Unveiling financial dependency: The education-specific impact of first birth on household and individual poverty risks within couples in Germany

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1 Background

While existing research acknowledges the unequal distribution of children's economic costs within heterosexual couples (Musick et al., 2020), previous studies on the link between parenthood and poverty risk have not adequately addressed this issue. Poverty risk is a relative income measure that reflects whether someone has a substantially lower income than the country's average. Arguing that households pool their resources and economic risks, the concept is commonly evaluated through equivalised household income, overlooking income disparities *within* households (Western et al., 2012).

Couples with children may pool their resources, reducing the acute poverty risk for the lower-earning partner. However, low personal income can still leave individuals vulnerable within the household and expose them to social risks (Spini et al., 2017). Notably, post-divorce research indicates that the loss of partner income disproportionately increases women's poverty risk, especially for mothers and those with low education (Hogendoorn et al., 2020). This implies that partnered women often rely on their partner's income to avoid acute poverty but experience a latent poverty risk.

Recognising this vulnerability as it evolves over the life course is crucial for policymakers and scholars to develop effective tools for poverty prevention, especially in households with children. Such households often exhibit notable income inequalities between partners, with mothers facing a child penalty. Previous studies on poverty risk related to childbirth did not address this issue, focusing on household poverty risk across different household types, emphasising short-term outcomes (Mussida & Sciulli, 2023; Hamilton et al., 2023; Barbieri & Bozzon, 2016; Vandecasteele, 2011), and often neglecting distinctions by parity (but see: Struffolino & Van Winkle, 2023). These studies found that childbirth increases household poverty risk in already disadvantaged households. However, they used the household as the primary unit of analysis and did not explore the role of individual characteristics—such as gender and education—in linking parenthood to poverty risk. To account for women's economic vulnerability, I argue that considering an individual perspective within couples is crucial.

Going beyond a household-level analysis, this paper uses an event study design and the German SOEP to investigate changes in poverty risks within couple households over an 8-year period surrounding the transition to parenthood. During this life course stage, mothers typically make more adjustments to their employment behaviour than fathers, widening the income gap between partners (Kleven et al., 2019).

2 Theoretical Framework

Women with low and high levels of education diverge in their fertility behaviour and encounter distinct motherhood penalties on income (Doren, 2019), suggesting education-specific effects of first birth on poverty risk at household and individual levels. Depending on whether partners are theorised as one unit of equal status (Goldthorpe, 1983) or as two separate entities (Acker, 1973), economic risks are experienced collectively or individually. This leads to distinct motherhood penalties on poverty risk by the unit of analysis, driven by two mechanisms: (1) the availability and amount of partner income (relevant to household poverty risk), and (2) one's own income potential (relevant to both household and individual poverty risk).

At the household level, couples are expected to collectively share economic risks, including the child penalty on poverty risk. The father's income can potentially offset the mother's income losses, and individual contributions supplement the household income. At the individual level, economic risks may vary between partners. Unlike at the household level, mothers lack access to partner income and must secure their economic well-being through personal income.

In line with the gender revolution framework (Goldscheider et al., 2015), higher female education correlates with higher maternal income and lower income inequality within couples (Klesment & Van Bavel, 2022; Dotti Sani, 2015). However, in the context of individual economic risks, the question is not just about the extent of one’s contribution to household income but rather whether someone generates poverty-safe incomes. Building on these ideas, this paper develops a theoretical framework to hypothesise how mechanisms differ based on the mother's educational background. The German context provides an intriguing setting for this, as mothers’ work-care trajectories increasingly diverge based on their educational backgrounds (Stahl & Schober, 2018).

3 Data and Sample

I analyse data from the German Socio-Economic Panel (SOEP v38, Goebel et al., 2023), spanning the period from 1990 to 2019. The analysis focuses on partnered women aged 16–49, living with a male partner, who were childless at the initial survey and had their first child between 1992 and 2013 (N=1,174). They were observed two years before becoming mothers and at least once more before the first child turned six, i.e. reached German schooling age. 60% have a balanced panel, and another 26% were observed for at least four out of eight years. Event times (t_i) are organised in yearly intervals around the first child's birth month (t_0), emphasising income changes during the transition to parenthood.

I corrected the time lag between fertility and income histories in the SOEP (Debels & Vandecasteele, 2008) and calculated women's yearly disposable incomes for each event time to construct poverty measures. Following Siegert (2024), I use two binary dependent variables to measure poverty risk (1=At risk of poverty), based on the same income components but distinct income pooling scenarios: one where partners have access to each other's income (assessing household poverty risk) and another where they do not (assessing individual poverty risk).

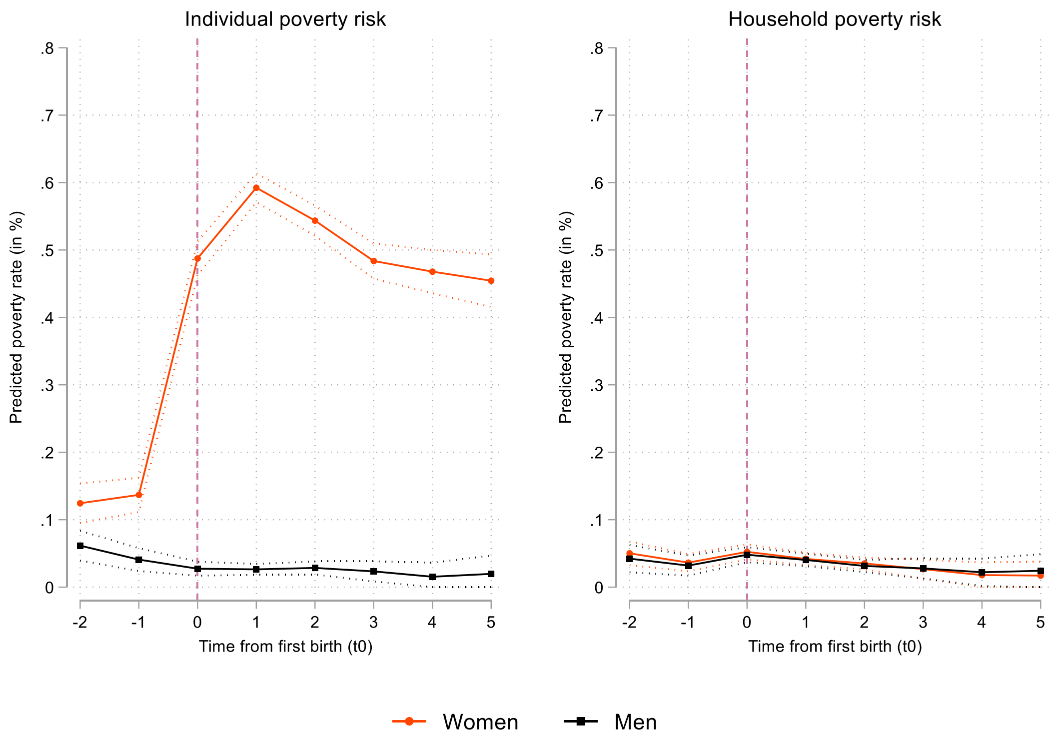
4 Analytical Strategy

This paper examines the average change in poverty risk for partnered women during an eight-year window around the transition to parenthood (poverty risks at event times t_i relative to t_{-2}). It adapts the causal event study design by Kleven et al. (2019), augmented with individual fixed effects.

In the first part, I estimated the effect of first birth on poverty risk for all units in the panel that received treatment, i.e. experienced a first birth, but at random times. The model included a full set of event time dummies, age dummies and year dummies to account for time-dependent processes that potentially confound my estimates. This helped to disentangle motherhood penalties, period fluctuations and age patterns. The second part repeats the analysis, introducing partnered women who remained childless throughout the observation period as a control group (N=1,561). Using entropy balancing (Hainmueller, 2012), I ensure maximal similarity between the treatment and control groups at the initial observation, correcting for selection into parenthood based on observables. This reweighting technique generates balanced samples, meeting the parallel trends assumption for estimating unbiased treatment effects.

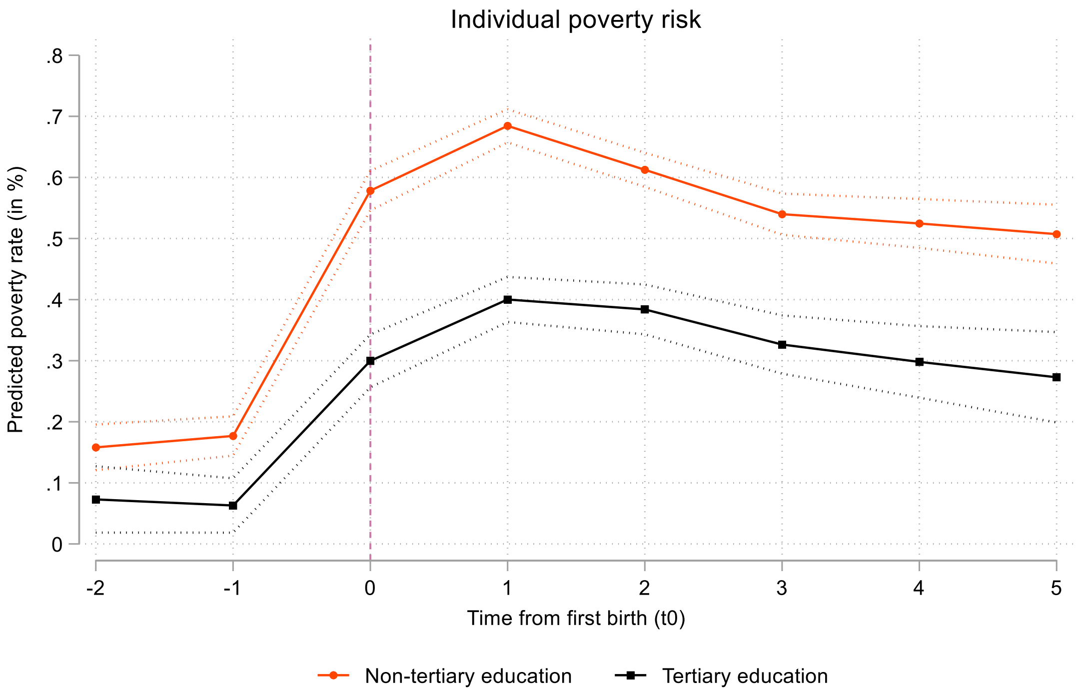
5 Preliminary results

Figure 1. Average poverty risks in couple households over time, by gender



Source: SOEP 1991–2020 (1990–2019), own calculations. N=2,311 partnered individuals (1,174 women, 1,137 men). Notes: Linear probability model with individual fixed effects and robust SE, including event-, year- and age-dummies.

Figure 2. Partnered women's individual poverty risk over time, by educational background



Source: SOEP 1991–2020 (1990–2019), own calculations. N=1,132 women (770 with a non-tertiary (ISCED 0–4), 362 with a tertiary (ISCED 5–6) degree at t_{-2}). Notes: Linear probability model with individual fixed effects and robust SE, including event-, year-, and age-dummies. Excluding those who obtained a tertiary degree during the observation period (about 5% of those with a non-tertiary degree) did not substantially change the results.

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