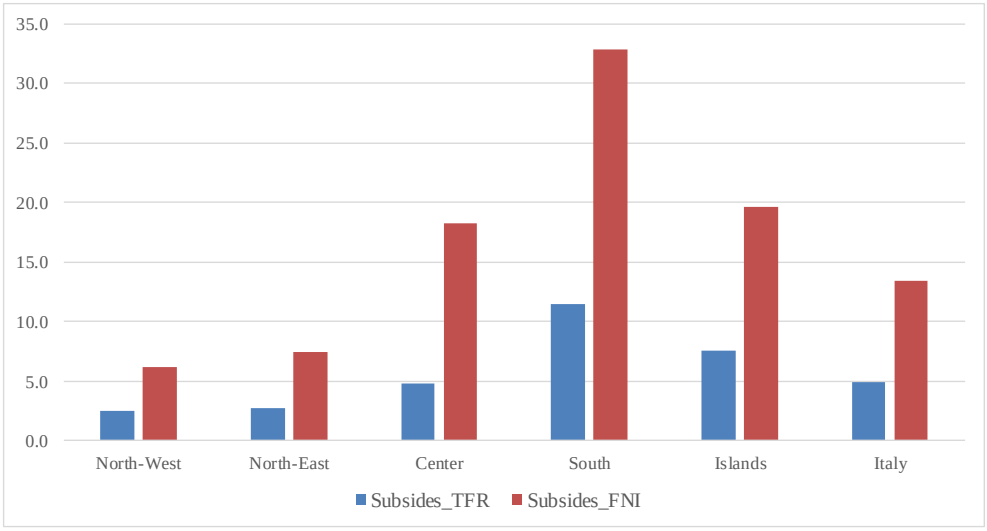

Figure 11. Percentage incidence of EU aid (I Pillar- CAP) on total farm revenues (TFR) and farm net income (FNI) by district. Source: Our elaboration on FADN data, 2018–2020.

In terms of the incidence of aid in relation to the farms' net income, at the district level it is the south that shows the highest percentage (32.9%), which is followed by the islands (19.6%) and the center (18.2%). The district of Northern Italy on the other hand, is the one that shows the lowest percentage incidence. In fact, in the north-west, it is equal to 6.1%, and in the north-east, the percentage incidence of public subsidies in relation to the farms' net income is equal to 7.4%.

Figure 12 shows that at regional level there is a lot of variability in regard to the distribution of aid per hectare. In fact, the values vary from over EUR 500 in the Calabria region to around EUR 193 in Trentino Alto Adige.

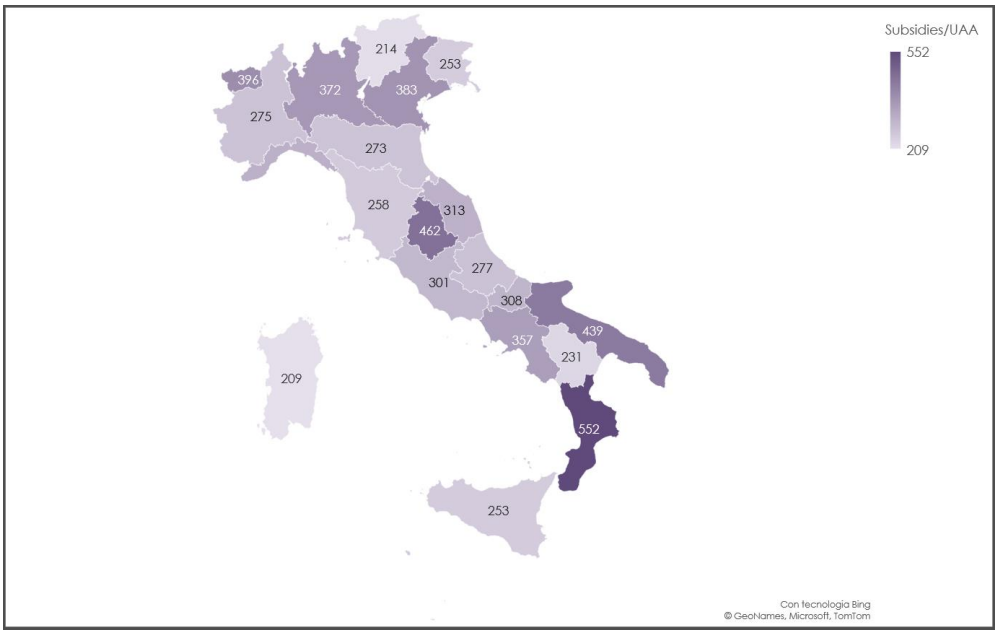

Figure 12. Subsidies per hectare in the Italian regions.

3.3. Econometric Analysis

The objective of the paper was to evaluate the factors that influence the farms' net income through a multiple regression model. However, before we began this, the variables considered in the multiple regression model were subjected to a principal component analysis (PCA).

The PCA was performed on the data set concerning the small farms sample collected by FADN in the three years (2018–2020). The principal component analysis was applied to the data matrix in order to provide a data structure study of a reduced size, while retaining the maximum amount of information possible. We used the correlation matrix as an input for the PCA to extract the factors, and a varimax rotation was used to identify the elements responsible for the grouping of the objects. About 150 variables were included in the factor analysis, and using the Kaiser criterion, or the eigenvalue rule, the factors to be extracted were defined. With this technique, only those factors with an eigenvalue of 1.0 or more were retained. Using this criterion, our data revealed 13 factors (Table 4).

Table 4. Results of principal component analysis.

	Factors					
	1	**2**	**3**	**4**	**5**	**Uniqueness**
Type of Farming					0.819	0.286
Utilised Agricultural Area		0.841				0.254
Annual Working units	0.737					0.428
Other Gainful Activities revenues	0.895					0.131
Operating costs	0.817					0.281
Total external factors	0.888					0.198
Operating income	0.816		0.42			0.126
Farm Net Income	0.786		0.461			0.161
Circulating capital			0.842			0.249
Third party capital			0.344	0.754		0.279
New investment				0.746		0.314
District		0.759				0.326
Total Livestock units		0.448			−0.527	0.408

Additionally, we checked for any multicollinearity issues across the Kaiser–Meyer–Olkin (KMO), a measure of sampling adequacy (MSA) was used to detect multicollinearity in the data so that the appropriateness of carrying out a factor analysis could be detected. The MSA predicts if the data are likely to factor well, based on correlations and partial correlations, while the KMO measure compares the magnitudes of the observed correlation coefficients to the magnitudes of the partial correlation coefficients (Table 5).

Table 5. KMO measure of sampling adequacy and Bartlett's test of sphericity.

KMO	χ^2	Df	Sig
0.748	1912	78	<0.001

Furthermore, another test of the strength of the relationships among the variables was performed using the Bartlett's test of sphericity. This test compares an observed correlation matrix to the identity matrix. In other words, it checks to see if there is a certain redundancy between the variables that we can summarize with a few numbers of factors. The null hypothesis of the test is that the variables are orthogonal, i.e., they are not correlated (Table 5). These diagnostic procedures indicated that factor analysis was appropriate for the data.

To examine the determinants of the farm net income of the small farms, we estimated an econometric model using the multiple linear regression model (Ordinary Least Square—OLS) in line with our theoretical framework. To better identify the key factors that manifest their influence on the formation of the farms' net income with different degrees and in different ways, we included in the OLS the results of the principal components analysis. In this case, in our regression model we used the farms' net income as the dependent variable and the factors identified by results of the principal components analysis as the explanatory variables. In this way we have used only 13 explanatory variables instead of 150 that were available in the FADN database. Although it is not in the results of the ACP, we also added some explanatory variables related to the characteristics of the entrepreneur (age, gender, educational qualification) because we wanted to test whether "the entrepreneur" had an influence on the formation of the farms' net income. The key findings of the model are shown in Table 6. Specifically, in regard to the significant covariates, all of the signs of the estimated coefficients are highly significant and consistent with the expected results.

The analysis of the table shows how the formation of the farms' net income is related to the geographical location (district), to the type of farming, the altitude area and the UAA. Public subsidies (i.e., contributions from the Pillar I of the CAP) also play a crucial role in building the farms' net income. The operating costs, i.e., expenses incurred for the purchase of non-farm inputs (seeds, seedlings, fertilizers, pesticides, feed, mechanization, etc.) and the external factors (i.e., expenses incurred for wages and passive rents) are significant but, as they are variables that express a monetary outlay, they show a negative relationship with the formation of the farms' net income. Among the characteristics of the head of the farm, the age data highlight how the small farms led by younger tenants perform better in terms of the farms' net income.

Indirectly, these results demonstrate that some characteristics of the farmers (i.e., gender, level of education, main occupation, level of commitment, professional conditions) play a positive role in the formation of the farms' net income for small farms, but with a very low margin value which suggests that they are almost completely negligible in influencing the process of forming the net income of the small farms.

Table 6. The multiple regression model results.

Variables	Coefficients	Std. Error	$t-$ Statistic	p-Value	
const	2973.94	476.188	6245	<0.0001	***
District	−26.0887	569.508	−0.4581	0.6449	
Less Favoured Areas	121.823	455.611	2.674	0.0075	***
Altimetry	−847.685	109.99	−7.707	<0.0001	***
Type of Farming	495.627	360.489	1.375	0.1692	
Gender	114.241	142.575	0.8013	0.423	
Age	−20.6983	461.507	−4.485	<0.0001	***
Utilised Agricultural Area	474.253	113.203	4.189	<0.0001	***
Power machines	0.0794166	0.0263396	3.015	0.026	***
Annual Working Units	317.039	193.262	1.64	0.101	
Gross Salable Production	0.965286	0.0064947	148.6	<0.0001	***
Policy support (Direct payment)	0.0619304	0.0206609	2.997	0.0027	***
Other Gainfull Activities revenues	0.953821	0.0077662	122.8	<0.0001	***
Operating costs	−1.03548	0.0124733	−83.02	<0.0001	***
Multiyear costs	−0.940149	0.0180813	−52	<0.0001	***
Total external factors	−0.932884	0.0163166	−57.17	<0.0001	***
Subsides Pilla II (CAP)	111.759	0.0722036	15.48	<0.0001	***
Fixed capital	0.00791856	0.0012869	6.153	<0.0001	***
Circulating capital	0.0172883	0.0021124	8.184	<0.0001	***
Third party capital	−0.0145073	0.0032231	−4.501	<0.0001	***
Net capital	−0.00718261	0.0011807	−6.084	<0.0001	***
New investiment	−0.037046	0.0083813	−4.42	<0.0001	***
Dependent variable mean	7996.27		Std. Dev. Dep. Var.		13,273.89
Square sum residues	1.97×10^{11}		Std. Error regression		5.399.03
R^2	0.84		R^2 adjusted		0.83
F(226,749)	1.627.273		$p-$ value(F)		0
Log−likelihood	−67,786.41		Obs.		6.771

***: significant at 1%. Source: Own calculation based on FADN data.

4. Discussion

The study on the small farms highlights how in modern agriculture they play an important connecting role in the complex structure of the agro-industrial sector. In fact, they represent a miniature model of it [32]. Small farms are increasingly required to promote sustainable development, guarantee global nutritional security and food stability, mitigate climate change, etc. (e.g., [33–37]). They tend to be the subject of important scientific debates, as well as of various national and international publications.

The importance of small farms is well established and recognized in developing countries, but much less is known about their role in Europe, where the agriculture is largely industrialized [38], which highlights higher productivity and efficiency as well as the ability to exploit economies of scale [38–40]. Furthermore, in Europe, the dominance of industrial agriculture has threatened their very survival in the medium and long term [28,41–43], increasingly marginalizing the small farms. This has resulted in greater attention being paid by policy makers to large-scale agriculture, thus neglecting the needs of the small farms within the European Agricultural Policy [43].

There are several works in the literature that have analyzed the influence of various factors on the formation of farm revenues. Some of these works focus their attention only on a specific product and/or on crop diversification. Instead, other works examine a specific sector, and finally, others still focus on a specific aspect (e.g., [44–63]).

The analysis of the vast amount of existing literature highlights how the various authors concentrate their efforts on analyzing, in general, the factors (structural/physical and socio-economic characteristics) that influence the cultivation patterns in order to increase productivity in such a way to pursue sustainable development, i.e., to improve the sustainable livelihood of farmers in the various local production realities. However, in these works, the object of the analyses was not always the entire small farm sector of a given

country, and more often the focus was on a single productive sector. Furthermore, these works highlight how the characteristics of the small farms vary according to the diversity of the local contexts in which they are inserted. Therefore, they examine the relationships between the small farms and the family, their integration into the market and the challenges for their survival, precisely considering their local context since many of its determining factors such as climate, accessibility and demographics are locally and regionally specific.

Small farms represent a large pool of family labor, especially in developing countries. In fact, their activities mainly use local labor and resources, and they face local constraints, but at the same time, they are strongly influenced by increasingly complex national and global economic changes that determine different productive and socio-economic transformations to be put in place to face such shocks. Furthermore, the analyses carried out show how the accessibility, the size of the farm, the crop arrangement, the quantity harvested, the accessibility to extension services, the size of the family, the gender of the farmer, and their education level and age are all relevant elements in influencing the choices of small farm managers. Finally, they recommend that these characteristics of small producers should be critically considered when one is formulating agricultural policies to improve correct decision making by small farmers on the choice to achieve sustainable agricultural production.

The small farms also play a crucial role in the European agricultural system as they provide local jobs and support rural activities and ensure the resilience of the agri-food system, etc. However, their numbers, under the pressure of land grabbing and competition from big farms, are dwindling. Furthermore, for a long time they were considered to be unprofitable and obsolete, and therefore, they were neglected by policy makers when they were defining agricultural policies [64].

In this document, our scale of analysis is at the country level (Italy), analyzing the differences that exist within it. The agricultural systems differ regionally in terms of the actors involved and the characteristics of their relationships and activities.

The Italian scientific literature on small farms is not particularly vast, and it is aimed at analyzing the multifunctional and diversification aspects of small farms (e.g., [65–67]) or, in other cases, the dependence of small farms on the perceived public aid is analyzed [68,69]. Almost completely absent are the Italian works that have an objective of conducting the analysis of the performance of small farms, while at the interview level, various authors have dealt with this aspect (e.g., [70–73]. This research line includes the work of Cimino and Cardillo (2020) [6], who analyze the structural characteristics as well as the economic and financial situation of small farms using the data of the Italian FADN for the year 2018 using a series of structural and economic–financial indicators. In general, the results of their work show a polarized territorial distribution of small farms and the presence of a greater number of farms specialized in permanent crops and arable crops. The economic results show a good performance for small farms, even if this is in the presence of a wide regional differentiation and even if they are dependent on the public support that they receive.

This work differs from that of Cimino and Cardillo (2020) [6] because in addition to analyzing the performance of small farms, it aims to evaluate, through the application of a multiple correlation, which was carried out with the least ordinary squares technique, the variables that have pushed towards the adoption of a more sustainable agriculture, favoring the survival of Italian small farms. At the moment, it seems to represent the first paper in Italy that aims to identify all of the factors that affect the farms' performance (measured by the farms' net income), while maintaining such a network of small farms, which are distributed over the entire territory, which guarantees a strategic role in the defense of the environment, the protection of the territory, quality productions, in the maintenance of employment levels in rural areas and in allowing small producers to survive in difficult conditions.

5. Conclusions

The analysis proposed, taking into consideration only some of the aspects of the FADN database, has identified a "group" of small farms, and this has made it possible to highlight some of the structural and economic characteristics of them.

In particular, based on the indices proposed, a diversification of the structural characteristics as well as of the economic results of the small farms in the various districts emerged.

In general, the farms specialized in arable crops and herbivores prevailed, showing to some extent, a polarization in the national territory: the former ones are in the district of the south, while the latter ones are more present in the farms of Northern Italy.

Although they are small farms, they are affected by the presence of people outside the farming family, for example, the farm itself employed people for carrying out the farms' operations. The use of external labor is an aspect that is most visible among farms located in the islands and in the south.

The tenants of the small farms, who are mostly men, are aged between 40 and 65, and their main qualification is a baccalaureate one. Only a small percentage of them have a degree.

There is also a fair amount of economic sustainability for the small farms, even if they show a different performances between the different districts. The indicators that show the highest value are those relating to labor productivity, which are a direct consequence of the method used to calculate them. Furthermore, all of the small farms selected show a low incidence of aid on the total revenues, therefore, it would seem that the profitability of the production recorded by the small farms in the different regions and measured in terms of the total farm revenues is, in fact, independent of the subsidies received. However, when we are referring to the farms' net income, the situation is diametrically opposite. In fact, in this case, it is more evident how the public aid received by farms plays an important role in the formation of the farms' net income, and this is clearly true for the small farms located in Southern and Central Italy.

Finally, the analysis of the small farms that is proposed here has made it possible to highlight the various factors (which to varying degrees and in different ways) manifest their influence on the formation of the farms' net income, thus favoring the survival of the small farms themselves. In particular, it was found that a crucial role in maintaining the network made up of small farms is played not only by the geographical location of the farm, but also by the public subsidies that the small companies themselves receive.

The data relating to the typological classification of the small farms showed that mixed farms tend to have a greater positive influence on the formation of the net income, as a consequence of the diversification strategy that was adopted.

The work carried out has, therefore, made it possible to deepen the analysis on the "vitality" of small farms within the Italian agriculture, which has largely diversified and different production realities, and they are well distributed throughout the territory. The objective of ensuring the permanence of vital agriculture throughout the national territory is, therefore, strategic for Italy for reasons of an economic, social and environmental nature. Naturally, an essential role in this is played by small farms, which continue, above all, due to family work, and which contribute to the national agricultural production. In maintaining such a productive fabric, the European Agricultural Policy can help, which, since 2014, has begun to implement new elements to support small farms.

Finally, Italy shows a good presence of small farms of which the manifestation of their development is slow. However, it shows a fair amount of economic sustainability for the farms, with a different performance between the districts. The indices relating to labor productivity record the highest value, and they are not dissimilar from the incomes received in other productive sectors. This allows to stop the typical depopulation of rural areas, guaranteeing a high level of income to the farm family. Consequently, the small farms in rural areas play a crucial and important role in the development and survival of these areas. The small farms, especially if well-integrated into a diversified rural economy

and agri-food value chains, can contribute to economic growth and job generation, and they can also contribute to the development of rural communities. While the small farms are often recognized as a vital sector for development, they have rarely enjoyed the political and institutional support necessary for the small farms and rural economies to thrive. Therefore, the presence of this type of farm in the area contributes, for example, to the protection and conservation of natural resources, with there being resulting direct benefits for biodiversity, the mitigation of the impact of climate change, the balanced development and employment of the area itself, etc. However, to fully express the environmental and cultural resources they have within them, they need the presence of young farmers, and perhaps, subsidies and other agricultural support policies that make small farms more attractive than they actually are.

In the future, further studies could provide additional evidence and more details on the trends and patterns of development of the small farms in Italy by addressing some of the limitations of this study, including the lack of continuity of data over time and the use of a single database for the analysis. Indeed, while the use of FADN data allowed the internal variables affecting on farms' income formation processes to be explored in detail, an integration with external datasets would have been very useful to better capture the external variables, such as the socio-geographical environment as well as the role played by national and regional institutions and policies in influencing the composition and evolution of the small farms' revenues. In this regard, the current initiative of converting the FADN into FSDN (Farm Sustainability Data Network) represents a very good opportunity to expand the scope of the current network with additional data on the environmental and social practices.

This new data collection process could also improve the comparability of the sustainability performance of different farming systems (including economic performance and income-related issues), as well as better support evidence-based policy making and monitoring, which are in line with the Farm-to-Fork strategy objective as well as for future revisions of the CAP.

In fact, from this study, interesting policy implications can be deduced. Indeed, the EU's implemented rural development policy has so far been based on distinct axes and/or themes which had little space to support combinations of strategies that crossed the boundaries of different axes/themes as each of them provides support for specific measures.

We also argue that these strategies should be combined by focusing on the individual farm level. Therefore, as soon as the data from the new general agricultural census are available, we intend to carry out a new study to better investigate the situation of the business structures of the small farms with a more detailed analysis at the regional level in order to provide useful suggestions to political decision makers to more accurately define the agricultural policy interventions that are to be implemented in support of the small farms.

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

Appendix A

Table A1. Structural indexes used and their brief description.

Index	Formula	Description
Land Intensity (Gif)	$\text{Gif} = \frac{\text{FK}}{\text{UAA}}$	Fixed capital (FK) invested on one hectare of utilised agricultural area (UAA).
Operating Intensity (Gie)	$\text{Gie} = \frac{\text{WK}}{\text{UAA}}$	Amount of working capital (WK) used on the utilised agricultural areaunit (UAA).
Farm Intensity (Gia)	$\text{Gia} = \frac{\text{FK+WK}}{\text{UAA}}$	Total average investment per hectare.
Own-UAA (SAP)	$\frac{\text{OUAA}}{\text{UAA}}$	Percentage share of the own UAA (OUAA) by the total farm UAA.
Rented-UAA (SAP)	$\frac{\text{RUAA}}{\text{UAA}}$	Percentage share of the rented UAA (RUAA) by the total farm UAA.
Irrigated UAA (UAAIR)	$\frac{\text{UAAIR}}{\text{UAA}}$	Percentage incidence of irrigated UAA on total UAA.
Labour Intensity	$\frac{\text{AWU}}{\text{UAA}}$	Availability of UAA per worker unit.
Family management index	$\frac{\text{FWU}}{\text{AWU}}$	Incidence of family work unit (FWU) on the annual work unit (AWU) used in the farm. The closer it is to 1, the greater the reliance on family work in the farm.
Degree of mechanization	$\frac{\text{KW}}{\text{UAA}}$	Availability of motive power (KW) available per hectare of surface (UAA).
New investments	$\frac{\text{INV}}{\text{UAA}}$	Degree of business dynamism compared to the UAA.

Table A2. Economic indexes used and their brief description.

Total Farm Revenues per hectare	$\frac{\text{TFR}}{\text{UAA}}$	Measures the degree of technical efficiency achieved by the farm, providing an indication of the increase or decrease that the capitals contributed to the production suffered as a result of the cultivation operations.
Total Farm Revenues per working unit	$\frac{\text{TFR}}{\text{AWU}}$	Measures work efficiency.
Value Added per hectare	$\frac{\text{VA}}{\text{UAA}}$	It expresses the productivity of the land at the net of variable costs.
Value Added per working unit	$\frac{\text{VA}}{\text{AWU}}$	It expresses the value added (VA) per worker unit (AWU), or the overall performance of the work employed. The more it assumes high values, the better the economic efficiency per employee is to be considered.
Subsides per Total Farm Revenues	$\frac{\text{Subsides}}{\text{TFR}}$	Incidence of public subsidies on total farm revenues. The closer it is to 1 the greater the incidence of aid on the formation of total revenues.
Subsides per Farm Net Income	$\frac{\text{Subsides}}{\text{FNI}}$	Incidence of public subsidies on farm net income. The closer it is to 1 the greater the incidence of aid on the formation of FNI.
Operating Income per hectare	$\frac{\text{OI}}{\text{UAA}}$	Economic result of ordinary operations per hectare of UAA. It includes all the costs and revenues generated by production processes and active and passive services related to agricultural activities.
Operating Income per worker unit	$\frac{\text{OI}}{\text{AWU}}$	As above but, referring to worker unit.
Farm Net Income per hectare	$\frac{\text{FNI}}{\text{UAA}}$	Overall economic result of the farm (per hectare of UAA). It also includes the costs and revenues originating from activities that are not typically considered agricultural: extra-characteristic management (financial management, extraordinary management, various management and public transfers). Identifies the ability to remunerate all the productive factors used.
Farm Net Income per worker unit	$\frac{\text{FNI}}{\text{AWU}}$	As above but, referring to worker unit.

Table A3. Description of the variables used in the regression model.

Variable	Description	Variable	Description
Geographical area	Localization of farms: North-East, North-West, Centre, South, Islands.	Altimetry	Breakdown of farms according to altitude: montains, hills, plains.
Utilised Agricultural Area	Area used for farming in hectares	Management	Type of farm management (e.g., only family members, with wages).
Legal Form	Type of legal form of the farms (e.g., individual, cooperative).	Type of farming	Production specialization of farms (fieldcrops, horticulture, permanent crops, grazing livestock, granivores livestock, mixed farms).
Age	Agricultural entrepreneurs age, in years.	Age classes	Agricultural entrepreneurs age, in classes (<40 years, 40–65 years, >65 years).
Gender	Agricultural entrepreneurs gender (man; woman).	Education level	Agricultural entrepreneurs education level.
Engagement	Level of agricultural entrepreneurs engagement in the farm activity.	Professional conditions	Agricultural entrepreneurs professional conditions.
Total labour input	Total workers employed on the farms.	Family labour input	Family workers employed on the farms.
Diversification	Presence of other gainful activities directly related to the farm.	Organic	Presence of organic farming in the farm.
Total farm revenues	Total revenues of the farm.	Products sales	Gross saleable crop/livestock production.
Products crop	Gross saleable production closely related to crop products.	Products livestock	Gross saleable production closely related to livestock products.

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