Educational assortative mating and couples' fertility

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Introduction

Fertility studies have been typically conducted based on the characteristics of one parent (usually the mother) rather than of both parents. To justify this approach, scholars have pointed to the fact that people tend to mate assortatively, i.e. partners share similar characteristics, values and lifestyles (Corijn et al. 1996). Educational assortative mating in particular has been strongly documented. But even if educational homogamy remains strong (Blossfeld and Timm 2003), some remarkable changes have occurred in mate choice patterns. Traditionally, hypergamy was prevailing: if there was a difference in educational attainment, the husband tended to have more education than his wife. However, in more recent cohorts, hypogamy has become more common than hypergamy: in case of a difference, she typically has more education than he (Esteve et al. 2012; Grow and Van Bavel 2015). The basic hypothesis underlying the current paper, following Van Bavel (2012), is that this new situation may have an impact on couples' fertility. One way to explore whether and how this might be the case is to study fertility from a couple's perspective.

In general, the study of fertility from a couple's perspective is divided into two strands. The first focuses on the decision-making processes and on the way partners bargain about fertility, mainly by studying their intentions, preferences and desires (e.g. Bauer and Kneip 2013; Testa et al. 2014; Thomson et al. 1990). The second strand of research focuses on the relative effect of partners' socio-economic resources on fertility quantum and timing. Scholars have been interested in finding out whose partners' socio-economic resources are more influential for fertility (e.g. Begall 2013; Jalovaara and Miettinen 2013; Vignoli et al. 2012), often disregarding the mate selection process; and how men's characteristics may shape the effects of women's characteristics, chiefly education, on fertility (e.g. Gustafsson and Worku 2006; Kreyenfeld 2002).

We contribute to the latter strand of research in two ways. First, we look at both partners characteristics simultaneously and at the effects of the interactions between their characteristics, when feasible. Second, we consider an additional dimension of education which has not been explored for couples yet: his and her field of study combined. In the last decade, the field of study has been considered a relevant determinant of fertility timing and quantum (e.g. Bagavos 2010; Van Bavel 2010; Begall and Mills 2013; Hoem et al. 2006a; Martin-Garcia 2008, etc.) for several reasons. First, since the educational expansion, medium educated and highly educated tend to be more heterogeneous groups. The field of study as dimension of the level of education helps in differentiating fertility behavior for those with an education higher than upper-secondary level, since it has been shown to be a good predictor for future earnings and labour market participation (Van Bavel 2010; Reimer et al. 2010). Additionally, the field of study is also a proxy of the socialization process during formative years and a proxy for inclination towards more gender-stereotypical roles (Van Bavel 2010; Hoem et al. 2006a; Tesching 2012).

In the first step of our approach, we estimate the earning potential and unemployment risk by field of study, country and sex based on data from the European Labour Force Surveys (EU-LFS). In the second step, we match the results with the Generations and Gender Surveys (GGS) of eight European countries, to estimate the effect of educational pairing by level and field of study on the hazard of first, second and third birth, using a simultaneous equations approach.

How may educational assortative matter for couples' fertility? Working hypotheses

In societies where the male-breadwinner model holds, we hypothesize that traditional couples, where he has more educational resources than her, are more prone to childbearing compared to other pairings. Moreover, in line with the traditional gender roles framework, we expect that gender-stereotypical

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couples, where he is graduated in a male-dominated field of study and she is graduated in a female field, are also more prone to childbearing compared to other pairings.

With increasing women's human capital and participation in the labor market, the division of labour could even become detached from gender roles (Becker 1991). If the specialization remains an efficient family model, we hypothesize that heterogamous pairings will be more conducive of childbearing compared to couples where both partners have similar characteristics (i.e., homogamy).

Finally, since higher standards of living require that both partners contribute to the household income, an advanced degree in education has become important to be attractive on the mating market for women as well as for men. As a result, a specialization model based on the division of labour between the partners (attached or not to sex roles) may not be an efficient family-model (Oppenheimer 1994). We hypothesize that the level of resources pooled by partners matters more for fertility than the homogamy/heterogamy itself. Due to income effects and the possibility to compensate for higher opportunity costs, couples with higher human capital and higher earning potential may show higher fertility rates compared to those with lower human capital and earning potential.

Analytical strategy

Our analytical strategy comes in two steps. First, using EU-LFS (2009-2013) we estimate the earning potential and unemployment risk of each field of study by country and sex: the earning potential reflects what would typically be earned by graduates who work full-time, while the unemployment risk captures the expected likelihood to be without a job by people who graduated in a particular subject at any point in time. The income variable is categorized in income deciles and it is available only for those who are employee. To estimate the earning potential by field of study we selected full-time working individuals of 20-64 years old. The variable of field of study refers to the main discipline of the highest level of education attained. Following UNESCO/ISCED guidelines, we grouped field of study in eight categories, nine including the low-educated (for this group field of study is not applicable). The earning potential of a respondent has been estimated by means of linear regression. Overall, we ran 144 regressions (9 groups of field x 8 countries x 2 sexes), including as covariates: age, age squared, years since start working, the educational level and survey year.

Additionally, we calculated the proportion of women by field of study using data from Eurostat and GGS. Eurostat has time series from 1998 till 2012 for the absolute number of graduates (both sexes) in each field of study (ISCED97 - 3 to 6) excluding the general/unspecified field. We derived the proportion of women in the this latter category using GGS data (men and women born between 1960-1987 with at least upper secondary degree).

The predicted values of the earning potential at age 52 have been matched to individual GGS data of Austria, Belgium, Bulgaria, Czech Republic, France, Lithuania, Poland and Romania, by educational level, sex and field of study. We selected respondents and their partners if they are born between 1960 – 1987. Since the focus of the paper is fertility, we selected couples in which the woman was 15-45 years old at time of starting the co-residential union. In general, the minimum age at union formation for both partners should be 15 years old to be included in the sample. To keep homogenous the sample, we dropped those cases in which one of the partners had a child from a previous relationship. Finally, since we apply event history analyses and our observation period starts at time of co-residential union, we had to drop couples who started living together after the birth of the first child, overall we have a sample of 23363 couples.

To estimate the transition to first, second and third birth we apply a piecewise linear hazard model which accounts for time constant unobserved heterogeneity factors related to the couple (Kravdal 2001).

Independent variables

The educational pairing is defined as the combined educational attainment of the partners, we distinguish: three categories for couples where men and women have the same educational attainment, i.e. homogamous couples; two categories for hypergamy, i.e. couples in which man is highly educated and the woman medium or low educated, and couples in which men are medium educated and women low educated; two categories for hypogamy, i.e. couples in which the woman is highly educated and

the man medium or low educated and couples in which women are medium educated and men low educated. To account for the earning potential of the male and female partners separately, we included the deviation from the mean of the country of the earning potential for each partner. We also added the proportion of women (PoW) in the field of study of the male and female partner, we have 4 categories: (1) male-dominated field (PoW lower than 40%); (2) balanced field (PoW 40-60%); (3) female dominated (PoW higher than 60%); a missing category (4), for the low educated. Finally, we combine both partners type of field (4x4, 16 categories overall). However, since many combinations are very small categories, we focus only on those more meaningful theoretically, e.g. the homogamous couples and the gender-stereotypical couples, i.e. where he is graduated in a male field and she in female field. We control for woman's age at union formation (centered at age 22); age difference between partners; respondent's sex; union's cohort; type of union as time varying covariate (couples who declared to be married but we do not know when are given a missing category); union order of the respondent only, since the union order of the partner is not available. For higher order births we substitute the woman's age at union formation with woman's age at first birth, centered at age 25. Since we proceeded pooling all the countries, we included dummies for countries effects in all models.

Results

Figure 1 shows the effect of educational pairing for the transition to first and second births. Couples with one highly educated woman or two highly educated partners tend to have a lower first birth rates compared to the hypergamous couples with a highly educated man. This is in line with the hypothesis according to which an imbalance of education in favor of the man, i.e., the man is more educated than the woman, is conducive to fertility. However, these hypergamous couples do not have higher first birth rates overall: low and medium educated homogamous couples have higher first birth rates. With regard to the transition to second birth, a U-shaped effect shows up: both low and highly homogamous educated partners have higher birth rates than medium homogamous couples, even after controlling for the earning potential. Hypergamous couples, despite having higher birth rates than medium homogamous educated couples, do not statistically differ from the highly educated homogamous couples. Hypogamous couples with a highly educated woman have a lower risk of second births compared to the hypergamous couples with a highly educated man.

Table 1 shows the effect of his and her earning potential separately. In general, the effect is negative for both partners. The role of educational level is quite different from the role of earning potential, since in all our models we found that a higher earning potential, especially of the male partner, leads to lower birth rates. These findings are against the expectation that a higher earning potential is positively associated with fertility. In the future, we aim to include in our models a combined variable of his and her earning potential and a measure of the unemployment risks by field of study.

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Figure 1 Relative risks for the effect of educational pairing, 95% confidence intervals.

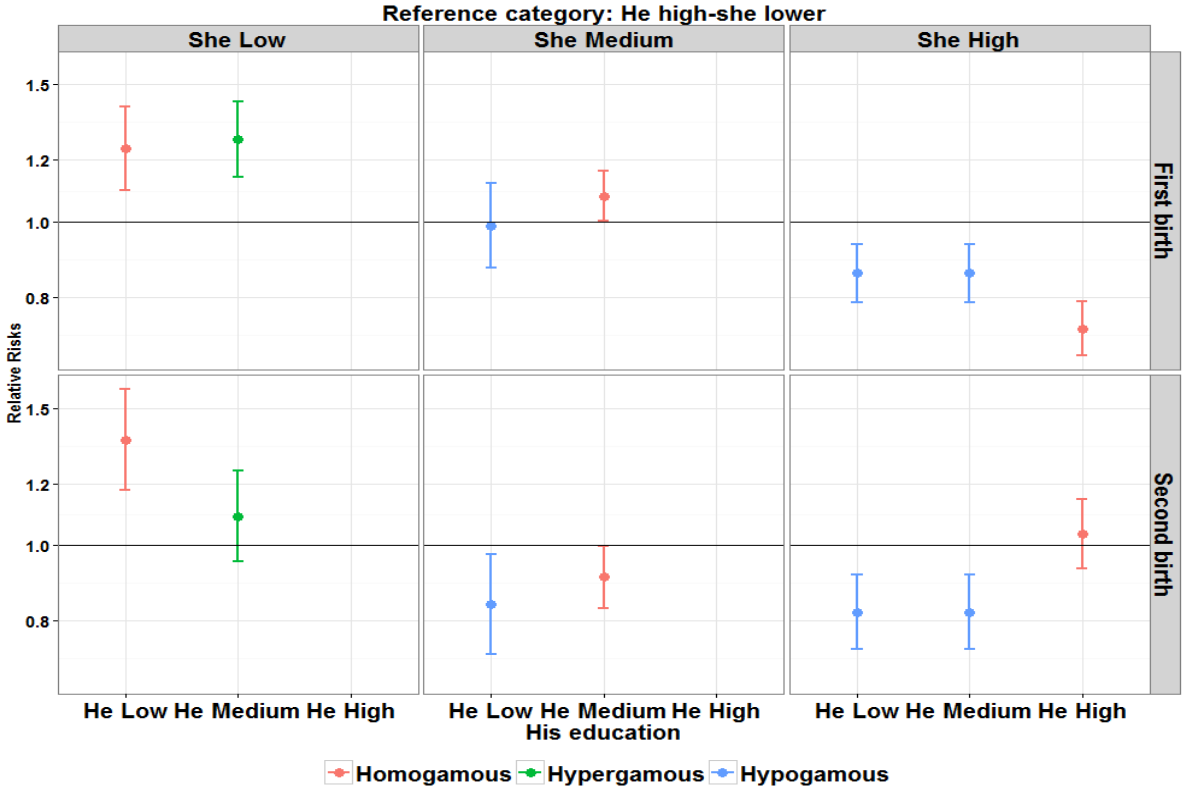

Table 1 Exponentiated coefficients for the effect of earning potential, 95% confidence intervals in parentheses.

	First birth	Second birth
His potential	0.92 [0.89 - 0.96]	0.87 [0.83 – 0.92]
Her potential	0.95 [0.96 - 1.02]	0.94 [0.90 – 0.97]