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OF ECONOMICS

Childlessness and fertility by couples' educational gender (in)equality in Austria, Bulgaria and France

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June 2016

Education and fertility - background

- Education is **usually negatively related to fertility among women** (however the positive or U-shaped effects were also identified)
- Among men, the correlation between fertility and education is often **positive** or **U-shaped**
- **How do these contradictory effects result in a couple?**

Education and fertility – a couple perspective

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- However, cultural and social factors as well as economic wellbeing might lead to the rejection of specialisation
- In the dual-earner family model both partners have to specialise in work and both should also specialise in family tasks
- However, gender equality present in the labour market is not always accompanied by the equality in family institution
- Thus, the impact of various partners' educational profiles on their fertility might differ by country specific conditions

Country background

1. AUSTRIA

- Average level of gender equality regarding domestic work
- Inefficient childcare - not enough facilities for young children, inadequate schooling hours (early ending) and poor afternoon supervision for older kids; low participation in childcare (one child out of five 0-2 year-old children)

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3. FRANCE

- Similar level of gender equality to Austria (average)
- Adjusted childcare – high public expenditures on childcare, high childcare participation rate (50% of 0-2 year-old children)

Couple educational profile

- **HOMOGAMY** – female and male educational levels are equal (F=M)

- **HYPERGAMY** – educational level of a male partner is higher than the educational level of a female partner (F<M)

- **HYPOGAMY** – educational level of a male partner is lower than the educational level of a female partner (F>M)

Hypotheses

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- Higher probability of childlessness and lower average fertility of **hypogamous unions** in Bulgaria (poor childcare and low gender equality increases the opportunity cost, especially for a couple in which a woman is the primary-earner)
- **Hypergamy** enhances couples' fertility, mainly in Austria and Bulgaria (traditional family institutions, lower female opportunity cost)

Data

- GGS 1st wave data for: Austria, Bulgaria and France
- Sample: only couples with the female partner aged **24-45** (2370 couples in Austria, 2922 in Bulgaria and 2147 in France)

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- Data on individual **education** given in ISCED codes (0-6), grouped for a couple into 5 classes:
  - edu11 – both partners have at most low education (from 0 up to 2 ISCED codes);
  - edu22 – both partners have a medium educational level (3 and 4 ISCED codes; reference level);
  - edu33 – both partners have completed a high level of education (5 and 6 ISCED codes);
  - eduLH – hypergamous union (including the following cases of woman's-man's education: low-medium, low-high, medium-high);
  - eduHL – hypogamous union (included cases: medium-low, high-low, high-medium).

Structure of couples' educational status

	AT	BG	FR
Homogamous:	65.6%	73.0%	55.1%
edu11	3.8%	11.5%	10.5%
edu22	51.1%	47.6%	18.8%
edu33	10.7%	13.9%	25.9%
Hypergamous (eduLH)	23.1%	8.5%	21.3%
Hypogamous (eduHL)	11.4%	18.4%	23.5%

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Hurdle Zero-Truncated Poisson Model with Bayesian approach

$$P(Y_i = y_i | \beta, \gamma) = \begin{cases} p_i, & y_i = 0 \\ \dfrac{1 - p_i}{1 - \exp(-\lambda_i)} \dfrac{{\lambda_i}^k \exp(-\lambda_i)}{k!}, & y_i = 1,2, \dots \end{cases}$$

$$p_i = \frac{\exp(x_i \beta)}{1 + \exp(x_i \beta)} \; ; \quad \lambda_i = \exp(w_i \gamma)$$

x_i, w_i – vectors of covariates; β, γ – vectors of hyperparameters

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Advantages:

- An adequate approach to fertility: to become parents a „hurdle" (measured by the probability of childlessness) must be crossed first
- Possibility to include different sets of determinants in modelling zero and counts

Variables

- **Response variable**: number of couples' children ever born

- **Main explanatory variables**: partners' educational status

- **Control covariates**:
  a) socioeconomic characteristic of a household: household monthly income, number of hours worked per week by a woman, number of rooms in the flat/house, a woman is a housewife
  b) other couples' characteristics: marital status, age of a woman and a man, type of settlement
  c) only for parents: institutional help with childcare

The *a posteriori* expected values of coefficients

		CHILDLESSNESS (p)			PARENTHOOD (λ)		
		Austria	Bulgaria	France	Austria	Bulgaria	France
Education of a couple	edu11	-0.584	-1.373	0.411	0.405	0.459	0.091
	edu33	0.817	0.550	0.955	-0.170	-0.156	-0.170
	eduLH	0.074	-0.387	0.051	0.052	0.061	-0.025
	eduHL	0.960	0.425	0.388	-0.006	-0.177	-0.061
Household income	low	-0.288	-0.762	0.038	-0.102	0.146	0.071
	high	0.704	-0.038	0.401	-0.054	-0.037	0.011
Female working hours	none	-2.639	-1.019	-0.105	0.181	0.093	0.024
	20-	-1.797	0.385	-0.623	0.076	-0.077	0.098
	41+	0.747	0.027	0.267	0.095	0.007	-0.049
Number of rooms		-0.384	-0.055	-0.670	0.067	0.034	0.118
Housewife		0.467	-0.459	-2.024	0.205	0.052	0.296

NOTES:

1. Insignificant variables have been marked with grey.
2. Positive values in *childlessness (p)* means a higher probability of childlessness.
3. Positive values in *parenthood (λ)* means a higher average no. of kids among parents.
4. Model includes also control covariates.

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Couple educational status has in general negative impact on fertility

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Fertility of hypergamous union does not differ from homogamous medium educated partners

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Hypogamy increases the probability of childlessness in Austria and decreases the average number of children among parents in Bulgaria

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Fertility by couples' educational profile

The comparison of:

- the posterior **probability of childlessness**
- the average **number of children ever born**

by various couples' educational status and country

Covariate	Probability of childlessness			Average number of children		
	Austria	Bulgaria	France	Austria	Bulgaria	France
edu11	0.211	0.022	0.156	1.542	1.656	1.535
edu22 (reference)	0.308	0.071	0.108	1.103	1.311	1.548
edu33	0.499	0.118	0.235	0.747	1.188	1.228
eduLH	0.324	0.054	0.113	1.102	1.365	1.520
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The *a posteriori* expected values of probability of childlessness and average numer of children

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- Much **lower variation** in the reproductive behaviour by couples' educational profiles is observed in **France** - a high level of gender equality accompanied by an adequate childcare system might help couples to overcome possible obstacles and enhance fertility at all educational levels

CRACOW UNIVERSITY OF ECONOMICS

THANK YOU FOR YOUR ATTENTION!

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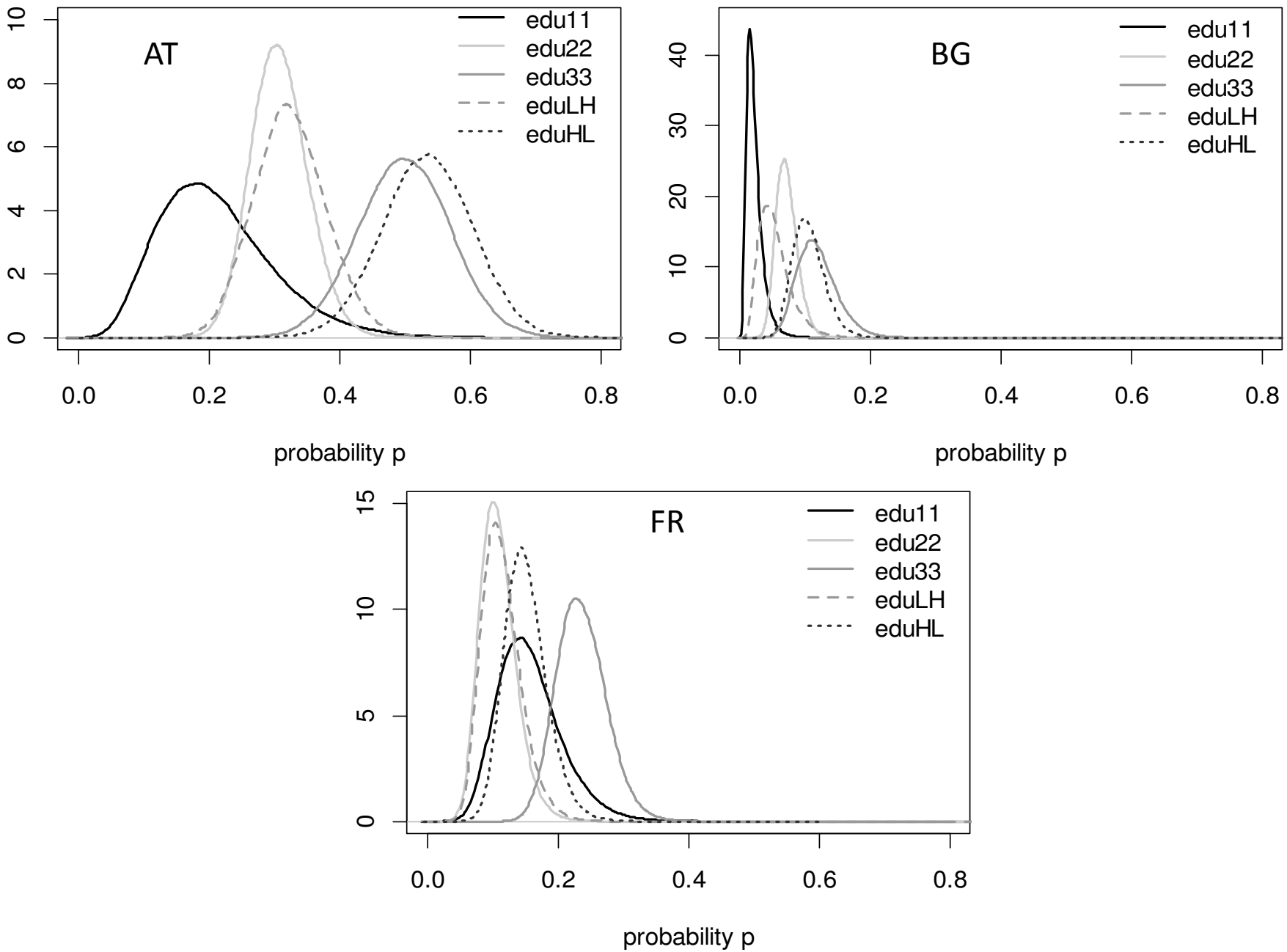
December 2015

Posterior distributions of the probability of childlessness



Posterior distributions of the expected number of children