Becoming a Mother in Romania: Exploring the Effect of Education

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Final paper

Introduction

Nowadays Romania presents a surprisingly stable total fertility rates (TFR) which, since 1995, has leveled off at a value of only 1.3 children by women. A sharp decline occurred immediately after the fall of the communist regime, i.e. during the first years of the socio-economic transition, since in 1989, the year of the political turnover, the TFR was still above the replacement level with its 2.2 children per woman. Motherhood postponement is responsible for a significant part of the drop to the contemporary very low fertility, and it is known by a large body of research conducted all over the world that women's increased human capital is an explanation of the delayed entry into motherhood. But the education's influence is complex and there are several ways in which educational attainment or educational enrolment contribute to delaying motherhood. A previous study, using the same data as here but a different research approach (Mureşan and Hoem 2009), has found a negative educational gradient in Romanian fertility for all parities, and this study is an extension of the findings concerning childbearing at parity 0.

We investigate women's transition to first birth in Romania, focusing on the impact of women's education. We simultaneously consider the influence of educational level, enrolment in education, and time elapsed since completion of education on the transition to motherhood. These three aspects of the role of education that influence the delay of entry into motherhood in the most recent fifteen years are contrasted with their respective influence during the last fifteen years of state socialism. First, we discuss the missing effect of educational level on the transition to first birth before 1990, and its negative gradient after the political turnover when economic returns to education started being effective. The decline in first-birth risks after 1989 applies more so to women with higher level of education than to those with a lower level. Second, during early adulthood women have spent more time in education recently than their contemporaries did in the era of state socialism, and this in itself has lead to

motherhood postponement. Third, women have entered motherhood much more slowly after the completion of education than they did before. This contrasts with the previous pattern, when after the completion of studies there was a strong and immediate effect on first-birth risks. We argue that a greater educational differentiation of labor market opportunities and constraints brought about a corresponding greater educational differentiation in the timing of entry into motherhood.

Theoretical considerations and research hypotheses

According to the economic approach, the role of female human capital should play a central part in the timing of births (e.g. Gustafsson 2001, Kantarova 2004). The relative costs of children are affected significantly by changes in the value of time that women have at their disposal. This is because the cost of a mother's time is a major part of the total cost of producing and rearing children (Becker 1991). The "new home economics" links educational level with demographic behavior via economic considerations, assuming that higher education leads to a higher (potential) wage and therefore to a greater "opportunity cost of childbearing" for women. Our fist research hypothesis is therefore:

In the times of the Romanian market economy, there is a negative effect of women's educational level on the transition to first birth: women with a higher level of education have a lower risk of entry into motherhood.

By contrast, under Romanian state-socialism, most women participated in labor market activities and future earnings were highly predictable according to wage grids. Earning levels were largely dependent on age, and the timing of work interruption due to childbirth had no major influence on women's future employment and earnings. The withdrawal from the labor market after childbirth was on the whole temporary and of short duration, and the compatibility of work and childrearing was supported by public childcare provisions. We consequently assume that:

There was little differentiation by educational attainment in first birth risks (when controlled for educational duration) during state-socialism.

As regard the effect of time spent in education, our argument originates in the writings of authors like Blossfeld and Huinick (1991) or Skirbekk et al. (2004), who pointed out that the impact of educational level on a birth transition is largely explained by the longer time spent in education by the highly educated. The incompatibility of enrolment in education and parenthood is caused by several factors (Becker 1991; Schultz 1993; Oppenheimer 1988), including the incompatibility of education and childbearing, the increased risk of not completing education after a birth, the high opportunity costs of failing to complete education, and social norms that discourage childbearing while women are still in education.

We expect to find a negative effect of enrolment in education on entry into motherhood, both during state socialism and during times of market economy.

Starting with 1990, in Romania one observed not only a decline in period fertility, but also a rise in the mean age of mothers at first birth. Beside the fact that women spent more time in education than before, there was a prolongation of the period between the end of studies and formation of family during which young women established their position in the labor market and in society in general. An intriguing question is whether this development affected all educational groups proportionally or whether the education differentiation in the timing of first birth was rising. The economics of the family provide a comprehensive framework for the role of women's education in the context of market economies. Several components of a "career planning hypothesis" must be included in the cost of children: (i) the opportunity cost of time spent with children instead of being in the labor market, (ii) the depreciation of the value of education and experience while caring for a child, and (iii) net direct child costs (Cigno and Ermisch 1989, Cigno 1991). These considerations are not the same for women with different socio-economic characteristics – such as education. Even if the effect of women's education is theoretically disputed, it is generally considered to be harmful to a career to have children during the "career building" phase, in particular for women with higher education (Liefbroer and Corijn 1999). Another aspect is the greater desire of women with high level of education to establish oneself in a career after completing education and before having a child. Finding out whether education differentiation had an effect on the transition to first birth after completing

education might contribute to the understanding of the fertility decline of the 1990s and early 2000. Our corresponding hypothesis sound as follows:

After the political turnover in Romania, there is a negative relation between educational attainment and the rate of transition into motherhood after the completion of education.

The effect of educational attainment on the rate of transition into motherhood after the completion of education was smaller during state socialism than in subsequent market economy times.

Data and methods

Our empirical analysis is based on data collected by the Generations and Gender Survey at the end of 2005. The sample consists of 11,986 respondents aged from 18 to 79 years at the time of interview, of which 6,009 were women. They enter in the analysis at age 14 and are right-censored at age 35. The period of interest covers the time span 1975-2005 and is divided according to the major changes in the social-political and economical systems after the end of 1989, so we contrast the last 15 years of state socialism with the next 16 years of market economy. We retained 2,691 women from the sample as exposed to risk of entering motherhood in the period 1975-1989, and 1,759 women in the period 1990-2005. A total of 1,446 first births were registered in the former period and 1,055 first births in the latter.

We apply hazard regression to model the transition to first conception (ending in a live birth) as a function of an underlying risk modified by a vector of covariates.

Model 1: $\ln h_i(t) = y(t) + \sum_k \beta_k x_{ik}(t)$

The baseline hazard by the age of a woman $y(t)$ is a piece-wise linear spline in the log-hazards (generalized Gompertz), and the covariate educational status $x_{ik}(t)$ is time-varying variable. Educational status is constructed as a categorical variable with four levels, viz. “in education”, “no degree”, “baccalaureate or vocational degree” and “tertiary degree”.

When we investigate the effect of education via time passed since completion we introduce, along with the age of the woman, a second "time clock" in the model (i.e. the time passed since the end of education) $z_e(t-e_i)$ which starts ticking for woman i at her completion of education e_i. The multiple clocks combine additively to form the overall risk of first birth in the log-hazard.

Model 2: $\ln h_i(t) = y(t) + z_e(t - e_i)$

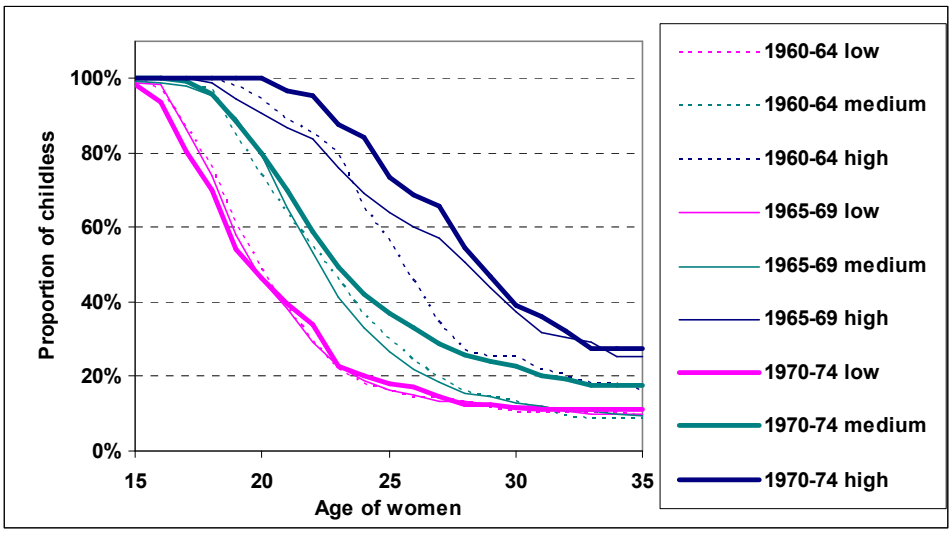
Both models are replicated for each of the two periods of time. For the estimation of the hazard models we use aML software, Version 2.09 (Lillard and Panis 2003).

Main research findings

Effect of educational level on postponing motherhood

Our analysis starts with survival curves of transition to first birth disaggregated by final level of education (Figure 1).

Figure 1. Transition to motherhood: Proportion of childless women by age and final education level, birth cohorts 1960-1964, 1965-1969 and 1970-1975



One observes a postponement of first birth from the cohorts born in 1960-1964 to those born in 1965-1969, and then to those born in 1970-1974, and especially for women with higher levels of education. One also observes practically no changes inside the category of women without any educational degree and smaller changes in

the category of women with a high school or a vocational degree when compared with large and complex changes in transition to motherhood of women having a tertiary degree at the moment of the interview. However these findings based on a cohort approach does not met in evidence the major role of the socio-economic and institutional context, very different before and after the political turnover in 1989. Cohorts born in 1960-1964 have had their first birth mainly in the ancient regime; those born in 1965-1969 have become mothers during both regimes; while the majority of those born in 1970-1975 have experienced their first birth mainly during a period marked by important societal, institutional, and economical changes. Furthermore, using the final educational level instead of a time-varying educational level bias our results, since not all women had their first conception (leading to a live birth) after completing their last educational level as they declared at the time of the interview, and some of them might have been be still enrolled.

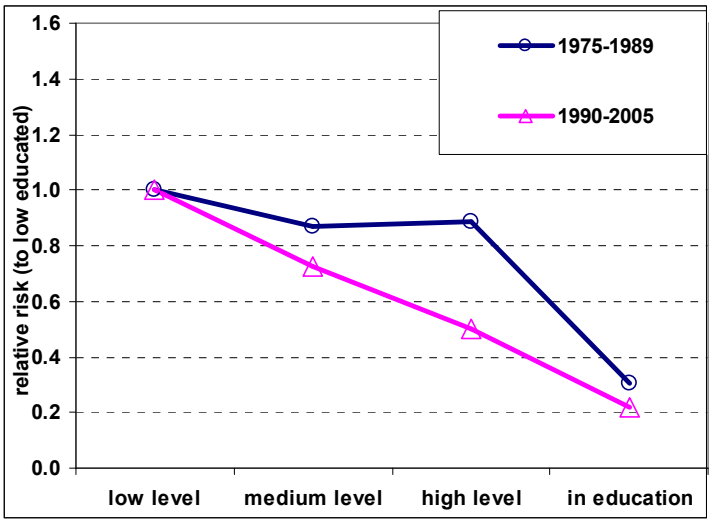
In the next analysis, we take the education variable as time-varying with differentiation of period in education and out of education. Since we do not really have complete educational histories, as only the highest level at time of the interview and the year and month of completion are reported in first-round GGS, every respondent is considered to be enrolled in education all the time until the date of her declared completion of final education. At that time she either enter directly in the corresponding category of "low", "medium", or "high" level of education, either she remains in the category labeled "in education" if she declared as enrolled at the time of interview[1].

Figure 2 shows the relative risk of entry into motherhood by educational status (Model 1). There are two lines, one for each calendar period, and the baseline category is women without any degree in both cases. The line for period 1975-1989 shows definitely smaller differentiation in transition to motherhood by current educational level than the line for period 1990-2005. During state-socialism women with no academic qualifications had 13% higher conceiving risk than women with higher education, but there were no differences in such a risk between women with a high school diploma or a vocational degree and women with at least a university degree. During market-economy times one could observe a clear negative gradient by

[1] More details on how the time-varying covariate of the educational attainment has been constructed and on the adequacy of such a construction could be found in (Mureşan and Hoem 2009).

educational level related to transition to motherhood. Women with a medium level of education have 27% lower first conception risk and those with a high level of education 50% lower, compared to women with low level of education.

Figure 2. Transition to motherhood: Relative risk by educational status and period



It seems that our hypothesis concerning the effect of the level of education on postponing motherhood confirms.

Effect of enrollment on postponing motherhood

Beside the effect of the educational attainment itself on postponing motherhood, there is another effect of education, just of being enrolled regardless on which level of education. The latter effect is largely recognized and empirically proved in all societies, and sometimes it was shown the only effect of education on postponing motherhood, as Blossfeld and Huinick (1991) have found for Germany.

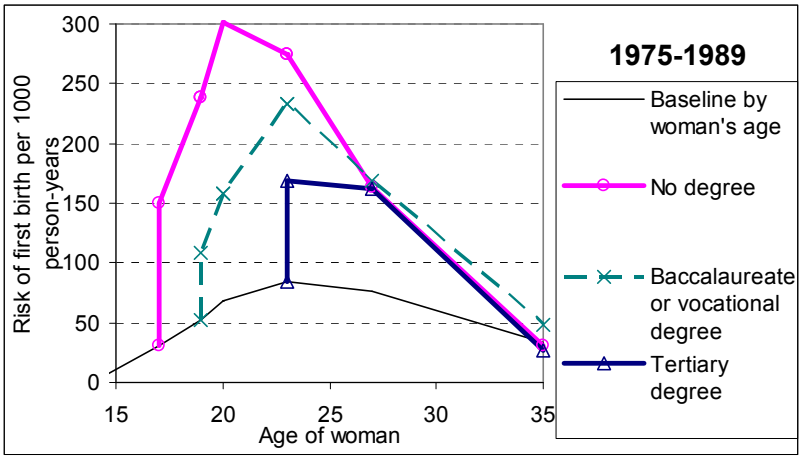
As we have seen above, in Romania controlling for educational duration (Model 1) does not vanish the effect of educational level (Figure 1). The last category displayed on the same Figure 1 shows that enrolled women hardly postpone their first birth, having 70% - 78% lower risks of entry into motherhood than women with low level of education (most women in Romania). But the socio-economic and institutional context also counts. Controlling for enrolment almost vanish the differences by educational level during state-socialism, while this effect remains untouched during the recent years. Taking into account that more people than before are now enrolled in

education, and that the time spent in education is increasing, we may expect a further postponement of entry into motherhood. Our third hypothesis also confirmed.

Effect of time elapsed since end of education on postponing motherhood

To further investigate the effect of education attainment on entry into motherhood, we distinguish between the effect of the time passed since the end of education and the effect of women's age. Thus, we examine the period after participation in education and its relationship with family formation. The two "time clocks" (i.e. age and time passed since end of studies) combine additively to form the overall risk of first conception (leading to a live birth) in the log-hazard. The multiplicative effects of the time passed since the end of education are added to the hazard of first birth by women's age at the ages typical for completing education at the respective level (17, 19, and 23). The risks are visualized in Figures 3 and 4.

Figure 3. Transition to motherhood: effects of time elapsed since end of education for the various education levels, period 1975-1989

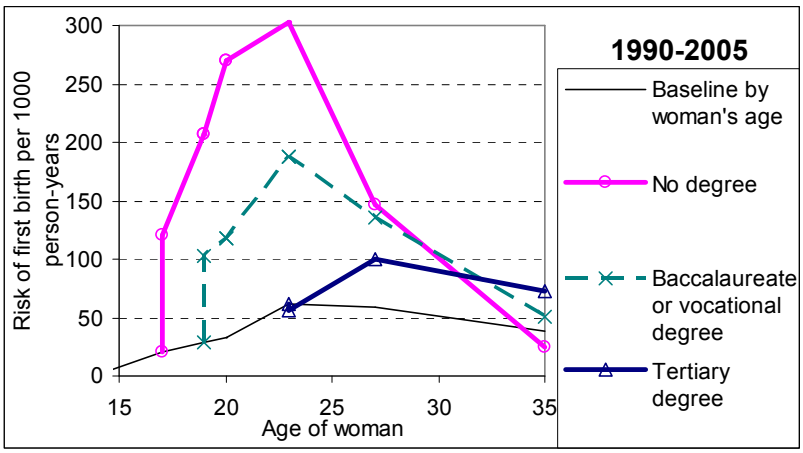


In the late 1970s and the 1980s the risk of conception quadrupled after completion of compulsory school and doubled after completion of a degree. For a few years, the risks were rising or remained stable and then they declined (Figure 3). Education completion was strongly perceived as beginning of the family formation period, regardless the level achieved. But, after age 27 there are no more differences in birth risk by level of education. This may be the result of societal norms on early entry into motherhood, strong at that time, i.e. the 'ideal" being before 25, but not much later than 30. As much a woman spend more time enrolled in order to obtain a higher educational level, as less time remains for her to enter into motherhood before age 30. But, since the biological clock of motherhood is not yet a problem at an age before

30, women with higher educational level have had no more reasons than the others to hurry with family formation, once they did not shortly after completion of education.

Situation changed in the more recent times, when returns to education become more important. The effect of age itself slightly diminishes, and differences by time since end of education become more important (Figure 4).

Figure 4. Transition to motherhood: effects of time elapsed since end of education for the various education levels, period 1990-2005



Particularly women with a university degree have low risks of first birth immediately after completion of studies, with a subsequent rise in risks thereafter. This reveals that the period between education and family formation constitutes a distinct part of life in which young educated women establish their position on the labor market and pursue their education attainment. A "career building" phase appears in the life of women holding a tertiary degree diploma, which was not the case in the period before the political turnover. At the opposite end, women with no academic qualification still have increased risks of first childbirth shortly after the completion of compulsory studies, and practically they have the same risks of childbearing at any age as during the state-socialism period. For women with medium level of education the age profile of entry into motherhood after completion of studies did not change dramatically: a similar tripled risk of family formation immediately after completion of studies as before, but a slightly smaller increase in the very next four years. These women have comparatively limited prospects on the labor market and are less motivated to translate their education into labor market activities than women with higher level education. The various transformation of entry into motherhood from one calendar period to the other conducted to a situation in which a positive educational gradient in

first birth risk for women aged 30-35 appears, while at younger ages the gradient remained negative (Mureşan and Hoem 2009).

Conclusions

Investigating women's education role in postponed motherhood, we have looked at two specific situations: before and after the political turnover in Romania. Using data from the Generations and Gender Survey of 2005 and applying an event-history analysis, all our research hypotheses were found true. In the interpretation of our results we stress the importance of the institutional environment: political setting, labor market, educational system and public policies.

Thus, during the last decade and half state-socialism (1975-1989) were little differences by level of education of entry into motherhood, and these differences regarded only women with low level of education who started faster family formation than the others. Moreover, regardless educational attainment, education completion was strongly perceived as beginning of the family formation period, and women started entry into motherhood shortly after achieving their final education level. However, no recuperation phenomena of women with higher level of education were observed. This is different from the Czech case (Kantarova 2004), or some occidental European countries, where women with tertiary degree were found with a higher risk of entry into motherhood immediately after completion of education then other women with a lower level of education. In Romania of last years of state-socialism, and strong but coercive natalist policies, women in their late 20s had the same overall risks of entry into motherhood regardless their educational level, proving that social meaning for time to first childbearing was perceived the same for all educational attainments. Enrollment per se proved to have a strong positive effect on postponed motherhood, i.e. during studies women strongly postpone family formation, and this effect did not change with socio-economic and policies changes, since enrolled women have four times lower risks to conceive a first child than women without any academic qualification, both in state-socialism or market economy times.

In the last decade and half, during the period marked by profound societal transformations (1990-2005), changes of entering motherhood regard mainly women with a tertiary degree, regard less women with a high school diploma or a vocational degree, but do not regard women with only compulsory education. Women with

higher education make use of new employment opportunities and career prospects, and their education receive grater importance in terms of prestige or income than in the state-socialism era. Highly qualified women seem to postpone family formation to a time after the consolidation of employment, i.e. acquiring some job experience, making the most of education attained, creating improved conditions for prospective maternity leave with the right to a period of job protection.

It is also possible that social norms regarding ideal age at entry into motherhood are changing character from being universal to having different social meanings for various education levels, since we found an inversed educational gradient of transition to motherhood by age of women, from negative at younger ages to positive at age 35. This idea deserves further investigation and data from the second wave of Generation and Gender Survey would be very helpful.

References

Becker G. (1991). *A Treatise on the Family*. Cambridge: Harvard University Press.

Blossfeld H, Huinick J. (1991). "Human Capital Investments or Norms of Role Transition? How Women's Schooling Careers Affect the Process of Family Formation." *American Journal of Sociology,* 97: 143-168.

Cigno A. (1991). *Economics of the Family*. Clarendon Press, Oxford.

Cigno A. and Ermisch J. (1989). "A micro-economic analysis of the timing of the first births." *European Economic Review* 33: 737-760.

Gustafsson, S. (2001). "Optimal age at motherhood. Theoretical and empirical considerations on postponement of maternity in Europe". *Journal of Population Economics* 14: 225-247

Kantarova V. (2004). " Education and entry into Motherhood: The Czech Republic during State Socialism and the Transition Period (1970-1997)", *Demographic Research*, Special collection 3(10): 245-272

Liefbroer A.C, Corjin M. (1999) . "Who, What, Where, and When? Specifying the Impact of Educational Attainment and Labour Force Participation on Family Formation." *European Journal of Population,* 15: 45–75.

Lillard L, Panis C. (2003). *aML Multilevel Multiprocess Statistical Software*, Version 2.0. EconWare, Los Angeles, California.

Mureşan C, Hoem J.M. (2009) – „The negative educational gradients in Romanian fertility." *MPIDR working paper*, WP-2009-019, http://www.demogr.mpg.de/papers/working/wp-2009-019.pdf

Oppenheimer, V. K. (1988). "A Theory of Marriage Timing." *American Journal of Sociology* 94: 563-591.

Schultz T. P. (1993): "Returns to Women's Education." In E. M. King and M. A. Hill (eds.) *Women's Education in Developing Countries: Barriers, Benefits, and Policies*. Baltimore: Johns Hopkins University Press: 51-99.

Skirbekk V, Kohler H.P, Prskawetz A. (2003). "Completing Education and the Timing of Births and Marriage: Findings from a Birth-Month Experiment in Sweden." *MPIDR working paper,* WP 2003-017