## Cohort Increases in Childlessness in Italy are Largely Driven by Changes in Partnership Patterns

### Research Background

In the most recent decades, the increase in the share of women who remained permanently childless in developed countries (Kreyenfeld and Konietzka 2017) has occurred together with declining first-birth. The increasing childlessness among women reflect and reinforce changes in social roles (Goldscheider et al. 2015), personal identity and aspiration (Tanturri and Mencarini 2008). However, childbearing patterns are shaped not only by individual preferences but also by historical and cohort-specific norms. Goldstein et al. (2003) suggest that behaviors in one cohort help define the normative context for the next, potentially creating a self-reinforcing dynamic.

Childlessness has fluctuated among women born in the early 20th century, declined among those born in the late 1940s, and has been increasing again in more recent cohorts. Rowland (2007) documents that the lowest rates of childlessness in many developed countries were found among women born in the second half of those born in the 1940s, while both earlier and later cohorts show higher levels. For instance, between the 1935 and 1975 birth cohorts, the incidence of permanent childlessness more than doubled in several OECD countries. By 1975, nearly one in four women in Italy and Spain, and over one in four in Japan, remained childless (OECD 2024)—pointing to a growing trend of delayed or forgone childbearing.

The growing pattern of childlessness is commonly associated to the rise in education and in labor market participation of women. Two key mechanisms have been proposed to explain the association between higher education and childlessness: postponement of childbearing and the opportunity costs of motherhood. More educated women are more likely to delay family formation, which can reduce the likelihood of having children altogether. Additionally, the potential economic

and career-related costs of having children may weigh more heavily on women with greater educational and professional investments. Indeed, research has consistently found higher childlessness among highly educated women (e.g., Berrington 2017; Brini 2020). However, complementary evidence suggest that childlessness is not confined to highly educated, but it is also prevalent among women with disrupted educational paths and limited work experience, with pattern observed in different countries (Tocchioni et al. 2022).

Together with educational expansion and increased labor force participation, changing patterns of marriage have played a key role in the rise of childlessness (Hayford 2013). Women who never married were far more likely to remain childless than those who did. Marriage rates have steadily declined since the baby boom era, one might expect this shift to result in fewer births and more women without children. Hwang (2023) in South Korea documents a shift in the drivers of low fertility: initially driven by later and fewer births among married women, it is now primarily characterized by fewer women marrying and, notably, a rising share of married women who remain childless, indicating a severe decoupling of marriage and childbearing. Yet, the picture is more complex. The growing prevalence of nonmarital births has loosened the once-strong link between marriage and childbearing—partly offsetting the impact of declining marriage rates on overall childlessness, although these changes are to occur at a varying pace depending on the context.

As outlined above, a vast body of research has examined the socio-demographic determinants of childlessness, emphasizing factors such as education, labor force participation, and union status. However, no study has explicitly quantified the extent to which (and how) these factors and their compositional changes, have contributed to the observed rise in childlessness across cohorts. The socio-economic determinants of childlessness are not isolated factors but part of a dynamic and interdependent set of processes. Education, labor force participation, and union status intersect

over time, influencing the ability and decision to have children. More generally, childlessness is not the result of a single decision or reason, but a complex process influenced by various life events and personal developments (Mynarska et al. 2015). Therefore, the role of such determinants can be both direct and indirect, and often mediating one another's influence on childlessness. Given the methodological complexity arising from these interdependences, previous studies have examined these factors separately.

## Aim and Methodological Innovativeness

We apply a dynamic counterfactual decomposition analysis based on the longitudinal parametric g-formula (Hernan and Robins 2020; Robins 1986) with Monte Carlo integration to model the complex interdependencies between socio demographic processes and childlessness. We simulate scenarios to assess the extent to which changes in education, labor force attachment and union status across successive cohorts have driven the observed increase in childlessness.

## Setting and Data

We focus on Italy, a forerunner among the lowest-low fertility countries. Childlessness increased sharply for the cohorts born in the 1960s and early 1970s, exceeding 20%. Only few women plan to not have children (Tanturri and Mencarini 2008), for many childlessness is the results forgone fertility due to postponement, with increased heterogeneity in the population of childless (Tocchioni 2018). Education significantly influences fertility behavior, with its impact growing among younger cohorts. According to Impicciatore and Dalla Zuanna (2017) while highly educated women are more likely to delay or forgo motherhood, among those who do have children the likelihood to have a second child is higher.

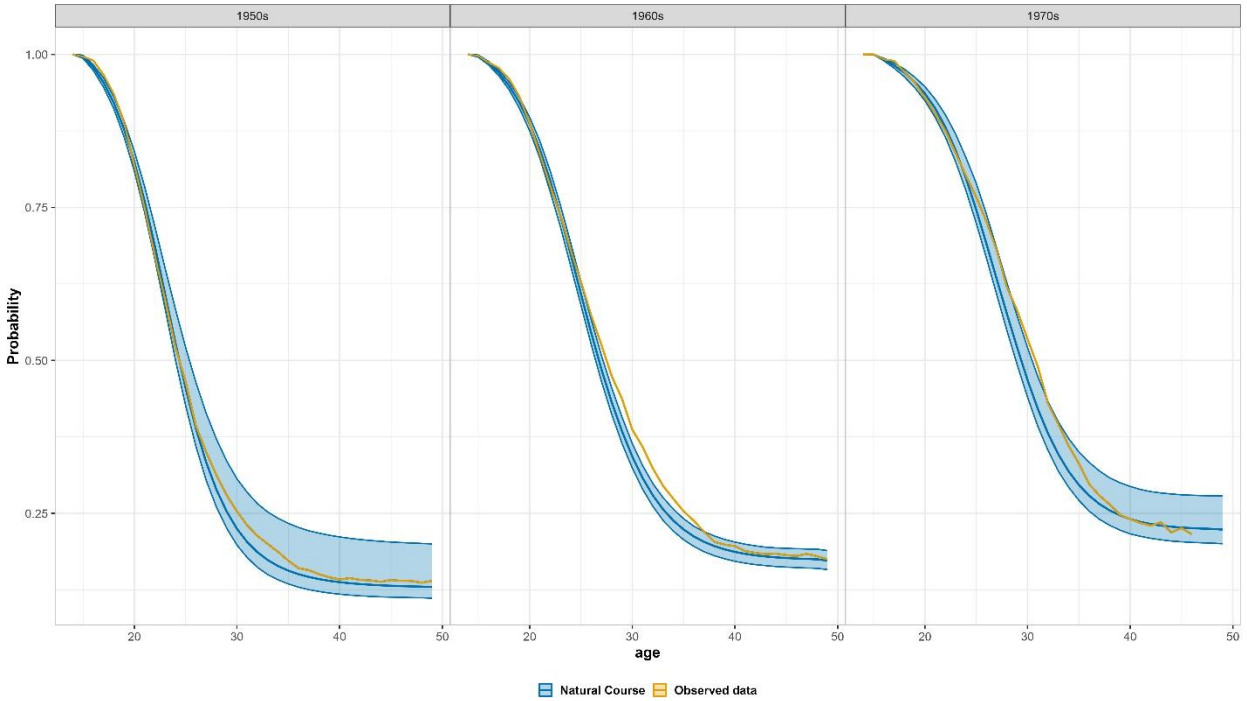
Education expansion has contributed to the increase in labor force participation women, also in Italy. Nevertheless, in Italy women's labour market participation is still low; just above 50% in 2024 (Eurostat 2025). Economic insecurity and unstable labor market conditions contribute to the postponement of marriage and family formation, thereby indirectly increasing the likelihood of remaining childless. Indeed, partnering plays a particularly crucial role, as marriage and parenthood are closely linked (Aassve et al. 2024). Such, conditions make Italy an ideal scenario for our study.

We use data from ISTAT's "Families, Social Subjects, and Life Cycle" survey (FSS 2016), which includes 32,000 individuals aged 18 and over and provides a representative sample of the resident population. For our analysis, we focus on approximately 24,000 women born between 1950 and 1975. The survey offers detailed monthly histories on fertility, partnerships (including cohabitation), education, employment, and family of origin characteristics. We reconstruct each woman's relevant life-course information from age 15 to 50, at the month level; to ensure computational feasibility, we aggregated the data to obtain a n analytical set of data in person-year format—resulting in around 200,000 observations.

## Preliminary Results

**Figure 1** compares the observed share of childless women from age 15 to 50 across birth cohorts with the corresponding shares simulated through our modeling procedure. The simulated data closely match the observed trends, illustrating how the probability of permanent childlessness at age 50 rose from approximately 0.11 among women born in 1950 to nearly 0.25 for those born in 1970.

**Figure 1- Observed Data vs Simulated Data (Natural Course)**




Note: The distributions are based on a limited number of simulations and exhibit variability that could be significantly reduced with more iterations

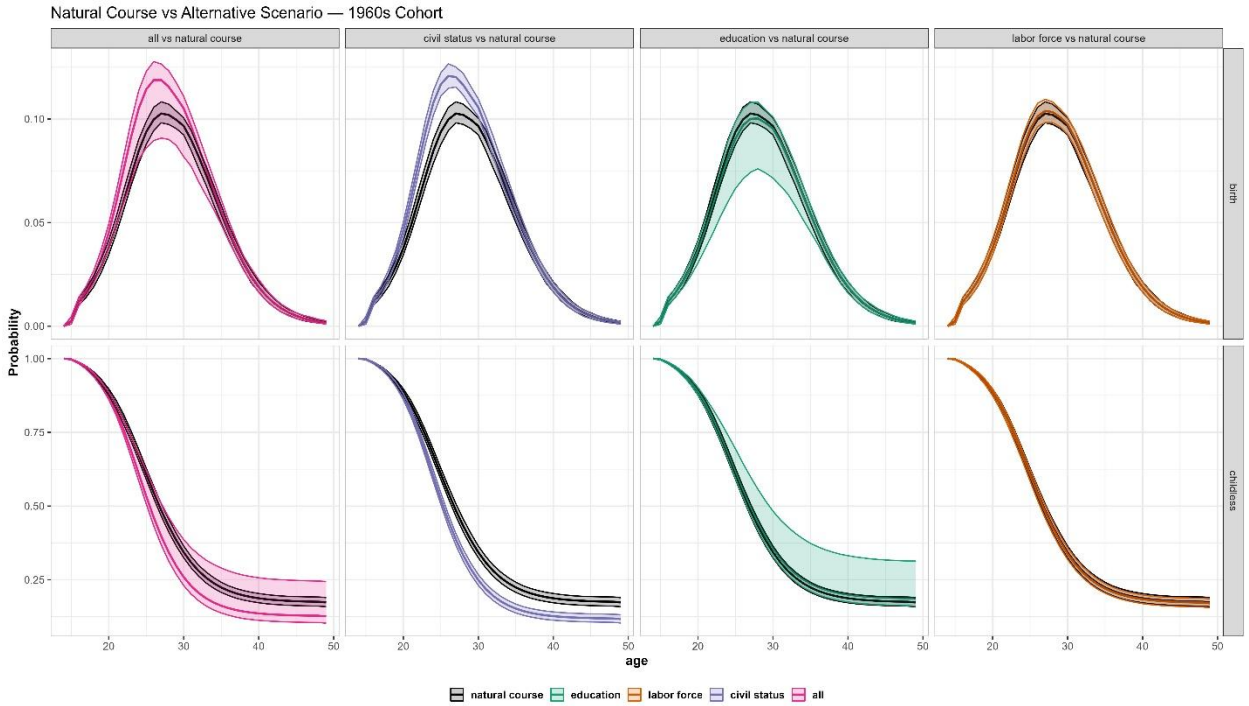
**Figure 2** and **Figure 3** present the results of simulated "what-if" scenarios, where the socio-demographic characteristics of women born in the 1960s and 1970s—such as education, labor force attachment, and union status—are replaced with the corresponding parameter distributions from the 1950s cohort.

In essence, these simulations examine how the age probabilities of childlessness and birth for women born in the 1960s and 1970s would change if their education, employment, or partnership patterns followed the parameter distributions observed in the 1950s – the models used to simulate the data of the relevant characteristics are those estimated on the 1950s cohort and applied to the 1960s and 1970s cohorts. Importantly, the results show how each of these determinants has dynamically influenced birth and childlessness probabilities, with each 1950s determinant also affecting other factors in a cascading manner—for example when simulating a scenario for the 1960s cohort with education following the 1950s distribution, the corresponding union status and

labor force participation are also affected. The current results indicate that changes in partnership patterns have had the largest and most significant impact on the rise in childlessness. Specifically, the decline in fertility within marriage, along with increased marital instability and higher divorce rates, appear to drive the increase in childlessness—particularly between ages 20 and 28 for the 1960s cohort, and between ages 20 and over 30 for the 1970s cohort.

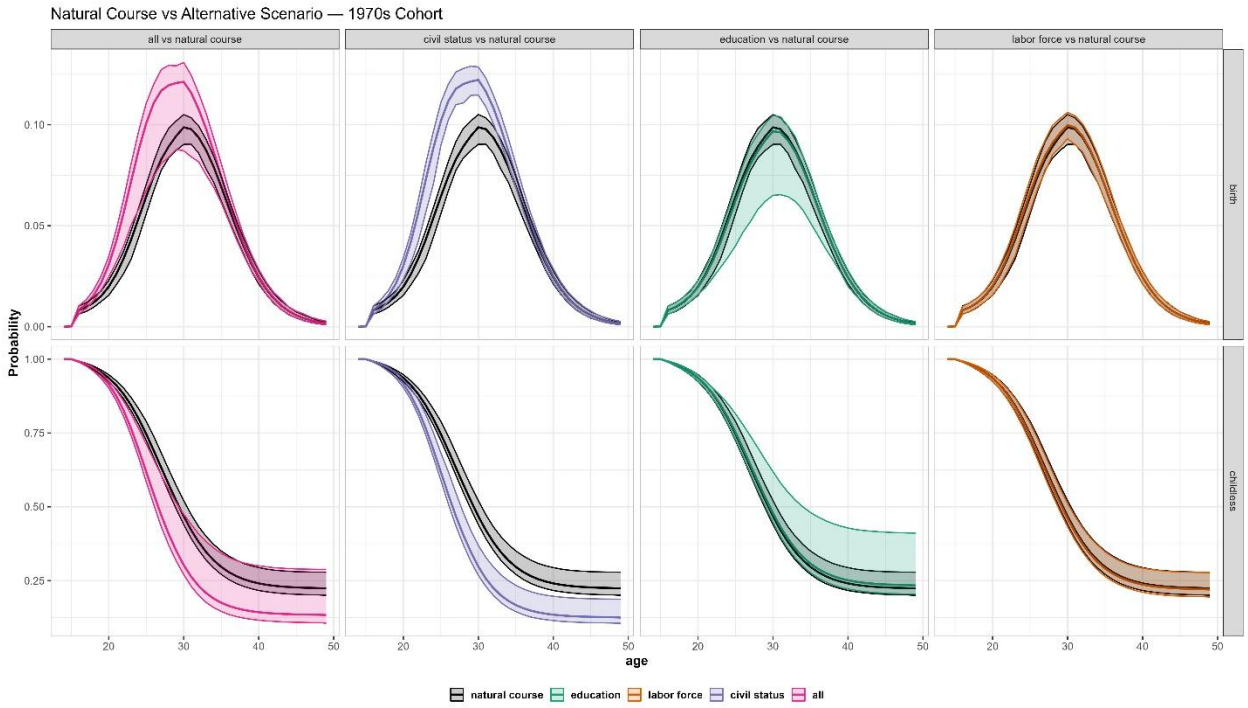
By the time of the conference, we will provide the relative measure of how much marriage, divorce and other determinants have contributed to the rise in childlessness and conduct further analyses to clarify whether and to the extent which education played an indirect role by influencing changes in union status. In short we will examine and quantify how and to what extent factors such as marital postponement, divorce, and cohabitation have contributed to these observed shifts.

**Figure 2 - Simulated Outcomes for Women Born in the 1960s Using Determinant Distributions from the 1950s Cohort**



Note: The distributions are based on a limited number of simulations and exhibit variability that could be significantly reduced with more iterations

**Figure 3- Simulated Outcomes for Women Born in the 1970s Using Determinant Distributions from the 1950s Cohort**

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