PAPER SUBMITTED TO *DEMOGRAPHIC RESEARCH*

Effect of education on second births in Hungary. A test of the partner effect hypothesis

Tamás Bartus

Associate professor, Corvinus University, Budapest

Research fellow, Demographic Research Institute, HCSO

tamas.bartus@uni-corvinus.hu

Lívia Murinkó

Doctoral candidate, Corvinus University, Budapest,

Researcher, Demographic Research Institute, HCSO

murinko@demografia.hu

Ivett Szalma

Doctoral candidate, Corvinus University, Budapest

Researcher, Institute of Sociology, HAS

szalma@socio.mta.hu

Bernadett Szél

Researcher, Institute of Sociology, HAS

bernadett.szel@uni-corvinus.hu

Please direct correspondence to: Tamás Bartus, Institute of Sociology and Social Policy, Corvinus University, Budapest, H-1093 Budapest, Közraktár u. 4-6. Email: tamas.bartus@uni-corvinus.hu.

Abstract

The effect of education on the transition to second births is examined using three waves of the Hungarian GGS data. We hypothesize that higher education increases the hazard of second conception and this effect is due to the presence of highly educated partner. Parity-specific survival models are estimated using women born between 1946 and 1983. Higher education decreases the time to second conception. The partner's education reduces the waiting time to second conception. The results remain robust after controlling for sample selection. The findings support the partner effect hypothesis (Kreyenfeld 2002).

Keywords: partner effect hypothesis, Hungary, education, fertility, second births

1 Introduction

One of the well-known predictions of the economic theory of fertility is the negative relationship between female labor market participation and fertility. Recent studies carried out in Germany, Denmark and Norway however found that women's education has a positive effect on the transition rate to second births (Kreyenfeld 2002, Gerster et al 2007, Kravdal 2001, 2007). So far, less effort has been made to examine this relationship in Central and Eastern European countries, which are infamous for the low level of total fertility (Spéder 2006, Thornton and Philipov 2009, Gerber and Berman 2009, Kapitány and Spéder 2010). While there is evidence that education is negatively related to first birth rates (Kantorová 2004, Oláh and Fratczak 2004, Muresan and Hoem 2010), results on the effect of transition to second child are limited and mixed. While Muresan and Hoem (2010) found a negative educational gradient for Romania regarding the second and third births, a positive effect of education on the transition to second birth was reported for Estonia (Klesment and Puur 2010). In Russia, people with primary education exhibit the fastest transition to second births, but there are no significant differences among other educational groups (Billingsley 2011).

The first objective of this paper is the description of the relationship between education and fertility in one of the former socialist countries, Hungary. It was argued that fertility is likely to decrease with women's education in in post-socialist countries (Muresan and Hoem 2010). Previous research into fertility in Hungary, however, found an U shaped relationship between education and total fertility (Husz 2006). A similar pattern was found between education and the probability of delivering a second child within a five year interval after the first birth (Spéder 2006). The U shaped pattern is paradoxical, since, as we will demonstrate in Section 2., the opportunity costs of raising children should be substantially larger among people with college and university education than among people with secondary education. Our second objective is to explain why the fertility of highly educated women might be higher than that of women with secondary education.

A possible answer to this question is provided by the partner effect hypothesis (Kreyenfeld 2002). Highly educated women tend to marry (or live with) educated men, a phenomenon known as educational homogamy or assortative mating (Becker 1981, Kalmijn 1998). If male labor supply is independent of or increases with the number of children, an assumption that fits male-breadwinner regimes well, the partner's income might be sufficient to invest in the human capital of several children. Using the language of the economic theory of fertility, the partner effect hypothesis states that the positive effect of family income on childbearing suppresses the opposite effect of the shadow price of raising high-quality children (Becker and Lewis 1973, Jones, Schoonbroodt and Tertilt 2008). Indeed, there is some evidence that the partner's education does have a positive effect on second birth rates (Kreyenfeld 2002, Gerster et al 2007, Klesment and Puur 2010). The partner effect hypothesis therefore does not predict a negative relationship between female labor force participation and fertility. Recently, it was documented that the negative correlation between female labor force participation and fertility has turned into positive since the 1980s (Brewster and Rindfuss 2000, Blossfeld and Drobnic 2001, Ahn and Mira 2002).In a meta analysis of studies researching the association between fertility and women's employment across the member states of the European Union and the USA, Matysiak and Vignoli (2008) found that the negative effect of female employment on fertility is the weakest in post-socialist countries.

The paper is organized as follows. Section 2 situates the partner effect hypothesis in the Hungarian context. In Section 3, we describe the data and methods we use to examine the relationship between education and fertility. The results of the analyses are presented in Section 4. Section 5 concludes.

2 The partner effect hypothesis in the Hungarian context

The dramatic decline in fertility in the former socialist countries was often explained in terms of institutional changes that have occurred during the transition to capitalism, like the increase in income inequalities, consumption aspirations and labor market uncertainties, the expansion of higher education, and the decline in the free access to childcare (Kantorová 2004, Klasen and Launov 2006, Thornton and Philipov 2009). Following this line of reasoning, we link some important features of the Hungarian labor market and child-care institutions to the partner effect hypothesis. First, we present some evidence on the opportunity costs of childbearing and the possible impact of the partner's education on these costs. We demonstrate that highly educated men face good career or earnings opportunities so that their income might be sufficient to invest in the human capital of more children. Second, we argue that the patterns of earnings inequalities are related to family policy in Hungary, and the interplay of labor market and child-care institutions reinforce the male-breadwinner model. Finally, we summarize the likely implications of the male-breadwinner model for the relationship between education and fertility behavior.

2.1 Earnings opportunities

In this subsection, we present some evidence on the opportunity costs of childbearing and the career opportunities of educated men and women. More precisely, we examine gender and cohort-specific earnings over time across educational categories. We define four educational levels: primary, vocational, secondary and higher. (For a good explanation of the Hungarian educational system, consult Kézdi, Köllő and Varga 2009). Primary education refers to the first stage of compulsory education, which typically begins at age 6. People who did not complete the primary education will be treated as having completed primary education. After completing primary education, children should follow either the vocational, the academic secondary or the vocational secondary track (by law, enrolment is compulsory until age 16.). In our analyses, secondary education embraces both vocational and academic secondary education. Traditionally, primary and secondary education lasted 8 and 4 years, respectively, but during the transition, other forms, like the combinations of 6+6 years and 4+8 years emerged. Secondary education is completed by passing the Matura (or A-level) exam, which is a necessary condition of college or university admission. In contrast, vocational schools do not offer the Matura exam. Throughout this paper, higher education refers to college and university graduates.

We use the 1994-2008 waves of the Hungarian Wage and Earnings Survey (WES). The WES is collected annually, the sample includes 150,000-217,000 employees, depending on the year. (For a detailed description of the sampling design, consult Lovász 2008). An important feature of the survey is that not individuals are interviewed: all data on individual wages and personal characteristics are provided by the representatives of the sampled firms. Using the individual-level data, we created a quasi-panel dataset. There are 24 groups in the quasi-panel dataset, defined as the combinations of four educational levels, three birth cohorts (1966-1970, 1971-1975 and 1976-1983) and the two sexes. The cohorts are compatible to the cohorts we will use in Section 4 to examine the relationship between education and fertility. For each group, average net wages are observed in the period 1994-2008. The nominal earnings figures were transformed into real values using price-index data published by the Hungarian Central Statistical Office, the base year being 2011.

Figure 1 shows the real value of net monthly earnings in Euros by educational level for three birth cohorts and the two sexes separately.[1] In 2011, the net minimum wage is about 300 euros per month, thus each 400 unit on the Y axis represents about 133 percent of the minimum wage. The graphs show that especially among men, the largest wage disparities exist between people with higher education and people with secondary education. The wage differentials became

[1] We assumed that 1 Euro equals 260 HUF.

pronounced during the late 1990s and the 2000s. It is also striking that there is virtually no average wage difference between people with vocational education and people with primary education. People with secondary education enjoy a small wage advantage of about 100 euro per month over people with poor education.

In the light of the partnership hypothesis, the most interesting pattern is that educational differences are affected by gender. On average, men with secondary education or less do not earn more than women with similar education. In contrast, college and university educated men born between 1966 and 1975 do enjoy a substantial wage advantage over women with the same educational level. The advantage over men seems to diminish as we move from older cohorts to younger ones.

These observations support one of the key assumptions of the partner effect hypothesis, namely that male earnings might be more important in fertility decisions than female ones. On the one hand, the opportunity costs of raising children increase as age-earnings profiles become steeper. On the other hand, the steeper the age-earnings profiles, the lower are the costs of future investments into the human capital of children. Among the highly educated, the age-earnings profiles are steeper among men than women, thus highly educated couples could invest in the human capital of even more children. In contrast, women with secondary education cannot afford a relatively large number of high-quality children, since their age-earnings profile are not steep enough to found the investment costs.

2.2 Institutions reinforcing the male-breadwinner model

Perhaps the most simple and powerful explanation of disparities in wage dynamics between college educated men and their female counterparts is the depreciation of human capital (Becker 1981) of mothers on parental leave, which might result in statistical discrimination against childless women and thereby reinforce the male-female wage gap (Coate and Loury 1993). These mechanisms are very likely to operate in Hungary because mothers might and typically do leave the labor market for several years. This subsection discusses the institutional conditions of the male-female wage gap among the highly educated.

The Hungarian family support system is one of the most generous ones in international comparison if cash benefits are concerned, but falls behind as one regards the availability of child-care and that of part-time or flexible work arrangements. Generous cash transfers together with limited access to flexible work and infant's nurseries create substantial incentives for mothers to interrupt their careers for a long period of time.

The system of subsidies is complicated, we just present a simple overview, and our exposition is focused on people with social security insurance. (Our exposition follows Blaskó 2010; for details, consult this source and the references cited therein). Maternity leave is 24 weeks with 70% of the average daily earnings, with no ceiling on payments. After the maternity leave women and men are also entitled for parental leave, which amounts to 70 percent of what the parent has been earned in the previous year. However, the parental leave cannot exceed 140 percent of the minimum wage. This means that highest amount available is close to the average earnings of women with secondary and primary education (see Figure 1). After parental leave, insured parents are also entitled to a flat rate benefit until the child's third birthday. The total length of paid leave is thus 36 months, which is similar to the length of paid leave in the Czech Republic, Poland and France, but which is substantially longer than paid leave in Germany, Denmark and the Netherlands (Korintus 2010).

The price women has to pay for generous cash benefits is the difficulty to reconcile family and work. In international comparison, Hungarian women have limited access to child care and flexible forms of employment. Although the vast majority of children aged 3 to 6 attend nurseries, the rate of children aged 0 to 3 attending infant's nurseries is very low, about 10 percent in 2006 (Blaskó 2010). This figure is similar to the attendance rate in some former socialist countries like the Czech Republic, Slovakia and Poland, but is substantially lower than the attendance rate in Denmark, the Netherlands and France. The proportion of employees who work either part-time or home-based is one of the lowest in Hungary (for details, consult Bajnai, Hámori and Köllő 2009). Not surprisingly, the employment rate of mothers with children aged 0 to 3 are also very low in international comparison (Blaskó 2010).

2.3 Hypotheses

One of the well-known predictions of the economic theory of fertility is the negative relationship between education and fertility. The evidence presented in this section suggests a revision of this prediction. Compared to women with secondary education, fertility decisions of highly educated women are affected by two mechanisms which work in the opposite direction. On the one hand, they face better career prospects, and they find the price of high-quality children relatively high (Becker and Lewis 1973). On the other hand, the evidence presented in this section suggests that they have more income available to raise high-quality children, since they tend to be partnered to highly educated men, who face upward-sloping age-earnings profiles. It is possible therefore that due to this income effect, highly educated women have more children than women with secondary education. Besides, the transition to second birth might be faster among highly educated women. The generous cash benefits and the limited availability of child-care force most of the women to exhaust the 3 years of paid leave. This leads to a substantial depreciation of human capital and results in a male-female wage gap among qualified employees. Highly educated women therefore are likely to prefer leaving the labor force once and squeezing births together over experiencing repeated spells of being out of the labor force.

The income effect mechanism, together with the time-squeeze mechanism, implies that the transition to second birth is faster among highly educated women than among women with secondary education. The income effect mechanism in itself implies that women partnered to highly educated men wait less for the second conception than women partnered to men with lower education. The remainder of the paper is devoted to examining the relationship between education and fertility in Hungary and to testing these hypotheses.

3 Data and methods

3.1 The sample

The panel survey *Turning Points of the Life Course* (TPLC henceforth) was launched in 2001, then data collection was repeated in 2004 and 2008. The survey includes retrospective information on fertility and partnership histories, as well as cross-sectional information on the characteristics of partners. The target population includes people aged 18-74 in 2001. Individuals were selected using a stratified two-stage sampling procedure: the strata were defined in terms of settlement size and gender, the primary sampling units were settlements. The second wave of TPLC corresponds to the first harmonized wave of the Gender and Generations Survey (see Spéder 2001 for more information about the Hungarian survey and Vikat et al. 2007 about the GGS). The interviews were scheduled to take place in November, but sometimes interviewers were able to find the respondents and complete the interviews later.[2] The number of participants dropped from 16,300 to 10,641 from the first to the third wave. Weights adjusting for nonresponses in the first wave, as well as weights adjusting for panel

[2] The first wave of data collection was conducted between November 2001 and March 2002, the second one between November 2004 and July 2005, and the third one took place between November 2008 and February 2009.

attrition were constructed. Since these weights are negatively correlated, subsequent analyses will not use weights.

The sample for subsequent empirical analyses was constructed as follows. First, we selected women who were born between 1946 and 1983 and who participated in all of the three waves. All of our analyses will include women born between 1966 and 1983. They were 7 to 24 years old at the beginning of transition in 1990, and 25 to 42 years old when our observation period ends. We will use this cohort to examine fertility behavior under the conditions of transition to capitalism. Women born between 1946 and 1965 will be treated as a „control" group or „benchmark", since the experiences of these cohorts mostly reflect the state-socialist area.

Our sample is restricted to women who were not enrolled in education at the time of the first wave interview. The reason is that we wish to compare the fertility behavior across educational levels, but we do not wish to study the effect of changes in education over the life course. We also omitted respondents who got pregnant before turning 14 and respondents with incomplete or inconsistent life histories. Our sample includes 3235 women.

In this paper, we pursue both a descriptive and an explanatory research question. Our descriptive research question is whether there is an U shaped relationship between education and fertility. In order to answer this question, we constructed a dataset of conception histories of the selected women. Each record in this dataset contains an indicator for conception and the duration to the conception itself. The indicator variable takes on value 1 if the women delivered a child 9 months later, and 0 if the spell is censored, that is, by the time of the third wave interview no conception occurred. Duration is the number of months elapsed since the previous demographic event, which is either a delivery or turning 14 years old. Similar to earlier studies, analyses will be restricted to transitions to first, second and third conceptions, thus higher order transitions are omitted.

Our second objective is to test the partner effect hypothesis. The dataset of conception histories therefore was supplemented with the characteristics of the partners. The latter information is available in cross-sectional format for each wave. We matched the cross-sectional information of the first wave to the event history data using the following procedure. We first selected birth cohorts 1966-1983. Next, we identified unique episodes of partnership histories, like being single, cohabiting or married. Then we deleted episodes which ended prior to the date of first wave interviews. Finally, we removed events related to partnership formation and we constructed a dataset of durations to conceptions. The matched dataset includes 1757 spells reported by 882 women. The parity-specific samples for first, second and third birth transitions include 660, 657 and 440 observations, respectively.

To our best knowledge, our study is the first to examine the relationship between education and fertility using all three waves of the TPLC dataset. The results of our study might differ from earlier studies which used only the first or the first two waves. For instance, Spéder (2006) shows that among women born after 1966, there is a substantial difference in the probability of becoming a mother by age 30 across educational groups. However, he used only data from the first wave, while we are able to observe fertility histories up to 2008. Besides, we will use different methods. Therefore, our conclusions might, and will differ from those which were drawn previously.

3.2 Method

In our subsequent empirical analyses, we will use event history or survival analysis to examine the effect of education and partner's education on parity-specific transitions to conceptions. The separate modeling of parity-specific transitions raises the issues of sample selection and endogeneity. First, separate estimates of parity-specific transitions might be subject to sample-selection bias. If education has a negative effect on the transition to first birth, education will be positively correlated with unobserved causes of fertility in samples of women who have one child and are at risk of second conception (Kravdal 2007). For instance, if highly educated people face better career opportunities and therefore postpone first birth, family-oriented values or preferences for children must be on average stronger among educated mothers than among mothers with poor education. Otherwise, highly educated women would not enter the sample of mothers. The comparison of the fertility outcomes across educational categories in the sample of mothers therefore measures not only the true effect of education but also the effect of unobserved factors (Kravdal 2001).

Second, results might be biased if explanatory variables, like union formation and the partner's education are endogenous. Partnership formation is obviously endogenous since intention to have children or unintended conception is one of the main causes of marriage (for evidence based on the GGS project, see Hoem et al 2009). Even education can be endogenous, since preferences for children, which were shaped during socialization, might affect the educational decisions (Baizan and Martin-Garcia 2007, Jones et al 2008).

In this paper, we will use the the Stata module cmp (Roodman 2008, 2009) to estimate survival models with sample selection and endogeneity.[3] The cmp module allows one to estimate recursive systems of equations under the assumption that the equation-specific disturbances are correlated and follow a multivariate normal distribution.[4] Because of this distributional assumption, we estimate lognormal survival models. The lognormal model has two distinctive features. First, the model is formulated only in the accelerated failure time metric. As a consequence, the dependent variable is the natural logarithm of time to event, and not the hazard rate. The second feature is that the hazard rate implicit in the lognormal model exhibits a non-monotonic duration dependence: the implicit baseline hazard first increases, then decreases over time. The side-effect of using the cmp module is that we impose a specific form of duration dependence on our data. We do not regard this as a serious limitation since studies using the piecewise-exponential model often reported observed and baseline hazards which are first decreasing then decreasing with process time (Blossfeld, Golsch and Rohwer 2007, Kreyenfeld 2002, Kulu and Vikat 2007, Muresan and Hoem 2010, Oláh and Fratczak 2004, Gerster et al 2007).

4 Empirical analyses

The empirical analyses proceed in three steps. First, we present a simple description of the relationship between education and fertility. These analyses ignore the censoring of fertility histories of younger women. In the second step, we correct for this problem by estimating survival models of transitions to births. Finally, we examine the partner effect hypothesis using survival models.

4.1 The relationship between education and fertility

The relationship between education and fertility is described using the data of conception histories, which covers women born between 1946 and 1983. Table 1 presents simple cross-sectional indicators of fertility by educational level. None of the figures presented here are adjusted for censoring. The third (an until now, last) wave of the TPLC was administered in November 2008. At this time, the youngest members of age cohort 1946-1965 were 43 years

[3] We are of course aware of the widespread use of aML among demographers.

4 No assumptions are imposed on the variance-covariance matrix of disturbances. Systems involving more than two equations are estimated using simulated maximum likelihood, in general, and the Geweke, Hajivassiliou, and Keane simulator, in particular. For details, consult Roodman (2009).

old, thus the figures in panel A) are very likely to reflect completed fertility histories. The first thing to note is that the mean number of children did not vary dramatically across educational categories; all of the education-specific averages are close to 2. The relationship between the average number of children and education nevertheless exhibits an U shaped pattern: people with secondary education have the least children. The parity specific distributions presented in the next four rows give a more detailed picture. The most striking finding is that the proportion of one-child families is the largest among women with secondary education. It is also remarkable that the realization of the two-child family becomes more likely as we move up in the educational hierarchy. The high average among people with primary education reflects the large proportion of women who have three and more children. Finally, differences in the timing of conceptions seems to fit differences in times spent in education. With the exception of women with primary education, the first conception tended to coincide with the time of graduation. Then, depending on education, the conception of the second child followed the first conception by 3-3.5 years. The transiton to third conception was faster among women with primary education than among women with better education, the difference being 1.5 years.

TABLE 1 HERE

Panel B) presents the same statistics for women born between 1966 and 1983. We use members of these cohorts to test the partner effect hypothesis. Women born in 1966 were 24 years old at the beginning of transition, thus the demographic behavior of this cohort is likely to reflect responses to the transition to capitalism. Age of the members of this cohort ranged between 25 and 42 when the observation period ended, which results in censoring of fertility histories, especially among younger women. Since we did not made any adjustments for censoring, the presented figures are likely to give biased estimates of the actual, but unobserved magnitudes.

Not surprisingly, there are differences in fertility behavior between younger and older cohorts. Members of the birth cohort 1966-1983 were 25-42 years old at the time of the last interview, therefore it is natural that the mean number of children among women with vocational or better education ranges between 1.3-1.5. In 2008, the total fertility rate was 1.35 in Hungary (Kapitány and Spéder 2010). The first thing to note is that the parity distribution does not differ substantially between women with secondary and tertiary education. Nevertheless, the proportion of childless women is somewhat larger among women with secondary education than among women with higher education. This finding is surprising since members of the former group graduate earlier. The inverted U shaped relationship between education and childlessness thus holds for all birth cohorts. Besides, female college and university graduates are somewhat more likely to have three and more children than women with secondary education.

The comparison of panel B) to panel A) shows two differences in the timing of births. First, while the time of first conception became closer to the time of graduation among women with primary education, the first conception occurs later after graduation among women with education higher than primary. Surprisingly, the time interval between graduation and first conception among women with secondary and vocational education is longer by about 2 years than among their highly educated counterparts.

4.2 Education and the transition to conception

We proceed to estimating duration models for the transitions to conceptions. As explained in the previous section, we will model log durations instead of hazard rates. More specifically, we estimate interval-censored regression models on log durations. Interval-censored regression models require two dependent variables, indicating lower and upper bounds of time intervals. Let t_c denote the length of the duration (in months) of the risk period for conception c (c=1,2,3). For the first conception, the risk period begins at age 14, otherwise, it begins at the delivery of the previous child. For uncensored durations, the lower and upper bounds are $\ln(t_c-1)$ and $\ln(t_c)$, respectively, meaning that conception occurred somewhere between time points t_c-1 and t_c (Lillard and Panis 2003). For right-censored durations, the respective lower and upper bounds are $\ln(t_c)$ and $\ln(\infty)$; meaning that the event will occur somewhere in the future.

The explanatory variables include three indicator variables for educational level and indicator variables for birth cohorts. The base category of educational level is secondary, since our main interest is the comparison of the fertility of highly educated women with those with secondary education. Birth cohorts are grouped into seven categories, the first including women born between 1946 and 1950, the last including women born between 1976 and 1983. The reference category will be the cohort of women born between 1976 and 1983. The models for the transition to second and third conceptions also include age at previous delivery minus 25 years, the square thereof, and interactions between the education dummies, on the one hand, and the age variables, on the other hand.[5] The interaction terms between educational levels and the age variables allows us to assess the time-squeeze mechanism. Since the fear of reaching the biological limits of fertility must be stronger for those who spend more time in education *and*

[5] Substracting 25 years from age at previous delivery resulted in a substantial decrease in the correlation between the two age variables.

postpone childbearing, the time-squeeze mechanism implies a negative effect of the interaction between higher education and the age at previous birth. The estimation sample include women born between 1946 and 1983. All of the models were estimated first using all women, then using women born between 1966 and 1983.

Table 2 presents the estimation results. The reader should keep in mind that coefficients reflect partial changes in log durations, instead of changes in hazard rates, and a positive effect on duration is equivalent to a negative effect on the hazard rate. The positive coefficient of higher education in the first conception equation thus means that, compared to women with secondary education, highly educated women tend to *postpone* the first birth. In contrast, women with poor education have the first birth earlier. The results for first conception thus exhibit the negative educational gradient and are consistent with the economic theory of fertility emphasizing the opportunity costs of childbearing.

TABLE 2 HERE

For the second conception, however, we find the opposite pattern in the sample of women born between 1946 and 1983 (Panel A): highly educated mothers wait less until the second conception than their counterparts with secondary education.[6] The main effect of higher education, as well as the interaction effect between age and higher education are negative and significant. The negative interaction effect is consistent with the time squeeze hypothesis. The main effects indicate that 25 years old women with higher education tend to be about twice as fast to have a second child than 25 years old women with secondary education. The difference in waiting times between these educational groups even increases by age, which supports the hypothesis that people who prolong both education and first birth squeeze births together. Since 25 years old women are far from reaching the biological limits of fertility, the main effect of education suggests that the time-squeeze hypothesis is not a complete explanation of observed patterns.

Note that in Table 1, we found that the time between graduation and first conception is longer among women with secondary and vocational education than among their highly educated counterparts. The regression results reported in Table 2 show the opposite: among women with similar age, postponement is more likely among highly educated women. The results differ not only because only the regression analyses controlled for birth cohort, but also because the

[6] We also estimated models which include the interactions between education and birth cohort. Most of these interaction terms turned out to be insignificant. Significant interaction terms were found only for primary and secondary education. Since our paper focuses on the difference between secondary and higher education, these results are not reported here.

indicators in Table 1 ignore censored observations. The shorter waiting time to first conception among the highly educated probably reflects the experiences of a selective group of women; for instance, they might have a strong preference to have a first child soon.

Our analyses were also carried out using the sample of women born between 1966-1983. This sample will be used to test the partner effect hypothesis. In these cohorts, higher education does not have a significant effect on the waiting time to second conception. The failure of replicating the previous result is nevertheless interesting. Provided that the weak effect size and not sample size accounts for the lack of statistical significance, the failure suggests that the U shaped relationship between education and transition to birth was present among members of older birth cohorts. In other words, postponement of first child and squeezing births together characterized highly educated women already before the transition. If the fall of the state-socialist regime had strengthened the strategy to postpone the first birth and then to squeeze subsequent births together, the negative coefficient of the higher education variable would be larger in panel B than in panel A.

The previous analyses did not addressed the issue of sample selection. We proceed with estimating survival models which adjust for possible sample selection. The survival models for transitions to the second and third conceptions are estimated simultaneously with probit models of being at the risk of second and third births, respectively (Kreyenfeld 2002). The dependent variable of the probit model takes on value 1 if the woman is exposed to conception *c* (*c*=2,3) since already has *c*-1 child (or children); and it is zero if the respondent cannot be exposed because she has *c*-2 child (or children). The predictor variables in the probit model include dummies for education and birth cohort.

Table 3 presents the sample selection corrected estimates for survival times to second conceptions using both the full sample and the subsample of women born between 1966 and 1983. Results of the model for third conception is not displayed because the variables we are interested in were not significant. The coefficient of higher education in Table 3 is significant and the effect size is similar to those reported in Table 2. Highly educated women born between 1946 and 1983 are found again to time the second birth earlier than women with lower education. In contrast, higher education does not have a significant effect among women born between 1966 and 1983. Controlling for self selection does not affect our result, we can therefore reject the hypothesis that some unmeasured common factors are responsible for fast transition of college educated women to second birth.

TABLE 3 HERE

To summarize, we found some evidence for the positive effect of higher educaton on the transition to second birth in birth cohorts 1946-1983. However, the effect of higher education lacks statistically significance among women born between 1966 and 1983. Since the transition to capitalism substantially overlaps with fertility histories of the latter birth cohorts, the negative results might suggest that the postponement of the first child but the squeezing of births together characterized highly educated women already before the transition. The negative result might also reflect insufficient statistical power, since the observation period ends when the youngest members of these cohorts are 24.

4.3 The partner effect hypothesis

The partner effect hypothesis will be examined using the matched sample of event histories and cross-sectional information on partner's characteristics (see Section 3). Since information on the partner's education are taken from the first wave, we carry out a prospective study in which the partner's education is treated as time-constant variable, which, by the construction of the dataset, precedes events of conceptions. By keeping the partner's education constant, we do not make any attempt to study changes in partnership status and thereby changes in partnership status on fertility.

The partner effect assumes couples with similar education. Table 4 shows that the extent of educational homogamy is not as strong as it might be expected: in our sample, about half of the female respondents are married to or cohabit with men with the same level of education. Nevertheless, the chances of living with highly educated men shows considerable variation. While 53 percent of college educated women were partnered to highly educated men, this proportion drops to 10 percent among women with secondary education.

The fact that about half of the college and university educated women should marry downwards is associated with the unequal distribution of highest level of education between the two sexes. There are simply more highly educated women than men with the same education; and similarly, there are more secondary education graduates among women than among men. As a consequence, some of the highly educated women must be married to men with lower education. In the first wave of the TPLC, the ratio of the number of college and university graduated women to the number of men with the same educational level is 3 to 2 in the birth cohorts 1966-1983. This means that perfect educational homogamy cannot be achieved and half of the highly educated women must marry men with secondary education. This leads to an increasing competition among women with secondary education to find partners with similar education. The first wave data suggests that in the marriage market for men with secondary education, the ratio of the number of female competitors to the number of male partners will be again 3 to 2. Therefore, half of the female competitors should marry men with a lower education. The lesson is that women with tertiary and secondary education are disadvantaged in the marriage market since some of them should marry men with lower education.

TABLE 4 HERE

We now proceed to examine the effect of partner's education on birth transitions. We first estimated separate parity-specific interval regressions of log durations on the education of the current partner and the explanatory variables which were used in the previous section. Then we estimated the same models simultaneously with the following probit selection model. The dependent variable of the selection model indicates women who had partners and were at the risk of the next parity transition. The explanatory variables include only education and birth cohort. The selection model thus controls for selection biases which might arise from the correlation of unobserved factors which simultaneously affect marriage or cohabitation, on the one hand, and transition to first birth, on the other hand.

Previous studies mainly focused on the effect of higher education on the transition to second birth. Table 5 presents the results for the transition to second conception. Both the separate and the sample-selection corrected estimates are presented. Both models yield the same qualitative conclusion: the high education of women does not have a significant effect on transition to second birth, but the partner's education does have the expected effect. Women who live with highly educated partners time the second conception earlier than women partnered with men with secondary education. The effect is quite large: the estimated average duration between first and second birth among women with highly educated partners is about half of the expected duration which characterizes women who live with men with secondary education. The effect size is not affected dramatically by adjusting for sample selection.

TABLE 5 HERE

While the partner effect hypothesis holds for the transition to second conception, there is no evidence that it would be valid for the transition to first and third births. Regardless of controlling for sample selection, the effect of the partner's higher education lacked statistical significance.

We also experimented with alternative specifications. Our exposition of educational homogamy might suggest that the effect of women's education is affected by the presence of a highly educated partner. We added interactions between own education and the partner's tertiary education to the model. The interaction terms were not significant, and they did not change the magnitude of the main effects substantially, thus there is no evidence that the effect of women's education on transition to births would depend on the partner's education. We also estimated models which included interactions between partner's education and partnership status, the latter measured by the categories married, cohabiting and single. Our aim was to examine whether the partner effect is conditional on partnership quality. When controlling for sample selection, we found that compared to cohabiting women, the transition to first birth is faster among women. However, we did not find significant interaction effects, and there is no difference among married and cohabiting women when transition to second and third births are considered. These results suggests that the resources of the partners are more important than partnership status.

5 Conclusions and discussion

This paper describes the relationship between education and fertility in one of the former socialist countries, Hungary, and makes an attempt to explain the observed patterns. One of the well-known predictions of the economic theory of fertility is the negative relationship between female labor market participation and fertility. Recent studies carried out in Western European countries, however, found a positive effect of education on the transition rate to second births (Kreyenfeld 2002, Gerster et al 2007, Kravdal 2001, 2007). The relationship between education and transition to second births was also examined in some former socialist countries: the results are mixed and do not always support the hypothesis that fertility is likely to decrease with women's deducation (Muresan and Hoem 2010, Klesment and Puur 2010, Billingsley 2011). Previous research into fertility in Hungary suggests that the relationship should be U shaped instead of a decreasing one (Husz 2006, Spéder 2006). The U shaped pattern is paradoxical since the opportunity costs of raising children are larger among people with college and university education than among people with secondary education.

To explain this paradox, we relied on the partner effect hypothesis (Kreyenfeld 2002). Highly educated women tend to marry (or live with) educated men, and highly educated men face better career opportunities than their female counterparts. Highly educated couples thus can afford the costs associated with raising high-quality children, a phenomenon also known as the income effect (Becker and Lewis 1973). Besides, the generous cash benefits and the limited availability of child-care force women to exhaust the 3 years of paid leave. This leads to a substantial depreciation of human capital and results in a male-female wage gap among qualified employees. Highly educated women therefore are likely to prefer leaving the labor force only once and squeezing births together over experiencing repeated spells of being in and out of the labor force.

We use three waves of the Hungarian GGS data to describe the relationship between education and fertility as well as to test the partner effect hypothesis. We examined parity-specific transitions to conceptions using lognormal survival models. The analyses took into account both the time-squeeze and the selection hypotheses (Kreyenfeld 2002). Our results can be summarized as follows. First, in line with the prediction of the economic theory of fertility, education has a negative effect on the transition to first birth: the time to first conception is the longest among college and university educated women. Second, the transition to second birth is faster among highly educated women than among women with secondary education in the sample of women born between 1946 and 1983. To assess whether this effect reflects the transition from state-socialism to capitalism, we repeated the analyses to women who were born after 1965, and were 24 or younger at the beginning of the transition. We were unable to replicate the positive effect of education; this failure however might indicate that the time-squeeze mechanism operated during state-socialism.

Next to describing the relationship between education and fertility, we also made an attempt to explain this relationship. More specifically, we tested the partner effect hypothesis. After including the partner's education in the parity-specific regression models, the significant effect of education turned into insignificant, and the partner's higher education was found to have a significant negative effect on the time to second conception. This finding strongly supports the partner effect hypothesis. We have also shown that partners with college or university education faced an upward-sloping age-earnings profile between 1994 and 2008. The effect of highly educated partners therefore can be interpreted in terms of the income effect: highly educated men can afford the costs of investments into the human capital of children, which are likely to increase over time.

While our findings are consistent with the predictions of the partner effect hypotheses, the evidence presented here is not sufficient to gain a deeper insight into the mechanisms that link the partner's education to fertility. A deeper analysis of the hypothesis is required for several reasons. First, similar to Kreyenfeld’s (2002) study, we found that the relationship between women’s education and the transition to second birth is spurious, and it can be explained in terms of partner’s education effect and educational homogamy. In contrast, other studies report that the effect of own education remains after controlling for partner’s education (Gerster etal 2007, Klesment and Puur 2010). In the latter case, the relationship between women’s education and fertility is likely to be a causal one and the partner effect hypothesis is just another mechanism which strengthen the correlation between higher education and the transition to second births. Second, the validity of the partner effect hypothesis is parity-specific: high education of the partner leads to a fast transition to second births, but it cannot prevent highly educated women from postponing the first child. This implies that women seem to consider their own education when timing the first birth, but after becoming a mother, own education does not matter when it comes to time the second birth. Future research should examine the conditions under which women’s education has no causal effect on the transition to second births and it should also address the question why the relative importance of women’s education depends on parity.

We did not examine alternative explanations for the positive effect of partner’s education on transition to second birth. It might be the case that the education of the partner has a positive effect on marital stability. Partners with low education lack the resources to support the family, which might result in family conflicts, especially in a society where the male-breadwinner model is predominant. One might also speculate that highly educated men are more involved in housework than their counterparts with lower education, which also might affect the stability of the marriage. Future research should offer a more detailed description of the mechanisms which link the partner’s education to the fast transition to second births.

6. Acknowledgement

The research was financially supported by the CERGE-EI Foundation, grant number RRC X 19 („Birthrate Paradox. Fertility Patterns among People with Secondary education in Hungary.”) We thank Randal Filer for his comments and suggestions at the beginning of the project. A preliminary version of the paper was presented at the First GGS User Conference, May 2001, Budapest.

References

Ahn, N. and Mira, P. (2002). A note on the changing relationship between fertility and female employment rates in developed countries. *Journal of Population Economics*, 15: 667-682.

Bajnai, B., Hámori, Sz,. and Köllő, J. (2009). The Hungarian labour market: European perspective. In: Fazekas, K. and Köllő, J. (eds.). *The Hungarian labour market: Review and analysis 2009*. Budapest: Institute of Economics HAS, National Employment Foundation: 44-94. http://econ.core.hu/file/download/mt09/infocus.pdf Accessed: 22 June 2011

Becker, G. S. (1981). *A treatise on the family*. Second, enlarged edition. Cambridge, MA: Harvard University Press.

Becker, G. S. and H. G. Lewis (1973). On the Interaction between the Quantity and Quality of Children. *The Journal of Political Economy* 81: S279–S288.

Billingsley, S. (2011). Economic crisis and recovery: Changes in second birth rates within occupational classes and educational groups. *Demographic Research* 24: 375-406.

Blaskó, Zs. (2010). Childcare and employment. In: Monostori, J., Őri, P., S. Molnár, E. and Spéder, Zs. (eds.). *Demographic portrait of Hungary 2009: Report on the conditions of the Hungarian population*. Budapest: HCSO Demographic Research Institute: 41-50.

Blossfeld, H.-P. and Drobnic, S. (2001). Theoretical perspectives on couples' careers. In: Blossfeld, H.-P. and Drobnic, S. (eds.). *Careers of couples in contemporary societies: From male breadwinner to dual earner families*. Oxford: Oxford University Press: 16-50.

Blossfeld, H.-P., Golsch, K. and Rohwer, G. (2007). *Techniques of event history modeling using Stata: New approaches to causal analysis*. Mahwah (NJ): Erlbaum.

Brewster, K. L. and Rindfuss, R. R. (2000). Fertility and women's employment in industrialized nations. *Annual Review of Sociology* 26: 271-296.

Coate, S. and Loury, G. (1993). Will affirmative-action policies eliminate negative stereotypes? *American Economic Review* 83: 1220-1240.

Gerber, T. P. and Berman, D. (2010). Entry to marriage and cohabitation in Russia, 1985-2000: Trends, correlates, and implications for the Second Demographic Transiton. *European Journal of Population* 26(1): 3-31.

Gerster, M., Keiding, N., Knudsen, L. B. and Strandberg-Larsen, K. (2007). Education and second birth rates in Denmark 1981-1994. *Demographic Research* 17: 181-210.

Hoem, J. M., Kostova, D., Jasilioniene, A. and Mureşan, C. (2009). Traces of the Second Demographic Transition in four selected countries in Central and Eastern Europe: Union formation as a demographic manifestation. *European Journal of Population* 25(3): 239-255

Husz, I. (2006). Iskolázottság és a gyermekvállalás időzítése [Education and the timing of childbearing.] *Demográfia* 49(1): 46-67.

Jones, L. E., Schoonbroodt, A. and Tertilt, M. (2008). Fertility theories: Can they explain the negative fertility-income relationship? NBER Working Paper No. 14266. http://www.nber.org/papers/w14266.pdf. Accessed: 22 June 2011

Kalmijn, M. (1998). Intermarriage and homogamy: Causes, patterns and trends. *Annual Review of Sociology* 24: 395-421.

Kantorová, V. (2004). Education and entry into motherhood: The Czech Republic during state socialism and the transition period (1970-1997). *Demographic Research* Special Collection 3: 245-274.

Kapitány, B. and Spéder, Zs. (2010). Fertility. In: Monostori, J., Őri, P., S. Molnár, E. and Spéder, Zs. (eds.). *Demographic portrait of Hungary 2009: Report on the conditions of the Hungarian population*. Budapest: HCSO Demographic Research Institute: 29-40.

Kézdi, G., Köllő, J. and Varga, J. (2009). The failures of "uncertified" vocational training. In: Fazekas, K. and Köllő, J. (eds.). *The Hungarian labour market: Review and analysis 2009*. Budapest: Institute of Economics HAS, National Employment Foundation: 95-147. http://econ.core.hu/file/download/mt09/infocus.pdf Accessed: 22 June 2011

Klasen, S. and Launov, A. (2006). Analysis of the determinants of fertility decline in the Czech Republic. *Journal of Population Economics* 19: 25-54.

Klesment, M. and Puur, A. (2010). Effects of education on second births before and after societal transition: Evidence from the Estonian GGS. *Demographic Research* 22: 891-932.

Korintus, M. (2010) Hungary. In: Moss, P. (ed.). *International review of leave policies and related research 2010.* London: Department for Business, Innovation and Skills: 115-141. (Employment relations research series no. 115*)* .http://www.bis.gov.uk/assets/biscore/employment-matters/docs/i/10-1157-international-review-leave-policies.pdf Accessed: 22 June 2011

Kravdal, O. (2001). The high fertility of college educated women in Norway: An artefact of the separate modeling of each parity transition. *Demographic Research* 5: 187-216.

Kravdal, O. (2007). Effects of current education on second- and third-birth rates among Norwegian women and men born in 1964: Substantive interpretation and methodological issues. *Demographic Research* 17: 211-246.

Kreyenfeld, M. (2002). Time-squeeze, partner effect or self-selection? An investigation into the positive effect of women's education on second birth risks in West Germany. *Demographic Research* 7: 15-48.

Kulu, H. and Vikat, A. (2007). Fertility differences by housing type: The effect of housing conditions or of selective moves? *Demographic Research* 17: 775-802.

Lillard, L. A. and Panis, C. W. A. (2003). aML Multilevel Multiprocess Statistical Software, version 2.0. EconWare, Los Angeles, California. http://www.applied-ml.com/download/amldoc.pdf Accessed: 22 June 2011.

Lovász, A. (2008). Competition and the gender wage gap: New evidence from linked employer-employee data in Hungary, 1986-2003. Budapest working papers on the labour market; Bwp 2008/4. http://www.econ.core.hu/file/download/BWP/BWP0804.pdf. Accessed: 22 June 2011

Matysiak, A. and Vignoli, D. (2008). Fertility and women's employment: A meta-analysis. *European Journal of Population* 24: 363-384.

Mureşan, C. and Hoem, J. M. (2010). The negative educational gradients in Romanian fertility. *Demographic Research* 22: 95-114.

Oláh, L. Sz. and Fratczak, E. (2004). Becoming a mother in Hungary and Poland during state socialism. *Demographic Research* Special Collection 3: 213-244.

Roodman, D. (2008). CMP: Stata module to implement conditional (recursive) mixed process estimator. http://ideas.repec.org/c/boc/bocode/s456882.html. Accessed: 22 June 2011

Roodman, D. (2009). Estimating fully observed recursive mixed-process models with cmp. Washington, DC: Center for Global Development. Working Paper no. 168. http://www.cgdev.org/content/publications/detail/1421516 Accessed: 22 June 2011.

Spéder, Zs. (2001). Turning points of the life course: research plan and questionnaire of the Hungarian Social and Demographic Panel Survey (HSDPS). Budapest: HCSO DRI. http://www.demografia.hu/letoltes/dpa/panel_koncepcio_a.pdf. Accessed: 22 June 2011

Spéder, Zs. (2006). Rudiments of recent fertility decline in Hungary: Postponement, educational differences, and outcomes of changing partnership forms. *Demographic Research* 15: 253-288.

Spéder, Zs. and Kapitány, B. (2009). How are time-dependent childbearing intentions realized? Realization, postponement, abandonment, bringing forward. *European Journal of Population* 25: 503-523.

Thornton, A. and Philipov, D. (2009). Sweeping changes in marriage, cohabitation and childbearing in Central and Eastern Europe: New insights from the developmental idealism framework. *European Journal of Population* 25: 123-156.

Vikat, A., Spéder, Zs., Beets, G., Billari, F. C., Bühler, C., Désesquelles, A., Fokkema, T., Hoem, J. M., MacDonald, A., Neyer, G., Pailhé, A., Pinelli, A., Solaz, A. (2007). Generations and gender survey (GGS): Towards a better understanding of relationships and processes in the life course. *Demographic Research*, 17(14), 389-440.

TABLES AND FIGURES

Table 1

Cross-sectional indicators of fertility by educational level and birth cohort.

	Primary education	Vocational education	Secondary education	Higher education
A) Women born 1946-1965				
Mean number of children	2.2	2.0	1.7	1.8
Distribution by number of children (%)				
Childless	6.5	5.9	7.5	9.2
One child	17.3	18.6	25.7	18.2
Two children	45.0	53.6	53.6	56.3
Three and more children	31.2	21.9	13.2	16.2
Mean age of mothers				
First conception	20.5	20.9	22.6	24.6
Second conception	23.9	24.7	26.0	27.7
Third conception	26.9	29.4	30.1	32.7
Average age when graduating	14.5	20.3	22.1	25.7
N	565	442	763	357
B) Women born 1966-1983				
Mean number of children	2.2	1.5	1.3	1.4
Distribution by number of children (%)				
Childless	13.8	15.5	26.7	24.3
One child	19.0	30.6	27.2	27.2
Two children	27.2	40.8	34.4	34.7
Three and more children	40.1	13.1	11.7	13.9
Mean age of mothers				
First conception	19.6	21.8	23.9	26.1
Second conception	22.5	24.8	26.4	28.3
Third conception	25.3	28.2	28.6	31.3
Average age when graduating	14.6	18.2	19.7	24.3
N	232	373	445	202

Table 2

Education and log waiting time to conception. Separate estimates

	First conception		Second conception		Third conception	
A) Birth cohorts 1946-1983						
Education completed						
primary	-0.464***	(16.37)	0.064	(0.59)	-0.964***	(4.33)
vocational	-0.256***	(9.04)	-0.014	(0.13)	-0.181	(0.80)
higher	0.245***	(7.65)	-0.399***	(4.02)	-0.336	(1.14)
Age at previous birth-25			0.076***	(5.52)	0.223***	(4.36)
Age at previous birth squared			0.01***	(3.75)	-0.014	(1.82)
Interaction between age and						
primary education			0.035	(1.52)	0.018	(0.30)
vocational education			0.071*	(2.35)	-0.092	(1.27)
higher education			-0.064*	(2.47)	-0.019	(0.16)
Interaction between age-squared and						
primary education			-0.007*	(2.00)	0.008	(0.80)
vocational education			0.01	(1.85)	0.006	(0.50)
higher education			0.004	(0.74)	-0.006	(0.43)
Constant	4.918***	(137.94)	4.403***	(39.49)	6.316***	(18.92)
N	3235		2791		2024	
N of conceptions	2849		2085		596	
Log-likelihood	-15922.34		-11294.45		-4113.08	
Chi^2	553.28		201.94		218.07	
B) Birth cohorts 1966-1983						
Education completed						
primary	-0.525***	(9.61)	0.005	(0.03)	-1.048**	(3.21)
vocational	-0.247***	(5.33)	0.252	(1.74)	0.31	(1.07)
higher	0.166**	(3.01)	-0.256	(1.69)	-0.349	(0.81)
Age at previous birth-25			0.094***	(4.05)	0.165*	(2.39)
Age at previous birth squared			0.012*	(2.25)	-0.018	(1.74)
Interaction between age and						
primary education			0.028	(0.58)	-0.049	(0.55)
vocational education			0.01	(0.24)	-0.167	(1.58)
higher education			-0.115**	(2.69)	-0.12	(0.69)
Interaction between age-squared and						
primary education			-0.004	(0.53)	0.026	(1.65)
vocational education			-0.001	(0.13)	0.013	(0.82)
higher education			-0.003	(0.36)	0.024	(1.1)
Constant	4.93***	(120.28)	4.168***	(34.19)	5.455***	(17.59)
N	1070		896		602	
N of conceptions	812		574		190	
Log-likelihood	-4718.14		-3092.94		-1221.97	
Chi^2	153.83		74.54		69.51	

Coefficients from interval regressions of log durations until conceptions. See the text for details of the estimation method. Numbers in parentheses are *t* values. * Significant at 5%; ** Significant at 1%; *** Significant at 0.1% . The models also control for birth cohorts (see text for definition).

Table 3

Education and log time to second conception.
Sample-selection bias corrected estimates, women born 1946-1983

Variable	Birth cohorts 1946-1983				Birth cohorts 1966-1983			
	Conception		Selection		Conception		Selection	
Education completed								
primary	0.049	(0.45)	0.196*	(2.50)	0.205	(1.05)	0.325**	(2.71)
vocational	-0.034	(0.31)	0.265***	(3.42)	0.447**	(2.9)	0.376***	(3.71)
higher	-0.391***	(3.93)	-0.106	(1.30)	-0.235	(1.46)	-0.017	(0.14)
Age at previous birth-25	0.076***	(5.53)			0.082***	(3.77)		
Age at previous birth squared	0.01***	(3.74)			0.012*	(2.32)		
Interaction between age and								
primary education	0.035	(1.52)			0.038	(0.83)		
vocational education	0.071*	(2.34)			0.02	(0.52)		
higher education	-0.064*	(2.47)			-0.101*	(2.38)		
Interaction between age-squared and								
primary education	-0.007*	(1.99)			-0.004	(0.50)		
vocational education	0.01	(1.85)			0.001	(0.19)		
higher education	0.004	(0.75)			-0.004	(0.54)		
Constant	4.553***	(26.19)	0.261***	(3.56)	3.385***	(23.47)	0.199*	(2.46)
Correlation or residuals	-0.189				0.832***			
N	3235				1169			
Log-likelihood	-12474.91				-3681.55			
Chi^2	428.61				168.05			

Coefficients from interval regressions of log durations until conceptions. See the text for details of the estimation method. Numbers in parentheses are *t* values. * Significant at 5%; ** Significant at 1%; *** Significant at 0.1% . The models also control for birth cohorts (see text for definition).

Table 4

Distribution of partner's education by women's education (%). Birth cohorts 1966-1983

Partner's education	Women's education			
	primary	vocational	secondary	higher
primary	49.6	15.3	6.6	0.0
vocational	47.9	62.8	42.7	16.3
secondary	1.7	18.9	40.3	30.8
higher	0.9	3.1	10.4	52.9
N	117	196	211	104

Note: column percentages are displayed.

Table 5

Partner's education and the time to second conception. Women born 1966-1983

Variable	Women with one child		All women			
	Conception		Conception		Selection	
Partner's education						
no partner	0.559**	(3.06)				
primary	-0.078	(0.4)	-0.145	(0.71)		
vocational	0.035	(0.25)	0.025	(0.17)		
higher	-0.416*	(2.18)	-0.389*	(2.03)		
Education completed						
primary	0.138	(0.58)	0.337	(1.21)	0.262	(1.5)
vocational	0.372*	(2.13)	0.533**	(2.69)	0.264	(1.88)
higher	0.065	(0.34)	0.049	(0.23)	-0.173	(1.05)
Age at previous birth-25	0.08**	(2.71)	0.076*	(2.51)		
Age at previous birth squared	0.012	(1.61)	0.01	(1.39)		
Interaction between age and						
primary education	-0.016	(0.31)	0.039	(0.54)		
vocational education	0.005	(0.11)	0.006	(0.11)		
higher education	-0.108	(1.93)	-0.103	(1.74)		
Interaction between age-squared and						
primary education	-0.013	(1.39)	-0.009	(0.79)		
vocational education	-0.009	(0.83)	-0.007	(0.68)		
higher education	-0.002	(0.18)	-0.003	(0.34)		
Constant	4.004***	(23.73)	3.405***	(17.1)	0.287*	(2.52)
Correlation of residuals			0.797***	(6.42)		
N	657		657			
Log-likelihood	-2141.47		-2204.96			
Chi^2	67.68		111.77			

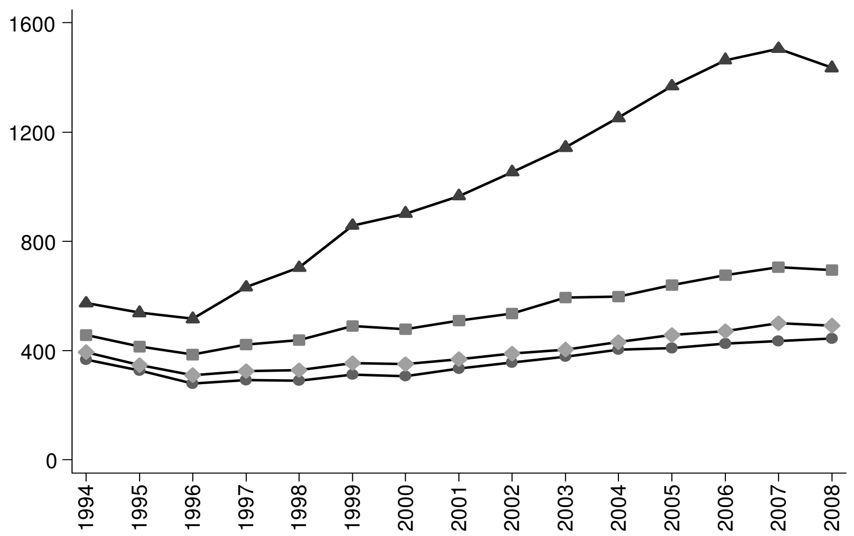
Coefficients from interval regressions of log durations until conceptions. See the text for details of the estimation method. Numbers in parentheses are *t* values. * Significant at 5%; ** Significant at 1%; *** Significant at 0.1% . The models also control for birth cohorts (see text for definition).

Figure 1

Net real wages in Euro by educational level, gender and birth cohort, 1994-2008

Legend: triangle = higher education, square = secondary education; diamond = vocational education; circle = primary education

Men born 1966-70



Women born 1966-70

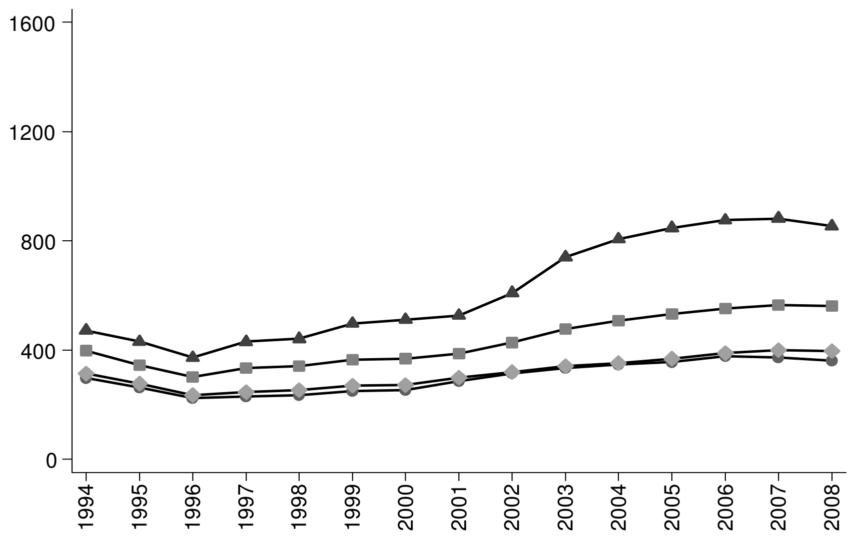
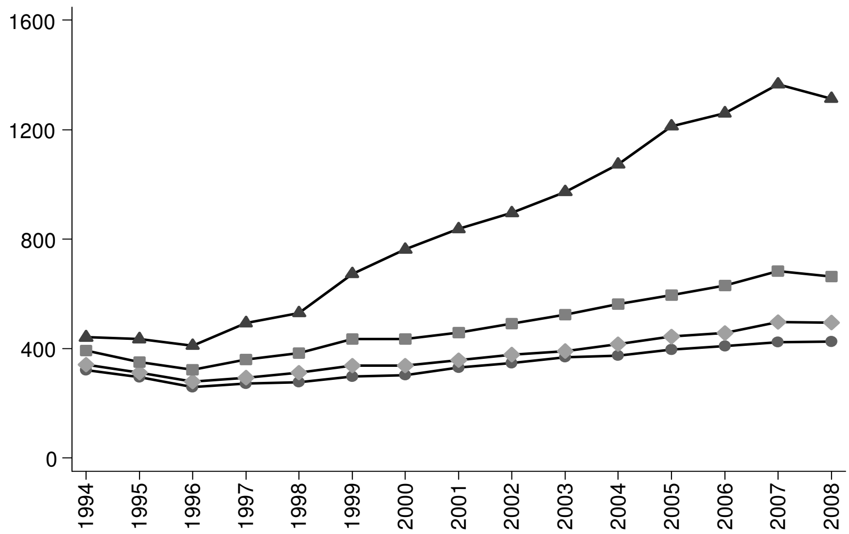


Figure 1 (continued)

Legend: triangle = higher education, square = secondary education; diamond = vocational education; circle = primary education

Men born 1971-75



Women born 1971-75

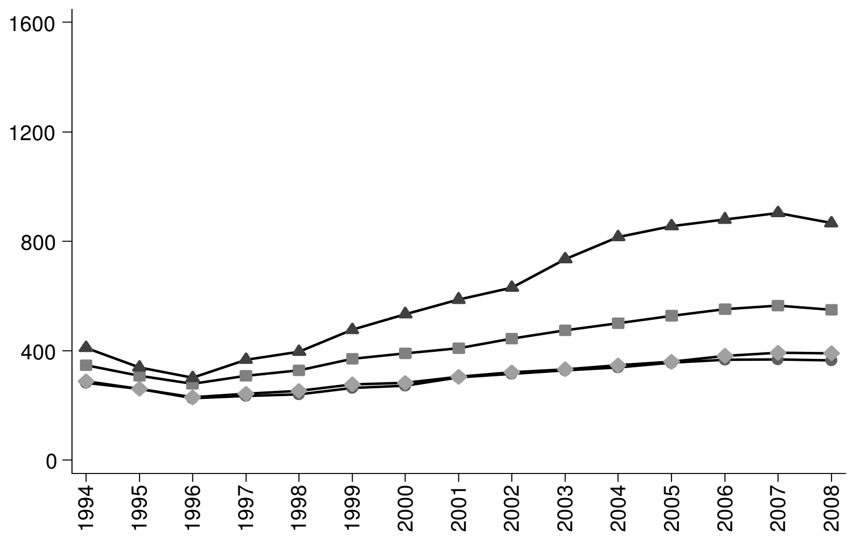
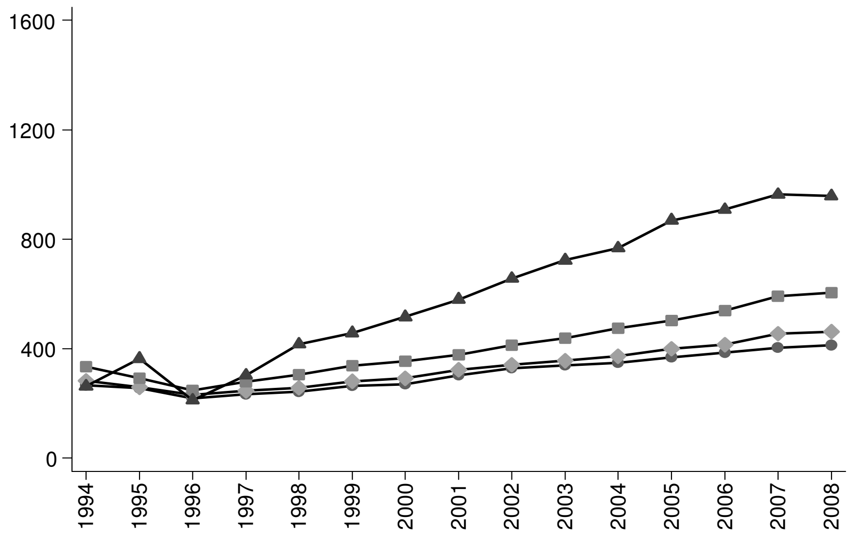


Figure 1 (continued)

Legend: triangle = higher education, square = secondary education; diamond = vocational education; circle = primary education

Men born 1976-83



Women born 1976-83