Educational disparities in couples and the transition to parenthood during the fertility decline of the 2010s

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Abstract

This study examines how the educational composition of co-residential unions in Sweden relates to first birth transitions during 2011-2022, with a focus on the role of educational heterogamy in transitions to parenthood. This focus is motivated by parallel developments in both Sweden and many other Western countries since 2010 where fertility has dropped sharply at the same time as women's education has continued to outpace men's. We first assess changes in the prevalence of heterogamous unions during the 2010s, then analyze how different educational pairings are related to first birth risks. Our findings show a decline in the prevalence of new unions where the man have higher educational attainment than the woman and a rise in homogamous unions with two highly educated partners. Unions involving highly educated women—whether homogamous or heterogamous—consistently exhibit higher first birth rates than unions with other educational pairings. Notably, unions where the woman is more educated than her partner have retained higher fertility more so than other parings, a trend that strengthened over time. Our results suggest that higher educational attainment of women is increasingly associated with higher fertility, a trend that has attenuated the trend of a general decline in first-birth risks during the 2010s. Rather than contributing to falling fertility, the shifts in educational pairings have helped mitigate the fertility decline.

Introduction

Since 2010, Sweden has experienced a marked decline in fertility, with the Total Fertility Rate falling from 1.98 in 2010 to a historic low of 1.43 children per woman in 2024 (Statistics Sweden 2025b). This represents the lowest level recorded since age-specific fertility rates were first documented in Sweden in 1751. The recent fertility decline is produced by declining propensities of childless people to become parents but not to declines in the propensity to form new couples (Ohlsson-Wijk and Andersson 2022; Cantalini, Ohlsson-Wijk and Andersson 2024).

Parallel to this demographic shift, women's educational attainment has continued to rise and outpace that of men—a trend observed across most post-industrial societies (Van Bavel 2012). This is a long-standing development—women became the majority of university students as early as 1977 (Gribbe 2022)— and the trend has persisted in more recent cohorts of young women and men. In 2024, women accounted for 58% of all 30-year-olds with a university degree, up from just over 55% in 2011 (Statistics Sweden 2025a). The university attainment has also increased among men born in the 1980s onwards, compared to the cohorts born in the 1960s and 1970s. Overall, the share of university-educated individuals has grown substantially in the younger cohorts, but the rise has been more pronounced among women, resulting in a widening gender gap in educational attainment.

Educational attainment is a key predictor of socioeconomic outcomes and political attitudes. Recent research has linked gender disparities in education to growing polarization in political preferences along the GAL–TAN spectrum and to diverging voting behavior (Ahlbom and Oscarsson 2022). These developments have sparked public discourse in Sweden, where media commentators have suggested that increasing educational asymmetry between young men and women may be contributing to union instability, intra-couple conflict, and ultimately, declining fertility (Boije and Tryggvason 2025; Magnusson 2025; Swedish National Radio P3 2025).

Despite these concerns, there is limited empirical research on how educational dissimilarities between partners—particularly among cohabiting couples—affect the transition to parenthood. This presents a significant limitation when analyzing first births, which have been the primary driver of the fertility decline in Sweden during the 2010s.

To address this gap, this study examines the role of educational heterogamy in shaping first birth transitions among childless couples in Sweden during 2011–2022. Specifically, we ask:

Q1: Has the share of heterogamous couples changed during the 2010s?

Q2: How are different types of educational pairings related to first birth risks and changes in such risks?

Due to earlier limitations in data on non-marital cohabitation, research on educational dissimilarities between partners has predominantly focused on married couples, both in Sweden and internationally (Dribe and Stanfors 2010; Kalmijn 1998; Nitsche et al. 2021). This presents a challenge when studying first births, as the vast majority of these transitions in Sweden for several decades have occurred within cohabiting unions. To overcome this, we leverage newly available register data from 2011 onwards on apartment dwellings that are linked to childless Swedish cohabiting women and men (cf. Cantalini et al. 2024). This enables us to assess the role of union compositions in childbearing outcomes and to apply hazard models to estimate how different educational pairings are related to the likelihood of becoming a parent.

Data and methods

To address our research agenda, we focus on the population of childless Swedish-born women aged 18–45 who were in a co-residential union and at risk of a first birth at some point during 2011–2022. This yields a study population of slightly more than 200,000 childless couples in an average year who are at risk of having their first common child, providing 2,615,289 yearly observation spells during 2011-2022 of 713,948 unique women in 908,265 unique unions. Descriptive statistics for our dataset are presented in Table 1.

To identify childless cohabiting couples, we apply the definition used in Statistics Sweden's household statistics and register-data collections, available from 2011 onwards. In these data, dyads are identified as a heterosexual cohabiting union if a man and a woman are registered as living in the same dwelling, have a maximum age difference of 15 years, are not biological relatives and are the only possible such dyad in the same apartment dwelling (Statistics Sweden 2013, 2017). Couples who meet the same criteria but are married are also included in our study if they have not yet experienced the birth of their first child.

Table 1: Descriptives for couples at risk

	Summary
Number of episodes	2,615,289
Childbirth during year	
No	2,275,999 (85.8%)
Yes	378,178 (14.2%)
Educational composition of couple (_t)	
Homogamous (Low)	38,888 (1.5%)
Homogamous (Medium)	874,629 (33.0%)
Homogamous (High)	729,937 (27.5%)
She more educated	694,338 (26.2%)
He more educated	316,385 (11.9%)
Woman receives student grant (_t)	
No	2,039,242 (76.8%)
Yes	614,935 (23.2%)
Man receives student grant (_t)	
No	2,316,287 (87.3%)
Yes	337,890 (12.7%)
Man born in Sweden	
No	218,369 (8.2%)
Yes	2,435,808 (91.8%)

Source: Register data (SCB)

We focus on Swedish-born childless women aged 18–44, beginning the analysis when they enter a cohabiting union and following them until the birth of their first child, their 45th birthday, December 31, 2022, or the dissolution of their union due to separation, death, or emigration—whichever occurs first. Women already in a union in 2011 enter the analysis with late entry, and

the onset of risk is determined by identifying the year the couple began living in the same building prior to 2011. Given this strategy, the union is treated as the unit of analysis, and a woman may contribute more than one union during the observation period. The vast majority of women have only one union during our study window, with a mean of 1.27 coresidential unions per woman. Women who have their first birth outside of a co-residential union are not included; about 9% of all observed first births during the study period occurred to women not being registered as living with the father of their common child at the time of childbirth. A non-negligible share of these women enter cohabitation with the father in the year after the birth of the first child but are not included in our analysis as we condition on cohabitation at the time of first birth.

Educational attainment is treated as a time-varying indicator, measured at the turn of each year and based on the highest achieved level of education for both partners. Education is categorized into three levels: Compulsory (ISCED 1–2), Secondary (ISCED 3–4), and Tertiary (ISCED 5–8). Based on this, we construct a five-level indicator for the couple's time-varying educational composition: three homogamous categories (*low, medium, high*), one *hypogamous* category (woman more educated than the man), and one *hypergamous* category (man more educated than the woman).

To address our first research question—how the share of heterogamous couples has changed during the 2010s—we calculate yearly descriptive statistics on educational pairings among newly formed unions and the composition of the stock of couples at risk of a first birth. We also calculate the annual proportion of childless women who live in a co-residential union to assess the role of any changes in union formation and union stability during the period 2011–2022.

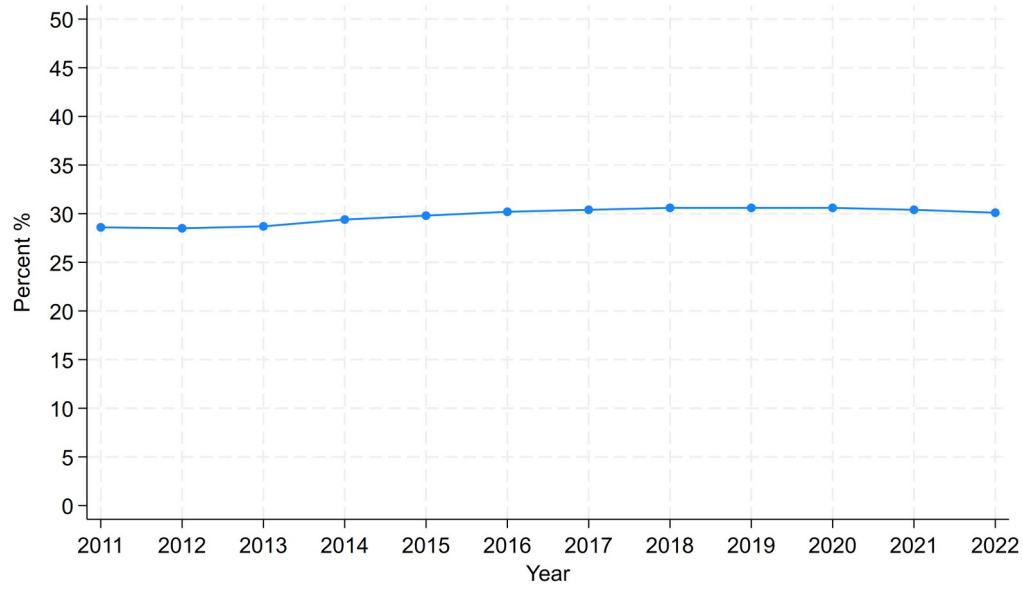
For our second question—how different types of educational pairings relate to first birth risks—we study the intensity of first birth in relation to the couple's educational composition.

We begin by estimating non-parametric Kaplan–Meier survival functions for the couples at risk, stratified by their educational compositions. In the second step, we estimate Cox proportional hazards models to assess the relationship between educational pairing and first birth risks, controlling for woman's age, observation year, receipt of student grants by either partner, and whether the man was born in Sweden. In the third step, we evaluate potential changes over time in the role of educational compositions by estimating interaction models with yearly dummies for educational pairings.

Results

When calculating the share of childless women aged 18–45 who lived in a coresidential union with a man during the period 2011–2022 (Figure 1), we find no indication of a decline in union formation or union stability that may have helped contribute to the fertility decline during this period. On the contrary, the share of childless women in a co-residential union remained stable or increasing slightly, from 28% in 2012 to 30% in 2022.

Figure 1: Share of childless women aged 18-45 in a co-residential union, 2011-2022



Educational Compositions of Newly Formed Unions

Turning to the educational composition of newly formed unions during the study period (Table 2), we observe that the growing share of highly educated individuals has mainly produced an increase in highly educated homogamous unions. The share of hypogamous unions—where the woman is more educated than her partner—also increased slightly, from 22.9% in 2011 to 24.3% in 2022. This type of union was already quite common in 2011, and the increase over time has been modest. In contrast, the share of hypergamous unions—where the man is more educated than the woman—declined from 15.3% to 13.0% over the same study period. Looking at the stock of childless unions the same patterns emerge (results now shown).

Table 2: Educational parings of unions formed during each year for childless women 18-45, 2011-2022

	2011	2012	2013	2014	2015	2016
Homogamous (Low)	2.7%	2.7%	2.5%	2.4%	2.1%	2.1%
Homogamous (Medium)	42.3%	40.3%	40.4%	40.3%	39.6%	39.7%
Homogamous (High)	16.7%	18.8%	19.1%	19.7%	20.3%	20.5%
She more educated	22.9%	23.6%	23.6%	23.5%	23.9%	23.8%
He more educated	15.3%	14.6%	14.5%	14.2%	14.0%	13.9%
N	50,501	60,539	61,672	64,099	63,066	62,112

	2017	2018	2019	2020	2021	2022
Homogamous (Low)	2.1%	1.9%	2.0%	2.0%	1.9%	2.0%
Homogamous (Medium)	39.0%	39.1%	38.5%	37.8%	38.2%	38.2%
Homogamous (High)	20.9%	21.5%	21.8%	22.7%	22.6%	22.4%
She more educated	24.1%	23.9%	24.1%	24.0%	24.1%	24.3%
He more educated	13.8%	13.6%	13.6%	13.4%	13.2%	13.0%

N	60,471	60,984	58,711	59,481	56,811	55,393

Source: Statistics Sweden register data

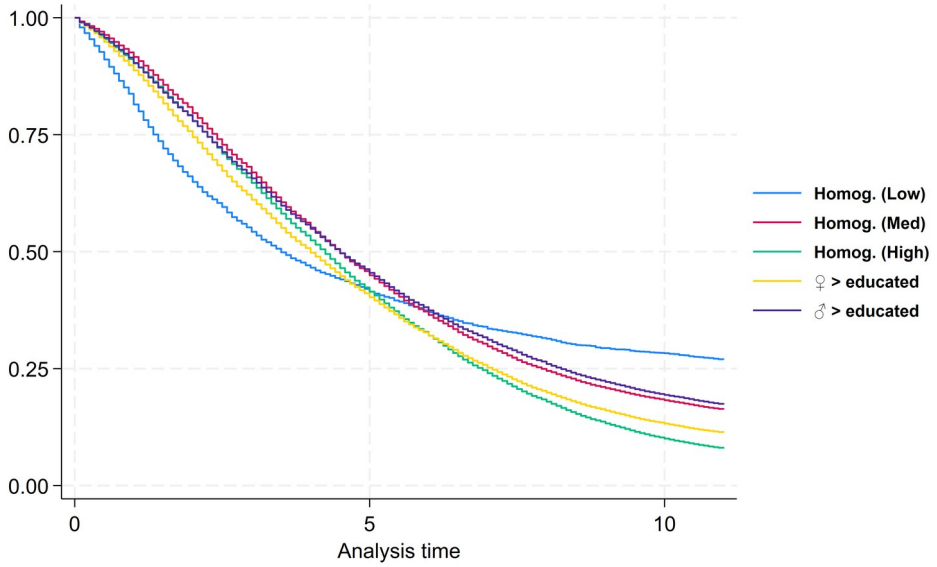
Transition to first birth for different educational parings

Figure 2 presents the non-parametric Kaplan–Meier estimates of first birth transitions across different union types. The results reveal no indication that hypogamous couples or the growing share of highly educated women in childbearing ages have contributed to declining fertility during the 2010s—rather, the opposite appears to be true. Couples in which the woman is highly educated consistently show the highest likelihood of transitioning to parenthood, regardless of the male partner's educational level. The highest transition rates are observed among highly educated homogamous couples, followed closely by the hypogamous unions.

In contrast, the very small group of homogamous low-educated couples displays markedly different fertility behavior. These unions exhibit the lowest overall transition rates to parenthood. Interestingly, they show relatively high transition rates during the very first years since union formation but very low rates thereafter. As a result, this group ends up with the highest rate of remaining childless.

In summary, while highly educated unions—especially those involving highly educated women—are associated with higher first birth transitions, low-educated homogamous couples tend to either have children quickly or remain childless. Regardless, the low educated couples only make up around 2% of all unions formed during the period, which means that their impact on aggregate fertility levels is negligible.

Figure 2: Kaplan-Meier survival estimate of transition to first birth by educational parings, 2011-2022



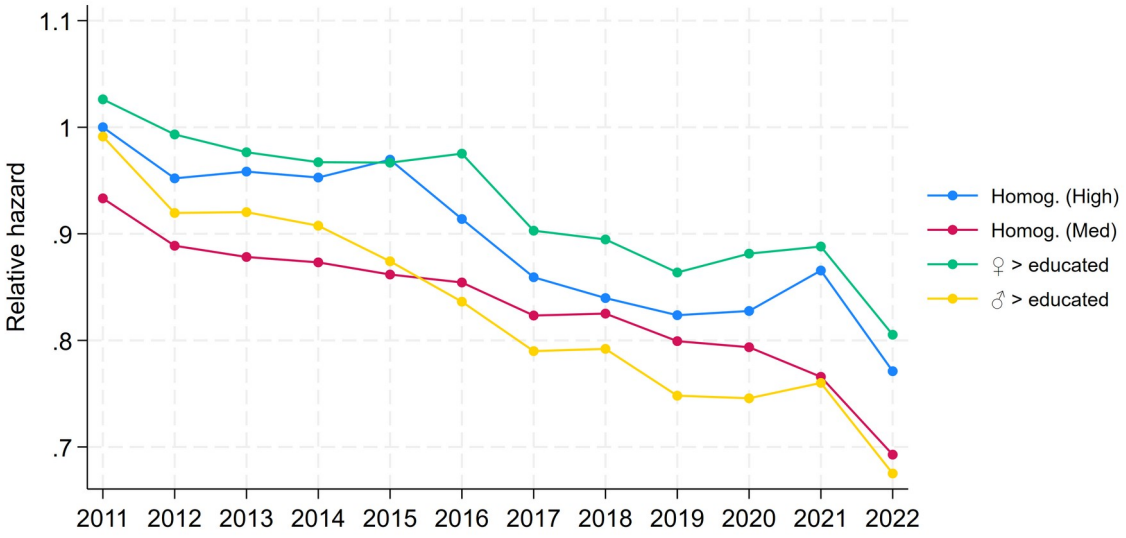
Changes in the relationship between educational pairings and the hazard of first

birth during 2011-2022

Figure 3 presents the results from our Cox regression model, in which we interact union type with calendar year to assess the role of any changes in childbearing behavior over time. We exclude the low-educated homogamous couples from the model, as their distinct hazard function violates the proportional hazards assumption of the Cox model. Controlling for confounding factors—including the woman's age at union onset, receipt of student grants, and whether the male partner was born outside Sweden—produce results that show that highly educated homogamous couples and hypogamous couples with a highly-educated woman exhibit the smallest overall declines in first birth risks during the study period of general fertility decline.

Notably, women in hypogamous unions emerge as the most likely to transition to parenthood, closely followed by women in highly educated homogamous unions. These findings suggest that unions involving highly educated women—regardless of the male partner's education—have remained relatively resilient in terms of fertility behavior throughout the 2010s and early 2020s.

Figure 3: Cox-regression estimates of yearly relative hazards of first birth for different educational parings, 2011-2022, relative to highly educated homogamous couples in 2011



Source: Register data (SCB)

Note: Cox-regression estimates of yearly risk of first birth for women in a union relative to highly educated homogamous couples in 2011. Model incudes controls for: womans age, man or woman enrolled in education and man not being Swedish born

Preliminary concluding discussion

Our study demonstrates a decrease in the fraction of cohabiting unions where the man has higher education than his female partner and an increase in the fraction of homogamous unions where both partners are highly educated. Furthermore, our results show that unions with a highly educated woman have higher first birth rates than others, no matter if the union builds on educational homogamy or heterogamy. As a matter of fact, unions where the woman has higher education than her partner have retained higher fertility more so than other parings and this pattern was gradually strengthened during our observation period. That the fertility among highly educated women have been the least affected by the general decline in first-birth rates since 2010 indicates that female empowerment seems to be increasingly positively related to the propensities

to become parents and certainly not a hindrance to it. Furthermore, the compositional changes in the educational pairings of Swedish couples have not contributed to the ongoing fertility decline, they have rather mitigated that decline.

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