Large families (in a context of lowest-low fertility): what do we know about them?

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Abstract:
From 1961 to 2011 in Italy the average number of individuals per household decreased from 3.6 to 2.4, and the proportion of household with 6 members or more dropped from 14.4% to 1.4%. Large families (4-plus children) are often associated with poverty, but, given their rarity, it is extremely difficult to study them. They are basically unknown, especially in contexts of very low fertility. We aim to characterize large families (with 4-plus children) and to highlight what distinguishes them from families with fewer children, for both native and non-native population. Using data from the 2011 Italian Population and Housing Census, demographic characteristics of large families out of all families with children are described. In order to analyze factors associated to large families, logistic regression models are applied to predict whether families were large (four-plus children) or small (one or two children). Results suggest a socio-economic polarization of large families and a negative association with women's education among both native and non-native populations. Only for Italian couples repartnering is a predictor of larger families and couples with self-employed men are more likely to have large families than employees. Internal cultural and institutional differences are also relevant.

Keywords: Large families, native and foreign couples, socio-economic status, repartnering, census data, Italy

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Abstract: From 1961 to 2011 in Italy the average number of individuals per household decreased from 3.6 to 2.4, and the proportion of household with 6 members or more dropped from 14.4% to 1.4%. Large families (4-plus children) are often associated with poverty, but, given their rarity, it is extremely difficult to study them. They are basically unknown, especially in contexts of very low fertility. We aim to characterize large families (with 4-plus children) and to highlight what distinguishes them from families with fewer children, for both native and non-native population. Using data from the 2011 Italian Population and Housing Census, demographic characteristics of large families out of all families with children are described. In order to analyze factors associated to large families, logistic regression models are applied to predict whether families were large (four-plus children) or small (one or two children). Results suggest a socio-economic polarization of large families and a negative association with women's education among both native and non-native populations. Only for Italian couples repartnering is a predictor of larger families and couples with self-employed men are more likely to have large families than employees. Internal cultural and institutional differences are also relevant.

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1. Introduction

The persistent decline in fertility rates, with Italy reaching the lowest-low level in the 1990s, has combined with increasing numbers of family disruptions and a lengthening life expectancy to strongly affect family size in Italy. From 1961 to 2011, the average number of individuals per household decreased from 3.6 to 2.4, despite the official definition of family being widened in the meantime. Over the same period, the proportion of households with 6 or more members dropped by 90% (from 14.4% to 1.4%). Against this backdrop, we are interested in studying a very special minority, i.e. families with four or more children, which are becoming increasingly rare in the context of a lowest-low fertility. We call them "large families".

Large families are often associated with poverty (Steck 2004, Bradshaw et al. 2006, Iacovou and Berthoud 2014, Stone and Berrington 2017). The latest Italian Wellbeing and Sustainability Report (ISTAT 2018a) shows that the rate of severe material deprivation and the risk of poverty among couples with at least three children are much higher than among couples with fewer children. On the other hand, recent studies conducted at macro level in rich countries have shown a reversal of the relationship between development and fertility rates, with the latter recovering in economically advanced regions (Luci-Greulich and Thévenon 2014, De Rose et al. 2019). There is evidence to suggest that fertility rates are likely to increase in areas where parents have the opportunity to combine work and family life. If this were to hold at micro level too, it is worth investigating whether large

families form a homogeneous group or include different typologies, based on polarized socio-economic conditions, for instance. We aim to characterize large families and to highlight what distinguishes them from families with fewer children.

Being a large family is not a stable feature of the life course of a family. A family becomes "large" when the number of children increases. A second way to form a large family is when two single-parent families (with parents who may have experienced the breakdown of a previous union) start living together as a single family unit. A third way involves new couples in which one or both partners have children from a previous relationship and give birth to common children together. Once a large family has been formed, its size is still only a temporary feature, as the children gradually leave home. In short, a family can only be large in some stages of its life (Toulemon 2004).

Little is known about large families. Their relative rarity makes it difficult to rely on survey-based data because the sample sizes are usually not large enough to enable in-depth analyses of their characteristics, or of the processes behind their formation. As a family's composition changes during its life course, large families should also be studied longitudinally, following up their formation and dissolution, but large samples of panel data are very rare. In this paper we use Italian population census data - the only data source available that enables us to conduct a detailed analysis on a small subgroup of cases.

This study aims to shed light on at least some of the characteristics of large families in Italy, taking a cross-sectional perspective. What do we know about parents with at least 4 children? Are there differences in economic factors that can explain the formation of large families, such as family income or social class, or female education level? Are large families all concentrated among the poorest population groups, or is there a polarization between less and more affluent families? Now that the traditional differences in fertility between Italian regions have disappeared, does the same apply to large families? Are cultural context and norms still influential? Do family changes relating to the Second Demographic Transition (union dissolving and repartnering) affect the formation of large families? In what ways do large families of foreign origin (which have increased significantly in number in the last decade) differ from the native population's large families? In this paper, we answer these questions on the strength of data from the 2011 Italian Population and Housing Census. After discussing factors associated with a higher probability of building a large family in the light of the existing literature and empirical studies (section 2), we describe how we selected the data we use and our methodology (section 3). We present a preliminary description of large families (section 4), before discussing the choice of covariates and the results emerging from our regression models, run separately for Italian and foreign couples (section 5). The implications of our findings are discussed in the final part of the paper (section 6).

2. Theoretical and empirical background on large families

On the topic of large families, the literature has paid more attention to high fertility than to their composition and characteristics. Given the general paucity of literature on large families, in reviewing previous studies we consequently focus mainly on the processes contributing to their formation, i.e. high fertility and repartnering. That said, the overlap between determinants of high fertility and large families is not perfect because a large-sized family is also compatible with societies where many couples are childless or have few children, while some of them reaching high parities. We therefore also consider the literature on high parities, where available. Unfortunately, given the relatively small proportion of large families, most of the literature focuses on parity 3 or more, rather than 4 or more.

For the sake of simplicity, we group the explanations for high fertility into two macro-categories, i.e. factors relating to a family's socio-economic conditions, and to contextual determinants. This is a very rough classification, and we are aware that forcing every determinant to fit within a given category is a limitation because they are often strongly interrelated. We also implicitly assume that each determinant may affect family size, but we are aware that the reverse may also apply, or both effects may be at play. In other words, the relations we observe are not intended to be interpreted as

causal explanations. Finally, although theories often recall general concepts with a given level of abstraction, the published empirical analyses that we consider here necessarily used different variables as proxies for said general concepts, making it difficult to compare their findings. Bearing these simplifications in mind, we briefly review the possible explanations for high fertility. We end our literature review with some comments on the rare but precious contribution of works on the determinants of large family size related to repartnering.

Explanations for high fertility related to economic and social conditions
- Economic resources. Economic theory describes three relations between income and fertility. A *positive association* between social status and fertility is expected when couples at the top of the ladder would have numerous children because they have better chances of raising them (*income effect*). A *negative association* would be induced by the opportunity costs being greater the higher the income and social status. New Home Economics (NHE) theory (Becker 1965) underscores the strong differences in gender roles in the post-war nuclear family in Western societies, the male being the breadwinner, and the female the homemaker and carer. But women's life courses have come increasingly to resemble those of men, mainly in terms of a better education and growing attachment to the labor market. The better-educated women, who could access better-paid jobs, would consequently find it more costly to be absent from the labor market (*substitution effect*; Becker and Lewis 1973, Skirbekk 2008). Another approach suggests a U-shaped association, that can be explained through the different behavior of parents wanting to invest in the quality of their children (Becker and Lewis 1973, in the sphere of economic theory; Bourdieu 1984, in that of social theory). High-income couples have limited constraints on their chances of having both a (relatively) large number of children and opportunities for their children's futures. Low-income couples, who cannot invest in economic and cultural capital, are more oriented towards the social capital achievable with large families. In between, middle-income couples have to balance the number of children they have with the investments they make in order to offer their offspring greater opportunities in terms of social mobility.

- Gender roles. Another dimension that can lead to changes in fertility patterns concerns the role of gender in the job market and in couples. As predicted by NHE theory, gender convergence in market productivities means rising opportunity costs of motherhood, particularly among better-educated, career-oriented women. The consequence is a postponement of motherhood and a decline in fertility. A second phase in the gender revolution is expected, however. As gender equality increases and men become more and more involved in family life and childcare, and a new normative framework characterized by gender-egalitarian norms spreads, fertility can be expected to increase (Goldscheider et al. 2015, Esping-Andersen and Billari 2015).

- Values and beliefs. The theory of Second Demographic Transition (SDT) takes a different perspective (Van de Kaa 1987, 2004; Lesthaeghe 1995), emphasizing the influence of the cultural shift towards individual self-fulfillment in Western societies, and the diffusion of a post-materialist value orientation. According to this approach, having children is just one of several possible choices. The relationship between social status and fertility may change, depending on the balance between opting to have a child (or another child) and making other choices. For example, in order to explain a possible positive relation between fertility and education, Kravdal (2001) suggests that better-educated women may take the lead in the shift towards more child-friendly preferences, and have begun to appreciate the emotional returns of parenthood more than before.

Empirical research offers no clear evidence of the above-described relations. Differences emerge, depending on the variables used to measure socio-economic status, for instance, or on the choice of dependent variable (Iacovou and Berthoud [2014] consider the number of children; Stone and Berrington [2017] a binary response indicating whether or not a woman conceives a second, third or

fourth child during each person-month of observation in every birth-interval; similarly Impicciatore and Dalla Zuanna [2017] analyze the propensity to have a first, second and third child; and Kravdal [2001] uses parity progression ratios). Other differences may be due to how statistical models are formulated, e.g. when parity progression ratios are modelled separately, or jointly controlling for unobserved heterogeneity (see Kravdal 2001), or to the choice of units (only women, or both partners in the couple) or control variables.Positive relations between women's education and third births were observed in Norway, Finland, Sweden, and the US (Kravdal 1992, Rønsen 1998, Kravdal and Rindfuss 2008). According to Hoem et al. (2001), better-educated women's greater propensity to have a child (in Austria) can be explained by their better position in the labor market. A higher family income may also play a part in the sense of making a family better able to afford an additional child. A positive relation between women's income and fertility was found by Ekert-Jaffé (1986) in France, and by Hoem and Hoem (1989) in Sweden.

On the other hand, a negative relation between husbands with high incomes and the likelihood of having a third child has been found in Norway (Kravdal 1992). In the 1999 Census in France, the proportion of mothers with three or more children was higher among women who were not working or were blue-collar workers than among those who were managers. The same was true of fathers with at least four children (Pirus 2004). In the UK, Iacovou and Berthoud (2014) also identified a negative relation between parents' participation in the labor market and families with four children or more. These authors analyze three factors: employment, working hours, and average hourly earnings. The negative relation is very strong for mothers, especially for employment rate, and slightly less so for working hours. Fathers of large families have lower employment rates than fathers of smaller families, and they earn less than fathers with two or three children (the highest earners).

Non-linear relations have been documented in other empirical studies. In the UK, Iacovou and Berthoud (2014) found a negative gradient between mothers' education and the probability of their having a large family; but this relation changed, taking on an inverted J shape, after controlling for mothers' age at the time of their first child's birth. Unlike Iacovou and Berthoud, Stone and Berrington (2017) found no effect of socio-economic status (women working full-time, working part-time, economically inactive, or unemployed) on the chances of women having three or four children in the UK. Again, an inverted J-shaped relation was found for fathers' education and the transition to a third birth in France, while the corresponding curve for Sweden was U-shaped (Corman 2000). A U-shaped curve was also seen in France and England for the relation between third births and partners' social group, but the groups with higher fertility were not the same in the two countries (Ekert-Jaffé et al. 2002).

Focusing on Italy, analyses have highlighted the important influence of women's education on their fertility patterns, though the results are not always consistent. Women with more human capital and economic resources do show a greater propensity to have a third child, particularly in northern Italy, among women in employment, and among younger cohorts (which would suggest changing behavioral trends) (Mucciardi and Rizzi 2006; Impicciatore and Dalla Zuanna 2017). A study by Rizzi (2005) showed that fathers who were entrepreneurs and self-employed were more likely to have a family with 3+ children than employees, especially in the central and northern Italian regions – a finding presumably due to the income effect. On the other hand, a later study (Impicciatore and Dalla Zuanna 2017) found a negative association in the South, while a U-shaped relation had been observed in five Italian provincial capitals (Mencarini and Tanturri 2006), and in southern Italy (Mucciardi and Rizzi 2006).

The role of the gender system was explored by Mencarini and Tanturri (2006) who found that a lack of men's involvement in domestic tasks at the beginning of the union was associated with high (and low) parities, suggesting that numerous families have a more traditional gender organization. Some authors nonetheless interpret the positive effect of income and education on third births in terms of greater gender equality. Rizzi (2005) found a positive effect of income and suggested that it may be indicative of a greater gender equality in better-off couples. According to Impicciatore and Dalla Zuanna, the opposite relationship between education and third child births observed in the north and

south of the country, "suggests that the north of Italy is moving towards a more gender-equal system where couples, who are similar in terms of human capital, follow a model of dual careers and shared home production. Conversely, in the south the negative effect of education on the third child birth may mirror the lower level of gender-equity and the more conservative attitudes toward the mothers' and wives' roles in comparison with the rest of the country" (Impicciatore and Dalla Zuanna 2017, page 2312).

Explanations for high fertility related to the context
- The propensity to have large families can be influenced by different conditions in the places where people live, which can support or hamper large families. These conditions may originate from fiscal and welfare policies directly or indirectly affecting family life, such as childcare services, lower taxes, financial aid, and public housing. Other conditions take effect through more indirect or even symbolic actions, creating a social environment more or less family-friendly. Welfare policies vary from one country to another (Esping-Andersen 1999, Thévenon et al. 2014), but in this study we are more interested in local factors operating within Italy's borders. Of course, local administrations may implement national schemes differently, and develop their own additional local initiatives.

- Place of residence is also characterized by different traditions and cultural climates. Geographical differences (from those between broad macro-areas to the more circumscribed between regions or provinces) are rooted in political, economic and cultural history. Italy's history has been very fragmented and its geographical diversity has shaped its historical demographic patterns (Livi Bacci 1977) and its more recent demographic dynamics. Second Demographic Transition and the related implications for gender roles have been spreading from north to south, so Italy cannot be considered as a homogeneous country (ISTAT 1999, Vitali and Billari 2015, Caltabiano et al. 2019). Place of residence is also definable not only on the grounds of administrative boundaries, but also on other, more transversal features. To give an example, there are the differences between urban and rural areas, and between more or less densely populated areas, which can proxy more or less open, economically and culturally active social environments, characterized by different living conditions and cultural climate. Expanding the meaning of the contextual dimension, individuals' place of residence is also where proximity and social networks strengthen the beliefs, values and norms that orient them towards more traditional or innovative attitudes and personal choices, presenting certain types of behavior as prevalent, and more likely to be regarded as normative (Lesthaeghe and Neels 2002, McQuillan 2004). In this setting, ethnicity or place of origin can also strongly influence people's behavior, acting as a driving force towards change and/or as an identity factor that tends to consolidate traditional behaviors.

It is difficult to measure the influence of national family-oriented policies on large families. Generally speaking, in developed countries, such policies have some positive short-term effects on fertility, but uncertain long-term effects, mainly because they are often temporary and depend on the stability of the economic environment (Thévenon 2011; Thévenon and Gauthier 2011). Their impact also frequently interacts with other covariates. A longitudinal analysis conducted in France shows that a history of more generous family policies results in less socially polarized fertility patterns than in Britain, although parity progression ratios at third births are higher among women who left the labor force in both countries (Ekert-Jaffé et al. 2002). In Australia a reduction in public family support for women who were not working discouraged parity progression among less educated mothers by comparison with those with university degrees (McDonald and Moyle 2019). In Italy, the lack of a coherent system of policies to support childbearing or facilitate work-family reconciliation has often been highlighted (UN 2015). Some local measures have been introduced, but they have not always proved effective. Boccuzzo et al. (2008) highlighted the positive effect of a fiscal bonus on second- and higher-order births for low-income families in Friuli Venezia Giulia, in the north-east of Italy. Dalla Zuanna et al. (2019) could find no direct effect of policies implemented in Trentino Alto Adige

(also in the north-east), but concluded that "a combination of economic development and measures aimed at reconciliation between work and family can convince some couples to have an additional child". These two autonomously-administered provinces have implemented a system of incentives and measures in favor of families with children to promote a family-oriented social environment, and their third-order total fertility rate is higher than elsewhere in Italy[1].

Housing has also been found related to current or expected fertility (Ström 2010; Vignoli et al. 2013), but the association depends partly on available resources or access to affordable housing, and partly on the housing market, access to mortgages, and rules governing access to social housing (Mulder and Billari, 2010). The main problem with interpreting the influence of housing on fertility lies in that it is impossible to disentangle the causal direction of the relationship between tenure or number of rooms and family size. A flexible housing market enables the choice of house to be adapted to changing family needs, whereas in a rigid market purchasing decisions may be prompted by expectations of a more or less numerous family in the future (Kulu and Steele 2013, Ermisch and Steele 2016). Opportunities or constraints interact with a psychological effect relating to the sense of security, because owning a home or living in social housing makes people feel more secure than renting a private home (Vignoli et al. 2013). The cost of purchasing a house can also compete with the cost of raising children, however (Murphy and Sullivan 1985; Stone and Berrington 2017). Indirectly, housing is also an indicator of a family's economic conditions in a given context.

Italy's housing market is inflexible and the search for houses for rent is not encouraged. The tendency for couples to buy a house as soon as they marry increased in the second half of the 1900s. Among couples who married in the 1990s, only 35% went to live in rented accommodation (Barbagli et al. 2003). According to the 2011 Census, the proportion of households living in their own home was 72.0%, above the EU average (63.7%), and similar to that of other Mediterranean European countries. Only the Baltic and Eastern European countries have larger proportions of home-owners[2]. As far as we know, the association between tenure of dwellings and fertility has never been studied in Italy. In the UK, Stone and Berrington (2017) found a higher likelihood of transition to third or fourth births among people living in social-rented housing, after accounting for the effect of household income and tax credits received.

Internal geographical differences are often of interest in Italy. The north-south divide is a dimension that is always included in analyses on social behavior. It is associated with different modernization processes, generally involving a developed north with a strong industrial and urban concentration as opposed to a backward south. As concerns large families, the above-mentioned studies on the relationship between socio-economic resources and fertility rates produced different results in northern and southern regions. This dichotomy often hides other, important internal differences and local peculiarities, however. For example, families in northern Italy with three or more children are more common in small municipalities, i.e. those with a population of less than 10,000, and especially those with populations below 2,000 (Rizzi 2005), after accounting for other individual socio-economic characteristics. This is probably because small municipalities offer a more family-friendly lifestyle, and lower costs of living. This finding was confirmed in a central Italian region (Marche), where fertility rates were higher in small municipalities too (Zagaglia and Morettini 2015).

As Italy is a Catholic country, a strong attachment to Catholic values has often been mentioned as one way to explain the delayed diffusion in Italy of changes in family behaviors. The polarization between north and south is likewise sometimes explained in terms of differences between parts of the country that are more secularized or more anchored to religious and traditional values. The mechanisms by which religion affects people's choices regarding family are not clear, however. One study on union formation suggested, for instance, that social pressure and the judgment of friends and acquaintances are more important than Catholic prescripts (Vignoli and Salvini 2014). As regards

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[1] http://dati.istat.it/Index.aspx?lang=en&SubSessionId=2e94de76-76d7-4bad-83a1-6fa3709705e8, accessed 6th June 2019
[2] Eurostat database, table cens_11htts_r2, accessed 19th June 2019

high fertility, the influence of religion on individual choices is still visible in Italy, since couples that are more religious are more likely to have three children or more (Rizzi 2005; Mencarini and Tanturri 2006).

Despite Italy's history of immigration now spanning three decades, the literature on the composition of foreign families living in the country is still scarce. Little is known about the presence of large families by country of origin, and there are no studies on the fertility of immigrants by birth order. The only clue we have is the total fertility rate, which is higher for foreign women than for Italian women (ISTAT 2018b). Cross-sectional fertility rate estimations are a weaker proxy of large family building for immigrant women than for Italian ones, however, because of the strong interaction between reproductive choices (before and after moving to Italy) and migratory projects (Mussino and Strozza 2012). Nevertheless, large families might be expected among some immigrant groups, as suggested by the very high fertility rates seen for some foreign women. Sobotka (2008) found that Somali and Pakistani women living in Europe had a TFR higher than 4, far higher than that of immigrant women coming from Europe, whose TFR was usually similar that of autochthonous women, or somewhat lower.

Determinants of large families related to repartnering:
- As mentioned in the Introduction, repartnering contributes to the building of large families when partners with cohabiting children from a previous union set up house as a new family unit, and/or when they have any additional children together.

Analyses on repartnering support the positive effect on post-dissolution childbearing, compared with the case of separated women living alone, with some differences between remarried or cohabiting couples (Jefferies et al. 2000; Meggiolaro and Ongaro 2010). A union disruption that is not followed by a new partnership reduces exposure to conception opportunities, but a perception of the new union as potentially unstable can negatively affect repartnered women's intentions to have other children. Then there is the opposite circumstance to consider: previously-separated women may revise their family size targets to strengthen the new union, and satisfy the desires of the new repartnered couple. Other determinants may have a role in post-dissolution fertility too. A partner's history of parenthood can matter because, having had a previous family – with the associated financial and caring responsibilities – can make them less inclined to have (additional) children than hitherto childless partners. Finally, decisions regarding any further children can be influenced by the number and features of the children coming from the previous unions. Their reported effect varies in the literature, however, and changes from one European country to another (for a review, see Meggiolaro and Ongaro 2010).

Focusing on empirical research regarding high fertility in stepfamilies, in France and England the likelihood of having a third child is reportedly higher among women in their second union (both remarried and cohabiting) than among married women in their first union (Ekert-Jaffé et al. 2002). In France, the probability of post-dissolution childbearing is higher among women with three children than for those with one or two (but lower than for those without any children – Beaujouan and Solaz 2008). In the UK, on the other hand, the probability of a birth in the new union is associated not with parity, but with the age of the youngest child (Jefferies at al., 2000). Moreover, the contribution of stepfamilies to the category of large families in the UK comes only from family units that include children from the couple's first *and* second unions, not from family units comprising couples with children only from their previous union (Iacovou and Berthoud 2014).
In Italy, little is known about the contribution of repartnering to the formation of large families, partly because stepfamilies have only recently begun to increase in number; and they are still less common than in other European countries. In 2007 they accounted for just 5.3% of couples, and 6.1% in 2012. Of these Italian stepfamilies, 54% have children, mostly from the second union (64%); and only 14% of them have children from both past and present unions (Gabrielli and Meggiolaro 2015).

3. Data and analytical strategy

3.1. Data

The present study used data from the 2011 Italian Population and Housing Census collected by the Italian Statistics Institute (ISTAT)[3]. The census concerned the whole population and data were collected using two types of questionnaire. A short form was used to collect information on basic population characteristics, such as place of usual residence, sex, age, occupational status, and family and household membership. A long form was used to collect these basic characteristics, plus further information on individuals and households (e.g., occupation sector, amenities, and tenure of dwellings). The long form was completed by everyone living in municipalities with a population under 20,000, and by a representative sample of the population living in larger towns and cities, while the remainder of the latter population completed the short form. In other words, basic characteristics are available for the whole population, and more specific details for a sub-group of the population.

Given their survey design, censuses provide data on a sufficiently large number of cases to enable relatively rare phenomena - like families with four or more children – to be studied. In the present case, we were able to identify 11,418,517 families with children[4], and 163,640 of them were families with at least four children. We considered as large families those with four or more children, rather than three or more, as suggested by Iacovou and Berthoud (2014), because families with four or more children have outcomes (e.g. poverty) and needs (house and car sizes) that are clearly distinguishable from those with three children (medium-sized families)[5]. In other words, adopting an analytical dividing line between large and small family units at the third child would not give us an accurate picture of the characteristics of large families.

3.2 Analytical strategy

First we developed some descriptive analyses to obtain information on the number and prevalence of large families out of all families with children, distinguishing them by certain basic demographic characteristics. Then we went on to analyze the determinants of large families. To do so, we used logistic regression models to predict whether families were large (four-plus children) or small (one or two children) in a specific group of family units, i.e. those comprising couples[6], in which the woman was 40-44 years old at the time of the census. As regards the dependent variable, we excluded couples with 3 children that, as previously argued, represent medium-sized families. We restricted our analyses to couples with woman aged 40-44 because the census provides cross-sectional data, so this seemed the best way to approximate the completed family's size. The distribution of large

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[3] In our descriptive analyses, we also occasionally used data from the 2001 Census (https://www.istat.it/it/censimenti-permanenti/censimenti-precedenti/popolazione-e-abitazioni/popolazione-2001). Data processing was done at the ISTAT Laboratory for Micro-Data Analysis (ADELE), in compliance with Italian legislation on statistical confidentiality and personal data protection. The results and opinions presented in this work are the exclusive responsibility of the authors and cannot be considered as official statistics.

[4] In this study, a family (or nucleus) with children is identified as a group of cohabiting individuals comprising a single parent or a couple with children. A child is defined as any (cohabiting) individual who is the offspring of a single parent or of one or both parents forming the couple. Taking this perspective, the definition of "child" is not limited to dependent children, but also includes any children (whatever their age) who have not yet formed their own family. Individuals belonging to the same family were linked with the household and family codes to build a dataset of families containing the relevant information on each member (mother, father, children), and on the family as a whole (type of family, place of residence, etc.). Any other individuals cohabiting with a family were not considered.

[5] The third child might not necessarily be the outcome of a deliberate choice (by couples who may have intended liked to limit the family size to two children), or might be the result of a multiple birth at a second pregnancy. These considerations are more likely to concern the birth of a third child since most women in Italy have one or two children, and the ideal number of children per woman is around two.

[6] We restricted our analyses to couples living in houses or apartments (those living in caravans or shacks were excluded).

families by the mother's age (Figure 1) shows that the modal percentage corresponds to age 40-44, making this age group most likely to coincide with the family in its completed stage. In other words, we should find couples that are unlikely to be planning to have more children, and most of their children are unlikely to have left home. These women were born between 1967 and 1971. Like women born in previous years, they continued to tend to postpone having children, and to have fewer children, particularly after the second birth. These trends became even more accentuated among women born in subsequent years, so a further contraction in the number of large families can be expected in the years after the 2011 Census.

Figure 1. Couples with 4-plus children by age of mother: percentage distribution, 2011 Census
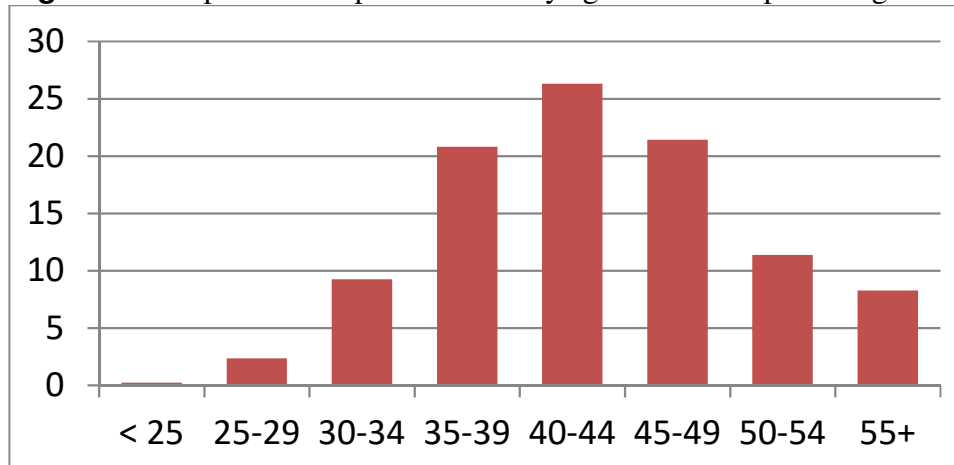
Assuming that the determinants of large families could differ between native and foreign couples, we applied the regression analyses separately to two subgroups of couples: those with both Italian partners and those with both foreign partners. For this purpose, we considered individuals' country of birth instead of their citizenship because the latter could produce an underestimation of foreign couples, due to the number of foreigners obtaining Italian citizenship after arriving in Italy (about 1.5% of foreign residents annually during the years around the 2011 Census[7]). Mixed couples were not considered in our study because we wanted to analyze couples as homogamous as possible in terms of the partners' cultural background.

In this way, from the 8,766,690 couples with children, we obtained 1,294,921 couples with 1, 2 and 4-plus children, and mothers aged 40-44 who were living together in a house or apartment. Among these families, we identified 1,158,674 Italian couples and 76,654 foreign couples[8], who formed the population of interest for our regression analyses. The vast majority (98% and 90%, respectively) consisted of couples with 1 or 2 children. Of those with 4-plus children, 28,044 were Italian, and 7,754 were foreigners.

4. Demographic outcomes of large families: trend and structure

In 2011, Italy's large families amounted to just over 160,000 units, representing 1.4% of all families with children. Their number had declined since the 2001 census, when there were just over 200,000, corresponding to roughly 1.8% of all families with children. Looking at large families from another point of view, the proportion of children living with 3 or more siblings was 4.8% in 2001, and 3.8% in 2011. When only minors with mothers under 40 years of age were considered, this trend was reversed, with 4.1% in 2001, 4.4% in 2011.

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[7] ISTAT database http://demo.istat.it/
[8] The remainder were mixed couples, including 45,435 comprising an Italian man and a foreign woman, and 14,158 consisting of a foreign man and an Italian woman.

Figure 2. Large families (x100 families with children), by a) area of residence, b) type of nucleus and c) citizenship (only couples). Prevalence and percentage distributions, 2001 and 2011
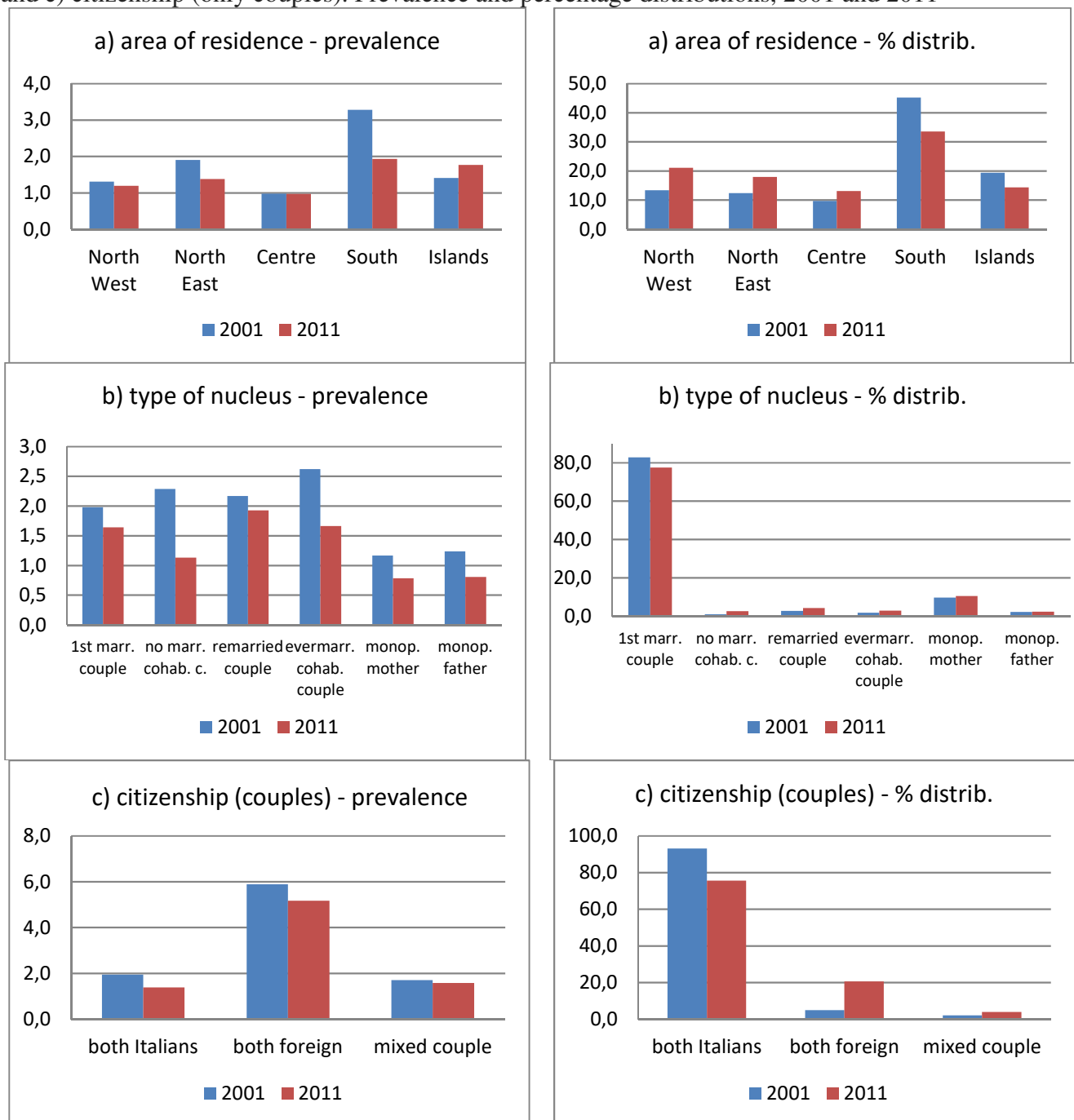
More than half (58%) of the large families lived in the south of Italy or islands (Sicily and Sardinia), but ten years earlier the corresponding figure had exceeded 65% (Figure 2). There were still significant territorial differences in terms of their prevalence, though they were attenuated compared with the past, with the proportion of large families being highest in the south (1.9% of all families with children) and lowest in central Italy and islands (about 1%). In 2001, large families had accounted for more than 3% of families with children in the southern parts of the country.

The vast majority of large families consisted of couples, with single-parent family units only accounting for 13%. The structure of large families had changed since 2001, when 3% of the couples involved were unmarried and 5% were repartnered. Ten years on, these figures had increased to more than 6% and 8%, respectively. The proportion of large families out of all families with children dropped for all types of family unit, however, and especially for unmarried couples. As expected, among all families with children, the prevalence of large family units containing couples was higher

(almost double that of the single-parent units). The prevalence distributions of large families by mothers' age were similar in the two types of family unit, however, peaking for women aged 40-44, (amounting to 2.6 and 1.3 respectively, see Figure 3). Single fathers were older than single mothers. All types of family unit were most prevalent in the southern regions (Figure 4).

Figure 3. Prevalence of large families (x 100 families with children), by the age of the mother (or single father) and the type of nucleus, 2011
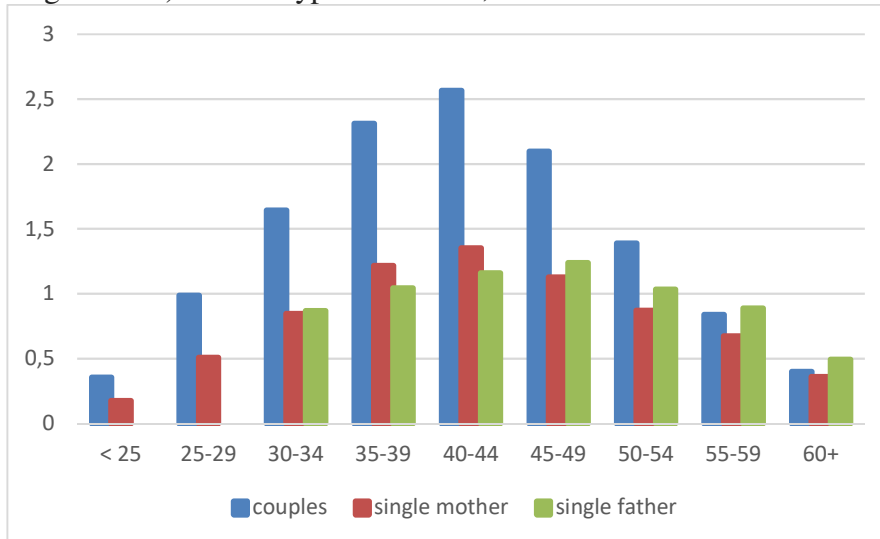
Figure 4. Prevalence of large families (x100 families with children), by area of residence and type of nucleus, 2011
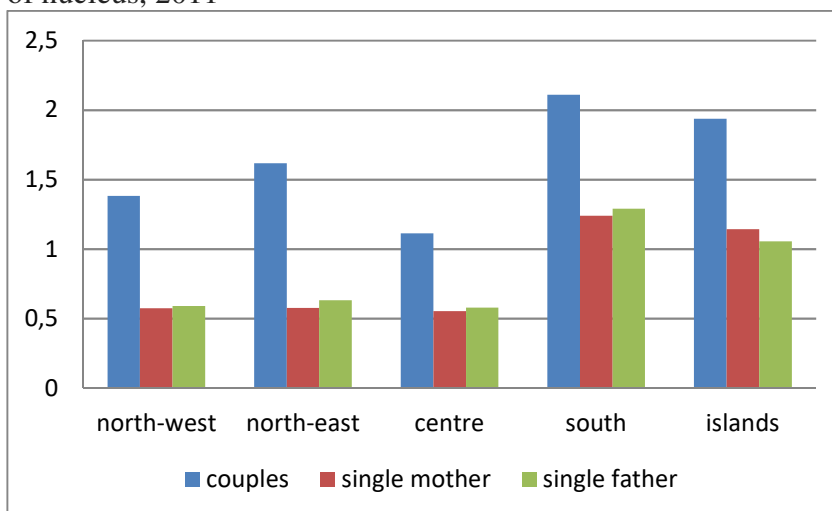
In parallel with the number of foreign citizens in Italy, the presence of large foreign families also increased from 2001 to 2011 (see Figure 2). In 2001, more than 90% of large families included parents who were both Italian, while they were both foreign in less than 5% of cases. Ten years later, the percentages had changed to nearly 75% and 20%, respectively. The presence of foreign single-parent families had grown likewise from 4% to 14% during the same period. Interestingly, as seen in the total population, the prevalence of large families declined among foreigners too, though the difference between the families of foreigners and those of Italians remained considerable (Table 1), especially for units comprising couples (5.2% of the former and 1.4% of the latter), but also for single-parent families (Table 2). When couples consisted of two Italians, no significant differences emerged as concerns the type of union (married or unmarried, repartnered or in their first union). When couples consisted of two foreigners, however, there were lower proportions of unmarried couples, regardless

of whether they were in their first union or repartnered. There were intermediate values for mixed couples, though they tended to come closer to the proportions seen for the all-Italian couples.

Table 1. Prevalence of large families (x 100 families with children) among couples, by citizenship of partners and type of couple, 2011

Both Italian partners				Both foreign partners			
	First union	Ever Married	Total		First union	Ever married	Total
married	1.38	1.51	1.39	Married	5.34	6.11	5.38
cohabiting	0.91	1.59	1.20	Cohabiting	3.17	2.78	3.05
Total	1.36	1.55	1.38	Total	5.19	4.95	5.17
Mixed couples				TOTAL			
	First union	Ever married	Total		First union	Ever married	Total
married	1.64	1.61	1.63	Married	1.64	1.93	1.65
cohabiting	1.05	1.58	1.34	Cohabiting	1.13	1.66	1.36
Total	1.57	1.60	1.58	Total	1.61	1.81	1.63

Table 2. Prevalence of large single parent families (x 100 single parent families with children), by citizenship and sex of parents, 2011

	Italian	Foreign	Total
Single mother	0.74	1.29	0.78
Single father	0.71	2.27	0.80

On the topic of large families, the literature has paid more attention to high fertility than to their composition and characteristics. Given the general paucity of literature on large families, in reviewing previous studies we consequently focus mainly on the processes contributing to their formation, i.e. high fertility and repartnering. That said, the overlap between determinants of high fertility and large families is not perfect because a large-sized family is also compatible with societies where many couples are childless or have few children, while some of them reaching high parities. We therefore also consider the literature on high parities, where available. Unfortunately, given the relatively small proportion of large families, most of the literature focuses on parity 3 or more, rather than 4 or more.

5. The probability of having a large family: a multivariate analysis on Italian and foreign couples

5.1 The covariates

Several independent variables relating to the characteristics of couples are used to assess the factors influencing the propensity to have a large family rather than a small one. Three covariates refer to the family's socio-economic conditions (male's social status, female's education, tenure of family dwelling); two refer to the environmental setting (geographical region of residence, population size in the municipality of residence); and one is a demographic variable (type of couple). The male's social status is a variable obtained by combining his current occupational status (employed or unemployed) with his highest education level (low, intermediate or high[9]), generating six categories

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[9] For men, a low education level means compulsory education (8 years of schooling) or less; a high education level means completion of short-cycle tertiary education or more (at least 15 years of schooling); and an intermediate education level means any level of education in between (secondary school qualifications).

ranging from the lowest position (unemployed or inactive with a low education level) to the highest (employed with a high education level). We consider this variable as a proxy for family income[10]. Then, for Italian couples, we construct a variable that distinguishes the male's occupational status by type of work (employee or self-employed/entrepreneur) to see whether large families are more likely among couples in which the man is self-employed or an entrepreneur. Where no information on the male's socio-economic status is available, the female's education level (very low, low, intermediate, high)[11] is often used in the literature on large families as a proxy of a family's social status. However, after accounting for the male's social status, it might represent the woman's human capital. From this perspective, more human capital implies higher opportunity costs on the one hand (see NHE theory), but also a greater ability to manage complex situations, and a greater gender equity within the couple.

Housing tenure identifies whether the family owns its home (or has bought it with a mortgage), rents privately, is in rented social housing, or in other conditions (mainly housing granted to employees free of charge or at subsidized rents by private firms)[12]. It might not be easy to interpret the relationship between housing tenure and large families, given the multiple mechanisms linking this covariate with family size. Some types of tenure (ownership, social housing) can be interpreted as a proxy of family income or as a correlate of individual expectations that might influence a couple's decisions about having children. That said, Italian local authorities have welfare services that give priority to families with numerous children when assigning public housing, so the possibility of a reversed causation cannot be ignored.

Large families are mainly the result of high fertility but, given the recent growth in the numbers of individuals repartnering after a divorce, we can safely assume that some large families in Italy are the result of post-dissolution childbearing and/or of new unions to which parents bring cohabiting children from previous partnerships. We therefore constructed a "type of couple" variable comprising four categories, with the various combinations of the couple's current type of relationship (marriage, consensual union) with retrospective information about any previous marriages of one or both partners (no, yes)[13]. For cohabiting Italian couples, we also tested whether

Table 3. Italian and foreign couples with woman 40-44 according to the number of children: percentage distributions of independent variables used in the logistic models

	Italian couples			Foreign couples		
Number of children	1 or 2	4+	Total (1,2,4+)	1 or 2	4+	Total (1,2,4+)
Geograph. area of residence						
North-West	26.0	17.1	25.8	36.7	41.3	37.2
North-East	18.6	15.5	18.5	28.2	31.7	28.5
Centre	19.0	11.6	18.8	25.1	16.9	24.3
South	24.6	39.4	24.9	7.0	6.2	6.9
Islands	11.8	16.3	12.0	3.0	3.9	3.1
Municipalitiy's population size						
<5000	17.3	18.2	17.4	13.6	17.8	14.0
5-20000	32.4	30.6	32.3	30.0	34.8	30.5
20-100000	30.3	32.2	30.4	25.9	25.5	25.9

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[10] Several preliminary analyses were run in an effort to create a more complex indicator of the family's social status using other variables too (e.g. the male's current occupation or employment sector), but the variable we used was ultimately preferred for its clarity and meaning. It also worked well in describing foreign families' social status.

[11] This measures the highest level of education: very low means no basic qualifications; low means compulsory education; high means completion of short-cycle tertiary education or more; intermediate education includes all the levels in between.

[12] The covariate was constructed by combining information from the short and long questionnaires, so the models including this variable are estimated on a subset of the whole census population.

[13] Unfortunately, the census data only reveal whether a partner had previously been married, whereas a partner who had children from a previous cohabitation would not be identifiable.

100-250000	7.5	7.3	7.4	10.4	10.2	10.35
250.000+	12.5	11.7	12.5	20.1	11.7	19.2
Type of couple						
First marriage	87.3	89.1	87.4	83.97	89.6	84.5
Re-married	4.2	4.35	4.2	7.1	6.05	7.0
Cohabitation (no previous marriage)	4.5	2.4	4.4	4.9	2.7	4.7
Cohabitation of ever married partners:	4.0	4.1	4.0	3.97	1.65	3.7
cohab_F evermarried	*1.3*	*1.5*	*1.3*	*1.3*	*0.36*	*1.2*
cohab_M evermarried	*1.7*	*0.9*	*1.7*	*1.26*	*0.5*	*1.2*
cohab_MF evermarried	*1.0*	*1.6*	*1.0*	*1.4*	*0.77*	*1.35*
Female's education						
Very low	4.5	15.1	4.8	13.1	38.2	15.7
Low	37.0	41.6	37.1	31.8	34.6	32.1
Medium	42.9	30.1	42.6	43.5	21.1	41.2
High	15.6	13.2	15.5	11.6	6.1	11.0
Male's employment & education status/1 (male social status)						
Employed/low education	41.8	45.1	41.9	36.4	53.5	38.1
Employed /medium education	36.8	25.3	36.6	39.0	22.2	37.3
Employed/high education	12.4	12.2	12.4	8.3	6.5	8.1
Non employed/low education	6.4	14.6	6.6	8.0	12.0	8.4
Non employed/medium education	2.2	2.3	2.2	6.9	4.7	6.7
Non employed/high education	0.4	0.5	0.3	1.4	1.1	1.4

(continue)

Table 3. (follows)

	Italian couples			Foreign couples		
Number of children	1 or 2	4+	Total (1,2,4+)	1 or 2	4+	Total (1,2,4+)
Male's employment & education status/2						
Employee/low education	32.5	34.2	32.5	32.0	46.4	33.5
Employee /medium education	29.4	18.2	29.2	35.0	19.2	33.4
Employee/ high education	10.0	9.3	9.9	7.3	5.5	7.1
Self-employed/low education	9.4	10.9	9.4	4.3	7.1	4.6
Self-employed /medium education	7.4	7.1	7.4	4.0	3.0	3.9
Self-employed/ high education	2.3	2.9	2.4	1.1	1.0	1.1
Unemployed	4.3	7.9	4.4	8.4	10.4	8.6
Inactive	4.7	9.5	4.8	7.9	7.4	7.8
n. cases (=100)	**1,130,630**	**28,044**	**1,158,674**	**68,900**	**7,754**	**76,654**

	97.6	2.4	100	89.9	10.1	100
%	97.6	2.4	100	89.9	10.1	100
Housing tenure status*						
Property	81.3	69.9	81.1	38.5	35.1	38.1
Rental	5.7	10.2	5.8	47.4	41.2	46.8
Social housing	1.2	5.4	1.3	3.0	15.2	4.3
Other	11.8	14.5	11.8	11.1	8.5	10.8
N. cases (=100)	**1,085,460**	**26,273**	**1,111,733**	**57,073**	**6,772**	**63,845**

*variable built with some information from long questionnaire.

the association with large families might depend on which partner in the couple (man, woman or both) had previously been married.

The geographical region of residence and the population size of the municipality of residence can be used to represent several background aspects (living conditions, cultural climate, institutional context). Italian macro-regions (north-west, north-east, center, south and islands) are still differentiated from an economic and cultural standpoint. The latter regions have more traditional families and less developed economic background conditions than the former. In addition, some north-eastern regions are characterized by a mix of fiscal and welfare policies, economic framework and cultural context that set them apart for their specifically family-oriented social environment.

The population size of a municipality can also be seen as a proxy for both living conditions and cultural climate. The more traditional family values typical of small municipalities may lie behind the higher fertility of couples living in them. The possible effect of living conditions is less clear. On the one hand, some living conditions in small municipalities (lower costs of living in terms of house prices, informal neighborhood services) might make life easier for residents with numerous children. On the other hand, small municipalities suffer from shrinking populations and shortages of public services (schools, hospitals, etc.), making life more complicated for families with children.

Table 3 lists the covariates used in our logistic regression models and shows their percentage distributions by number of children (1, 2 or 4-plus) in family units with Italian and foreign couples and women aged 40-44. Among Italian couples, large families are more common in the southern regions (more than 50% of Italy's large families live in the South and in the Islands, as opposed to 36% of its small families). Large families also have fewer cultural and economic resources: men are more likely to be unemployed (almost 18% are unemployed or inactive, as opposed to 9% among couples with 1 or 2 children); and women have fewer years of formal education (15% of women with large families have a very low education level, as opposed to 5% of those with small families). This situation is confirmed by the housing tenure variable, since relatively fewer couples with large families live in their own home (70% versus 81% of couples with 1 or 2 children), and more of them live in social housing (5% versus 1%). For foreign couples the results are similar as regards socio-economic status. Large families are more disadvantaged than small families. Women with 4-plus children are less well educated (almost 38% of them have a very low education level versus 13% among couples with 1 or 2 children). Men with large families are more likely to have a low social status (the employed and poorly-educated account for 54%, as opposed to 36% among couples with 1 or 2 children). More of these families (15%) live in social housing (while this is true of only 3% of small foreign families). On the other hand, large foreign families are more likely to live in the north of Italy (almost 73% as opposed to 65% of foreign couples with 1 or 2 children).

5.2 The results

5.2.1 Italian couples

Table 4 shows the odds ratios from six logistic regression models run on our sample of Italian couples to see to what extent contextual and couples' covariates are associated with large families.

Model 1 represents the effect of place of residence. Models 2 examine the effect of characteristics of the couples, considering socio-economic factors first in Model 2a, then adding the type of couple (a demographic feature) in Model 2b. Model 3 analyses the combined effects of the covariates concerning place of residence and socio-economic factors. Model 4 adds tenure of dwelling to the covariates considered in Model 3 to obtain the fully-adjusted regression model. Finally, Model 5 examines further aspects regarding the effects of the type of couple and the man's socio-economic status (not considered in the previous models).

Model 1 shows that place of residence is significantly associated with the odds of having a large family. Couples living in southern Italy (southern regions and islands) and those in the north-east of the country are more likely to have a large family than those living elsewhere. In addition, the smallest municipalities (with populations of less than 5,000) and the most populous cities (with more than 250,000) both have the strongest positive associations with large families.

Socio-economic factors (male social status) and demographics (the type of couple) are significantly associated with large families (Models 2). Couples with a man who does not work are more likely to have large families than those with a man who works, but in both cases the likelihood of having a large family varies with the man's education level (Models 2a, 2b): regardless of current occupational status, the odds ratios suggest a U-shaped relationship between the man's education level and the propensity to form a large family. After accounting for the effect of the man's socio-economic status, the woman's education level shows a weak inverted J-shaped pattern: a large family is negatively associated with female education levels; women with no qualifications have a more than three-fold higher probability of having 4-plus children than those with an intermediate education level, who are the least likely to have large families. Finally, the type of couple is scarcely related to family size (Model 2b), with the exception of cohabiting couples who were not previously married, who show a clearly weaker propensity to form large families.

The effects of the socio-economic covariates do not change when we control for the effect of the place of residence (Model 3). Assuming that the man's social status may be a proxy of the family income, large families are more likely among families in the low- or high-income brackets, while families with intermediate incomes are the least likely to have four or more children. Although the studies are not wholly comparable, these results are consistent with those reported for some Italian cities by Mencarini and Tanturri (2006), and for some other European countries (France, England, Sweden) by Corman (2000), and Ekert-Jaffé et al. (2002). As seen in Models 2, large families seem to be more likely for women with little human capital (the odds ratio is almost four times higher than for women with an intermediate education level) and, to a lesser extent, for women with the greatest human capital. The same inverted J-shaped relation between the mother's education and the probability of having a large family was found in the UK by Iacovou and Berthaud (2014).

Controlling for the place of residence, however, the effect of the type of couple changes with respect to what emerged from Model 2b: couples in which at least one partner had previously been married are more likely to have a large family, especially if they remarry. In other words, repartnering seems to have a role in increasing the propensity to form a large family (Iacovou and Berthoud 2014), though we cannot say whether this is due to partners with cohabiting children from previous unions sharing their children in a new family unit, or to the new couple having further children.

Model 3 also shows that, even after controlling for couples' socio-economic and demographic characteristics, place of residence still has a role (albeit weaker than in Model 1) in promoting the formation of a large family. Looking at the effect by geographical macro-region, significant positive associations emerge for couples living in the southern (and, to a lesser extent, north-eastern) regions. Our data are unable to clarify which factors are at work in such an association. The strong positive association between large families and southern regions presumably depends on cultural roots, while the (weaker) association with the north-east might have to do with a mix of institutional (social welfare provisions encouraging childbearing), cultural and economic factors in some areas nurturing favorable attitudes to large families. In Trentino Alto-Adige, for instance, 4.6% of couples with children are large families with women 40-44 years old, while the national average is 2.5%. Similarly,

the significant association between large families and small municipalities (see also: Rizzi 2005; Zagaglia and Morettini 2015) could be explained by cultural roots or a simpler and less expensive lifestyle favoring the formation of large families. There could even be a (less likely) reversed causality, with small municipalities being chosen as a place of residence by large families because they are more family-friendly.

Model 4 examines the association between housing tenure and the formation of a large family, net of the effect of the covariates in Model 3[14]. There is a clear tendency to have a large family among couples living in social housing. This could be simply the result of a welfare that gives priority to large families when allocating social housing. On the other hand, whilst we cannot make any causal claim, we cannot rule out another possibility, i.e. that the security of tenure provided by social housing (compared with renting privately) makes more economically deprived couples more likely to have larger families (Stone and Berrington 2017; Murphy and Sullivan 1985). Unsurprisingly, home ownership shows a negative association with large families, suggesting that this type of tenure is not a condition promoting the formation of large families. In fact, given the relatively large proportion of people in Italy who own their homes, we can assume that most of them belong to a social (middle) class for which the family's desire for social mobility competes with having more children.

Finally, we take a further look at the effects of the man's socio-economic status and the type of couple, distinguishing the former by type of work (employee or entrepreneur/self-employed), and the latter by which party in a cohabiting couple (man, woman or both) had previously been married (Model 5). In this case, the man's education level shows an inverted J-shaped curve for the couple's propensity to form a large family, whatever his type of work. This finding supports the hypothesis of a social polarization of large families, irrespective of how the men earn a living. Consistently with findings reported by Rizzi (2005) regarding families with 3 or more children, our results also show that self-employed men - whatever their education level - are more likely to have large families than employees. As for the effect of the type of couple, Model 5 suggests that, for cohabiting couples in which one or both partners were previously married at least, large families correlate positively with repartnering only if the repartnered party is the woman. This is consistent with the fact that the children of a previous union that has dissolved usually live with their mother, so repartnered fathers rarely share their children with their new partner. Unfortunately, we cannot establish from the data available whether children were born during a woman's previous marriage or are the offspring of her current family.

Table 4. Logistic regression (odds ratios) predicting whether a family is large (vs small), Italian couples - woman aged 40-44

Covariates	Mod1	Mod 2a	Mod 2b	Mod 3	Mod 4	Mod 5
No. cases	1,158,674	1,158,674	1,158,674	1,158,674	1,111,733	1,111,733
Geogr. area of res. (ref. Centre)						
North-West	1.07**			1.07**	1.07**	1.08**
North-East	1.38***			1.41***	1.44***	1.43***
South	2.63***			2.11***	2.07***	2.08***
Islands	2.27***			1.83***	1.81***	1.83***
Municipalitiy's population size (ref. 250.000+)						
<5,000	1.05*			1.13***	1.19***	1.13***

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[14] Adding this variable leaves the previous results unchanged, exception some categories concerning the man's socio-economic status (being unemployed) and the type of couple (cohabiting after a previous marriage): the significance of the former is somewhat reduced, and that of the latter is lost, suggesting a correlation between these variables and housing tenure. Preliminary analyses to test the impact of housing tenure in association with the covariates of Model 2b generated similar results.

5-20,000	0.93***			0.98	1.03	0.98
20-100,000	0.96*			0.99	1.04	1.03
100-250,000	0.92**			0.99	1.01	1.01
*Female education (ref. **Medium**)*						
Very low		3.83***	3.83***	3.18***	2.83***	2.93***
Low		1.47***	1.47***	1.40***	1.33***	1.36***
High		1.11***	1.11***	1.12***	1.12***	1.12***
*Male employment & education status/1 (ref. **employed/medium education**)*						
Employed/low education		1.27***	1.26***	1.24***	1.20***	
Employed/high education		1.53***	1.53***	1.52***	1.55***	
Non employed/low education		2.20***	2.20***	1.89***	1.67***	
Non employed/medium educat.		1.38***	1.40***	1.21***	1.15**	
Non employed/high education		1.98***	2.08***	1.85***	1.65***	
*Type of couple/1 (ref. **first marriage**)*						
Re-married (at least one partner)			1.06	1.18***	1.15***	
Cohabitation (no previous marriage)			0.53***	0.60***	0.58***	
Cohabitation (of ever married)			0.97	1.07*	0.99	
Housing tenure status[1] *(ref. **rental**)*						
Property					0.63***	0.63***
Social housing					2.05***	2.11***
Other					0.80***	0.80***

(continue)

Table 4. (follows)

Covariates	Mod1	Mod 2a	Mod 2b	Mod 3	Mod 4	Mod 5
*Male employment & education status/2 (ref. **employee/medium education**)*						
Employee/low education						1.25***
Employee/high education						1.65***
Self-employed/low education						1.60***
Self-employed/medium education						1.58***
Self-employed/high education						2.05***
Unemployed						1.63***
Inactive						1.81***
*Type of couple/2 (ref. **first marriage**)*						
Re-married						1.14***
(first) Cohabitation						0.58***
Cohab_Female evermarried						1.20***

Cohabitation_M evermarried					0.52***
Cohabitaton_MF evermarried					1.46***
-2 loglikelihood (model)	259,577.6	257,198.7	256,886.7	254,623.2	238,595.3	238,065.5

*p<0.05, ** p<0.01, *** p<0.001 - (1) long questionnaire*

5.2.2 Foreign couples

Table 5 shows the results of logistic regression models run for all-foreign couples, using the same analytical strategy as for Models 1-4 on Italian couples. The foreign population considered is much more heterogeneous than the Italian one, because the couples' countries of birth varied (ISTAT, 2018c). These couples have weaker social and family networks than Italian couples, however, and they are less well embedded in the local environment – factors that could make their propensity to have large families less dependent on the cultural milieu of their adopted country.

Model 1 shows that the likelihood of forming a large family is rather polarized geographically, the highest odds ratios coinciding with Italy's Islands (96% higher than in central Italy), and the northern macro-regions (52-62% higher than in the central part of the country). For foreign couples, moreover, the size of a municipality's population is inversely associated with the size of their families: the propensity to have large families rises linearly from the largest cities to the smallest municipalities.

Models 2 indicate that foreign couples' socio-economic variables significantly affect their likelihood of having a large family. As in Italian couples, the men's education level shows a J-shaped relationship with large families. Unlike the case of Italian couples, however, their occupational status is uninfluential (it may be that joblessness has a different meaning for Italian and foreign men). Another similarity with Italian couples concerns the negative association between women's education and family size, but for foreign couples the probability of having a large family is significantly higher only for women with low or very low education levels, who are twice and five times as likely to have large families as women with intermediate or high education levels (so, in this case, there is no return to a propensity to have large families among the best-educated women). Model 2b also shows that, unlike the case of Italian couples, repartnering is not positively associated with a large family. It may be that foreign couples have relatively high fertility rates, and large families already from their first marriage, so the second marriage has no significant effect. It could also be that, for foreigners, repartnering and entering a second marriage or cohabitation is not (yet?) an alternative way to have a large family.

Table 5. Logistic regression (odds ratios) predicting whether a family is large (vs small), foreign couples - woman aged 40-44

Covariates	Mod1	Mod 2a	Mod 2b	Mod 3	Mod 4
No. cases	76,654	76,654	76,654	76,654	63,845
Geograph. area of res. (ref. Centre)					
North-West	1.62***			1.53***	1.47***
North-East	1.52***			1.44***	1.34***
South	1.19**			0.96	1.08
Islands	1.96***			1.37***	1.66***
Municipalitiy's population size (ref. 250.000+)					
<5000	2.17***			1.95***	2.02***
5-20000	1.95***			1.75***	1.83***

20-100000	1.71***			1.69***	1.82***
100-250000	1.66***			1.57***	1.62***
Female education (ref. Medium)					
Very low		5.09***	5.04***	4.91***	4.97***
Low		1.98***	1.98***	1.93***	1.96***
High		0.97	0.97	0.98	0.96
Male employment & education status/1 (ref. employed/medium education)					
Employed/low education		1.36***	1.36***	1.37***	1.38***
Employed/high education		1.48***	1.49***	1.52***	1.49***
Non employed/low education		1.36***	1.36***	1.40***	1.31***
Non employed/medium education		1.16*	1.18**	1.24***	1.24**
Non employed/high education		1.39**	1.45**	1.57***	1.60***
Type of couple/1 (ref. first marriage)					
Re-married (at least one partner)			0.90*	0.87**	0.85**
Cohabitation (no previous marriage)			0.54***	0.58***	0.58***
Cohabitation of ever married people			0.43***	0.44***	0.45***
Housing tenure status[(1)] *(ref. rental)*					
Property					1.21***
Social housing					5.46***
Other					1.01
-2 log likelihood	49540.75	46801.54	46614.50	46117.80	38326.12

* p<0.05, ** p<0.01, *** p<0.001 - (1) long questionnaire

Model 3 confirms the results of model 2, suggesting the presence of both similarities (the role of socio-economic variables) and differences (the effect of the type of couple) in the behavior of Italian and foreign couples. After controlling for socio-economic and demographic variables, Model 3 partly confirms the results of Model 1 as regards the effects of place of residence. Foreigners with large families differ from their Italian counterparts in that they show no clear preference for the smallest municipalities; they are distributed in municipalities of all sizes, albeit with a decreasing probability. Foreigners with large families are also more likely to live in the north of Italy and the islands than in central and southern Italy. This last result is not easy to interpret: the appeal of the northern regions may lie in the better chances of finding employment and more accessible welfare systems that foreign couples find in these regions; as for the islands, there may be a greater concentration of ethnic communities characterized by high fertility[15].

Finally, there is the matter of housing tenure (Model 4). As for Italian couples, living in social housing is strongly associated with large families. Foreign couples differ from Italian couples as regards home ownership, however. This significantly increases a foreign couple's propensity to have a large family by comparison with those living in privately rented accommodation, possibly because for foreigners a house purchase is the final step in a process of stabilization after completing the formation of their families.

6. Concluding remarks

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[15]According to the ISTAT (stra-dati.istat.it), these regions have the highest prevalence of immigrants from both North Africa (21% of all foreigners in Sicily, as opposed to 16% in Italy as a whole) and West Africa (20% of all foreigners in Sardinia, compared to 9.2% in Italy).

Large families (with four or more children) are difficult to study in developed countries. Their very low prevalence makes sample data inadequate for any in-depth analyses, so there is still a lot of uncertainty in the literature about their structural features and the processes leading to their formation. In this study we tried to reduce this gap by using population census data referring to a country, Italy, which has one of the lowest fertility in Europe.

Our analyses of census micro-data show that, as at the end of the first decade of this century, large families account for a very low proportion (less than 1.5%) of the families with children in Italy, and are decreasing over time (ten years earlier the figure was almost 2%). Geographical differences remain, but are gradually fading. Families are also changing in terms of their composition: they are increasingly represented by non-traditional forms, such as single-parent families, or cohabiting or repartnered couples, and especially by families of immigrants.

The availability of census micro-data also gave us an opportunity to analyze the associations between large families and certain socio-demographic variables in more depth. Without making any claims regarding causality (the cross-sectional nature of our data does not allow it), we can discuss some of the possible mechanisms leading to the formation of large families. Of course, we are limited by the list of variables collected at the census. Some variables potentially related to the formation of large families are not recorded, such as religiosity, age at the time of forming a union, or use of contraception. The effect of some of these variables – especially those known to be proximate determinants of fertility – may actually be absorbed by those we consider in the multivariate models. On the other hand, census data give us the opportunity to study both native and non-native couples. As regards the latter, we are well aware of the limits deriving from our inability to control for the different nationalities forming part of Italy's non-native population. At this stage of the analysis, however, it already seems important to take a descriptive approach to examining whether differences exist between Italian and foreign couples. As far as we know, the factors relating to immigrant couples with large families have never been studied in such a general and comparative way (in Italy at least) because they account for a relatively very small percentage of the total population. Bearing these precautions in mind, our multivariate analyses suggest that the formation of a large family is associated with a variety of micro or macro factors.

A family's social status seems to have an important role in determining its size. Our results support the hypothesis of a socio-economic polarization of large families (Becker and Lewis 1973; Bourdieu 1984) among both native and, to a lesser extent, non-native populations. Large families are more likely to be found among either low-income or high-income families. Low-income families may be scarcely motivated (and even unable) to control their fertility, given their limited opportunities to improve their social position. High-income families (with no economic constraints) are free to decide how many children they want. For intermediate-income families, a high fertility competes with their investment in human capital and social mobility, so they choose to contain their family size. Our findings also show a strong negative association between women's education and large families, supporting the hypothesis of a substitution effect (Becker and Lewis 1973, Skirbekk 2008). That said, the slight increase in the odds ratios observed for Italian couples with very highly-qualified women seems to suggest a change of behavior. This could be explained by couples in which the woman is better educated being better able to manage a large family, mainly thanks to a greater involvement of men in family life and childcare (Goldscheider et al. 2015, Esping -Andersen and Billari 2015). Alternatively, there could be a cultural change towards post-materialist values, implying more child-friendly lifestyle preferences and that would start with better-educated women (Kravdal 2001). Further studies are needed to replicate these findings and explore these hypotheses, taking a causal approach.

There are other micro-factors related to the formation of large families, however. Repartnering is a predictor of larger families, but only for Italian couples. This result is novel for Italy, where SDTs started later than in other European countries. Are these families the result of combining both partners' children from previous marriages, or children from previous unions and additional children born in the new union? Our results lead us to surmise that, for cohabiting couples at least (large

families are more likely when the repartnered party in the couple is the woman), large families could be the result of a higher fertility among repartnered women, who have children with their new partner as well as those from previous unions. Unfortunately, we cannot go into more depth on this point. More targeted analyses are needed to explore whether the same situation is seen among married couples and, more in general, in which conditions large families are associated with repartnered couples. Among native couples, we also find self-employed men more likely to have large families than employees. This finding is not new for Italy and warrants further investigation as it has numerous possible explanations that are not necessarily mutually exclusive. First, we can speculate that couples in which one or both parties are self-employed may be in a better position to reconcile their work and family commitments, so as parents they are better able to manage a large family. Second, such couples may have more confidence in their ability to cope with the uncertainty of the labor market, and consequently more comfortable with the uncertainty associated with managing a large family. Third, self-employed men could be more interested than employees in investing in a large family to increase the chances of entrusting their economic activity to one of their children. Fourth, we cannot rule out the possibility of self-employed fathers spending more time at work, and this could be a feature of a more traditional gender-role specialization within the family, which favors the formation of large families (Tanturri, 2006). Whatever the explanation, this finding goes to show that the propensity to have a large family could also be influenced by micro-factors other than socio-economic status and type of couple, including individuals' expectation and attitudes, life styles and family organization strategies.

Finally, our study shows that, after accounting for micro-factors linked to a couple's characteristics, their place of residence plays a part in any formation of large families, for both Italian and foreign couples. Unfortunately, our census data only enable us to say that differences relating to cultural and economic environments, public welfare policies and living conditions, associated with the Italian macro-regions or the municipalities' population size, can predict the likelihood of couples having large families (Thévenon and Gauthier 2011). Our findings also suggest, however, that place of residence might influence Italian and foreign couples differently. Among native couples, both environmental and cultural aspects (see the positive odds ratios associated with the more traditional southern as opposed to the north-eastern regions, as well as those associated with small municipalities) and institutional/environmental opportunities (in north-eastern regions and small municipalities) seem to be relevant. For foreign couples, living in Italy seems to influence their likelihood of having large families only as regards the economic or institutional opportunities available to them (see the positive association with the north of the country). Some signs of an association between foreigners with large families and Italian macro-regions (such as the positive association with the islands) lead us to surmise that the cultural factors influencing foreign couples' formation of large families is not those of their host country, but those of their country of origin. Further, more detailed analyses, distinguishing non-native couples by country of origin, could be useful to better explore this point.

In concluding, it is worth noting that our regression models show that at least a part of Italy's large families, be they Italian or foreign, suffer from adverse economic and cultural conditions (poverty and very poorly-educated parents). Though this issue goes beyond the scope of the present study, this indirect finding needs to be stressed because it means that a relatively large number of children in these families (mainly minors) experience poor living conditions (in 2011 the minors living in large families accounted for 4.4% of all minors). So just how many minors are affected? Where in Italy do they live? Are the economic and cultural shortcomings they experience associated with other social or relational weaknesses in their family environment? The persistent decline in fertility over the years may further reduce the number of large families, and the number of children living in them, but our findings suggest that they will be increasingly concentrated in the most marginalized social groups. Further insight on the less-privileged large families seems to be urgently needed in order to establish the dimensions and features of a phenomenon that has important social and policy implications.

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