IMPACT OF EDUCATIONAL ATTAINMENT ON THE TRANSITION TO THE SECOND CHILD IN POST SOCIALISTIC POLAND

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Abstract

After the collapse of state socialism in 1989 Poland experienced a rapid decline of fertility closely followed by educational expansion. A rapid increase in the number of young women with university degrees may influence the future fertility development, as highly educated Polish women tend to postpone their childbearing and more often than others decide to have smaller families. Considering that the birth of a first child is quite universal in the lives of Polish women, our analysis focuses on the transition to the second child. Using data from the Employment, Family and Educational Survey 2006, several piecewise exponential models were estimated. Our results show a strong negative impact of women's educational attainment on the risk of a second birth. We conclude that highly educated Polish women face higher opportunity costs that are not sufficiently reduced by family policies or labor market regulations related to working mothers.

Introduction and motivation

Poland experienced a rapid fertility decline after the collapse of state socialism in 1989; the period total fertility rate dropped from 2.09 in 1989 to 1.22 in 2003 and has oscillated around 1.3 children per woman of reproductive age in recent years. At the same time, profound changes in fertility patterns have occurred resulting in remarkable decline in fertility for women of all ages and postponement of childbearing. In the literature, the dramatic decline in childbearing in post-socialistic Poland is mainly explained by the socioeconomic and institutional changes related to the shift from a centrally planned to a free market economy. This shift resulted in reorganization of the state and society, greatly changing the reality of Poles. On the one hand, the state withdrew from being an employer and provider of financial support and social services, increasing the dependency of the family on the individual resources of its members. On the other hand, structural changes on the demand-side of the labor market hindered participation in the labor market and therefore the capacity to earn and secure income. Women were more strongly affected than men by this deterioration in the labor market and the problem became visible through their increased risk of unemployment, difficulties in re-entering employment and working under worse conditions. Given that after 1989, Poles with tertiary degrees are more likely to find stable jobs and achieve higher incomes than less-educated people, the importance of educational attainment for individual living standards and personal success has increased substantially. As a result, an educational expansion was observed, mainly driven by women of the younger cohorts.

A rapidly increasing number of highly educated women might have an impact on the future fertility development of Poland; women with a university degree tend to postpone their childbearing and decide more often to have smaller families than the less-educated. While several studies have also investigated the impact of educational attainment on the entry into motherhood in Poland, to our knowledge no previous study has looked into this effect on second birth risk at the micro-level. Although, considering that the birth of the first child in Poland is still almost a universal event in women's life, the question of a second child in terms of declining fertility seems to gain even more importance. Studies from other countries have shown that education can have various impacts on transition to the second child depending on the country studied. In general, a positive educational gradient in fertility was found in many Western European and Scandinavian countries. On the contrary, aside from the Czech Republic and Estonia, for Central and Eastern Europe a negative educational effect on the risk of a second birth has been reported. The objective of this study is to explore the role of education on the risk of second birth in Poland and thus to provide new information contributing to our understanding of fertility decline in changing socio-economical contexts.

Research hypotheses

Based on economic theory of fertility, we first expect a strong substitution effect in Poland. The opportunity costs of childbearing are presumed to be especially high among women with a university degree. Given the predominance of the dual earner - female double burden model, most women are faced with a strong time-conflict between childrearing and paid work. These incompatibilities are not sufficiently reduced by welfare state policies and labor market structure. Secondly, we also presume a strong income effect. Since children require high financial investment, women with a university degree are better able to afford a large family. Therefore, we expect that both – the substitution and the income effect might by very strong in post-socialistic Poland. The empirical analyses will show which of the effects will be stronger. Finally, we formulate the "time-squeeze hypothesis": due to longer enrollment in the educational system and the biologically determined upper age limit for childbearing, highly educated women might have to space their births more closely together.

Data and methods

The study is based on the Employment, Family and Education Survey (EFES), a retrospective survey conducted in 2006 for a representative sample of 3,000 women born in 1966-1981. However, we have restricted our analyses to women whose reproductive career took place mainly in the post-socialist period (cohorts 1971-1981). Women who entered motherhood before 1989, experienced multiple births, or had foster or adopted children are excluded from the sample. The remaining sample for the analysis comprises 1,520 women of which 771 women have given birth to a second child.

We use techniques of event history modeling to determine the impact of educational attainment on the risk of a second birth. The event under study is the occurrence of a second pregnancy, whereas the process time starts three months after the first delivery. For this reason four exponential piecewise constant models are estimated:

$$h(t \mid X) = h_0(t)\exp\left(\sum_{i=1}^{p}\beta_i X_i\right) \text{ and } X = (X_1, X_2, ..., X_p),$$

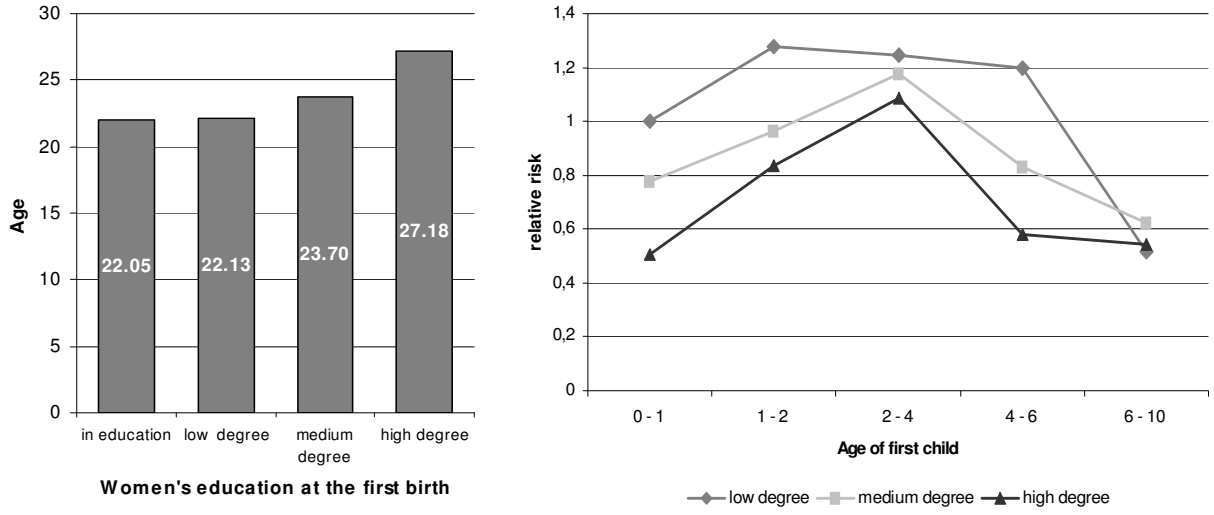
Here, $h_0(t)$ refers to the baseline hazard function (age of the first child) and βi to the estimated regression parameters for the covariates included in Xi. Our analysis includes a time-varying education variable and several time-constant control covariates: birth cohort, age at first birth, size of women's place of residence at age 15, and parents' education.

Results and discussion

Table 1 presents the results from the estimated models. Our main finding is that highly educated Polish women have a lower risk of second birth than women with less education. The negative effect of women's university degree on second birth risk becomes smaller after including additional covariates, though it remains still statistically highly significant. These results show that in Poland the substitution effect dominates the income effect. It seems that women with tertiary education faced higher opportunity costs that are not sufficiently reduced by family policies or labor market regulations addressed to working mothers. Furthermore, we find no evidence for a time-squeeze effect: despite spending more time in education, women with higher educational degrees do not space their children more closely than lower-educated women (see Figure 1). However, it must be considered that the women in the sample are still in their reproductive ages. Additionally, women at risk of second child, in particular those of the younger cohorts, might also be selective in terms of their educational attainment.

This first study on the impact of women's education and second birth using micro-level data is an important contribution to a better understanding of low fertility in Poland, with important implications for a policy-making perspective. However, largely due to data limitations, some of the findings remain preliminary and need to be followed-up in future research. For instance, it was impossible to include the partners' characteristics in the model. Various studies have shown that the effect of women's education may become insignificant or even reverse when controlling for partner's educational attainment. Moreover, it remains unclear how the effect of female education might reflect self-selection, or to what extent gender (in)equality influences fertility decision-making.

Figure 1: Interaction between baseline hazard (age of the first child) and women's education



Source: Employment, Family and Education Survey 2006, author's calculation

Note: Further control variables: cohort, age at first child, parent's education, size of women's residence, when she was 15 years old
Source: Employment, Family and Education Survey 2006, author's calculation.

Table 1: Second birth risks in post-socialistic Poland, cohorts 1971-1981

Variables	Model 1	Model 2	Model 3	Model 4
1 Age of first child				
< 1 year	1	1	1	1
1 - 2 years	1.36 ***	1.34 ***	1.36 ***	1.36 ***
2 – 4 years	1.44 ***	1.39 ***	1.42 ***	1.42 ***
4 – 6 years	1.17	1.11	1.14	1.14
6 – 10 years	0.7 **	0.64 **	0.66 ***	0.66 ***
2 Cohorts				
1971 - 1975	1	1	1	1
1976 - 1981	0.86 **	0.81 ***	0.81 ***	0.8 ***
3 Women's education				
In education	0.45 ***	0.46 ***	0.5 ***	0.53 ***
Low degree	1	1	1	1
Medium degree	0.69 ***	0.74 ***	0.8 ***	0.84 **
High degree	0.44 ***	0.56 ***	0.64 ***	0.69 **
4 Age at the first birth				
15 – 19 years		1.13	1.16	1.18
19 – 22 years		1	1	1
22 – 26 years		0.83 **	0.82 **	0.81 ***
26 – 35 years		0.58 ***	0.59 ***	0.58 ***
5 Size of women's place of residence, when she was 15 years old				
> 500,000 inhabitants			0.58 ***	0.63 ***
100,000 – 500,000 inhabitants			0.62 ***	0.65 ***
< 100,000 inhabitants			0.78 ***	0.82 **
Rural area			1	1
Missing			1.12	1.12
6 Mother's education				
Low degree				1.11
Basic vocational degree				1
Medium degree				1.03
High degree				0.92
Missing				0.52
7 Father's education				
Low degree				1.1
Basic vocational degree				1
Medium degree				1.03
High degree				0.93
Missing				1.16
Initial Log likelihood	-1759.664	-1758.664	-1757.664	-1757.664
Final Log likelihood	-1707.063	-1696.737	-1683.427	-1678.775
Number of cases				
Sample size				1520
Number of second births				771

***p<0.01; **p<0.05; *p<0.1

Source: Employment, Family and Education Survey 2006, author's calculation