European Journal of Population (2025) 41:22
https://doi.org/10.1007/s10680-025-09743-9

ORIGINAL RESEARCH

Women's Domestic Burden and Gendered Fertility Intentions in Italy: The Role of Parity and Child's Sex

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Received: 24 July 2024 / Accepted: 17 June 2025 / Published online: 27 August 2025

Abstract

In Italy, the unequal distribution of household chores persists, disproportionately affecting women and potentially discouraging fertility intentions. This study explores the relationship between women's domestic burden and reproductive intentions, and how this relationship varies between men and women, depending on the parity achieved and the sex of the child (or children) they already had. The paper relies on data from 2016 ISTAT Survey on Families and Social Subjects. The results find this association only for women (and not for men), and particularly for those working and residing in the Centre-North. Interestingly, unlike previous findings, as the childless women's domestic burden grows, it correlates negatively with their intention to enter motherhood. For mothers, the correlation is somewhat reversed: notably, among mothers with one child, there's a discernible trend where fertility intentions positively align with increasing household burdens, driven by mothers of one daughter. This suggests a potential preference among traditional mothers of a daughter for having another child, while the more egalitarian, i.e., less burdened ones, seem content with the current family size after having a daughter.

Keywords Fertility intentions · Division of housework · Gender roles · Italy

1 Introduction

Over the past years, the relationship between fertility behaviour and gender equality—both in society, (in particular in the labour market) and within couples (in terms of the division of domestic and caregiving responsibilities)—has been at the

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core of explanations for low fertility rates. This dynamic is especially significant in understanding the persistently low fertility rates observed in Southern European and South-Eastern Asia, in contrast to what happened in Northern European Countries (e.g., Goldsheider et al., 2015; Esping-Andersen & Billari, 2015; McDonald, 2000a, 2000b; Mencarini, 2018; Neyer et al., 2013). The general idea is that when women enter the workforce, if men do not adequately increase their share of domestic work, the inevitable result is the 'double burden' of women's work inside and outside the family, which can be a deterrent to having children. Only societies that have embraced gender equality, and consequently managed to reduce the typically unfavourable burden on women, have avoided a collapse in fertility, at least in the aftermath of the Demographic Transition. Nowadays, however, the recent accelerating fertility decline observed in Nordic countries makes this interpretation less obvious and requires new insights into the mechanisms behind the relationship between gender equality and fertility (as shown in Begall & Hiekel, 2024).

Italy serves as a particularly interesting case study in this field, where extremely and persistent low fertility has coexisted for decades with limited gender equality within and outside the family, together with a quite strong institutional reliance on kinship and family. Within couples, a highly unequal division of unpaid labour is still observed (Istat, 2019), and it is exacerbated not only by the men's scarce commitment, but also by an extraordinary amount of Italian women's time on household chores compared to their peers living in other countries (Mencarini et al., 2017; Paihlé et al., 2019). Furthermore, institutions and policies to reconcile work and parenthood overall remain quite limited and not sufficiently flexible to accommodate the new needs of the growing number of dual-income couples (Tanturri, 2016).

Despite being such an interesting case, there is limited empirical evidence focusing on gender equality in the household and reproductive behaviour in Italy. The few that exist are not very recent (Mills et al., 2008; Pinnelli & Fiori, 2008; Fiori 2011). These previous studies explored the relationship between gender division of unpaid work within couples and women's fertility intentions but used surveys dating back to the beginning of the century (Istat Family and Social Subjects 2003, ISTAT Survey on Births 2000–2001). They all showed that in Italy an unequal division of household chores (both domestic and childcare) negatively correlates with women's fertility intentions, but only for working mothers with one child (Mencarini & Tanturri, 2004; Mills et al., 2008; Pinnelli & Fiori, 2008) and with a very heavy housework burden (Mills et al., 2008).

Following this path, our paper tests the gender theory of fertility behaviour focusing on the private sphere, and we investigate whether the unequal division of household labour is correlated to lower fertility intentions among Italian women and men, childless or parents, based on the most recent data available from ISTAT Survey on Families and Social Subjects (FSS Survey 2016). Our paper is innovative for several reasons. First, in Italy the family context is changing fast. The dual-income model is finally prevailing, and now the crucial decision refers to the transition to parenthood itself (i.e., to the first child) rather than the transition to the second or third child.

Second, following a consolidated stream of studies, we focus on the fertility intentions at three years, rather than fertility intentions over the life course or fertility ideals (Raybould & Sear, 2021). Short time fertility intentions reflect—probably

better than fertility realisations—the current perceptions of fairness in the division of labour and how that influences fertility decisions. Moreover, for Italy, so far, there is no panel data available to measure fertility realizations.

The third innovation is that our analysis includes also men, since their intentions have been found to be important, as they significantly influence the couples' choice to opt for another child or not (Duvander et al., 2020; Okun and Raz- Yurovich, 2019; Testa & Bolano, 2021). The Gender Revolution Theory indeed suggests that a less gendered division of housework can encourage women's intentions to have a(nother) child (Goldsheider et al., 2015). As men's involvement in housework increases, however, they also may experience work-family conflicts, which may in turn lead them to reduce their fertility intentions, even potentially in contrast with their partners' preferences (Okun and Raz-Yurovich, 2019).

Fourth, given the idea that fertility is a conditional process, it is plausible that the relationship between women's domestic burden and fertility preferences may change not only according to the parity—as Mills and coauthors (2008) suggested—but also according to a specific characteristics of the children already born, i.e. their sex, that can affect their experience of parenthood in some way, or interact with parental sex preferences.

2 Theoretical Background

Much of the literature paying attention to the theoretical aspects of the relationship between gender equality and fertility was firstly motivated by the fertility decline observed after women's massive entry into the labour market, which later began to rise again as societies moved towards higher levels of gender equality (see Mencarini, 2018 for a review). One strand of this literature has focused on the analysis of the relationship at the macro-level, thereby comparing countries in terms of gender equality and observed fertility levels or looking at trends in fertility and gender equality over time (Aassve et al., 2015a, 2015b; McDonald, 2000a and 2000b, 2002, 2013; Esping-Andersen, 2009; Esping-Andersen & Billari, 2015, Goldscheider et al., 2015; Mencarini & Sironi, 2012). Another strand has focused on micro-level analyses, which instead considers gender equality within households and fertility-related decision-making (see for instance: Mills et al., 2008; Myrskylä et al., 2011; Aassve et al., 2014; Aassve et al., 2015a, 2015b; Miettinen et al., 2015; Schober, 2013; Solera & Mencarini, 2018; Pinnelli & Fiori, 2008). McDonald (2013) has also emphasised how this relationship is complicated by individual perceptions of gender equity (i.e., what it is considered appropriate and fair based on own gender), how achieving effective gender equality often has preceded a change in attitudes towards greater gender equity. While education levels between men and women reach parity, women expect greater gender equality in both the labour market and within the family (Raz-Yurovich & Okun, 2024). However, if several conditions persist (such as gender gaps in the labour market, few opportunities to balance work and family due to inadequate policies, and limited availability of care services, or resistance from men to increase their involvement in domestic and caregiving tasks), women remain trapped inside and outside the family in unequal conditions, inevitably reducing the

number of children (McDonald, 2000b). Thus, the disparity between gender equity (i.e. gender ideals and the perception of gender fairness, Mencarini, 2014) and actual gender equality might have a significant detrimental effect on fertility (McDonald, 2013).

Independently of the applied perspective, gender equality and gender equity play a central role in understanding fertility dynamics (Mills et al., 2008; Myrskylä et al., 2011). However, since the link between fertility and gender equity is quite difficult to be demonstrated due to the lack for data on gender role-set opinion (Lappegård et al., 2021), empirical findings on the relationship between gender equality in unpaid work and fertility outcomes remain ambiguous and highly heterogeneous. Regarding men's involvement, some studies find that a more equal division of domestic work (Aassve et al., 2015a, 2015b) and men's contribution to household chores (Dommermuth et al., 2017; Nagase et al., 2017; Sullivan et al., 2014) are positively related to the transition from the first to the second child. Others, instead, show that men's contribution has no impact on subsequent fertility (Goldscheider et al., 2013; Miettinen et al., 2015).

The other specular aspect is represented by women's burden of housework, for which studies provide more consistent, though not entirely unanimous, results. In a systematic review, Raybould and Sears (2021) found that in most cases gender equality in the household is positively associated with the likelihood of intending to have a(nother) child, although in some cases the relationship is U-shaped or even negative. In addition, the relationship seems to be significant only among specific groups (e.g the working women, in Mills et al., 2008; Pinnelli & Fiori, 2008) and at specific parities (more often among the mothers than the childless, e.g.; Mills, et al., 2008; Pinnelli & Fiori, 2008; Suero, 2023) or again only for certain activities, in certain countries (see Raybould & Sears, 2021 for a review) or using the level of satisfaction on the division of domestic work, rather than the actual division (Cavalli & Rosina, 2011).

In terms of fertility outcomes, women's housework commitment is negatively associated with the likelihood of having children (e.g., Schober, 2013). Miettinen et al. (2015) state that a more egalitarian division of household chores has a stronger influence on fertility outcomes among employed women, while for Snopkowski (2023) when both parents work full-time.

Couples adopt different arrangements for sharing domestic work, including who is responsible for specific chores and the time dedicated to them. This division is assumed to also influence their intention to have children. Relevant literature on time use (e.g., Istat, 2019; Sullivan, 2013, 2021) suggests that partners not only dedicate different amounts of time to domestic chores throughout the day, but also that the tasks they performed are highly gendered: men usually skip the most strenuous undesirable activities (changing nappies, washing the floors, ironing), to perform rather the most enjoyable and rewarding (e.g. cooking, playing with their kids, shopping). Many studies suggest that couples having a more equal and less gendered distribution of domestic chores are more likely to have positive fertility intentions. However, even in those countries where the gender revolution is considered to be in a more advanced stage and public policies have aimed at reducing women's caregiving burden (i.e.: Nordic countries), the reality is that, while women bear the

largest share of household chores, men have increased their participation only in some domestic domains, primarily in childcare (Miettinen et al., 2011). As found by Miettinen et al. (2011), a more equal division of domestic chores is observed mostly because highly educated or younger women are outsourcing housework, and not because men are holding a higher share of it. As stated by Neyer et al. (2013), both low fertility and low intentions to have children in contemporary societies are often a consequence of living in contexts where gender inequality prevails in productive (employment) and/or domestic (household/care work) activities. In these studies, the authors highlight that mothers who receive support from their partners in household tasks are more likely to intend to have another child compared to those not getting this support.

In southern European countries, younger fathers are gradually increasing their involvement in housework and childcare, however empirical evidence on its influence on fertility outcomes and intentions remains fragmented (Mills. et al. 2008; Cooke, 2009; Suero, 2023). Comparing Italy and Spain, Cooke (2003, 2009) finds that there is a faster transition to a second birth in those young couples where fathers are more involved in taking care of their first-born. Using data from the 2003 Italian Multipurpose Survey—Family and Social Actors, Mills and coauthors (2008) find that an unequal division of household labour only significantly reduce mothers' fertility intentions when they bear a very heavy workload, i.e. when they carry more than 75% of the household tasks and at the same time they work more than 30 h in paid employment. Similarly, Pinnelli and Fiori (2008) show—with different survey data—that the intention to have the second child is positively influenced by the father's participation to domestic chores and childcare, but again only among working women. In the same paper, however, the authors show the irrelevance of fathers' contribution in household labour for the intentions to have a third child and more generally for the reproductive intentions of women out of the labour market. Fiori (2011), using ISTAT Survey on Births, reveals that a higher paternal commitment in childbirth, childcare and domestic chores is positively associated to the intention of having a second child among mothers of a child born between 18 to 21 months prior to their interviews. According to Harknett and Hartnett (2014), the lower proportion of women who effectively realised their intentions in Southern European countries might be the reflection of a more hostile environment for childbearing, characterised, among others, by lower levels of gender equality within households. More recently in Spain, Suero (2023) finds that an unbalanced distribution of housework between mothers and fathers of an only child reduces mothers' intentions to have a second birth, while childcare distribution seems to be uninfluential.

As far as we know, in the previous studies on Italy, or Southern European countries, the relationship has never been studied keeping into account characteristics of already born children, i.e. their sex. However, Hank and Kohler (2000) explored gender preferences in fertility decisions, particularly the impact of previous children's sex on subsequent parity, finding a preference for a mixed-gender composition rather than a clear-cut sex preference also in Italy for the progression to the third child. Ichino et al. (2014) investigated the effect of first-born sex on mothers' labor force participation, finding that Italian women with first-born boys were less likely to work, indirectly suggesting a gender-based dynamic in parental decision-making.

While gender biases in fertility preferences have been well documented in societies with strong patriarchal structures, the extent to which children sex preference influences current reproductive decisions in Italy is definitely an underexplored area. This is one of the further research gap our paper seeks to fill.

3 The Italian Case and the Specific Hypotheses

Italy is an interesting case to empirically investigate the relationship between gender division of housework and reproductive intentions, due to the persistent low fertility, increasing (but still low) women's labour market participation and low level of gender equality in both the public and the private sphere. Fertility levels observed in Italy are among the lowest in Europe, with a Total Fertility Rate persistently lower than 1.3 for more than one decade, and the most delayed, with the age at first motherhood at almost 32 years (data 2022).[1] If the initial fertility decline observed since the Sixties initially affected second and higher order births (Kohler et al., 2002; Livi Bacci, 2001; Sobotka, 2004), in the last decades the further decrease has been attributable mainly to a decline in the number of first births. The transition to the first child is becoming more and more crucial in Italy and this is the reason why we are interested in understanding whether the relationship between gender unequal share of domestic work can affect this transition as well, differently from what previous studies found. It seems indeed that the biological and psychological incentives and "the normative parental imperative" (Rindfuss et al., 1996) leading couples to have at least one child are no more sufficient to compensate the high costs of childbearing. This has occurred even though having children still seems highly valued in the Italian society as the statistics show that most of Italians declare to desire a two-children family in their lifetime.

Recent literature attributes these difficulties in achieving the desired fertility to increased economic uncertainty and labour market vulnerability of the younger generations (e.g.,Comolli & Vignoli, 2021; García-Pereiro & Paterno, 2024). However, it is plausible that also other cultural and structural specificities, making the burden of childbearing particularly heavy in Italy, have a role (Impicciatore and Dalla Zuanna, 2017; Pinnelli & Di Giulio, 2007; Tanturri et al., 2015; Mussida & Patimo, 2023). Women's education level in Italy has impressively increased. In the last two decades the proportion of women aged 25- 34 having a tertiary education tripled (from 12 to 36%) and outnumbered the proportion of men (23%),[2] and women's employment rate has increased too. However, Italy still registers the lowest female employment rate in Europe (at age 15–64): 52.2% versus 70.9 for men with a remarkable gender gap of 18.7 points at national level.

Only recently, the number of dual income couples has outnumbered the traditional male-breadwinner ones, but the proportions of the latter are far from neglectable, still representing more than one third among the population in working age.

[1] Eurostat database, available at: https://doi.org/10.2908/DEMO_FIND
[2] Eurostat data, available at: https://doi.org/10.2908/EDAT_LFSE_03

The Italian society seems incapable to adapt to the new reality. Time use literature suggests that even among dual-income couples, which in principle should be more egalitarian in the gender division of housework, Italian women continue to bear the heaviest burden, as three quarter of the time that a couple dedicates to domestic activities is women's time (ISTAT, 2019).

In this paper, for lack of suitable data, we concentrate on the relationship between the gendered division of domestic tasks and fertility intentions, not being able to consider childcare. This is indeed a limitation, even considering that these activities indeed are the less rewarding ones and are performed daily by both childless and parental couples, impacting time allocation for all adults living in a couple (for a similar approach with Spanish data, see Suero (2023).

Drawing upon the aforementioned theoretical considerations and the Italian context, we build our research concerning the correlation between women's domestic responsibilities and their positive fertility intentions along three dimensions: the *gender*, to investigate whether the considerable and distinctive domestic burdens bear by Italian women impact both their own and men's intentions towards fertility; the *parity*, to ascertain the potential moderation of the relationship between women's burden and fertility intentions by the number of children already present in the household; the *sex of the first child* to understand whether the fact of having male or female children can change the relationship observed between gender equality and reproductive preferences. More specifically, we hypothesise the relationship between women's burden and fertility intentions exhibits gender-specific characteristics. Women's fertility intentions are negatively influenced by the domestic burdens they bear, whereas men's intentions which should be less influenced or even unrelated to domestic chores. However, alternatively, if women's burden is reduced by an increase in men's involvement in domestic activities, women should be more prone to have a(nother) child—as expected by the Gender Revolution theory—but the new balance could depress men's intention for childbearing, as they also start experiencing work-family conflict and they become more concerned about the time cost of children, in term of increased unpaid labour.

In relation to the parity, we hypothesise that the association between women's domestic burden and the desire to have one or more children will vary based on the number of children already in the respondents' households. Since the decision to have a second child largely depends on the first childbearing experience, it is plausible that those who have previously borne a heavier domestic load with the birth of their first child, decide not to expand further their families. This relationship is expected to be positive and more pronounced, particularly for those women who are already mothers of one child and are in the labour market, as previously shown in the Italian context. Differently from previous studies, given the fact that the transition to parenthood is more and more pondered and that the gendered division of domestic tasks is observed also among the childless couple, we expect however the emergence of a significant negative correlation between gender inequality at home and reproductive intentions also among the childless group. For the sex of the first child, since the preference in most of European countries are for mixed sex children, we expect that the sex of the first child does not have any association with further fertility intentions.

4 Data and Method

4.1 Measuring Fertility Intentions and Women's Domestic Burden

Data is drawn from the last available survey on Families, Social Subjects and Life Cycle conducted in 2016 by the Italian National Institute of Statistics (ISTAT). This data source is the most updated large-scale survey on family available for Italy and represent a valuable source for studying reproductive behaviour and intentions in detail.

To accurately disentangle gender relations within the private sphere, our sample was selected to consider only partnered individuals (women and men), with or without children, aged 20–45 (Nwomen= 1,842; Nmen=1,282). Unfortunately, in the 2016 wave, data are collected individually and therefore information for both partners in the same couples are not available, apart from a few basic characteristics which were asked to the respondent him/herself.

In Figure 1, we show declared fertility intentions for our selected sample of women and men by parity. In general, more than half of women in our sample declared to have strong negative fertility intentions ("definitely not" 53.2%), a figure that is twelve percentage points higher than the one registered for men. When disaggregating by parity, the percentage of respondents intended to have a(nother) child within the next three years is higher for childless men and women, while the percentages of those declaring strong negative intentions significantly increases as parity increases. It is interesting to note that 36% of women already having a child do not want to have the second one, while among men with one child positive intentions still prevail.

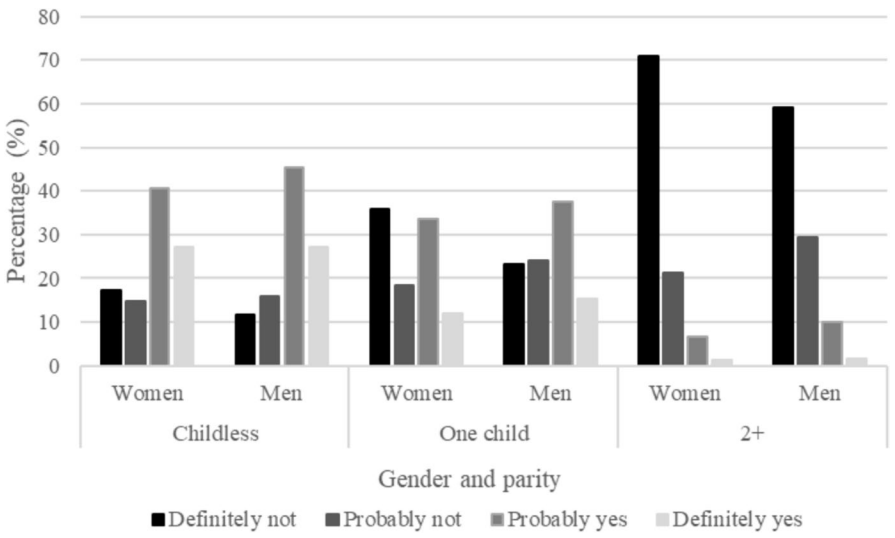

Fig. 1 Respondents' intentions to have a(nother) child within the next three years by gender and parity. *Source*: own elaboration, FSS microdata 2016

Our analyses consider one binary dependent variable measuring respondents' intentions to have a child within the next three years. We measure positive fertility intentions[3] by grouping respondents declaring that they want to have another child ("probably yes" and "definitely yes" vs "definitely not" and "probably not"). To measure gender equality within the couple we built a composite indicator measuring the *domestic burden* carried by women based on five items related to daily life activities (shopping, cooking, cleaning, making laundry and ironing). Unfortunately, data do not include information on the division of tasks related to childrearing. For each one of these items, the respondents selected (on a 6 points scale) who is in charge of these activities within the couple. A previously established value is applied to each response of the scale to quantify the domestic burden carried by women, where 5 indicates the maximum burden and 1 no burden at all. For women respondents, if the activity is: always done by the respondent the score is equal to 5, usually done by the respondent = 4, equally shared = 3, usually done by the partner = 2, always done by the partner or outsourced = 1. For men respondents, the contrary holds, if the activity is: always done by the respondent or outsourced the indicator is equal to 1, usually done by the respondent = 2, equally shared = 3, usually done by the partner = 4, always done by the partner = 5.

We are aware that the category "always done by the respondent" and "outsourcing domestic work" are given the same score, while the two situations may have different implications for gender role-set within the family, however as in this paper the focus is on women's domestic burden that can be reduced by both the above category.[4]

These scores were the input of a Categorical Principal Component Analysis (CATPCA) run to estimate a composite indicator of the domestic burden carried by women. By applying CATPCA we reduced the number of daily activities considered to a smaller number of principal components accounting for most of the observed variation. Table 2 (Appendix) displays correlation matrix, eigenvalues, eigenvectors, variance, loadings of indicators and unexplained variance resulting from CATPCA. We retained two principal components, explaining 82.3% of data total variance, instead of only one, given the huge reduction of the unobserved variance. The first component (PC1) is highly correlated with the following daily activities performed (in order): cleaning (0.476), doing laundry (0.473), ironing (0.454) and cooking (0.454). The second component (PC2) is highly correlated with shopping (0.856). After performing the oblique promax rotation of data, correlations remained high in the PC1 for ironing (0.586), making laundry (0.530), and cleaning (0.515), and in the PC2 for shopping (0.935).

[3] We are working with these categories because we are interested in proxying future reproductive decisions and research has shown that short-term positive fertility intentions are good predictors of fertility outcomes (Schoen et al., 1999; Toulemon and Testa, 2005). Moreover, a further disaggregation of the dependent variable (as, for example, from binary to multinomial) will result in a very small sample size with a loss of statistical significance. We also run an ordinal model to overcome this issue: findings remained robust, results are available upon request.

[4] Although, we run a robustness check that excludes outsourced tasks from the analysis and results hold (Table 6 Appendix).

These variables are stressing differences in the division of domestic chores among couples. The composite index measuring women's burden was built up for women and men living in couple with the two PCs retained, weighted by their eigenvalues:

$$Women's\ burden = \frac{0.6924}{0.8227}PC_1 + \frac{0.1303}{0.8227}PC_2$$

Finally, the indicator was normalized to obtain a women's burden indicator that varies between 0 (null burden) and 1 (maximum burden), where an equal division of domestic chores between partners is represented by the score 0.5. This indicator is the main independent variable of multivariate models. Women's burden reported by men is equal to 0.63, while the burden reported by women is much higher: 0.85. The gender discrepancy in the average level of the indicator is quite relevant and it is a pity not to be able to assess whether it is also present at couple level. It is possible that men tend to overestimate their contribution in term of domestic work (and women to slightly overestimate it) or to emphasize it to ensure more socially desirable answer.

4.2 Independent Variables and Empirical Strategy

A series of binary logistic regressions predicted women's and men's short-term positive fertility intentions. Model estimations include several control variables already identified by the literature as important determinants of fertility intentions (Balbo et al., 2013), as follows: *age group* of the respondent, represented by two categories: 20–34 (reference) and 35–45; *parity*, which classifies the respondent according to the number of children ever had in three categories: childless (reference), 1 child and 2 or more children; the *combination of the educational level* of partners is represented by five categories: homogamy upper secondary -both partners achieved the same level- (reference), homogamy tertiary -both partners achieved the same level-, homogamy lower -both partners achieved a lower level-, hypergamy -partner's level of education higher than respondent's-, hypogamy—respondent's level of education higher than partner's. We also consider the *number of hours dedicated by the respondent and by the partner to paid work* to approximate the intensity of their labour market participation: this variable was differently coded according to respondents' and partners' gender. For women, the following coding was applied: 0 non-working (reference), 1 working. For men, the number of hours was classified as: less than 20 h, 21–39, 40 (reference), more than 40. We decide to use different categories by gender to keep into account the different levels of labour market participation in Italy that persist.

Finally, we also include respondents' *macro-area of residence*: North and Center (reference), and South and Island and a measure of *subjective economic conditions* of the household: a dummy variable coded 1 if the declared economic conditions of the household during the previous 12 months were sufficient or good (reference) or coded 0 if scarce or insufficient (see Table 3 in Appendix1 for descriptive statistics of variables included in multivariate analyses).

To measure gender equity (in terms of values), we used surveys' data on opinions as a binary *proxy of gender values* since no explicit information regarding the fairness of the division of roles within the family was available. It accounts for more traditional gender values measuring the agreement with the following statement: "When parents need care, it is natural that female daughters take care of them more than males".

Other independent variables of interest are those coming from interactions between women's burden indicator and parity. In this way, we examined whether and how the relationship between fertility intentions and women's domestic burden varies when considering the dimension of respondents' offspring.[5]

The first set of models include independent variables of interest and controls for partnered women and men with positive fertility intentions as dependent variables, respectively (see M0 -full sample-, M1 -women- and M2 -men- Table 1). To accurately compare the effect of women's domestic burden on fertility intentions of men and women, we tested for the equality of the common coefficients across models using the *suest* command in Stata (seemingly unrelated estimation) and an interaction term between gender and our main independent variable of interest (Table 4, M0, Appendix 2 & Fig. 2). Both lead us to reject the equality of the common coefficients across models for women and men.

The second set includes interaction terms between women's burden indicator and parity, when statistically significant (Table 4, M1, Appendix 2). For the sake of brevity and a more accurate interpretation of these results, we computed and plotted Adjusted Predictions with 95% confidence intervals to test for changes in the relationship between positive fertility intentions and women's burden by parity (Fig. 3). Men's interactions, being not statistically significant, are not included. Consequently, our second research hypothesis (RH2: "Parity as a moderator") was tested for women only. Then, the number of children is further disaggregated considering the sex of the first child (childless, 1st child boy, 1st child girl, 2 or more children) and used both as independent variable in the model estimation and as mediator variable in the interaction term instead of parity, testing for our third hypothesis (Table 4, M2, Appendix 2). Again, estimations coming from interactions are plotted as Adjusted Predictions with 80% confidence intervals (Fig. 4).

We also performed an additional analysis aimed at isolating the effect of uncertain intentions. In this analysis, our dependent variable is categorical and compares strong positive and uncertain fertility intentions against strong negative ones. Accordingly, we estimated multinomial regression models separately for women and men (Table 5, Appendix 2).

Finally, we run a robustness check to search for inconsistencies that the inclusion of outsourced domestic tasks might have had on our findings. Then, we excluded all respondents that outsourced the activities used to build the indicator of women's

[5] We are completely aware of the relevance of parity for fertility intentions (Balbo et al., 2013; Mills et al., 2008), but small.
sample sizes did not allow us to further disaggregate the analyses according to the number of children.

Table 1 Results from binary logistic regression models on positive fertility intentions of women and men (Odds ratios). *Source*: Own elaboration, FSS microdata 2016

	M0: Full sample			M1: Women			M2: Men		
Independent variables	Odds ratio	SE	P > z	Odds ratio	SE	P > z	Odds ratio	SE	P > z
Women's burden	1.15	0.24		0.87	0.34	**	1.19	0.31	
Female	0.59	0.49	***	–	–	–	–	–	–
Agree (more natural for daughters to take care of parents…)	1.25	0.15	**	1.29	0.22		1.14	0.22	
Age groups									
(20–34)									
35–45	0.19	0.02	***	0.16	0.02	***	0.27	0.04	***
Parity									
(Childless)									
1 boy	0.44	0.06	***	0.45	0.09	***	0.42	0.09	***
1 girl	0.48	0.07	***	0.5	0.09	***	0.45	0.09	***
2+	0.05	0.01	***	0.04	0.01	***	0.05	0.01	***
Women/respondent's number of hours worked									
(40 h)									
< = 20	0.96	0.19		–	–	–	–	–	–
21–39	0.88	0.13		–	–	–	–	–	–
> 40	1.01	0.13		–	–	–	–	–	–
Women's employment status									
(Not working)									
Working	–	–	–	0.82	0.12		0.84	0.13	
Couple's educational comb									
(Homo upper sec.)									
Homo tertiary	1.64	0.28	***	2.05	0.49	***	1.39	0.36	
Homo lower	0.78	0.115	**	0.71	0.15		0.91	0.19	

Table 1 (continued)

Independent variables	M0: Full sample			M1: Women			M2: Men		
	Odds ratio	SE	P > z	Odds ratio	SE	P > z	Odds ratio	SE	P > z
Hypergamy	1.05	0.15		1.31	0.31		1.08	0.21	
Hypogamy	0.83	0.12		0.97	0.19		0.73	0.18	
Men/partner's number of hours worked									
(40 h)									
< = 20	0.93	0.19		0.75	0.17		0.92	0.37	
21–39	0.87	0.13		0.85	0.16		0.94	0.18	
> 40	1.01	0.14		0.92	0.14		1.35	0.22	**
Subjective economic conditions									
(Sufficient or good economic conditions)									
Scarce or insufficient	0.88	0.09		0.87	0.14		0.92	0.16	
Macroarea of residence									
(North and Center)									
South and Island	1.36	0.13	***	1.54	0.22	***	1.17	0.18	
N	3,265			1,842			1,282		
Log likelihood	–1388			− 708			− 604		
Pseudo R2	0.31			0.34			0.26		

*$p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

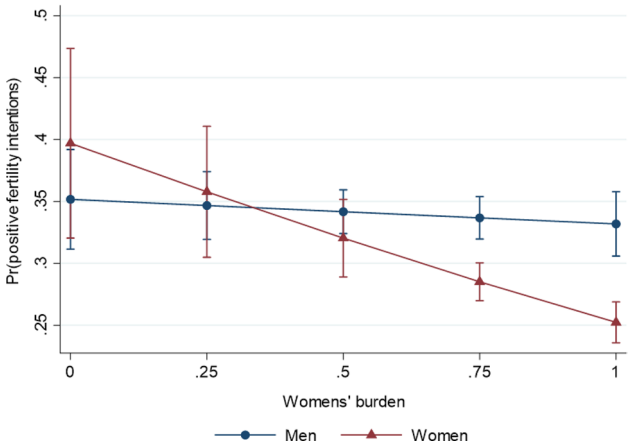

Fig. 2 Predicted probabilities by women's burden and gender on positive fertility intentions. *Notes*: See Table 4 (M0) in the Appendix 2 for the full model. *Source*: own elaboration, FSS microdata 2016.

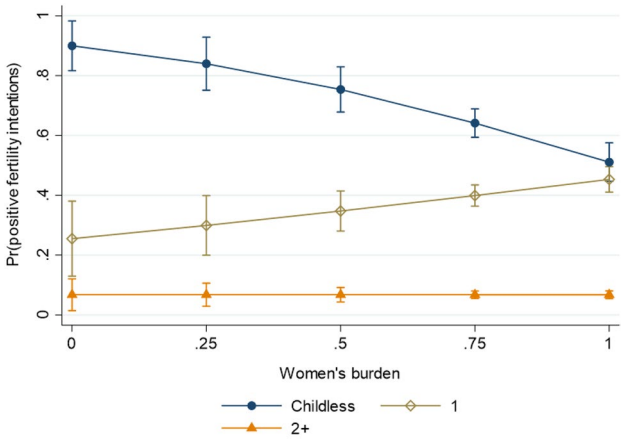

Fig. 3 Predicted probabilities by women's burden and parity on positive fertility intentions. *Notes:* See Table 4 (M1) in the Appendix for full models. *Source*: Own elaboration, FSS microdata 2016

burden and re-estimated models holding the sample restriction, as shown in Table 6 (Appendix 2). The results remain robust.

Our strategy to control potential biases resulting from high correlation and/or multicollinearity issues followed three steps. In the first, we computed the correlation matrices between pairs of independent variables for women and men not finding high correlations among them. In the second, we estimated the Variance Inflation

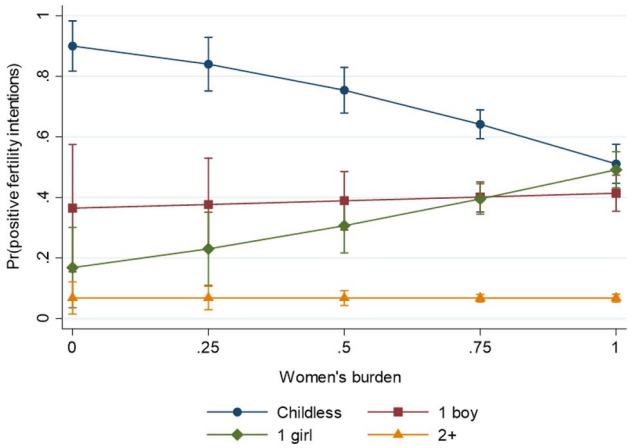

Fig. 4 Predicted probabilities by women's burden and parity on positive fertility intentions by sex of first born (80% CIs) -women. *Notes*: See Table 4 (M2) in the Appendix 2 for full models. *Source*: own elaboration, FSS microdata 2016.

Factors (VIFs) of complete model estimations without signs of multicollinearity.[6] Last, we followed a stepwise logic adding one independent variable at the time to search for sudden changes in coefficients, instead finding robust results (Table 6, Appendix 2).

5 Results on Women's Domestic Burden and Frtility Intentions

5.1 Fertility Intentions by Age, Parity, Domestic Burden, and Gender Ideology

Fertility intentions are notably influenced by both age and previous childbirths, as depicted in the descriptive Table 3 (see Appendix 1). A significant majority of women (66.9%) expressing certainty about wanting to have another child falls within the 20–34 age range. Conversely, strong negative intentions toward having more children are prevalent among older women, particularly among partnered women aged 35–45 (87.3%). For men, the highest proportions are consistently observed among those aged 35–45, with a distinct gradient based on intention: from 90.5% certain of not wanting a child to 55.1% certain of wanting one.

The distribution of the domestic burden among women, based on their fertility intentions, is presented in Table 3 in Appendix 1. Among partnered women, those who are certain about not intending to have another child bear a higher domestic burden (0.87), while those with other intentions show a slightly lower burden (0.83/0.84). In contrast, among men, partners who are certain about intending to have another child bear a slightly higher burden from their partners (0.67). These

[6] Results from the first two steps are not shown here but are available upon request.

initial descriptive findings highlight significant gender-based differences in the division of household chores and their association with short-term fertility intentions.

Table 3 also outlines the distribution, based on fertility intentions, of a variable aimed at capturing gender ideology. This gauges agreement with the statement about the perceived naturalness that a daughter is in charge for caring for old parents primarily, and not a son. The percentage of individuals, both women (20.9–19.8%) and men (16.8–20.6%), with more traditional gender values—particularly agreeing with the idea that daughters should primarily care for parents—is slightly higher among those with positive fertility intentions.

5.2 A Gendered Relationship Between Domestic Burden and Fertility Intentions

The results of our logistic regression models on positive fertility intentions are shown in Table 1. The first model (M0), confirms that the gender of the respondent matters, being women 41% less likely to want a(nother) child respect to men. Regarding the role of the domestic burden carried by women on positive fertility intentions, interesting differences between women and men also arise.[7] As shown in M1, there is a strong negative association between the women's domestic burden and their fertility intentions. Specifically, a one-point increase in women's burden significantly decreases the likelihood of desire to have a child (by almost 13%). However, this association is not significant in explaining fertility intentions among men (Table 1, M2). These differences are illustrated in Figure 2 where, at an equal share of chores (0.5), the likelihood of wanting a(nother) child roughly differs by gender. Instead, as the domestic burden of women increases their positive fertility intentions decrease, diverging from those of men, that remain almost unresponsive.[8]

Both women and men exhibit declining reported positive fertility intentions with increasing parity and age. Additionally, specific gender-related effects merit attention. Women in homogamous couples where both partners have attained tertiary education, as well as those residing in the Southern and Island regions, display a higher likelihood of desiring another child compared to those in couples where both partners have completed upper secondary education and those living in the Northern and Central regions. Interestingly, men working more than 40 h a week demonstrate a higher likelihood of wanting another child compared to those working precisely 40 h.

We do not find statistically significant results neither for employment nor for subjective economic conditions on fertility intentions, probably also because of the small sample size. However, we do find significant effects when examining this

[7] Test performed confirmed that differences observed in the coefficients of the effect of women's burden on positive.

fertility intentions are different between men and women. For the model with interactions terms please refer to Table 4 (M0, Appendix).

[8] We have also tested for non-linear effects in the relationship between women's burden and declaring positive fertility.

intentions without finding statistically significant results. Results are not shown here but are available upon request.

relation through parity levels among women.[9] As for employment, the likelihood of wanting another child is lower for working than for non-working women. This is true for childless and mothers of one child, but the likelihood is even lower for the latter. As for subjective economic conditions, the picture is a little bit different. For childless women, the likelihood for wanting their first child is higher for those who reported insufficient or bad economic conditions with respect to those reporting sufficient or good economic conditions. For mothers of one child, instead, the likelihood of wanting the second child is significantly lower for those with scarce economic conditions than for those faring better.

This might be meaning that the desire to have the first child is shared among women, even if their economic conditions are not favourable, but the desire to have the second, instead, is smaller among women thinking that their economic position is not strong enough.

Having analysed the influence of women's domestic burden on the will of men and women to have a(nother) child, we now turn the attention to uncertain and strong positive intentions (Table 5, Appendix 2). Concentrating the attention on women respondents, the first two models (M1-M2) show a negative influence of their domestic burden on both those with uncertain and certain positive intentions respect to those with certain negative intentions.

When comparing respondents holding certain positive fertility intentions against those with certain negative ones, some interesting insights emerge. Among women, the effect of the hours worked by the male partner turn significant. In fact, respect to women whose partner works 40 hours a week, those whose partner works less than 20 have lower likelihood of certainly wanting a(nother) child. For men (Table 5, M2-M3, Appendix 2), we find statistically significant results both for women's burden and our proxy of gender equity. First, an increase in the domestic burden held by their female partners has a strong positive influence on males' certain positive fertility intentions. Second, men more likely to certainly want a(nother) child are those reflecting "more traditional" values.

5.3 The Fundamental Role of Parity: An Opposite Relationship with Domestic Burden Across Childless Women and Mothers of One

The interaction term between women's domestic burden and parity proves significant for women (not for men), revealing intriguing insights. For this reason, this part of the analyses focuses solely on the female sample. Figure 3 portrays the predicted probabilities of declaring positive fertility intentions by women's domestic burden and parity. As depicted, the likelihood of wanting to have the first child decreases as their burden increases. Conversely, for women who already have one child, the opposite trend emerges. Recognizing the number of children as a crucial factor shaping fertility intentions, we conducted various analyses to explore how the relationship between women's burden and parity might differ based on their employment

[9] Results not shown here but are available upon request.

status, regional residence, and subjective economic conditions. Our findings indicate that the disparity in the desire for another child between childless women and those with one child remains consistent for working women, residents of the Center/North of Italy, and those reporting sufficient or good economic conditions, respectively. In contrast, for non-working women, residents of the South and Islands of Italy, and those reporting insufficient or poor economic conditions, the likelihood of desiring another child remains unchanged regardless of the burden they bear.[10]

The varying impact of women's domestic burden on positive fertility intentions between childless women and those with one child prompted us to seek for explanations.[11]

5.4 A Distinct Pattern for Mothers of a Girl

In our investigation, we explored the role of the firstborn's sex in the relationship between women's burden and fertility intentions (Figure 4). Unexpectedly, we observed a gradient in the likelihood of desiring a second child linked to the sex of the first child, specifically among mothers of a girl. For mothers of a boy, no significant interactions were found between women's burden and the probability of wanting another child. However, among mothers of girls, while at very low levels of burden having had a girl seemed to decrease the likelihood of positive fertility intentions, the relationship reversed for women bearing more than 75% of the domestic burden, becoming significantly higher at the highest burden levels.

Consistently with previous sections, we explored whether this relation differed when considering women's employment status, regional residence, and subjective economic conditions. Our findings revealed that while women's burden reduced the likelihood of wanting a child for childless women, this pattern did not hold for mothers of girls, whose intentions increased with higher burden levels. Notably, this trend was observed only among working women, residents of the North and Center, and those reporting sufficient or good economic conditions. Among non-working women, residents of the South and Islands, and those reporting insufficient or poor economic conditions, the relationship between domestic burden and fertility intentions did not significantly change based on the sex of the first child.

Given the unexpected outcome concerning the sex of the first child, we conducted a robustness check[12] to assess the potential impact of foreign-born women's fertility preferences on our estimations. However, upon re-estimating the models exclusively with data from Italian-born women, the results remained consistent. Thus, our findings suggest a potential influence of different gender preferences on positive fertility intentions among mothers of girls, contingent upon varying levels of domestic burden.

[10] These results are not shown here but are available upon request.

[11] Initially, we also tested for the role of the age of the first child, but the relationship between domestic burden and fertility.
intentions did not significantly change across categories.

[12] Specific results available upon request.

5.5 Discussion

The link between women's domestic workload and fertility intentions in Italy underscores the persistence of traditional gender dynamics—marked by the dominance of the male breadwinner model, an unequal distribution of domestic responsibilities, and a continued preference for sons—within a context where institutional support for balancing work and family remains limited.

Our results highlight unexpected aspects of this relationship.

The first key finding is that the relationship is significant among women but not among men. As expected in the Italian context, the burden of household chores is related solely to women's reduced fertility intentions, not men's ones. The negative association is particularly significant for women who are employed and self-report good economic conditions. Not surprisingly, variations in women's workload contribute to greater variability in their fertility intentions compared to men's, which remain relatively inelastic regardless of the number of children. It is plausible that gender inequality at home affects men and women differently: working women are more exposed to the work-family conflict and may choose to stop (or even forgo, if childless) childbearing if they perceive an unequal distribution of domestic responsibilities.

Furthermore, the fact that domestic chores play very different roles by gender is confirmed by specific robustness checks. For instance, when comparing respondents with certain positive fertility intentions to those with certain negative ones, the traditional role of Italian men emerges. Women whose partners work part-time (less than 20 hours per week) are less likely to express a strong desire for a(nother) child, whereas men who work longer hours, even beyond a standard full-time schedule (more than 40 hours per week), are more likely to have positive parenthood intentions. This suggests that men continue to be perceived as the primary breadwinners, and their full-time employment status may be a prerequisite for their female partners to consider having children. At the same time, men may not feel the same pressure to reconcile work and family life, which is noteworthy.

The second important finding concerns the role of women's workload in shaping fertility intentions differently by parity. The negative association is particularly evident for childless women—in contrast to past studies (Mills et al., 2008)—rather than for mothers of one child. Childless women are more likely to intend to have a child when their domestic workload is lighter, making their fertility intentions more responsive to gender equality (in terms of the division of household chores within the couple). This finding—that an unbalanced domestic workload in childless couples lowers women's fertility intentions—was not observed in previous studies, including an earlier analysis using similar FSS survey data from 2003 (Mills et al., 2008) or other studies based on contemporaneous data sources. This suggests that younger women without children have become increasingly sensitive to gender equality in their reproductive choices, particularly regarding the timing of childbearing and the decision to postpone or forgo fertility due to unequal domestic burdens. As a result, promoting a more egalitarian gender system within both society and couples is crucial for addressing Italy's low fertility rate. Such policies should target not only parents, but also couples struggling to begin their reproductive journey.

Conversely, for mothers of one child, the likelihood of wanting another child increases even when they bear a high domestic workload, contradicting the findings of previous studies (Mills et al., 2008). This result is not entirely unexpected, as contexts with low female labour force participation and a high gender wage gap often exhibit a re-traditionalization of gender roles after the birth of the first child (e.g., Solera & Mencarini, 2018).

The third surprising result concerns the role of the first child's sex in shaping fertility intentions according to women's domestic workload. When we disaggregated mothers based on the sex of their first child, we initially expected, following well-documented European trends favouring mixed-sex preferences, to find no effect. However, our results revealed a clear gradient in women's fertility intentions: among mothers of boys, fertility intentions remain stable regardless of workload, whereas among mothers of girls, intentions vary significantly based on domestic workload. Specifically, mothers in egalitarian couples (with lower domestic burdens) exhibit lower fertility intentions, while those in traditional arrangements (with higher domestic workloads) are more likely to want another child. Women in highly traditional role sets—shouldering most of the domestic chores—express a desire for additional children even when their workload is high, particularly if their firstborn is female.

This differential fertility intention based on the first child's sex has not been previously documented in the recent Italian context and warrants replication with other samples, including measures of fertility realization and behaviour. Our findings align with research suggesting that the relationship between the number of children and fertility desires is more complex than economic theory assumes. Couples may exhibit different stopping behaviours depending on their preferred gender composition of offspring, as if gender composition is considered separately from the total desired number of children (Toulemon & Testa, 2005). Research on son preference has primarily documented it in less developed countries (e.g., Nigeria—Milazzo, 2014; China, India, and Korea—Das Gupta et al., 2003) or, in Europe and the U.S., among older cohorts (e.g., Dahl & Moretti, 2008; Saarela and Finnas, 2014). Since our dataset does not include explicit measures of respondents' sex preferences for children, we cannot determine whether our findings among more traditional women reflect a preference for sons. More traditional women may prefer a son, or they may believe that having a daughter will provide greater household assistance, as suggested by prior research showing that daughters contribute significantly more to domestic work than sons in Italy and this push them for another child (Mencarini et al., 2017). Interestingly, recent research on sex preferences in Europe (Cukroewska-Torzewska and Grabowska, 2023) finds not only a well-established European preference for mixed-sex offspring (where parents with two children of the same sex are more likely to have a third) but also an emerging preference for daughters. Blau et al. (2020) propose that lower fertility among women with firstborn daughters may reflect their greater bargaining power within the family and more egalitarian gender roles.

This evolving literature on sex preferences and fertility intentions prompts us to interpret our findings as evidence of two coexisting gender-role regimes in Italy,

each leading to different child sex preferences. A "post-modern" regime aligns with recent European trends favouring daughters, where egalitarian couples are satisfied with one child if the first is a girl. A "more traditional" regime, rooted in the breadwinner model, emerges in couples with heavily unequal domestic divisions, where mothers with firstborn daughters are more inclined to have another child.

When studying fertility intentions in low-fertility contexts, particularly concerning sex preferences, it is crucial to focus on how the sex of the first child influences the progression to a second pregnancy, rather than merely examining the impact of sex composition on third births (Cukroewska-Torzewska and Grabowska, 2023).

Certainly, to better assess the relationship between couples' gender roles and fertility intentions, further investigation with more detailed data is necessary. This study has several limitations, including a small sample size that restricts the exploration of all potential interactions. One significant limitation is the lack of data on childcare responsibilities, as the study focuses only on domestic chores, omitting a critical aspect of gendered labour division. Childcare is a key domain of gender inequality, and its exclusion limits our understanding of household dynamics among parents who usually reallocate their time when they have young children: men usually decrease the time devoted to domestic chores to perform childcare activities (and usually the most rewarding ones), while women increase childcare time at the expenses of her labour market activities (Paihlé et al. 2019). Another limitation is the absence of data on certain respondent characteristics, such as infertility, which is closely linked to age and strongly influences fertility intentions. Additionally, properly operationalizing gender ideology and equity remains a challenge. These are complex and multifaceted concepts, and our study relies on proxy measures that may not fully capture individual beliefs about gender roles and fairness, thereby weakening the validity of our findings.

Despite these limitations, the novelty of our significant results—particularly regarding childless women's fertility intentions and the role of the first child's sex—calls for further analysis. We hope to conduct deeper investigations using future Italian data from the upcoming 2025 rounds of the Italian FFS and GGS. With new data, we aim to address the key limitations of this study and refine our understanding of gender dynamics in fertility decision-making within Italian couples.

Appendix 1

See Tables 2 and 3.

Table 2 Italy. Categorical principal component analysis results of daily activities' variables

CATPCA results					
Correlation matrix	Shopping	Cooking	Cleaning	laundry	Ironing
Shopping	1				
Cooking	0.56	1			
Cleaning	0.50	0.67	1		
Making laundry	0.48	0.67	0.74	1	
Ironing	0.42	0.60	0.72	0.72	1
PCs retained	PC1	PC2			
Eigenvalues	3,46	0.65			
Eigenvectors			Unexplained		
Shopping	0.37	0.86	0.05		
Cooking	0.45	0.14	0.27		
Cleaning	0.48	− 0.20	0.19		
Making laundry	0.47	− 0.24	0.19		
Ironing	0.45	− 0.39	0.19		
Variance absorption	0.69	0.13			
Oblique promax rotation Eigenvectors	PC1	PC2	Unexplained		
Shopping	− 0.08	0.94	0.05		
Cooking	0.33	0.32	0.27		
Cleaning	0.51	0.01	0.19		
Making laundry	0.53	− 0.02	0.19		
Ironing	0.59	− 0.17	0.19		

Table 3 Italy. Descriptive statistics (mean, column and row percentages, in this order) of variables used in the analysis by declared fertility intentions, women and men living in couple, aged 20–45. *Source*: Own elaboration, FSS microdata 2016

Variables	Women					Men					Total
	Definitely not	Probably not	Probably yes	Definitely yes	Total	Definitely not	Probably not	Probably yes	Definitely yes	Total	
Women's burden	0.87	0.83	0.84	0.83	0.85	0.63	0.65	0.62	0.67	0.63	0.76
(a) Column percentages											
More natural for daughters take care of parents…											
(Disagree)	81.6	86.8	79.1	80.3	83.8	84.3	84.7	83.2	79.5	81.8	82.7
Agree	18.4	13.2	20.9	19.5	16.2	15.7	15.4	16.8	20.5	18.2	17.3
Age groups											
(20–34)	12.7	28.0	52.6	66.9	27.7	9.5	15.3	37.0	44.9	21.1	24.8
35–45	87.3	72.0	47.4	33.1	72.3	90.5	84.7	63.0	55.1	78.9	75.2
Parity											
(Childless)	4.8	11.1	31.0	49.1	14.6	4.2	9.1	27.6	40.8	14.7	14.6
1 boy	9.3	13.7	23.2	21.0	13.8	9.6	16.9	26.3	28.6	17.3	15.4
1 girl	9.7	12.9	26.1	21.0	14.4	8.8	13.2	24.0	21.8	14.9	14.6
2 +	76.2	62.3	19.7	8.9	57.2	77.2	60.8	22.1	8.8	53.1	55.4
Women's employment status											
(Not working)	42.6	42.0	43.4	42.0	42.9	44.9	42.6	44.2	39.5	10.1	28.5
Working	57.4	58.1	56.6	58.0	57.1	55.1	57.4	55.8	60.5	89.9	71.5
Couple's educational comb											
(Homo upper sec.)	18.4	20.5	19.9	20.0	19.3	19.9	20.3	23.0	20.6	20.8	20.0
Homo tertiary	7.3	12.0	18.2	19.4	11.3	7.6	13.3	12.6	11.0	10.6	11.0
Homo lower	32.6	23.4	18.5	20.0	27.2	28.3	25.3	23.9	22.6	25.9	26.6
Hypergamy	14.2	11.7	13.5	12.9	13.5	29.8	26.0	29.2	34.9	29.1	20.4
Hypogamy	27.6	32.5	29.8	27.7	28.7	14.5	15.1	11.2	11.0	13.6	22.1

Table 3 (continued)

Variables	Women					Men					Total
	Definitely not	Probably not	Probably yes	Definitely yes	Total	Definitely not	Probably not	Probably yes	Definitely yes	Total	
Men's number of hours worked											
(40 h)	43.5	40.9	43.1	47.8	43.3	44.8	44.6	45.1	42.8	18.6	32.5
< = 20	13.5	13.2	12.9	7.6	13.1	3.5	2.9	3.7	3.1	55.0	31.5
21–39	15.3	12.1	14.6	21.0	14.9	21.0	20.0	17.0	18.3	21.7	17.9
> 40	27.7	33.8	29.4	23.6	28.7	30.8	32.6	34.3	35.9	4.8	18.2
Subjective economic conditions											
(Sufficient or good economic conditions)	67.9	70.8	71.9	76.0	69.8	67.0	71.3	71.2	74.7	69.9	69.8
Scarse or insufficient	32.1	29.2	28.1	24.0	30.1	33.0	28.7	28.8	25.3	30.2	30.2
Macroarea of residence											
(North and Center)	60.5	59.1	53.1	60.5	58.8	57.5	61.6	53.9	61.9	57.9	58.4
South and Island	39.5	40.9	46.9	39.5	41.2	42.5	38.4	46.1	38.1	42.1	41.6
(b) Row percentages											
More natural for daughters take care of parents…											
(Disagree)	52.9	20.8	18.4	8.0	44.4	40.8	26.1	23.8	9.3	55.6	100.0
Agree	54.5	14.4	22.2	8.9	40.9	38.9	24.2	24.6	12.3	59.1	100.0
Age groups											
(20–34)	24.4	19.7	36.3	19.6	62.6	18.3	18.6	42.3	20.8	37.4	100.0
35–45	64.2	19.5	12.6	3.7	54.0	46.6	27.4	19.2	6.8	46.0	100.0
Parity											
(Childless)	17.3	14.8	40.6	27.2	56.2	11.8	15.8	45.3	27.2	43.8	100.0
1 boy	36.0	19.5	32.2	12.4	50.5	22.6	24.9	36.4	16.1	49.5	100.0
1 girl	35.8	17.6	34.8	11.8	55.3	24.1	22.8	38.8	14.3	44.7	100.0
2 +	70.9	21.3	6.6	1.3	57.9	59.1	29.3	10.0	1.6	42.1	100.0

Table 3 (continued)

Variables	Women					Men					Total
	Definitely not	Probably not	Probably yes	Definitely yes	Total	Definitely not	Probably not	Probably yes	Definitely yes	Total	
Women's employment status											
(Not working)	53.2	19.3	19.5	8.0	100.0	41.9	25.0	24.4	8.8	100.0	–
Working	53.2	19.8	18.9	8.2	100.0	39.7	26.0	23.8	10.5	100.0	–
Couple's educational comb											
(Homo upper sec.)	51.1	20.9	19.6	8.4	54.3	38.9	25.1	26.4	9.7	45.7	100.0
Homo tertiary	34.4	20.9	30.7	14.0	57.5	29.1	32.3	28.5	10.1	42.5	100.0
Homo lower	64.1	17.0	12.9	6.0	57.2	44.4	25.1	22.0	8.5	42.8	100.0
Hypergamy	56.2	17.1	19.0	7.8	37.1	41.5	22.9	23.9	11.7	62.9	100.0
Hypogamy	50.7	22.0	19.5	7.8	73.0	43.6	28.7	19.8	7.9	27.0	100.0
Men's number of hours worked											
(40)	53.5	18.5	19.1	9.0	100.0	40.7	25.8	24.2	9.3	100.0	–
< = 20	55.8	20.1	19.3	4.8	100.0	42.2	22.2	26.7	8.9	100.0	–
21–39	54.3	15.8	18.6	11.3	100.0	43.6	26.5	20.8	9.1	100.0	–
> 40	51.0	22.9	19.5	6.6	100.0	38.3	25.9	25.2	10.7	100.0	–
Subjective economic conditions											
(Sufficient or good economic conditions)	51.7	19.9	19.6	8.9	44.0	38.9	26.0	24.5	10.6	56.0	100.0
Scarse or insufficient	56.7	19.0	17.8	6.5	56.2	44.4	24.3	23.0	8.3	43.8	100.0
Macroarea of residence											
(North and Center)	54.7	19.7	17.3	8.3	56.5	40.2	27.1	22.3	10.4	43.5	100.0
South and Island	51.0	19.4	21.8	7.8	55.6	41.2	23.5	26.5	8.9	44.4	100.0
N	1,030	379	371	157	1,937	612	385	362	147	1,506	3,443

Note: row percentages for certain variables (women's employment status and men's number of hours worked) lack totals because they are computed separately for men and women based on who is the respondent. For example, women's employment status regards her employment status if she is the respondent but is about the employment status of the women's partners of men respondents.

Appendix 2: Further Results and Robustness Checks

See Tables 4, 5, 6 and 7.

Table 4 Italy. Results of binary logistic regression models on positive fertility intentions (Odds ratios) including interaction terms between gender, parity without and with the sex of the first child and women's burden. *Source*: Own elaboration, FSS microdata 2016

Independent variables	M0: gender int			M1: parity int			M2: Parity & sex int		
	Odds ratio	SE	P > z	Odds ratio	SE	P > z	Odds ratio	SE	P > z
Women's burden	1.21	0.29		0.94	0.38		1.21	0.29	
Female	0.67	0.25	***	0.58	0.07	***	0.67	0.25	***
Agree (more natural for daughters to take care of parents…)	1.25	0.15	**	1.24	0.15	*	1.25	0.15	**
Age groups									
(20–34)									
35–45	0.19	0.02	***	0.19	0.02	***	0.19	0.02	***
Parity									
(Childless)									
1 boy	–	–	–	0.36	0.13	***	–	–	–
2 +	–	–	–	0.04	0.01	***	–	–	–
Parity and first-born sex									
(Childless)									
1 boy	0.44	0.06	***	–	–	–	0.44	0.06	***
1 girl	0.48	0.07	***	–	–	–	0.48	0.07	***
2 +	0.05	0.01	***	–	–	–	0.05	0.01	***
Respondent's number of hours worked									
(40 h)									

Table 4 (continued)

Independent variables	M0: gender int			M1: parity int			M2: Parity & sex int		
	Odds ratio	SE	P > z	Odds ratio	SE	P > z	Odds ratio	SE	P > z
< = 20	0.96	0.19		0.96	0.19		0.96	0.19	
21–39	0.88	0.13		0.88	0.13		0.88	0.13	
> 40	1.01	0.13		1.01	0.13		1.01	0.13	
Couple's educational comb									
(Homo upper sec.)									
Homo tertiary	1.64	0.28	***	1.63	0.28	***	1.64	0.28	***
Homo lower	0.78	0.115	**	0.78	0.11		0.78	0.11	**
Hypergamy	1.05	0.15		1.05	0.15		1.05	0.15	
Hypogamy	0.83	0.12		0.83	0.12		0.83	0.12	
Partner's number of hours worked									
(40 h)									
< = 20	0.93	0.19		0.93	0.19		0.93	0.19	
21–39	0.87	0.13		0.87	0.13		0.87	0.13	
> 40	1.01	0.14		1.01	0.14		1.01	0.14	
Subjective economic conditions									
(Sufficient or good economic conditions)									
Scarce or insufficient	0.88	0.09		0.88	0.09		0.88	0.09	
Macroarea of residence									
(North and Center)									
South and Island	1.36	0.13	***	1.37	0.13	***	1.36	0.13	***
Women's burden*gender									
Wb*Female	0.84	0.29	***	–	–	–	0.84	0.29	***
Women's burden*parity									
Wb#1	–	–	–	2.73	0.79	***	–	–	–

Table 4 (continued)

Independent variables	M0: gender int			M1: parity int			M2: Parity & sex int		
	Odds ratio	SE	P > z	Odds ratio	SE	P > z	Odds ratio	SE	P > z
Wb#2 +	–	–	–	1.11	0.58	***	–	–	–
Women's burden*parity by sex of the 1st child									
Wb#1 boy	–	–	–	–	–	–	1.81	0.36	*
Wb#1 girl	–	–	–	–	–	–	2.44	1.37	***
Wb#2 +	–	–	–	–	–	–	1.11	0.58	**
N	3,265			1,842			1,282		
Log likelihood	−1388			−708			−604		
Pseudo R2	0.31			0.34			0.26		

Note: *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

Table 5 Italy. Results of multinomial regression models on certain positive and uncertain fertility intentions against certain negative ones (Relative risk ratios). *Source*: Own elaboration, FSS microdata 2016

Independent variables	Women						Men					
	Uncertain vs. def. not			Def. yes vs. def. not			Uncertain vs. def. not			Def. yes vs. def. not		
	Odds ratio	SE	P > z	Odds ratio	SE	P > z	Odds ratio	SE	P > z	Odds ratio	SE	P > z
Women's burden	0.41	0.13	***	0.46	0.28	*	1.17	0.27		2.55	1.09	**
Agree (more natural for daughters to take care of parents…)	0.87	0.13		0.89	0.23		1.01	0.18		1.79	0.52	**
Age groups												
(20–34)												
35–45	0.23	0.03	***	0.07	0.01	***	0.38	0.07	***	0.22	0.06	***
Parity and first-born sex												
(Childless)												
1 boy	0.49	0.11	***	0.27	0.08	***	0.44	0.14	***	0.29	0.11	***
1 girl	0.55	0.12	***	0.24	0.07	***	0.39	0.12	***	0,25	0.09	***
2 +	0.15	0.02	***	0.02	0.01	***	0.11	0.13	***	0.01	0.00	***
Women's employment status												
(Not working)												
Working	0.85	0.11		0.74	0.17		0.96	0.13		1.01	0.25	
Couple's educational comb												
(Homo upper sec.)												
Homo tertiary	1.94	0.12	***	2.08	0.73	*	1.87	0.46	**	1.57	0.69	
Homo lower	0.66	0.11	*	0.76	0.24		0.94	0..18		1.07	0.38	
Hypergamy	0.97	0.19		1.04	0.37		0.93	0.17		1.27	0.39	
Hypogamy	1.06	0.17		0.88	0.26		0.88	0.19		0.91	0.36	
Partner/Men number of hours worked												
(40 h)												

Table 5 (continued)

Independent variables	Women						Men					
	Uncertain vs. def. not			Def. yes vs. def. not			Uncertain vs. def. not			Def. yes vs. def. not		
	Odds ratio	SE	P > z	Odds ratio	SE	P > z	Odds ratio	SE	P > z	Odds ratio	SE	P > z
< = 20	0.96	0.18		0.46	0.18	**	0.82	0.29		0.83	0.54	
21–39	0.71	0.12	*	1.04	0.29		0.91	0.15		0.92	0.29	
> 40	1.23	0.16		0.85	0.21		1.1	0.16		1.51	0.38	
Subjective economic conditions												
(Sufficient or good economic conditions)												
Scarce or insufficient	0.97	0.12		0.69	0.17		0.95	0.14		0.77	0.22	
Macroarea of residence												
(North and Center)												
South and Island	1.45	0.17	***	1.23	0.27		1.04	0.14		0.89	0.21	
N	1,842						1,282					
Log likelihood	− 1,330						− 1,025					
Pseudo R2	0.21						0.15					

Note: *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

Table 6 Italy. Robustness check. Results of binary logistic regression models on positive fertility intentions (Odds ratios) with sample restriction (see notes). *Source*: Own elaboration, FSS microdata 2016

Independent variables	M1: Women			M2: Men		
	Odds ratio	SE	P > z	Odds ratio	SE	P > z
Women's burden	0.88	0.36	**	1.11	0.31	
Agree (more natural for daughters to take care of parents…)	1.24	0.22		1.13	0.23	
Age groups						
(20–34)						
35–45	0.16	0.02	***	0.27	0.05	***
Parity and first-born sex						
(Childless)						
1 boy	0.46	0.09	***	0.39	0.09	***
1 girl	0.51	0.09	***	0.46	0.11	***
2 +	0.05	0.01	***	0.05	0.01	***
Women's employment status						
(Not working)						
Working	0.84	0.13		0.85	0.14	
Couple's educational comb						
(Homo upper sec.)						
Homo tertiary	2.09	0.53	***	1.35	0.39	
Homo lower	0.75	0.16		0.86	0.19	
Hypergamy	1.24	0.29		1.01	0.21	
Hypogamy	0.96	0.19		0.77	0.2	
Men/partner's number of hours worked						
(40 h)						
< = 20	0.69	0.17		1.11	0.46	
21–39	0.75	0.15		0.95	0.19	
> 40	0.85	0.14		1.36	0.23	**
Subjective economic conditions						
(Sufficient or good economic conditions)						
Scarce or insufficient	0.87	0.14		0.92	0.17	
Macroarea of residence						
(North and Center)						
South and Island	1.59	0.23	***	1.18	0.19	
N	1,698			1,196		
Log likelihood	− 658			− 566		
Pseudo R2	0.34			0.26		

Notes: $*p < 0.05$; $**p < 0.01$; $***p < 0.001$. These models exclude all respondents that outsourced the activities used to build the indicator of women's burden.

Table 7 Italy. Robustness check. Results of binary logistic regression models on positive fertility intentions (Odds ratios) stepwise strategy for women (A) and men (B). *Source*: Own elaboration, FSS microdata 2016

Women (A)	M0			M1			M2			M3			M4		
Independent variables	OR	SE	P > z	OR	SE	P > z	OR	SE	P > z	OR	SE	P > z	OR	SE	P > z
Women's burden	0.51	0.15	**	0.49	0.14	**	0.44	0.14	**	0.86	0.19	**	0.82	0.19	**
Agree (more natural for daughters to take care of parents…)	–	–	–	1.13	0.17	*	1.28	0.18	*	1.26	0.21		1.26	0.21	
Age groups															
(20–34)															
35–45	–	–	–	–	–	–	0.15	0.01	***	0.17	0.02	***	0.17	0.02	***
Parity and first-born sex															
(Childless)															
1 boy	–	–	–	–	–	–	–	–	–	0.43	0.08	***	0.43	0.08	***
1 girl	–	–	–	–	–	–	–	–	–	0.45	0.08	***	0.45	0.08	***
2 +	–	–	–	–	–	–	–	–	–	0.04	0.01	***	0.04	0.01	***
Women's employment status															
(Not working)															
Working	–	–	–	–	–	–	–	–	–	–	–	–	0.89	0.12	
Couple's educational comb															
(Homo upper sec.)															
Homo tertiary	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Homo lower	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Hypergamy	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Hypogamy	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Men/partner's number of hours worked															
(40 h)															
< = 20	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
21–39	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

Table 7 (continued)

Women (A)	M0			M1			M2			M3			M4		
Independent variables	OR	SE	P > z	OR	SE	P > z	OR	SE	P > z	OR	SE	P > z	OR	SE	P > z
> 40	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Subjective economic conditions															
(Sufficient or good economic conditions)															
Scarce or insufficient	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Macroarea of residence															
(North and Center)															
South and Island	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
N	1,899			1,894			1,894			1,894			1,894		
Log likelihood	– 1108			– 1104			– 964			– 774			– 743		
Pseudo R2	0.02			0.02			0.13			0.33			0.33		

Women (A)	M5			M6			M7			M8		
Independent variables	OR	SE	P > z	OR	SE	P > z	OR	SE	P > z	OR	SE	P > z
Women's burden	0.86	0.19	**	0.87	0.20	**	0.87	0.19	**	0.87	0.34	**
Agree (more natural for daughters to take care of parents…)	1.34	0.22		1.35	0.23		1.31	0.22		1.29	0.22	
Age groups												
(20–34)												
35–45	0.16	0.02	***	0.16	0.02	***	0.16	0.02	***	0.16	0.02	***
Parity and first-born sex												
(Childless)												
1 boy	0.44	0.09	***	0.45	0.09	***	0.45	0.09	***	0.45	0.09	***
1 girl	0.49	0.1	***	0.49	0.09	***	0.49	0.09	***	0.5	0.09	***
2+	0.05	0.01	***	0.05	0.01	***	0.05	0.01	***	0.04	0.01	***

Table 7 (continued)

Women (A)	M5			M6			M7			M8		
Independent variables	OR	SE	P > z	OR	SE	P > z	OR	SE	P > z	OR	SE	P > z
Women's employment status												
(Not working)												
Working	0.77	0.11	**	0.77	0.11	**	0.76	0.11	**	0.82	0.12	
Couple's educational comb												
(Homo upper sec.)												
Homo tertiary	2.03	0.47	***	2.03	0.47	***	2.04	0.49	***	2.05	0.49	***
Homo lower	0.67	0.14	**	0.69	0.14	**	0.71	0.15		0.71	0.15	
Hypergamy	1.21	0.27		1.21	0.28		1.28	0.29		1.31	0.31	
Hypogamy	0.96	0.18		0.96	0.18		0.97	0.19		0.97	0.19	
Men/partner's number of hours worked												
(40 h)												
< = 20	–	–	–	0.76	0.17		0.79	0.18		0.75	0.17	
21–39	–	–	–	0.89	0.17		0.89	0.17		0.85	0.16	
> 40	–	–	–	0.93	0.14		0.93	0.15		0.92	0.14	
Subjective economic conditions												
(Sufficient or good economic conditions)												
Scarce or insufficient	–	–	–	–	–	–	0.87	0.14		0.87	0.14	
Macroarea of residence												
(North and Center)												
South and Island	–	–	–	–	–	–	–	–	–	1.54	0.22	***
N	1,884			1,884			1,842			1,842		
Log likelihood	− 727			− 727			− 713			− 708		
Pseudo R2	0.34			0.34			0.34			0.34		

Table 7 (continued)

Men (B)	M0			M1			M2			M3			M4		
Independent variables	OR	SE	P>z	OR	SE	P>z	OR	SE	P>z	OR	SE	P>z	OR	SE	P>z
Women's burden	0.91	0.18		0.89	0.18		0.87	0.18		1.13	0.27		1.12	0.27	
Agree (more natural for daughters to take care of parents…)	–	–	–	1.14	0.22		1.09	0.17		1.18	0.21		1.16	0.21	
Age groups															
(20–34)															
35–45	–	–	–	–	–	–	0.21	0.02	***	0.25	0.03	***	0.26	0.04	***
Parity and first-born sex															
(Childless)															
1 boy	–	–	–	–	–	–	–	–	–	0.43	0.08	***	0.43	0.08	***
1 girl	–	–	–	–	–	–	–	–	–	0.47	0.11	***	0.47	0.11	***
2+	–	–	–	–	–	–	–	–	–	0.05	0.01	***	0.05	0.01	***
Women's employment status															
(Not working)															
Working	–	–	–	–	–	–	–	–	–	–	–	–	0.88	0.12	
Couple's educational comb															
(Homo upper sec.)															
Homo tertiary	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Homo lower	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Hypergamy	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Hypogamy	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Men/partner's number of hours worked															
(40 h)															
<=20	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
21–39	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

Table 7 (continued)

Men (B)	M0			M1			M2			M3			M4		
Independent variables	OR	SE	P>z	OR	SE	P>z	OR	SE	P>z	OR	SE	P>z	OR	SE	P>z
>40	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Subjective economic conditions															
(Sufficient or good economic conditions)															
Scarce or insufficient	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Macroarea of residence															
(North and Center)															
South and Island	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
N	1,466			1,457			1,457			1,457			1,457		
Log likelihood	− 939			− 931			− 500			− 690			− 690		
Pseudo R2	0			0			0.07			0.25			0.26		

Men (B)	M5			M6			M7			M8		
Independent variables	OR	SE	P>z	OR	SE	P>z	OR	SE	P>z	OR	SE	P>z
Women's burden	1.13	0.28		1.17	0.31		1.18	0.31		1.19	0.31	
Agree (more natural for daughters to take care of parents…)	1.17	0.22		1.15	0.22		1.14	0.22		1.14	0.22	
Age groups												
(20–34)												
35–45	0.26	0.04	***	0.27	0.04	***	0.28	0.05	***	0.27	0.04	***
Parity and first-born sex												
(Childless)												
1 boy	0.44	0.09	***	0.42	0.09	***	0.42	0.09	***	0.42	0.09	***
1 girl	0.48	0.11	***	0.47	0.11	***	0.46	0.11	***	0.45	0.09	***
2+	0.06	0.01	***	0.05	0.01	***	0.05	0.01	***	0.05	0.01	***

Table 7 (continued)

Men (B)	M5			M6			M7			M8		
Independent variables	OR	SE	P > z	OR	SE	P > z	OR	SE	P > z	OR	SE	P > z
Women's employment status												
(Not working)												
Working	0.84	0.12		0.82	0.13		0.8	0.13		0.84	0.13	
Couple's educational comb												
(Homo upper sec.)												
Homo tertiary	1.24	0.31		1.32	0.34		1.37	0.36		1.39	0.36	
Homo lower	0.84	0.16		0.88	0.19		0.91	0.19		0.91	0.19	
Hypergamy	0.87	0.16		1.02	0.21		1.06	0.21		1.08	0.21	
Hypogamy	0.65	0.15		0.71	0.17		0.72	0.18		0.73	0.18	
Men/partner's number of hours worked												
(40 h)												
< = 20	–	–	–	0.95	0.38		0.96	0.39		0.92	0.37	
21–39	–	–	–	0.97	0.19		0.96	0.19		0.94	0.18	
> 40	–	–	–	1.36	0.22	**	1.36	0.22	**	1.35	0.22	**
Subjective economic conditions												
(Sufficient or good economic conditions)												
Scarce or insufficient	–	–	–	–	–	–	0.91	0.15		0.92	0.16	
Macroarea of residence												
(North and Center)												
South and Island	–	–	–	–	–	–	–	–	–	1.17	0.18	
N	1,455			1,311			1,282			1,282		
Log likelihood	− 686			− 616			− 605			− 604		
Pseudo R2	0.26			0.26			0.26			0.26		

Note: *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

Acknowledgements None

Author Contributions All authors have equally contributed to the conception and design of the work; to the acquisition, analysis, and interpretation of data; have approved the submitted version.

Funding The authors acknowledge the financial support provided by the Italian Ministry of University and Research, 2017 MiUR-PRIN Grant Prot. N. 2017W5B55Y ("The Great Demographic Recession," PI: Daniele Vignoli). The authors acknowledge also the contribution of Piano Nazionale di Ripresa e Resilienza (PNRR) Mission 4, Component 2 – Investiment 1.1. "Progetti di ricerca di Rilevante Interesse Nazionale – PRIN", MUR code 2022ZEEEPN (Bando PRIN 2022 - DD 104 02/02/2022) - CUP "C53D23004940001 ("FER-MO: Italians' FERtility MOtivations in disorienting and uncertain time", PI: Letizia Mencarini). The study was also supported by the Cariparo Foundation Program 'Scientific Research of Excellence 2018, Project: CHILDZERO under Grant No. 52024 ("Behind the 'Childless Boom' in Italy: Insights via Statistical Experimental Design", PI: Maria Letizia Tanturri).

Data Availability The data that support the findings of this study are available from ISTAT but restrictions apply to the availability of these data, which were used under license for the current study, and so are not publicly available. Data are however available from the authors upon reasonable request and with permission of ISTAT.

Declarations

Conflict of interest The authors declare that they have no competing interests.

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