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ORIGINAL ARTICLE Open Access

Peasant families and farm size in Fascist Italy

Alessio Fornasin[1*], Marco Breschi[2] and Matteo Manfredini[3]

*Correspondence:
fornasin@uniud.it

[1] Department of Economics and Statistics, University of Udine, Via Tomadini, 30/A, 33100 Udine, UD, Italy
[2] University of Sassari, Sassari, Italy
[3] University of Parma, Parma, Italy

Abstract

This article looks at the key factors affecting the connection between peasant family size and farm size in Italy in 1930–1931. The association between farm size and family size was analyzed using a new dataset merging data drawn from both the Population Census of 1931 and the Census of Agriculture of 1930. We found a strict association between peasant family size, here considered as a production unit, and the surface area of the farm. The results seem to correspond to different causal relationship between family size and farm size according to access to land, and form of tenure. In some contexts, where sharecropping was widespread, farm size defines the size of the family. In others where small land ownership prevailed, it seems that family size shapes the size of the farm. In this study we propose a new explanation for peasant family size in the Fascist period. This is done adopting a cross-sectional perspective, providing a geographical analysis based on the 786 agrarian areas that formed the national territory in that period.

Keywords: Peasant families, Family size, Farm size, Italy, Fascist period

Introduction

In this article we look at the key factors affecting the connection between peasant family size and farm size in Italy in the first decades of the twentieth century. The first half of twentieth century is a good period to study: first, because it is possible to extend the analysis to the whole country; and, second, because, though there is an important amount of data, these questions have been little studied for this period. Several previous researchers have dealt with Italian peasant families and their different forms. A synthesis of the Italian research on this topic is collected in the second edition of the benchmark work of Marzio Barbagli published in 1988 and in a later article (Barbagli, 1990). From a demographic point of view, thinking particularly of the study of the family, there are a number of perspectives: the formation system; the number of components; the structure; and the evolution of the family. Barbagli's book shows that there are many local studies, but there is the lack of more general work on the topic: not least because of the remarkable variety to be found across the country. The situation did not change in the following years, as interest in the topic died away. Moreover, the literature is very uneven in chronological terms. For some territories research is focused on the medieval or the early modern period. Then, for other parts of Italy, there has been a greater emphasis on the post-unification period. Thus, it has not been possible to compare different regions

in a synchronous fashion. Attempts at synthesis have come up hard against the heterogeneity of research traditions and the data to hand.

This article offers a historical contribution to family research in Italy in an attempt to get beyond regional and local views. We look at the peasant family with reference to the whole country in the first decade of Fascist Italy (1922–1931). We consider the family and the size of its agrarian holding and the management style employed. The literature on the subject, devoted to land ownership rather than to farm size, has explored the topic starting with the family forms elaborated by Flandrin (1979), Laslett and Wall (1972) and Smith (1984). In this paper, however, to facilitate spatial comparisons we intend to analyze the family according to the number of members.

We are primarily interested in the adaptation of the size of the peasant family, and its labor capacity with respect to the needs of the family farm, in the context of rural production relations. The main sources here employed are the 1930 Census of Agriculture (Istat, 1935) and the 1931 Population Census (Istat, 1934–35). The sources available and the spatial scale do not allow us, as would be preferable, to assess the farm, and thus to consider its characteristics, such as the quality of the land, the type of crop, cultivation techniques, openness to the market, etc. But we try to make up for these shortcomings through some hypotheses.

The sources belong to the Fascist period, but for most of the country the transformations of the peasant family were slow and lasted centuries (Barbagli, 1988). What is more, the family policies adopted by the regime aimed at promoting the preservation of the "traditional" family especially in the countryside (Dau Novelli, 1994). This means that much of our findings have their roots in the previous centuries.

Literature review

The peasant family in Italy, still during the 1930s, preserved much from the past, even from the early modern period and before. The fascist regime aimed at maintaining, especially in the countryside, the ancient relations of production (Giorgetti, 1974: 453–505). Of course, the deep regional divides in this process need to be laid out. In the north, and particularly on large farms in the Po Valley, the mechanization of agriculture and the use of chemical fertilizers was already well advanced (Corona and Massullo, 1989). The "Battle of the Wheat" had among its effects the introduction of hybrid grains, particularly hybrid wheat (Lorenzetti, 2000). The rotation system had been refined. In the large northern farms, dairy cows were replacing the ox, which was no longer indispensable for farm work. Also, significant parts of the territory had been reclaimed.

Despite these important transformations in Italian agriculture, most families continued to be employed in agriculture (Vitali, 1990), and since these families were also larger on average than other families, the share of the population they represented was greater. In 1931, 41.5% of all Italian families were peasant families: 48.6% of the entire Italian population were peasants.

During Fascism there was a general tightening of agrarian contracts with a marked tendency for the introduction of clauses favoring landowners and sharecroppers rather than workers (Serpieri & Mortara, 1934: 246–248). Nevertheless, the regime pushed for more smallholdings (Barbagli, 1988: 111–112; Giorgetti, 1974: 460–461). From the

post-war period a process had begun in which many peasants had gone from being landless workers to owning and farming their land.

In Italy, there is an important tradition of studies on the size of peasant families with their economic functions and the size of the farm. But few works looked at family size over the whole Italian context. In a pioneering book, Livio Livi (1915) observed that, in central and northern Italy family size varied in relation to the amount of land a family farmed. In southern Italy instead, where *latifundia* and wage labor prevailed, family size was similar to urban families and, more generally, to non-peasant households.

The picture outlined by Livi more than a century ago has been reinforced by many subsequent local and regional studies, something usefully summarized by Marzio Barbagli (1988). Barbagli, in his synthesis on the history of the family in Italy, also makes a clear distinction between wage-earning peasants and others. In Barbagli's view, which echoes Livi's, the wage-earners behaved much as the urban proletariat; non-wage-earners, on the other hand, adopted a family strategy aimed at balancing hands and mouths. Peasant families adopted different forms of behavior depending on their relationship with the land. The main discriminators were land ownership and the type of agrarian contracts that gave them access to it. Households were smaller when the contract involved only the individual worker, usually a laborer. Conversely, they were larger when, instead, the contract involved the whole family.

With the exception of these two books, research on farm management and farm size is based on territorially circumscribed studies. For the north-central areas they mostly concern the 1800s and 1900s, while for the south they typically refer to the early modern period. Therefore, there is no general picture of the peasant family either in territorial or temporal terms. For the interwar period, there is relatively little research on the family in demographic terms, while, in contrast, there are quite a number of studies on land ownership. Certain characteristics of ownership, which were reflected in the size of holdings, had been perpetuated for centuries. In large areas of the south, the *latifundia* still dominated with predatory middlemen mediating between peasants, often laborers, and absentee landowners. In the more dynamic parts of the country, such as Lombardy, major changes in the relationship between the peasant family and land management had taken place through the course of the nineteenth century (Viazzo & Albera, 1990). There had been a shift from sharecropping to capitalist tenancy.

Most studies regarding the connection between family size, considered as a proxy of labor force and a consumption unit, and farm surface, focused on sharecropping families. Sharecropping contracts established, in a nutshell, a division of agricultural production between the owner of the land—organized into different sized farm units: the *poderi*—and the peasant family. The contract, was to be renewed annually and entailed, in its "pure" form, the equal division of expenses and harvests between the two contracting parties (Anselmi, 1990; Biagioli, 2002; Serpieri, 1935).

One of the most influential studies on this topic is an article by Carlo Poni published in 1982 (brought out in a preliminary version in 1978), regarding the Bologna countryside (Poni, 1978, 1982). There Poni traced the evolution of the sharecropping family from the early modern period until the 1850s, that is, until the onset of industrialization. According to Poni, over the course of the twentieth century, the characteristics of the rural family changed. It became less peasant and more "blue collar" as a result of the reduction

of the economic importance of agriculture and the transformations associated with this process. Its characteristic form eroded away in parallel with the decline of sharecropping. As the size of the family decreased the size of the sharecropper's *podere* and the house in which the family lived and worked also must be smaller. Through this process, and linked to the dimension of the farm, Poni identified the demographic code of the family, a kind of "unconscious" population control and family structure "programming".

Similar studies have been conducted around some Tuscan sharecropping communities, as they developed in the eighteenth and nineteenth centuries (Della Pina, 1990; Doveri, 1990, 2000). The basic idea of these studies is that the sharecropper family, having no property, had to work the land of others. In this way it modulated its dimensions through fertility control. Access to land was determined by the workforce available to the family for cultivating the *podere*. When the workforce was not sufficient for the needs of the *podere*, the owner would turn to another more suitable family. In this way, even if the family modulated its own size, its choices were conditioned by external elements.

The context where the relationship between the size of the family and the surface of the farm was seen most clearly was that of reclaimed lands. Due to the importance of land reclamation within the agricultural policy of the Fascist regime, the assignment of land to families also became a clear political-economic indicator about the family itself. For instance, in the *Agro Pontino*, near Rome, the land was apportioned to migrating peasant families. In these instances, it was predominantly the size of the family that initially determined the allotment of land. In this context, to have more land, immigrants added relatives to their family who, in their places of origin, had not lived together. In the years following the settlement phase, the changes in the family-size determined the assignment of more farms to the growing families or the removal from the land of shrinking families (Gaspari, 1985: 125–127).

In research on peasant families, less attention has been paid to those who cultivated their own land. Although in Italian history most agricultural land, and particularly the best quality land, belonged to a small number of big landowners, a much smaller share was farmed by a large number of smallholder families.[1] This was characteristic of agriculture in early modern Italy, as highlighted by a variety of studies (Alfani, 2015; Alfani & Ammannati, 2017; Alfani & Di Tullio, 2019; Fornasin, 2002), but it was still strong even in the interwar period (Coppola, 2002; Martinelli, 2016). By the 1930s, small peasant properties were widespread throughout Italy.

According to the few studies that address the topic (Chayanov, 1966: 9–10), it seems that in the case of family farms the adjustment between labor force, consumption, and farm size occurred by changing the size of the land farmed. Smallholders, therefore, could enter the land market by purchasing land, if they had capital or access to the credit market, or they added leased land to their holdings. However, these families also had legal constraints that involved demographic choices. These bonds were not formalized by agrarian contracts, but by legal forms of dowry and succession pacts (Levi, 1990; Manoukian, 1988). Again, balancing mouths and hands with the size of the farm—that always risked property division—proved crucial. A fragmentation of ownership reducing

[1] With the expression "smallholder families" we refer to families that, according to one assessment, did not have more than five hectares or, according to others, ten hectares (Coppola, 2002: 220).

the farm size below a certain threshold might see the family fall down into the agrarian underclass.

A substantial part of the literature on the peasant family in Italy concerns landless peasants: laborers and day workers. In many cases, however, they owned some land themselves. In the context of this article, therefore, the laborer is not a central figure. But he must still be considered because the history of the family develops dynamically. The transition from the status of worker to that of small owner and vice versa was frequent. Furthermore, from the point of view of size, the two types of families had relatively few members. David Kertzer, in some of his works devoted to communities in nineteenth century Emilia, compares the size of sharecroppers' families with those of laborers (Kertzer, 1977; Kertzer & Hogan, 1989). His research has showed that, in the same context, household sizes varied widely precisely according to the type of agrarian contract regulating their access to land. Households were much bigger among sharecroppers than among laborers. Other studies, often centered on northern Italy, have come to similar conclusions. Almost everywhere, from the early modern period to the end of nineteenth century, day laborers' households were smaller in size not only than sharecropper households, but also than tenant households (Angeli & Bellettini, 1979; Di Tullio, 2009; Manfredini & Breschi, 2008; Merzario, 1989; Sella, 1987).

Day workers were tied together by their precarious relationship with the land. They were employed only occasionally and mostly at times when the need for labor was greatest. They were found in the sharecropping parts of Italy. But they were also frequently to be encountered in the Po Valley, where they were employed in large capitalist farms, and were common even in the newly reclaimed territories. However, they were most common in the South, where peasants were employed in the *latifundia*. All research dedicated to the laborer's family, particularly in southern Italy and mainly focused on the early modern period, emphasizes its small size (Benigno, 1989; Da Molin, 1990a, Da Molin, 1990b; Delille, 1988).

Although most studies on family size have focused on the relationship with agricultural contracts, in a minority of works its relationship with the environment has been highlighted. Most of these research works concern mountainous areas, where the balance between population and resources and, therefore, between family and farm size was constantly followed (Viazzo, 1989). Here, adaptation between population and resources was not only about agriculture but was embedded in an economy of pluriactivity (Fornasin & Lorenzini, 2017). It was implemented through various demographic levers. In the Alps, the forms of adjustment between family size and farm size were, thus, much more varied. Its most accomplished level was represented by the agricultural system centered on the enclosed farm (*Maso chiuso* in Italian, *Geschlossener Hof* in German), something typical of the South Tyrol (Lanzinger, 2003). There, however, it was the size of the farm that determines the size of the family. The *maso* was an indivisible production cell and thus represented a very rigid constraint in the balance between "hands and mouths" and the amount of land farmed.

Sources and methods

The sources used in this paper are the 1931 Population Census and the 1930 Census of Agriculture. The Population Census gives important information regarding households

and families. For our purposes, the tables that matter are those devoted to the number of families and the number of members divided by the occupation of the head of the household. Peasant families are grouped into five different types, distinguished on the basis of their relationship to farm management: "owners"; "tenants"; "sharecroppers and settlers"; "laborers and daily workers"; and the residual category of "other agricultural workers". Moreover, these data are collected not on the basis of the census family but according to the "natural family" (Istat, 1935a: 29–30; Albertario, 1936). It included only relatives and kindred, excluding servants, roundsmen, cohabitants and on the like. Family members were counted even if they were temporarily absent. Thus, we do not have in this information distortions from seasonal migration, something that was extremely important in Italian agriculture at the time.

The Census of Agriculture presents information on the number of farms marked by surface classes and forms of management: independent farming; tenancy and sharecropping; plus a residual "mixed" category, which covers farms where there was more than one form of management, e.g., independent farming together with tenancy (Istat, 1935b). In the post-war historiography, some of the major criticisms of the Census focused on this aspect. The Marxist-leaning historian Emilio Sereni, for instance, asserted that the transformation of laborers into smallholders noted in the 1921, 1931 and, above all, 1936 censuses was the result of conscious manipulation of data or misrepresentation (Sereni, 1975). From this point of view, even the results of the 1930 Census of Agriculture is suspect. The growing importance of independent farming was emphasized in the survey. Farms with an area of less than one-half, one-tenth or even one-hundredth of a hectare were also considered farms. Most of these farms were clearly too small to support a family.[2] Its members necessarily had to find other employment to supplement their income, most often as laborers. Farms of less than half a hectare were more than one-quarter of those owned and nearly one-third of those leased. Among sharecropping or mixed farms, they were, respectively, 7.4 percent and 6.0%.

Much space is devoted in the Census to justifying the decision to include farms with a surface area too small to have any economic significance (Istat, 1936: 12–17). For our analyses, consistent with surface thresholds set in the same period in other countries, including Germany and Belgium, we decided not consider "farms" with less than half a hectare because it is unlikely that they were economically self-sufficient. This choice did not produce major changes in the results, but was still adopted to be consistent with the objectives of the work. In any case, there must have been a revival of small-scale peasant ownership during the twenty-year Fascist period, though their numbers appear to be overstated. This process occurred unevenly in different parts of the country. In Lombardy, for example, the evolution of agriculture led small farms to improve their competitiveness (Rossi, 1931). While in Calabria the proliferation of smallholders had been possible thanks to remittances from emigrants (Blandini, 1931).

Information from the two censuses can be taken together due to the perfect overlap of the spatial areas in both surveys. These areas are the provinces and the agrarian zones, both crucial for the purposes of our work. The agrarian zones represented

[2] Gauro Coppola sets the limit on one to two hectares and above (Coppola, 2002: 223).

an intermediate level between municipalities and provinces. Each of them included one or more municipalities grouped, according to prevalent agricultural, natural and physical characteristics (Istat, 1939, 17–18). This often implies internal uniformity in cultivation and in the prevailing form of management. In particular, there is a clear distinction between areas belonging to the mountainous, hilly and plain regions, which makes the 786 agrarian zones into which the country surface was divided far more homogeneous than the 92 provincial territories (Istat, 1929; Chiapparino & Morettini, 2018).

Regarding methods, we first propose a set of descriptive statistics that allow for the assessment of the distribution of peasant families across the territory and some of the aspects related to family type based on their relationship with the land. Secondly, we investigate the family by resorting to linear regression models where we use the average number of members as dependent variable.

Descriptive analysis

In 1931, the average size of the peasant family in Italy was 5.0 members, compared to the average number of members in non-peasant families which was only 3.8. Figure 1 summarizes the geographical distribution of the peasant families according to their size.

As can be seen in Fig. 1, the distribution of the number of family members seems to have a clear spatial pattern.[3] Those with the largest number of components were located along a kind of arc, starting in the northeastern regions and then following the entire upper Adriatic. Moving away from the sea, the regions where the peasant family was largest were, to the north, those of South Tyrol, Lombardy, and Emilia; and in the center, those of the Apennines. Elsewhere peasant family size becomes smaller and smaller, particularly in the far northwest. The lowest values, fewer than four members, are reached in northern Piedmont. In the South and Islands, too, the family is almost always smaller in size than in the North-Adriatic area. Geographic distribution describes only part of the aspects related to family size. Differences were considerable even among different family types. This is set out in Fig. 2.

Figure 2 shows that sharecroppers' families, with an average of 6.6 members, were the largest. They were followed by those of renters, with 5.7 members. In contrast, laborer families, with 4.2 members were the smallest in size. Not much larger were the families of tenants, with 4.9 members. The residual "Other" category had an average of 4.8 members. Table 1 summarizes family size, for each type, with the average number of members in the different territorial contexts of the country.

Table 1 highlights how those agrarian contracts of the same nature resulted in almost identical hierarchies in different territorial contexts. In other words, regardless of farm management, families were smaller in the south and islands than they were in the north. Moreover, the differences were minimal among laborers, while they were considerable among sharecroppers and tenants. Figure 3 shows the geographical distribution of agrarian contracts. The purpose behind the map is to identify the prevailing type of management for each agrarian zone.[4]

[3] The map basically traces the geographical distribution of extended and multiple households in the 1951 census (Barbagli & Kertzer, 1990).

[4] In the case of "mixed" social conditions, we have indicated the second most common.

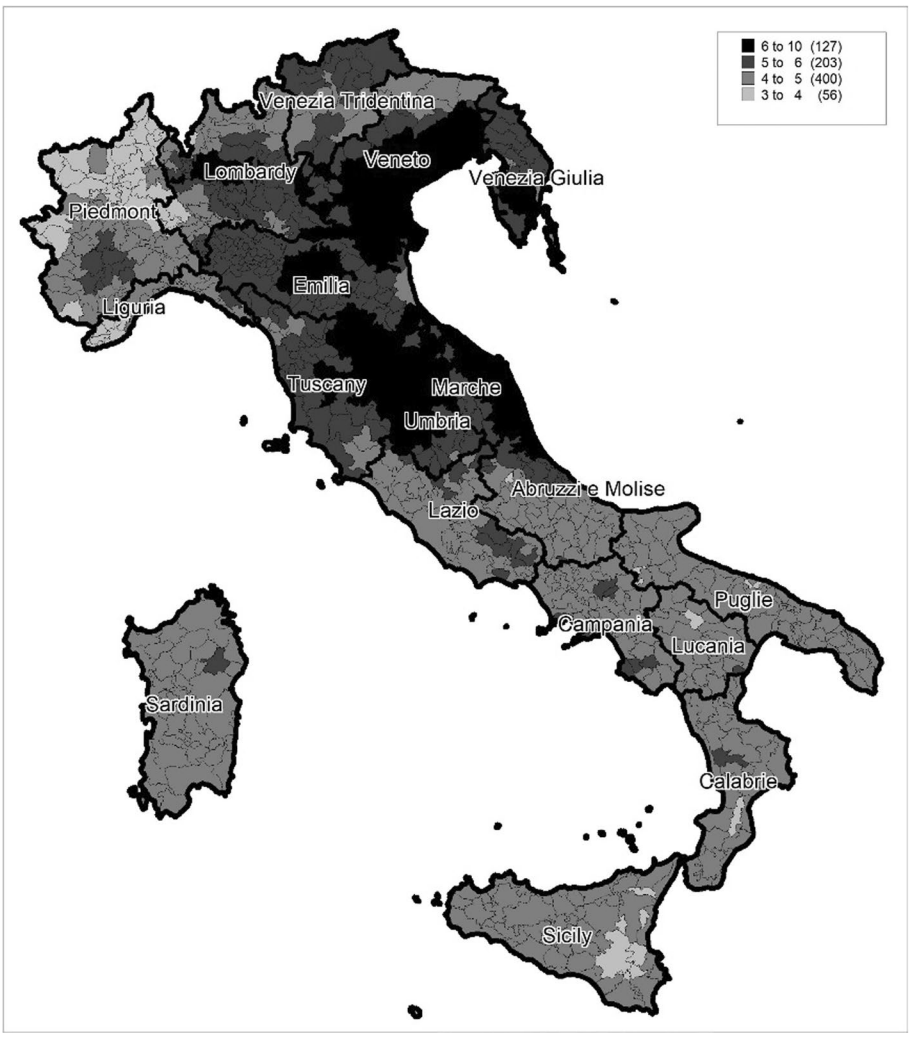

Fig. 1 Average number of peasant family members by agrarian zone in Italy (1931). Source: Istat, 1933–34. Note: every agrarian zone included one or more municipalities grouped according to similar agricultural and geographical characteristics

At the territorial level, the most common type of management, after independent farming, was sharecropping, followed by renting and leasing. Independent farming, which had grown previous to the 1930s, prevailed in almost all regions. Sharecropping dominated in the Tuscan countryside, Umbria and Marche. At the same time, renting was typical in some parts of the irrigated Lombard plain and in Veneto (Coppola, 2002; Massullo, 1991). As we have seen, spatial factors and ownership relations within the farm were both relevant in determining family size. Therefore, it is not surprising that their distributions overlap. The prevailing economic condition does not, of course, exhaust the characteristics of families in a given area. On the contrary, different family types coexisted. This aspect is explored in the next section.

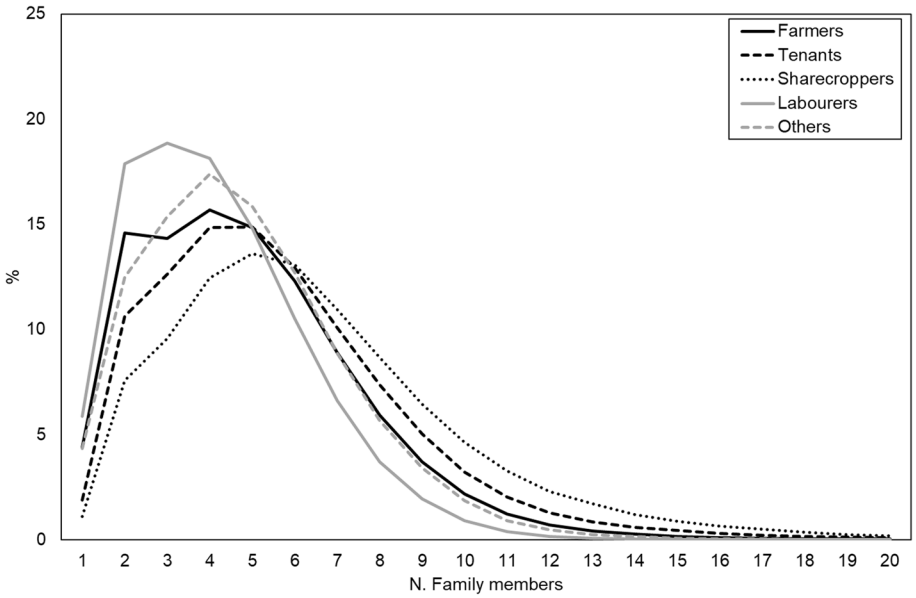

Fig. 2 Peasant families distinguished by type and number of members in Italy (1931). Source: Istat, 1933–1934

Table 1 Average number of peasant family members by type and macro-area in Italy (1931)

	Small owners	Tenants	Sharecroppers and settlers	Day workers and laborers	Others	Total peasants
Northwest	4.6	5.8	6.1	3.9	4.9	4.8
Northeast	5.8	7.5	8.3	4.7	5.5	6.1
Center	5.1	5.1	7.2	4.1	4.5	5.6
South	4.7	4.9	5.3	4.1	4.6	4.6
Islands	4.2	4.6	4.5	4.1	4.6	4.3
Italy	4.9	5.7	6.6	4.2	4.8	5.0

Source: Istat, 1933–34

Results

This section is devoted to exploring the determinants of family size in connection with farm surface. For this purpose, we constructed two models. In both, the dependent variable is the average number of peasant family members in each of the 786 agrarian zones. In both models, the first independent variable is the main forms of management. We consider, in particular, those that presupposed an exclusive relationship with the farm, namely ownership, tenancy and sharecropping. The second model differs from the first by adding the interaction between the management form and the average farm surface.

The next variable is the average size of farms in each agricultural zone. In our computations the variability in size is still considerable, even when not considering farms with fewer than 0.5 hectares. For this reason, the surface area is expressed in natural logarithms. This expedient allows us to mitigate the size effect without taking into account the reasons that could have influenced it. Large farms (with an area of at least 100 hectares) are found both in mountainous areas and in some parts of the Po Valley. However, in the mountains, large areas were devoted to permanent grassland, pasture and forest

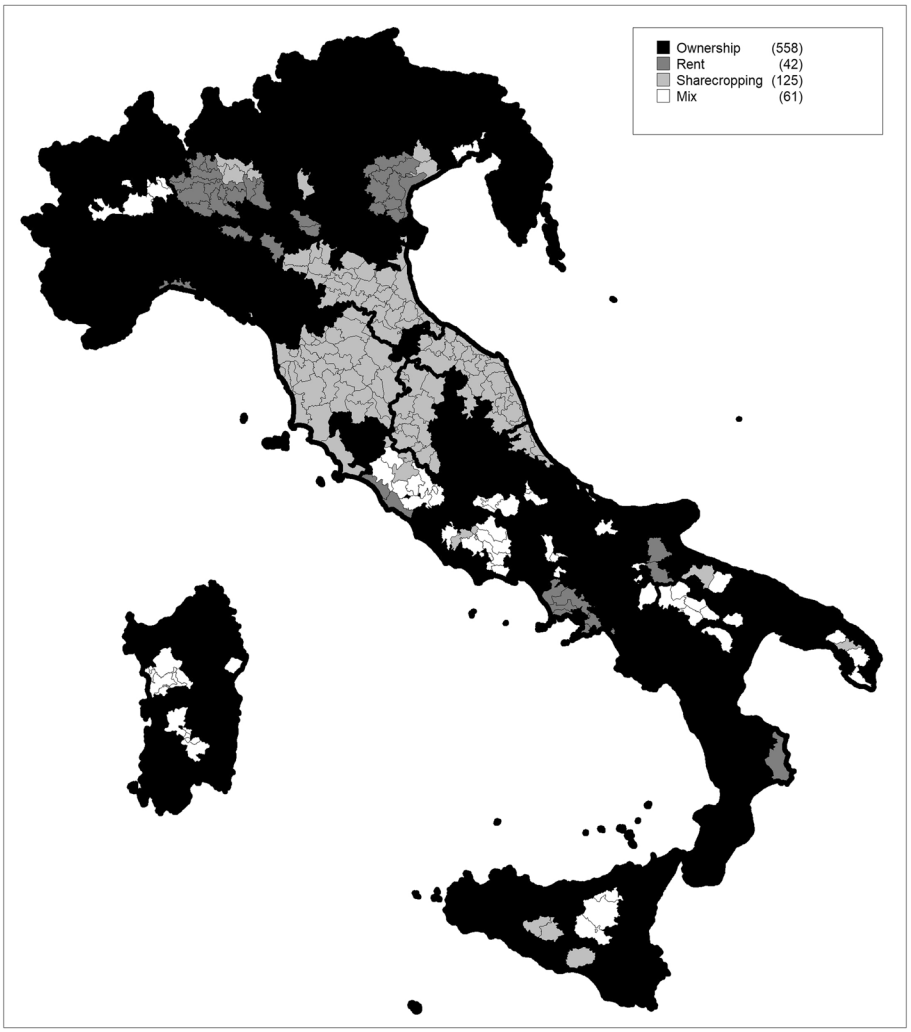

Fig. 3 Prevailing farm management in agrarian zones. Italy (1930). Source: Istat, 1935b

because of poor land quality. In many cases, these were public, municipal or state properties that were collectively exploited. In the Po Valley, high-quality terrain had favored the concentration of land in the hands of large landowners. To partly make up for this problem, we also introduced, for each agrarian zone, a measure of the inequality of peasant farm surface in a given area, expressed through the Gini Index. The index is calculated using the data of the Census of Agriculture.

If there is a relationship between farm surface and family size, we can assume that where the land was more fertile and cultivation techniques more advanced, other conditions being equal, the average farm area must have been smaller. Where land quality differed little within individual agrarian zones, farm size was more uniform and, therefore, more evenly distributed. In the Alpine area, for example, land quality was very uneven and, therefore, farm size also varied greatly. In areas of the middle plain, where soil fertility was more homogeneous, farm size varied little (Ricci & Zanibelli, 2021).

Three geographical elements were also included in the models: the "agrarian region", broken down into plain, hill and mountain; the presence in the agrarian zone

Table 2 Descriptive statistics

	N	%	ST DEV
Peasant family size (average)	5.0		0.93
Prevailing farm management: ownership	630	80.2	
Prevailing farm management: rent	42	5.3	
Prevailing farm management: sharecropping	114	14.5	
Farm surface (average)	7.9		11.62
Gini Index surface	0.36		0.15
CBR (per thousand)	24.6		6.34
CDR (per thousand)	14.6		3.46
Zones with provincial capital	92	11.7	
Zones without provincial capital	694	88.3	
Agrarian region: plain	174	22.1	
Agrarian region: hill	330	42.0	
Agrarian region: mountain	282	35.9	

of a provincial capital; and the *compartimento* (corresponding to the current administrative regions). The agrarian region allows us to consider some of the unobserved characteristics of farms. First, the productivity of the land, which usually increases as altitude decreases and is related to the chosen distribution of crops based on their elevation limits. Second, cultivation techniques, such as mechanized farming and the use of chemical fertilizers, both of which are prevalent in the plains, or conversely, greater manual labor intensity and the use of animal-derived fertilizers in the mountains.

The "provincial capital" variable covers at least two aspects. The provincial capital was, with few exceptions, the most populated city in the province. Therefore, the agrarian zones including provincial capitals typically had a larger urban population and these capitals represented a nearby consumer market for agricultural products (Martinelli, 2014). In addition, in these areas, there was also a share of land belonging to urban families. Both of these factors may have influenced the size of farms and, therefore, according to our hypothesis, the size of the family. Moreover, the proximity to an urban center favored direct sales of the farm's products in the city market. This affected the labor market, opening up more employment opportunities outside of agriculture and, in turn, fostered supplementary forms of income for families.

The *compartimento* variable was introduced to account for the various causes of heterogeneity that cannot otherwise be observed. For example, it contains the legal-type characteristics of agrarian contracts. The boundaries of the *compartimenti* followed, albeit loosely, those of the pre-unitary Italian states, which had independently developed rules governing agrarian contracts. Therefore, contracts of the same type did not always have the same legal content.

Alongside the spatial elements, we also considered two demographic variables, birth rate (CBR) and death rate (CDR) for each agrarian zone to account for the

Table 3 Determinants of peasant family size, Italy 1930–1931

	Model 1	Model 2
Prevailing farm management (ref. ownership)		
Rent	0.280 (0.005)	0.629 (0.004)
Sharecropping	0.795 (0.000)	− 0.155 (0.539)
Average farm surface (ln)	0.354 (0.000)	0.298 (0.000)
Prevailing farm management*Average farm surface (ln) (ref. ownership)		
Rent*Average farm surface (ln)		− 0.194 (0.063)
Sharecropping*Average farm surface (ln)		0.439 (0.000)
Gini index surface	− 1.973 (0.000)	− 1.774 (0.000)
CBR	0.058 (0.000)	0.059 (0.000)
CDR	− 0.053 (0.000)	− 0.054 (0.000)
Provincial capital (ref. No)		
Yes	0.157 (0.015)	0.162 (0.011)
Agrarian region (ref. Plain)		
Hill	− 0.263 (0.000)	− 0.265 (0.000)
Mountain	− 0.459 (0.000)	− 0.476 (0.000)
Constant	4.359 (0.000)	4.418 (0.000)
Number of obs	786	786
F(26, 759)	105.27	101.07
Prob > F	0.000	0.000
Adj R-squared	0.78	0.78

In brackets p-values. *Compartimenti* skipped

different timing within the country of the second phase of the demographic transition. We expected high birth rates and low mortality to push up the average number of family members.[5]

Table 2 contains some of the main descriptive statistics of the variables used in our empirical analysis.

The generalized form of the regression model, which does not take into account the interaction part, is the following:

$$AC_j = \alpha_0 + \beta_1 X_{1j} + \beta_2 X_{2j} + \cdots + \beta_n X_{nj} + e_{ij}, \tag{1}$$

where AC_j is the average number of peasant family members for each agricultural area *j*. β_n is the regression coefficient for each variable X (predictor), and e_{ij} is the error term. The fixed part of the model, therefore, includes a_0 and the different predictors of the average number of peasant family members. The results of the two models are summarized in Table 3. In the table we don't take into account the *compartimento* variable.

The variables considered in model 1 explain much of its variability. Regarding farm size, it is, as expected, positively correlated with family size. In contrast, the Gini index is inversely correlated with the dependent variable: the greater the inequality, the smaller the family size. As we noted in the descriptive section, for both tenants

[5] For the calculation of rates, data on births and deaths come from Istat (1934). For the rate denominator, the resident population has been taken from Istat (1932). On the relationship between mortality, fertility and family size see Burch, 1970 and Marco-Gracia (2021).

Fig. 4 Estimates of the *compartimento* variable in family size. Italy (1930–1931). Source: Table 2. Note: in brackets p-value Reference Piedmont

and, and especially, sharecroppers, family size is greater and statistically more significant than the reference value, which consists of drivers of their own land.

The presence of the provincial capital also affects family size. In agrarian zones where there is an urban center, the peasant family is larger in size than in other areas. Regarding the agrarian region, however, we observe that the largest families are found in the plains, and the family gets gradually smaller as altitude gets higher. Demographic variables also play an important role. As expected, their influence is positive for birth rate and negative for mortality. Therefore, it is worth paying attention to demographic changes and their spread across the country.

Compartimento is another relevant element for analyzing family size. To better read how the influence of this variable is distributed across the territory, we have shown in Fig. 4 the values of the coefficients of the model with respect to each of these administrative areas, with an indication of the significance threshold.

The benchmark is Piedmont, the first *compartimento* to experience the start of both the first and second phases of the demographic transition (Di Comite, 1988; Livi Bacci, 1977). Compared to this region, all northern *compartimenti* (except Liguria), show a significant upward difference in the number of family members. While, in the south, the coefficient values are negative, though they are not always statistically significant.

In model 2, interactions between management form and farm surface are included. These variables introduce additional assessment elements. Compared with model 1, in fact, only rent is positively associated with family farm size, whereas sharecropping is positively correlated with family size only in the interaction with farm size. Also in the interactive form, rent turns out to be negatively associated with the average number of family members, but in this case the significance level of this variable is rather low.

Discussion

The size of the peasant family, considered as a production unit, and the surface area of the farm fit each other well. The production needs of the farm are very different in relation to how the primary sector has evolved over time and space. Thus, there are many forces conditioning family characteristics: land ownership, farm size, type of production, agrarian contracts, farming techniques, and the lay of the land.

The research question we posed draws on the results of our models. These results are consistent with the tradition of studies on the topic. But there are at least two important differences. First, it is valid throughout the country and for others forms of management. Second, it works despite the presence of potentially opposing forces. These forces are unequally distributed over the territory, in terms of latitude and altitude, of new crops and of more modern cultivation techniques.

The other emerging element is the coherence of the results with a different relationship between farm size and family size in relation to management. In some contexts, it is the farm that defines the size of the family, in others it is the family that shapes the size of the land farmed. In this respect, attention should be paid to the different relationship with the land represented by the different contract types. The example of sharecropping suggests that in this case the *podere* is the determining factor, confirming the results in the literature. Indeed, such a relationship suggests a more rigid system or, at any rate, a slower mutual adaptation. From model 1 we have seen that being a sharecropper has a greater effect on family dimension, on average, of almost 1 unit (0.795), but this result, in model 2, is also correlated with the increase of average farm surface. This suggest that the interaction term increases the effect of the farm size on family size conditionally to sharecropping (0.439 instead of 0.354). Apparently, not only the sharecropping contract, but the combined effect of the sharecropping contractual structure and land size significantly influences family size.

This same adjustment could be more elastic when we consider farms conducted under lease or ownership. In these cases, our results are compatible with the opposite action. It seems to be the family that adapts the farm size to its size by buying land or leasing it. The strong component of "mixed" farms in non-sharecropping territories may depend on this. The results of model 2 further reinforces this interpretation. The strong positive association between peasant family size and rental management in model 1 (where there is no interaction with farm size) could be the result of reverse causality from that

observed regarding sharecropping, where a positive correlation with the number of family members is found only in the interaction with farm surface.

Looking for further confirmation of this hypothesized relationship, we evaluate the magnitude and significance of this reverse causality effect. We estimate a model using the residual of the regression between farm surface and all control variables, excluding the family size, and, in a second stage, estimating the correlation between residuals and family size. The model confirms this relationship, thanks to a p-value < 0.002, but the r-squared of the regression is very low, only 0.012. However, this weak relationship does not exclude the possibility that within individual agricultural areas it could be strong, if information that our sources do not report, such as soil fertility, were to be evaluated. In areas where sharecropping prevailed, where, as we have seen, it was the size of the farm that determined the size of the family, the land was much more homogeneous in terms of geographical position and soil quality. On the contrary, the small ownership farms were widespread both in territories with a high agricultural vocation, such as in large parts of the Po Valley, and in marginal areas, such as in the Alps. Another aspect that complicates the analysis is that, while the sharecropping farms retained the same surface area for centuries, family farms, as well as families themselves, were subject to continuous changes in size due to inheritance events, reversals of fortune, and the policy adopted by many peasant families of purchasing or renting new land. The variety of these situations and the multiplicity of strategies adopted to keep the land farmed in balance with the size of the family emerges in several cases in the *Monographs* of peasant families published by *Istituto Nazionale di Economia Agraria* (National Institute of Agricultural Economics, Inea), in the 1930s. As is explained in some cases, the patient work of acquiring new lands to cultivate often went hand in hand with the growth of the family. This can be observed both in parts of the Pisan plain (Inea, 1934: 96), as well as in those areas with specialized agriculture in Campania (Inea, 1935: 22), and even in those parts of more modest quality in the Umbrian Apennines (Inea, 1933: 127). Unfortunately, there is practically no literature on this topic. It would be necessary, to look at this question properly, to consider individual data at both the farm and family level.

The relationship with the Gini index also takes place in this same framework. As the index decreases, the peasant family is found to be larger. The result associated with the Gini index, even if is not so easy to interpret, shows that its insertion into the models capture some unobserved aspects of the farm surface–family size relationship. At least, this means that in regions where the family is larger, such as in sharecropping areas, farms are more uniform in size.

Along with variables related to farm characteristics, spatial variables also play an important role. We have seen that agrarian zones including a provincial capital, and thus a large urban center, had larger than average peasant families. This aspect is among the most difficult to interpret and also the least statistically significant. There may be several reasons for this result. Peasant families in urban municipalities or closer to cities might have enjoyed greater advantages in terms of survival; or there was perhaps a lower prevalence of direct holdings in relation to the number of properties. Perhaps land near centers belonged to families not employed in agriculture; as noted previously, in these areas there was a higher probability that some family members were working away from the farm, taking advantage of greater employment

opportunities in urban centers. This needs further investigation. The relationship between family size and geographic variables given by altitude and different *compartimenti* are easier to interpret. Soil quality, which gets worse with altitude, should be considered. The differences among *compartimenti* are also relevant. In this case, the role played by the various types of contracts and their territorial variations is interesting. For example, sharecropping in Emilia was different from sharecropping in Tuscany; the contents of lease contracts in Lombardy and Veneto were not the same (Giorgetti, 1974). Inter-regional differences were reflected in the relationship between the peasant family and the property they farmed.

The historical context considered here takes into account the different demographic and agricultural realities characterizing Italy during very different phases of evolution. This is particularly so with regard to demographic aspects. Both crude birth rates and crude death rates, in our models, prove important. The mechanisms linking CBR and CDR to family size, and not just peasant family size, are obvious. A higher birth rate corresponds to a higher number of minors within the family, while a lower mortality rate increases both the number of children and elderly, in part thanks to higher survival levels in advanced ages. This element plays an essential role in the present work as it depends on the stage of the demographic transition in different regions. Mortality had fallen everywhere, though differences between north and south remained, while birth rates had declined in the northwestern regions, but not yet in the rest of the country. Therefore, in northern Italy, the forces of transition determined family size. In the Northwest and along the Alpine arc, the decline in fertility was more advanced; in the Northeast, fertility was still high, though it had begun to decline. In the South, where the second phase of the transition had not yet begun, the central aspect in determining family size remained, as in the past, the neolocal postmarital residential pattern. This means that family structure was not shaped by economic issues alone. Rather it rested strongly on traditional arrangements that had been established over the centuries in different parts of the country. Of course, the family did not just passively endure their environment. They helped shape the context within which they operated. External forces selected families suited to the type of business, market needs and environmental context. On the other hand, however, the family adapted the farm size depending on family characteristics. This was the case, at any rate, among independent farmers. They could enter the land market by purchasing land, if they had capital or access to credit, or by adding leased land to their holdings. Poorer landowning families could also supply labor to other farms. Then there was no shortage of members of peasant families leaving for the city. During Fascism, migration flows from the countryside to urban areas intensified (Gallo, 2012; Sori, 1975; Treves, 1976). This process, too, would modify the size of the peasant family.

Author contributions
All authors have contributed equally. All authors read and approved the final manuscript.

Funding
Università degli Studi di Udine (524).

Availability of data and materials
The datasets used during the current study are available from the corresponding author on reasonable request.

Declarations

Competing interests
The authors declare that they have no competing interests.

Received: 19 September 2023 Accepted: 12 April 2024
Published online: 07 May 2024

References

Albertario, P. (1936). Gli addetti all'agricoltura nell'ottavo censimento della popolazione. *Giornale Degli Economisti e Rivista Di Statistica, 51*, 585–600.
Alfani, G. (2015). Economic Inequality in Northwestern Italy: A long-term view (Fourteenth to Eighteenth Centuries). *Journal of Economic History, 75*(4), 1058–1096.
Alfani, G., & Ammannati, F. (2017). Long-term trends in economic inequality: The case of the Florentine state, c. 1300–1800. *Economic History Review, 70*(4), 1072–1102.
Alfani, G., & Di Tullio, M. (2019). *The Lion's Share: Inequality and the rise of the fiscal state in preindustrial Europe*. Cambridge University Press.
Angeli, A., & Bellettini, A. (1979). Strutture familiari nella campagna bolognese a metà dell'ottocento. *Genus, 35*(3/4), 155–172.
Anselmi, S. (1990). Mezzadri e mezzadrie nell'Italia Centrale. In P. Bevilacqua (Ed.), *Storia dell'agricoltura italiana in età contemporanea* (pp. 201–259). Venice: Marsilio.
Barbagli, M. (1988). *Sotto lo stesso tetto. Mutamenti della famiglia in Italia dal XV al XX secolo*. Il Mulino.
Barbagli, M. (1990). Sistemi di formazione della famiglia in Italia. *Popolazione, società e ambiente. Temi di demografia storica italiana (secc. XVII–XIX)* (pp. 3–43). Bologna: Clueb.
Barbagli, M., & Kertzer, D. I. (1990). An introduction to the history of Italian family life. *Journal of Family History, 15*(4), 369–383.
Benigno, F. (1989). The Southern Italian family in the early modem period: A discussion of co-residential patterns. *Continuity and Change, 4*(1), 165–194.
Biagioli, G. (2002). La mezzadria poderale nell'Italia centro-settentrionale in età moderna e contemporanea (secoli XV–XX). *Rivista Di Storia Dell'agricoltura, 42*(2), 53–101.
Blandini, E. (1931). *Inchiesta sulla piccola proprietà coltivatrice formatasi nel dopoguerra. 2. Calabria*. Rome: Treves.
Burch, T. K. (1970). Some demographic determinants of average household size: An analytic approach. *Demography, 7*(1), 61–69.
Chayanov, A. V. (1966). *The theory of peasant economy*. Irwin.
Chiapparino, F., & Morettini, G. (2018). Rural 'Italies' and the Great Crisis. Provincial clusters in Italian agriculture between the two world wars. *Journal of Modern Italian Studies, 23*(5), 640–677.
Coppola, G. (2002). La proprietà della terra, i percettori dei prodotti e della rendita. In R. Cianferoni, Z. Ciuffoletti, & L. Rombai (Eds.), *Storia dell'agricoltura italiana 3. L'età contemporanea 1. Dalle «rivoluzioni agronomiche» alle trasformazioni del Novecento* (pp. 217–284). Florence: Polistampa.
Corona, G., & Massullo, G. (1989). La terra e le tecniche. Innovazioni produttive e lavoro agricolo nei secoli XIX e XX. In P. Bevilacqua (Ed.), *Storia dell'agricoltura italiana in età contemporanea* (pp. 353–449). Venice: Marsilio.
Da Molin, G. (1990a). *Strutture familiari nell'Italia meridionale (Sec. XVII–XIX)*. In *Popolazione, società e ambiente. Temi di demografia storica italiana* (pp. 45–81). Bologna: Clueb.
Da Molin, G. (1990). Family forms and domestic service in southern Italy from the seventeenth to the nineteenth centuries. *Journal of Family History, 15*(4), 503–527.
Dau Novelli, C. (1994). *Famiglia e modernizzazione in Italia tra le due guerre*. Studium.
Delille, G. (1988). *Famiglia e proprietà nel Regno di Napoli*. Einaudi.
Della Pina, M. (1990). Famiglia mezzadrile e celibato: le campagne di Prato nei secoli XVII e XVIII. In *Popolazione, società e ambiente. Temi di demografia storica italiana (secc. XVII–XIX)* (pp. 125–139). Bologna: Clueb.
Di Comite, L. (1988). Eterogeneità dei processi regionali di transizione demografica in Italia. *Rassegna Economica, 4*, 801–816.
Di Tullio, M. (2009). La famiglia contadina nella Lombardia del Cinquecento: Dinamiche del lavoro e sistemi demografici. *Popolazione e Storia, 10*(1), 19–37.
Doveri, A. (1990). Sposi e famiglie nelle campagne pisane di fine '800. Un caso di matrimonio «mediterraneo». In *Popolazione, società e ambiente. Temi di demografia storica italiana (secc. XVII-XIX)* (pp. 141–160). Bologna: Clueb.
Doveri, A. (2000). Land, fertility, and family: A selected review of the literature in historical demography. *Genus, 56*(3/4), 19–59.
Flandrin, J.-L. (1979). *Families in former times. Kinship, household and sexuality*. Cambridge: Cambridge University Press.
Fornasin, A. (2002). La proprietà della terra, i percettori dei prodotti e della rendita. In G. Pinto, C. Poni, & U. Tucci (Eds.), *Storia dell'agricoltura italiana. 2. Il medioevo e l'età moderna* (pp. 357–380). Florence: Polistampa.
Fornasin, A., & Lorenzini, C. (2017). Integrated Peasant Economy in Friuli (16th–18th Centuries. In A. Panjek, J. Larsson, & L. Mocarelli (Eds.), *Integrated peasant economy in a comparative perspective Alps, Scandinavia and Beyond* (pp. 95–116). Koper: University of Primorska Press.
Gallo, S. (2012). *Senza attraversare le frontiere. Le migrazioni interne dall'Unità a oggi*. Laterza.
Gaspari, O. (1985). *L'emigrazione veneta nell'Agro Pontino durante il periodo fascista*. Brescia: Morcelliana.
Giorgetti, G. (1974). *Contadini e proprietari nell'Italia moderna. Rapporti di produzione e contratti agrari dal secolo XVI a oggi*. Einaudi.
Istat (1929). Le caratteristiche delle zone agrarie del Regno. *Annali di Statistica* 5.

Istat (1932). *VII Censimento generale della popolazione, 21 aprile 1931. Elenco dei comuni del Regno e loro popolazione residente e presente*. Rome: Istituto Poligrafico dello Stato.
Inea. (1933). *Monografie di famiglie agricole, V, Mezzadri e piccoli proprietari coltivatori in Umbria*. Tipografia Operaia Romana.
Inea. (1934). *Monografie di famiglie agricole, VII, Contadini della pianura livornese e pisana*. Tipografia Operaia Romana.
Istat. (1934). *Movimento della popolazione secondo gli atti dello Stato civile nell'anno 1931*. Rome: Istituto Poligrafico dello Stato.
Istat (1933–34). *VII Censimento generale della popolazione, 21 aprile 1931*. 3.
Istat (1935a). *VII Censimento generale della popolazione, 21 aprile 1931*. 4. *Relazione generale*. 1. *Testo*. Rome: Failli.
Istat (1935b). *Censimento generale dell'agricoltura, 19 marzo 1930*. 2. *Censimento delle aziende agricole*. 2. *Tavole*. Rome: Istituto Poligrafico dello Stato.
Inea. (1935). *Monografie di famiglie agricole, VIII, Contadini della pianura campana*. Tipografia Operaia Romana.
Istat (1936). *Censimento generale dell'agricoltura, 19 marzo 1930*. 2. *Censimento delle aziende agricole*. 1. *Relazione generale*. Rome: Failli.
Istat (1939). *Catasto agrario 1929. Volume riassuntivo per il Regno*. Parte I. *Relazione generale*. Rome: Istituto Poligrafico dello Stato.
Kertzer, D. I. (1977). European peasant household structure: Some implications from a nineteenth century Italian community. *Journal of Family History, 2*(4), 333–348.
Kertzer, D. I., & Hogan, D. P. (1989). *Family, Political Economy and Demographic Change: The Transfortnation of Life in Casalecchio, Italy, 1861–1921*. University of Wisconsin Press.
Lanzinger, M. (2003). Towards predominating primogeniture: changes in the inheritance practices, Innichen/San Candido 1730–1930. In H. Grandits & P. Heady (Eds.), *Distinct inheritances: Property, family and community in a Changing Europe* (pp. 125–144). Lit-Verlag.
Laslett, P., & Wall, R. (1972). *Household and family in past times*. Cambridge University Press.
Levi, G. (1990). Economia contadina e mercato della terra nel Piemonte di antico regime. In P. Bevilacqua (Ed.), *Storia dell'agricoltura italiana in età contemporanea* (pp. 535–553). Venice: Marsilio.
Livi, L. (1915). *La composizione delle famiglie. Studio demografico*. Rome: Ricci.
Livi Bacci, M. (1977). *A history of Italian fertility during the last two centuries*. Princeton University Press.
Lorenzetti, R. (2000). La scienza del grano. Nazareno Strampelli e la granicoltura italiana dal periodo giolittiano al secondo dopoguerra, Roma: Pubblicazioni dell'Archivio di Stato, Ufficio centrale per i beni archivistici, Ministero per i beni e le attività culturali.
Manfredini, M., & Breschi, M. (2008). Socioeconomic structure and differential fertility by wealth in a mid-nineteenth century Tuscan community. *Annales De Démographie Historique, 1*, 15–33.
Manoukian, A. (1988). La famiglia dei contadini. In P. Melograni (Ed.), *La famiglia italiana dall'Ottocento ad oggi* (pp. 3–60). Laterza.
Marco-Gracia, F. J. (2021). Adapting Family Size and Composition: Childhood Mortality and Fertility in Rural Spain, 1750–1949. *Journal of Interdisciplinary History, 51*(4), 509–531.
Martinelli, P. (2014). Von Thünen south of the Alps: Access to markets and interwar Italian agriculture. *European Review of Economic History, 18*(2), 107–143.
Martinelli, P. (2016). Land Inequality in Italy in 1940: The New Picture. *Rivista Di Storia Economica, 32*(3), 303–350.
Massullo, G. (1991). Contadini. La piccola proprietà coltivatrice nell'Italia contemporanea. In P. Bevilacqua (Ed.), *Storia dell'agricoltura italiana in età contemporanea* (pp. 5–43). Venice: Marsilio.
Merzario, R. (1989). *Il capitalismo nelle montagne. Strategie famigliari nella prima fase di industrializzazione nel Comasco*. Il Mulino.
Poni, C. (1978). Family and podere in Emilia Romagna. *The Journal of Italian History, 1*(2), 201–234.
Poni, C. (1982). La famiglia contadina e il podere in Emilia Romagna. In C. Poni (Ed.), *Fossi e cavedagne benedicon le campagne* (pp. 283–356). Il Mulino.
Ricci, V., & Zanibelli, G. (2021). For a multidimensional measure of land inequality in 1930s Italy. A historical-statistical analysis. Asociación Española de Historia Económica (Documentos de trabajo AEHE 2107).
Rossi, R. (1931). *Inchiesta sulla piccola proprietà coltivatrice formatasi nel dopoguerra. 3. Lombardia*. Rome: Treves.
Sella, D. (1987). Household, land tenure and occupation in North Italy in the Late Sixteenth Century. *Journal of European Economic History, 16*(3), 487–509.
Sereni, E. (1975). *La questione agraria nella rinascita nazionale italiana*. Einaudi.
Serpieri, A. (Ed.) (1935). *La mezzadria negli scritti dei georgofili. 1873–1929*. Florence: Edizioni agricole.
Serpieri, A., & Mortara, G. (1934). Politica agraria fascista. Annali di. *Economia, 9*(2), 209–303.
Smith, R. (Ed.). (1984). *Land, Kinship and life-cycle*. Cambridge University Press.
Sori, E. (1975). Emigrazione all'estero e migrazioni interne in Italia tra le due guerre. *Quaderni storici, 29/30*(2/3), 579–606.
Treves, A. (1976). *Le migrazioni interne nell'Italia Fascista*. Einaudi.
Viazzo, P. P. (1989). *Upland communities: Environment, population and social structure in the Alps since the Sixteenth Century*. Cambridge University Press.
Viazzo, P. P., & Albera, D. (1990). The peasant family in Northern Italy, 1750–1930: A reassessment. *Journal of Family History, 15*(4), 461–482.
Vitali, O. (1990). I censimenti e la composizione sociale dell'agricoltura italiana. In P. Bevilacqua (Ed.), *Storia dell'agricoltura italiana in età contemporanea* (pp. 377–414). Venice: Marsilio.

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