

Income and Fertility in Italian Couples: New Evidence from Longitudinal Tax Data

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1 Introduction

According to the traditional *New Home Economics* gendered division of labour, one should expect lower (higher) fertility among higher-income women (men) due to opportunity costs and traditional male-breadwinner norms [1]. Yet, given the ever-rising economic prerequisites for parenthood in affluent countries [2] and shifting family values and behaviours, the association between women's income and fertility might turn (increasingly) positive, as recently documented in Northern European countries like the Netherlands [3] or Norway [4]. This way, the established negative income-fertility relationship from the 20th century may reverse in the 21st century.

Our study makes a twofold contribution to the contemporary fertility debate. First, we analyse the association between income patterns of men and women in married couples and their transition to a first child. Given the generalised reversal of gender gaps in education and the increasing economic instability of men, dual-earner and women-breadwinner couples are rising [5]. However, most previous fertility research lacked a dyadic perspective that considers fertility patterns as a couple's event [6]. Second, most previous studies focused on the effect of employment status instability on fertility, showing an increasingly negative association [7], particularly for women [8]. In comparison, few studies focused on the income-fertility link, documenting a positive relationship [2].

In the Italian context of (lowest-) low fertility rates, low female labour market participation, and insufficient family-friendly welfare policy by European standards, we focus on Tuscany, an average region regarding economic development and gender equality. We leverage long-term, longitudinal administrative data (2003–2021) from the *Istituto Regionale per la Programmazione Economica della Toscana (IRPET)*, encompassing the universe of tax declarations. For the first time in Italy, administrative tax data are being used to study fertility. Drawing from this unique large-scale dataset, we examine the relationship between personal income and the transition to parenthood within couples by sex over the last two decades.

2 Hypotheses

Resource pooling theory suggests that couples with greater combined socioeconomic resources have higher birth rates. These shared resources can safeguard against financial instability for either partner, allowing families to allocate more resources to domestic and childcare services, supporting child-rearing and career development [9]. Research on highly educated couples supports this theory, as dual tertiary-educated partners tend to have the highest rates of second and third births [10]. Oppenheimer [9] suggests that resource pooling is one of the key advantages of partnership, with men increasingly seeking partners with higher incomes due to the rising costs of childbearing. Men may compete for high-earning women just as women traditionally competed for high-earning men. Likewise, higher-earning women may prefer partners who contribute to housework and childcare, a pattern more common among highly educated men, facilitating the balance between work and motherhood [11].

Hypothesis 1 (H1). *The association between income and the transition to parenthood is positive for both men and women.*

Hypothesis 2 (H2). *High-income homogamous couples have the highest probability of having a first child, followed by hypergamous, hypogamous, and medium-income homogamous couples, with similar probabilities expected. Low-income homogamous couples are expected to have the lowest probability.*

3 Data, Methods and Variables

3.1 Data

Income and fertility information is taken from administrative population data on individual income tax declarations provided by IRPET. These data comprise the universe of declarations submitted by Tuscan taxpayers in 2022, referring to the previous fiscal year 2021, and mainly comprise employees with taxable labour income. The history of retrospective tax declarations can be traced back to 2003. We built a dataset on married different-sex couples, including both spouses' income and information on dependent children's presence, to create a dyadic balanced panel reaching an analytical sample of 489,996 couple-years (8 couple-years, on average) derived from 94,385 married couples. Spouse dyads were identified from individual income tax declarations in 2021 that reported a legal spouse and provided a joint retrospective fiscal observation window for both linked spouses. We select at least 2 person-years for each couple's spouse since the marriage starting year, so spouses who have the first child in the marriage starting year are excluded. For taxpayers and identified married couples, the linked tax IDs of dependent children allowed us to identify the first child's birth date. We selected women aged 25-60 in 2021 to retrospectively cover their biological reproductive span back to 2005, excluding those women above 50 by calendar year and those below 18.

Focusing on married couples raises concerns since they might be selected based on traditional values, age, and income. Thus, we independently analysed men and women who did not report any legal spouses (i.e., single and cohabitators). In this case, we apply a sex-specific age range: women aged 25-60 and men aged 25-64 in 2021 to retrospectively cover the biological reproductive span between 2005 and 2021, excluding women above 50 and men above 55, and all individuals below 18 by calendar year. We obtain an analytical sample of 2,582,121 men-years and 1,822,312 women-years from 234,457 men and 186,431 women, respectively.

3.2 Variables

Transition to the 1st Child. The outcome of having a first child is a time-varying variable on the yearly transition from childless (0), not declaring a fiscally dependent child in year t , to declaring a newborn child at $t+1$ (1). Once the outcome changes from 0 to 1, all person-years onwards exit the risk set. Person-years declaring a 1st child from the first observation unit were excluded from the analysis. Across the total panel of person-year observations, about 13% of spouses and 2% of single/cohabiting individuals experience the year-to-year transition from childlessness to parenthood.

Income. We use the individual gross annual income reported in the tax declaration, transformed into year-specific deciles or tertiles. We input missing income values within the observation window as zero. We consider all zero incomes (missing and real zeros) in their corresponding analytical samples when calculating the year-specific deciles/tertiles for married and single/cohabiting individuals. This strategy addresses potential positive sample selection bias. Only about 11-16% of the analytical sample reported zero or missing income, and the distribution largely overlaps with that of the population. Finally, we have created a variable based on the couple's year-specific income tertiles to test our hypotheses on income assortative mating.

3.3 Methods

We employ discrete-time event history analysis with logistic regression to estimate the probability of transitioning to parenthood. We display predicted probabilities to improve comparability and interpretation. Estimates by spouses' sex in married couples are based only on the wife's model, since the couple-year panel is balanced. In contrast, models for single and cohabiting individuals are estimated independently by sex. The covariates for the main models testing $H1$ on married couples include the wife's and husband's annual gross income (year-specific) deciles with a two-year lag (t_{-2}) to account for reverse causality; 3-year calendar year dummies to account for period effects; the number of years since the fiscal marriage began to model the baseline risk; the wife's and husband's ages at the start of the marriage; and the macro-region of birth to account for migration background. For the main analysis of single/cohabitators testing $H1$ by sex, we only control for men's or women's income deciles, age, age-squared, region of birth, and year-group dummies. Finally, to test $H2$ on couples' income assortative mating, we estimate a model with the couple's income tertile combinations. All the remaining covariates are as in the main model.

4 Findings

Focusing on married couples, **Fig. 1** shows that income is linearly and positively associated with having a 1st child for both spouses, particularly at the 4th decile. We now turn to the single/cohabitators. While the baseline probability is substantially lower than that of married couples, we also observe a positive effect of income for men and women, particularly from the 4th decile onward. However, the AMEs of income for married women from the 4th decile, compared with the 1st decile, range from 0.03 to 0.07. In contrast, it is considerably smaller and less linear for single/cohabiting women, ranging from 0.01 to 0.02. These findings validate *H1*: income positively predicts fertility for both men and women. **Table 1** illustrates the predicted probabilities of different combinations of a couple’s income assortative mating on the transition to parenthood. Three groups can be identified: low-homogamous couples are by far the least likely to have a 1st child (predicted probability of 0.08; p-value < 0.000), followed by hypergamous/hypogamous and medium-homogamous couples, which display similar likelihood (predicted probability of 0.12-0.14, on average; p-value < 0.000). Finally, married couples where both spouses earn high incomes are the most likely to have a 1st child (predicted probability of 0.18). This linear, positive pattern supports *H2* on the couple’s income pooling: the higher the couple’s economic resources, the greater the probability of transitioning to parenthood. Traditional hypergamous couples only show higher fertility than low-homogamous couples.

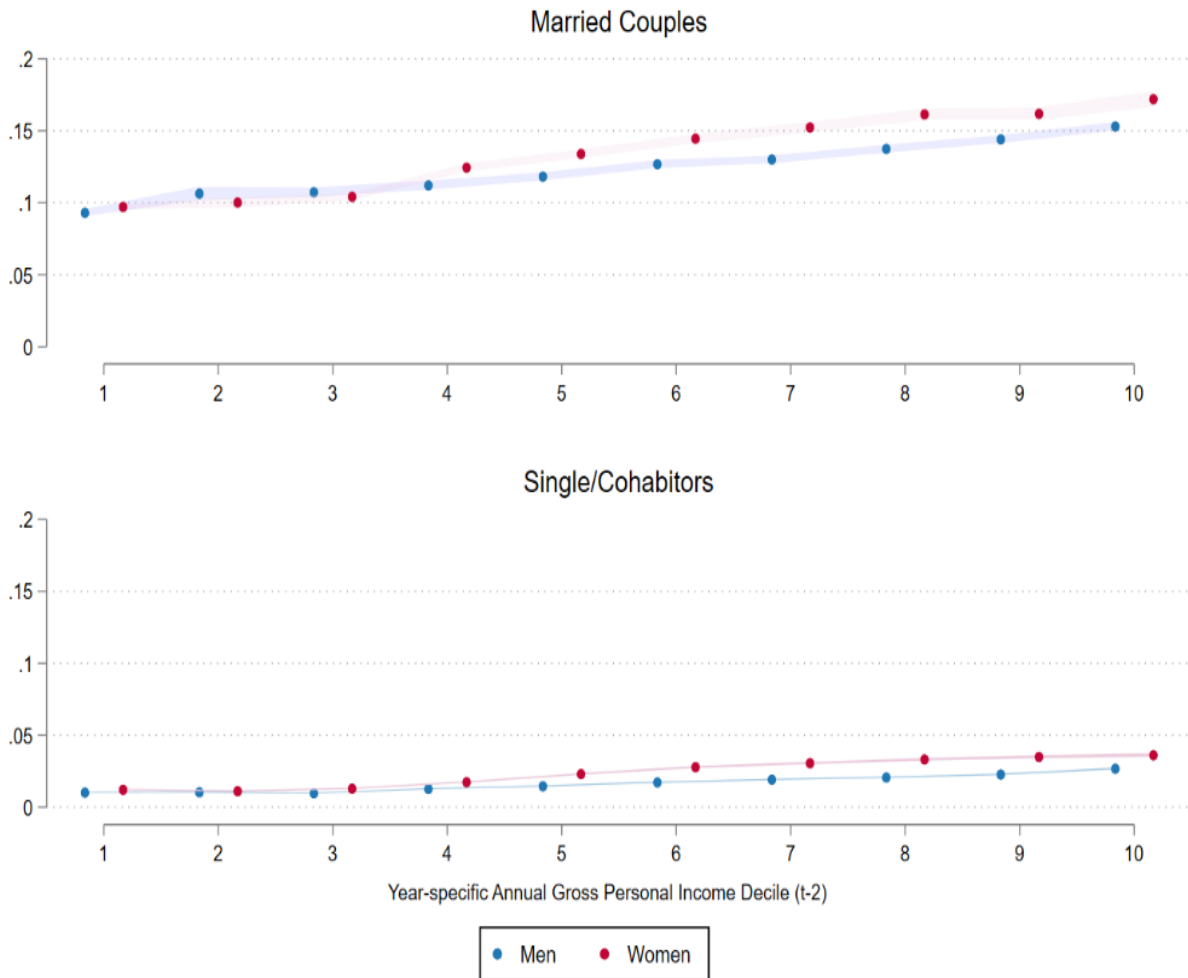


Fig. 1. Predicted probabilities of 1st child transition over income by married and single/cohabitators and sex

Table 1. Predicted probabilities of 1st child transition by the couple's income assortative mating

Income Tertile		Assortative Mating	Coeff.	p-value
Women	Men			
Hypergamy				
1	2	Low-Medium	0.098	0.000
1	3	Low-High	0.123	0.000
2	3	Medium-High	0.154	0.000
Hypogamy				
2	1	Medium-Low	0.115	0.000
3	1	High-Low	0.146	0.000
3	2	High-Medium	0.161	0.000
Homogamy				
1	1	Low	0.075	0.000
2	2	Medium	0.136	0.000
3	3	High	0.178	0.000

5 Conclusion

Our findings are novel in Italy, challenging traditional gender norms and the *New Home Economics* theory. They highlight the relevance of women's employment and income for fertility in the context of changing family values and increasing costs to afford a child. Yet these findings on the economic stratification of fertility also raise concerns about marked income inequalities in the chances of realising parenthood, a prevalent intention for most women and men that might be hampered in contexts of high economic inequality and meagre social policies. Our findings on Tuscany, an average-income Italian region with less traditionalist values and higher female labour force participation than the country average, align with other studies that find a positive income gradient for both sexes in Northern European countries with a more childbearing-supportive institutional setting and a consolidated gender revolution.

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