

**Choice of study discipline and the postponement of motherhood in Europe:
the impact of expected earnings, gender composition and family attitudes***

Jan Van Bavel (Interface Demography, Vrije Universiteit Brussel)

Corresponding address:

Prof. Dr. Jan Van Bavel

Interface Demography, Vrije Universiteit Brussel

Pleinlaan 2

BE-1050 Brussels

Belgium

e-mail: Jan.VanBavel@vub.ac.be

Fax: ++32-2-629 24 20 Phone : ++32-2-629 20 37

*** Acknowledgements**

The author wishes to thank the Flemish Fund for Scientific Research (FWO-Vlaanderen) for providing financial support for this research. Also many thanks to colleagues who commented on earlier papers that came out from this study and who inspired me to carry out the analysis presented here. In particular, I am grateful to Øystein Kravdal, Tomáš Sobotka, Francesco Billari, Jan Hoem, Gerda Neyer, the editors and four anonymous reviewers of *Demography* for their helpful comments.

Manuscript – Forthcoming in *Demography*

Abstract

Theory suggests that the field of education may be at least as consequential for fertility behavior as the duration and level of education. Yet, this qualitative dimension of educational achievement has largely been neglected in demographic studies. This paper aims to analyze the mechanisms relating the field of education with the postponement of motherhood by graduated women aged 20 to 40 years across Europe. The second round of the European Social Survey is used to assess the impact of four features of study disciplines that are identified as key to reproductive decision making: the expected starting wage, the steepness of the earning profile, attitudes towards gendered family roles, and gender composition. The results indicate that the postponement of motherhood is relatively limited among graduates from study disciplines where stereotypical family attitudes are prevailing and where a large share of the graduates is female. Both the level of the starting wage and the steepness of the earning profile are found to be associated with strong postponement. These results are robust to controlling for the partnership situation and the age at entry into the labor market.

(7992 words, excluding abstract and references)

INTRODUCTION

In recent decades, women's levels of educational attainment have markedly increased throughout Europe. Their participation in higher education has grown even to the extent that women now form the majority of those enrolled for university degrees (Eurostat 2007). To varying degrees in different regions of Europe, this catching up in education has also been translated into growing levels of participation in the paid labor market. A major demographic consequence has been the increasing postponement of first births (Sobotka 2004).

Yet, women are still heavily underrepresented in the more lucrative and powerful jobs. Although it has been shown that welfare states have been successful in furthering women's labor market participation, they have failed to achieve gender equity with respect to wage levels or occupational standing. In fact, nations that have been most successful in fostering female labor force participation are the very ones that tend to exhibit high concentrations of women in female-typed occupations and low female presence in the most lucrative and powerful positions. This can be explained by the fact that highly developed welfare states tend to host sheltered segments in the labor market with many opportunities for part-time work and parental leave but relatively flat career prospects. Jobs in these segments are typically held predominantly by women and can relatively easily be combined with childcare and housework (Mandel & Semyonov 2006).

The concentration of women's jobs in poorly paid sectors like public administration, nursing, and teaching corresponds to a large degree with the concentration of girls within particular disciplines at colleges and schools. European women have a higher tendency than men to go for a degree in health or personal care, to be trained as a teacher or to graduate in the humanities. Women pursuing a technical or technological diploma are a minority even though wages in these sectors tend to be higher (Brown and Corcoran 1997; Jurajda 2003; Machin and Puhani 2003).

One reason why women are overrepresented in particular fields of education may be that they expect these kinds of studies to lead to jobs that can relatively easily be combined with motherhood. Maybe teenage women choose their discipline as a function of their attitudes about women's roles. Predominantly female branches of study may better fit with stereotypically gendered family norms. Those norms are likely to be connected with preferences about motherhood (Hakim 2000; Lappegård and Rønsen 2005).

A case can be made, therefore, that the field of education is just as relevant for entry into parenthood as the level of education. Yet, this qualitative dimension of educational achievement has largely been neglected by demographers. There is a large body of literature about the connection between the level of education and first births (Marini 1984; Hoem 1986; Rindfuss, Morgan and Swicegood 1988; Blossfeld and Huinink 1991; Kravdal 1994; Blossfeld 1995; Rindfuss, Morgan and Offutt 1996; Liefbroer and Corijn 1999; Martin 2000; Lappegård 2002; Billari and Philipov 2004; Gustafsson 2005; Gustafsson and Worku 2005). However, there are just a few studies published about the relationship between study discipline and entry into motherhood. The papers that have been published all concentrate on the population of just one nation state. All of these suggest that there is an independent effect of the study discipline that cannot be explained by, and has been found to be more decisive than, the level of educational attainment or the duration of enrollment (Kalmijn 1996; Lappegård 2002; Lappegård and Rønsen 2005; Hoem, Neyer and Andersson 2006a, 2006b; Neyer and Hoem 2008). Yet, the mechanisms behind this effect remain unclear, although the literature mentions several plausible explanations (Lappegård and Rønsen 2005; Hoem et al. 2006a; Neyer and Hoem 2008).

The aim of this paper is to see how the field of education, i.e. the subject of graduation, is related to the postponement of motherhood across 21 European countries. To this end, data are used about women who participated in the second round of the European

Social Survey (Jowell et al. 2005) and who are no longer enrolled in fulltime education. The survey will be denoted by its shorthand ESS2 from now on, and women no longer enrolled in fulltime education are called “graduated women”. Although ESS2 is a cross-sectional survey, the data can still be exploited because the field of education is fixed after graduation. In contrast to personal attitudes and values, it does not change as a consequence of childbirth. Since the choice of field of education has temporal priority over actual entry into motherhood, the former cannot be caused by the latter.

Still, any association between the subject of graduation and the rate of entry into motherhood may be caused by two processes. First, field of education may causally affect family attitudes and career prospects, and these attitudes and prospects may affect the timing of childbearing later on in the life course. Second, it may just as well be that an antecedent set of characteristics, including personality traits and family attitudes originating from primary socialization, both causally affect the choice of study discipline and the rate of entry into parenthood. This second process need not involve any causal effect of study discipline on entry into parenthood. It rather implies that women who are prone to make the transition to motherhood are selected into particular study disciplines. The first and the second process may both apply at the same time and they may be mutually reinforcing. Yet, with the cross-sectional data for Europe at hand, we cannot distinguish between them and separate out selection from plain causation.

With these two causal pathways in mind, I investigate the association between field of education and the postponement of motherhood across Europe by means of multilevel logistic regression, with women cross-classified by country and field of education on the macro level. The concept of postponement is not used here to denote the historical process of increasing proportions of the population having their first child at a later age. Rather, postponement here denotes the individual level process of deferring first childbearing, as it is witnessed in

Europe today. Empirically, postponement is evidenced in cross-sectional data by the condition of not having had a first child yet. I leave aside whether postponement eventually results in childlessness or not, because the distinction between the postponement and the forgoing of childbearing can only be made at the end of the fecund life span. So, postponement in this article should be interpreted to be determined both by the probability and by the timing of childbearing.

In order to shed light on the underlying mechanisms behind the link between study discipline and first birth timing, key characteristics of fields of education are entered into the equation. More specifically, I look at the effects of the expected wage profile, norms about gender roles, gender composition, and the mediating role of marriage and cohabitation.

EDUCATION AND ENTRY INTO MOTHERHOOD

Three dimensions of education have been shown to be related to fertility and fertility postponement (Lappegård and Rønsen 2005): the duration of educational activity, the level of educational attainment, and educational field (for example: humanities, engineering, or health care). First, there is ample evidence that women's enrolment in schools and colleges delays their transition to parenthood (e.g. Blossfeld and Huinink 1991; Kravdal 1994; Blossfeld 1995; Liefbroer and Corijn 1999; Hank 2002; Skirbekk, Kohler and Prskawetz 2004; Lappegård and Rønsen 2005). This effect conforms to the sequencing norm that women who are still studying are not yet in the right position to give birth and raise children: in most Western countries, finishing fulltime education counts as one of the key prerequisites for parenthood (Rindfuss et al. 1988; Blossfeld and Huinink 1991; Skirbekk et al. 2004).

There is more discussion about the effect of the second dimension of education, i.e. the level of educational attainment. On the one hand, there are economic theories arguing that a higher level of education represents a higher level of investment in human capital. The accumulated human capital, in turn, paves the way for the better jobs. As a consequence, the

opportunity costs of motherhood increase because childbirth implies an interruption of activity in the labor market at least for some time. Therefore, higher educated women would be more inclined to postpone or forgo children than lower educated women (Kravdal 1994, 2004; Gustafsson 2001, 2005). Better educated women are expected to enter motherhood at a later stage in their employment careers, when they consider themselves more established in their jobs and when taking a break may be perceived as less damaging to their careers. On the other hand, if the wage profile of higher educated women is relatively steep, it may be less costly to have children early in the career rather than late (Lappegård and Rønsen 2005). In addition, college educated women are older when they graduate than women with just a high school diploma. Therefore, the biological and social clocks that set limits to the ages at childbearing may stimulate the higher educated to catch up once they are graduated. In that case, there would be no effect of the level of education on fertility postponement after controlling for graduation and the number of years spent in education (Blossfeld and Huinink 1991; Lappegård and Rønsen 2005).

Empirical research has found that the influence of the level of educational attainment on the timing of first births varies by country: in some countries, higher educated women postpone motherhood significantly more, even after controlling for the duration-of-enrollment effect, in other countries there is no or only a small effect. This heterogeneity may be attributed to differences between countries with respect to the opportunity costs of having children: in some countries, paid labor can relatively easily be combined with mothering young dependent children, for example thanks to the availability of childcare. In those countries, the opportunity costs will be relatively low. Norway may be a case in point: Lappegård and Rønsen (2005) provide evidence that higher educated women in that country catch up rapidly after graduation. The opportunity costs of the transition to motherhood will

be high, in contrast, in countries with strong conflicts between paid work and motherhood, like in Germany (Blossfeld 1995; Rindfuss, Guzzo and Morgan 2003).

Diverging wage profiles and opportunity costs may also be related to the third dimension of education, i.e. the study discipline. Indeed, different fields of education lead to different economic sectors, associated with working conditions that may facilitate or hamper the combination of work and family life (Kravdal 1994; Hoem, Neyer & Andersson 2006a). Lappegård and Rønsen (2005) argue that the effect of the *level* of education may operate chiefly through prolonged participation in education; “Having completed education, however, differences in opportunity costs may first and foremost be reflected through different *fields* of education that lead to different occupations and employment sectors” (p.34).

Not just the economic implications of particular qualifications may be important. There are at least two other reasons why study discipline may affect fertility postponement. First, the choice of a subject of study may reflect a person’s values and related preferences. At the same time these values and preferences may be molded by being enrolled in a particular discipline with its associated subculture. These cultural elements may influence the timing of entry into motherhood. Second, the branch of study affects the social environment during the student’s formative years (Hoem et al. 2006a). In particular, this includes the extent of sex segregation in the chosen study area, which may bear on the orientation towards family formation.

Only a handful of empirical studies have been published about the effect of study discipline on fertility in Europe. All these concentrate on one nation state. A Dutch study found that women with a degree from the social and cultural sciences had higher first motherhood rates than otherwise comparable women with a business- or technology-oriented degree (Kalmijn 1996). Lappegård (2002) concludes from an analysis of Norwegian register data that the field of study has a more decisive influence of women’s fertility than the level of

education. She found that women who graduated in female-dominated disciplines are less likely to remain childless and, after becoming a mother, tend to have more births. Apart from that, women with a high career orientation who are educated to work in health care (like doctors and dentists) appeared to have high fertility as well. Hoem, Neyer and Andersson (2006a, 2006b) conclude that fertility seems to depend more on the field than on the level of education in Sweden as well. They looked at a cohort of Swedish women who had completed their reproductive years and found that those educated for jobs in teaching and health care have much lower permanent childlessness than in any other major grouping. Women educated in arts and the humanities have high proportions permanently childless. A replication study in Austria yielded basically the same result (Neyer and Hoem 2008). Among Swedish women who did become a mother, Hoem et al. (2006b) found that the study discipline mattered for final parity as well. Again, mothers who were trained to become a teacher or a health care professional stand out as having higher fertility than others.

In a detailed hazard analysis with longitudinal Norwegian data, Lappegård and Rønsen (2005) found that women with a degree in the humanities and the social sciences have relatively low first birth rates. Women with a degree in engineering or in administration and economics have low first birth rates as well. The authors speculate that low motherhood rates for the first group may be due to a relatively unfavorable labor market position, while the second group may be less family oriented and more work oriented at the outset. High first birth rates are found among teachers and health care professionals. Lappegård and Rønsen (2005) conclude that there is no clear-cut relationship between high costs of labor market withdrawal and postponed motherhood, and that preference heterogeneity also matters.

Yet, just like in the Swedish case, the register data do not contain information about family values that can be used to explore their role in connecting the choice of study discipline with family formation. The current paper will use ESS2 to shed light on this. More

specifically, this paper will assess the effects of three key features of study disciplines that are identified as relevant in the literature: earning profiles, family attitudes, and gender composition.

DATA AND METHODS

This paper uses data from ESS2. This is an academically-driven, cross-sectional survey that is rigorously concerned with maximizing data quality, response rates, and cross-national equivalence (Jowell et al. 2005, 2007).

Selection of cases and weights

The analysis is restricted to women aged 20 to 40 years who are currently no longer enrolled in fulltime education. These women are called “graduated women” throughout the text. For reasons to be explained below, I also use information about family values of students still enrolled in fulltime education and about monthly wages earned by men as well as women with a fulltime job.

As indicated above, school or college enrolment has been consistently found to postpone motherhood. In fact, in some regions the sequencing norm that people should postpone family formation until they have finished their education is so strong that childbirth during educational activity is very rare. Hence, even when enrolment in education is included in a regression equation, estimates for other covariates of entry into parenthood will be biased because the process leading to the first childbirth is likely to be very different for women still enrolled in education as compared to graduated women (Mariani 1984; Skirbekk et al. 2004). Therefore, the subsequent analysis is limited to women who have finished full-time education. They will be called "graduated women" even if some of them will not have obtained their diploma.

The integrated file of ESS2 edition 2.0 contains survey data for 24 countries. France had to be dropped because the French data do not include information on the field of education. The United Kingdom had to be dropped because the national categories of level of education could not be recoded into the international standard format and was therefore omitted from the international file. Finally, Iceland was also dropped for a lack of sufficient cases. So the following analyses are based on ESS2-data for 21 countries (from north to south): Norway, Sweden, Finland, Estonia, Ireland, Denmark, Germany, Poland, the Netherlands, Belgium, Luxemburg, Czech Republic, Slovakia, Ukraine, Switzerland, Austria, Hungary, Slovenia, Portugal, Spain, and Greece. Table 1 gives the number of graduated women aged 20 to 40 years available for the analysis of the postponement of parenthood.

[Table 1. Countries included in the analysis and (unweighted) number of graduated women aged 20 to 40 years in the sample – about here]

In all empirical analyses, cases have been weighted by the ESS2 design weights. These weights take care of differences between countries in sampling design while estimating point estimates and standard errors of model parameters (Häder and Lynn 2007). I have not applied population weights for two reasons. From a technical point of view, population weights would distort the estimates of the standard errors: standard errors should reflect sampling design rather than population size. From a substantive point of view, the interest lies more in differences between European countries than in estimating some overall European average.

Modeling the postponement of parenthood

ESS2 is a general purpose social survey that has not been designed for demographic analysis. Yet, the high quality of the data and the exceptional care given to the comparability of the

questionnaires across Europe are two decisive reasons to use this body of data. A drawback is that no complete fertility histories are recorded, only the number of surviving children at the time of the survey. Therefore, any children who died are missing. This bias is considered to be minor and is neglected in the subsequent analysis. Fortunately, both children living with the survey respondent and children living in another household are counted.

The postponement of parenthood will be modeled in this paper as the probability that a respondent does not have any children alive, not even stepchildren or adopted children. This probability will be modeled as a function of the woman's current age, some of her own characteristics, the country she lives in, and characteristics of the field of education within that country. Put another way, I will be modeling the multilevel conditional probability that a woman's age at first birth is past her current age:

$$P_{ijk} = \Pr(A_{ijk} > a_{ijk}) = f(a_{ijk}, \mathbf{x}_{ijk}, \mathbf{f}_{jk}, c_k) \quad (1)$$

where a_{ijk} is the current age of a woman i who graduated in subject j in country k , A_{ijk} her (virtual) age at first childbearing, \mathbf{x}_{ijk} a vector of individual characteristics, and \mathbf{f}_{jk} a vector of features of study field j in country k . Finally, c_k is included to capture the effect of living in country k . This definition of the probability of postponement is equivalent to the definition of the survivor function in event history analysis (Courgeau & Lelièvre 1992). Particular in this case is that all observations are censored at the time of the survey. Clearly, this censoring is non-informative (Singer & Willett 2003) as respondents are selected to participate in the survey irrespective of their fertility history.

The multilevel conditional probabilities of postponement will be modeled using logistic regression with random effects on two levels (Agresti 2002): one on the level of study discipline within country, and another on the country level. So the basic structure of the models to be estimated is as follows:

$$\ln \frac{P_{ijk}}{1 - P_{ijk}} = \gamma_{00} + a_{ijk} \varphi_1 + a_{ijk}^2 \varphi_2 + \mathbf{x}'_{ijk} \boldsymbol{\beta} + \mathbf{f}'_{jk} \boldsymbol{\gamma}_{01} + u_{jk} + c_k \quad (2)$$

The parameters to be estimated are: the overall intercept γ_{00} , the slopes φ_1 and φ_2 for current age and age-squared (in order to allow for a non-monotonic effect), a vector of fixed effects $\boldsymbol{\beta}$ of the characteristics of individual women, and fixed effects $\boldsymbol{\gamma}_{01}$ of characteristics of fields of education within countries. In addition, I estimate the variance of u_{jk} , i.e. the random effect of field of education, and the variance of c_k , i.e. the random effect of country on the level of postponement. Both random effects are assumed to be independently normally distributed. Model parameters were estimated using R's *lmer*-function, applying the Laplace approximation method (R development Core Team 2006; Bates & Sarkar 2006).

The vector of individual-level covariates \mathbf{x}_{ijk} only includes indicators for the educational careers of women because these are fixed at the time of graduation. Individual-level indicators for current family values, current activity in the labor market or current wage are not included in the model because they are known to be endogenous to the transition to motherhood. For example, earlier panel studies have found that family values and attitudes do affect entry into parenthood, but also that they tend to become more traditional after entry into parenthood (Morgan & Waite 1987; Moors 1997; Jansen & Kalmijn 2000).

Education

ESS2 asked respondents about the subject of their highest qualification, offering fourteen answering alternatives. As the number of cases in some fields was too small, these were regrouped into nine categories. They are listed in the first column of Table 2, with the original ESS2-classification in the second column and the unweighted number of female graduates in the sample in the last column.

[Table 2. Fields of education – about here]

A number of comments about these categories are in place. First, the category of women trained as teachers is not as clear-cut as we would like. For those who chose to study linguistics, for example, instead of education as their *major* discipline, we cannot distinguish between women who obtained additional qualifications to be a teacher and those who did not. As a result, the group of teachers in this study is not as unambiguous as in the study by Hoem et al. (2006a, 2006b). As a result, there will be many teachers among those who declared that their major study area was the hard sciences or the humanities, for example. Second, earlier work suggests that women with a law degree stand apart in terms of their earning potential, possibly affecting fertility behavior through high opportunity costs (Kalmijn 1996; Lappegård and Rønsen 2005). Therefore, I have created a separate category for this group even if the number of cases is relatively low. Third, the category “personal care services” includes vocational training leading to jobs as diverse as cooks, hairdressers, salespersons, or sewers. As a result, heterogeneity within this category is likely to be very large.

Apart from the field of education, all models will include both the level and the duration of education. In order to construct an internationally equivalent and robust classification for the level of the highest degree obtained, the number of categories was reduced to three: low (up to lower secondary schooling), medium (upper- or post-secondary completed), and high (first or second stage of tertiary, i.e. college, polytechnic, and university). The number of years enrolled in education is measured in full-time equivalents, including compulsory schooling but excluding kindergarten years. Basic descriptive statistics for all covariates used in the models to be presented are in Table 3.

[Table 3. Descriptive statistics of the dependent and independent variables used in the regression analyses – about here]

Attitudes towards gendered family roles

The following five statements were presented to respondents, who were asked to indicate whether they agreed strongly, agreed, neither agreed nor disagreed, disagreed, or disagreed strongly: 1) A woman should be prepared to cut down on her paid work for the sake of her family; 2) Men should take as much responsibility as women for the home and children; 3) When jobs are scarce, men should have more right to a job than women; 4) When there are children in the home, parents should stay together even if they don't get along; 5) A person's family ought to be his or her main priority in life. These items were used to construct an index of stereotypical attitudes towards family norms. This index was constructed with the complete ESS2-sample, including men as well as women from all ages (ranging from 15 to 102 years). Exploratory factor analysis yielded two factors with eigenvalues above unity. Yet, item analysis showed that item 2 is correlating only weakly with both factors and that it is unable to discriminate between respondents because about everyone agrees with it, probably because "taking responsibility" can mean many things, including playing the breadwinner role. Item 5 stands apart as an item that is hardly correlating with the others and that less than 6% disagrees with. I have therefore dropped items 2 and 5 from the scale. Confirmatory factor analysis indeed showed that inclusion of these two items results in a poor fit of both a one- and a two-factor model (as judged by the RMSEA-index, see Kline 2005).

As a result, three items remain in the scale of stereotypical family attitudes (alternatively called "traditional" or "conservative" attitudes): item 1, 3, and 4. The confirmatory factor loadings from the exactly identified measurement model with one factor

and three indicators are, respectively: 0.60, 0.80, and 0.49, which is not great but reasonable. The same holds for the reliability of the scale, as indicated by a Cronbach's alpha of 0.62.

Next, standardized factor scores were calculated for ESS2-respondents of all ages and sexes using regression (Kline 2005). Finally, these factor scores were averaged per country and field of education. Figure 1 displays these averages in a dot plot: for each combination of country and field of education, the more stereotypical the attitude towards family roles, the bigger the area of the dot. The bottom line gives the overall averages per country. Clearly, the factor scores confirm the well-known tendency for Scandinavian countries to be more on the progressive side and Southern and Eastern European countries more on the conservative side. Spain, Slovakia, and Slovenia, however, appear in the middle part of the distribution.

The country-gradient is crossed by a study discipline gradient. People trained to work in health care, in legal services, in education, or people with a diploma in arts and the humanities tend to have less stereotypical family attitudes than people with a degree in engineering or the natural sciences, people trained to work in personal care services, or people who obtained a general or "other" degree. The rank order of study fields is not exactly the same in every country. For example, in Sweden and Denmark, teachers have the most progressive attitudes, whereas in Belgium, the Netherlands, or Austria, people trained in arts and the humanities are at the bottom of the distribution. It should also be noted that the field of education is not independent from the level of the degree obtained. Therefore, family attitudes also reflect, to some extent, the level of educational attainment. In most but not all countries, people with "no" or a "general" degree have the most stereotypical attitudes. These tend to be degrees on the low side of the low-high scale of educational attainment. On the other side of the scale, most people with a degree in law and legal services are university graduates. These typically have a more progressive family attitude.

[Figure 1. Mean factor scores for stereotypical attitude towards gendered family roles, complete ESS2-sample, by country and field of education – about here]

Family attitudes tend to change in the conservative direction when people become fathers and mothers (Morgan & Waite 1987; Moors 1997; Jansen & Kalmijn 2000). Therefore, in order to maximize the exogeneity of this covariate, the models presented below include average factor scores for students only, i.e. only people who were still enrolled in full-time education were included in the calculation of the averages for the study disciplines (N=4292, mean age 20.2 with standard deviation equal to 6.6). One downside of this approach is that the averages are biased in favor of attitudes held by people enrolled in longer educational programs; people with lower educational levels will be underrepresented in the averages since they are more likely to already have finished their studies by the time of the survey. Another downside is that the averages are less robust because they are based on a more limited number of cases. Therefore, since noise in the independent variables undermines the power to identify their actual effects, the estimates of the slope for family attitudes are conservative ones. Including graduates as well as students, however, yields similar results.

Earning profiles

Earning profiles for study disciplines were determined by running a series of OLS-regressions of the log of monthly gross wages on seniority in the work force, i.e. the total number of years respondents had been in paid work. The intercepts of the regressions represent the starting salaries. The slopes represent the steepness of the earning profiles. The earning potential is a function of both the intercept and the slope. Separate regressions were run for each discipline within each country, but only for the respondents who indicated that they were doing fulltime paid work for at least 35 hours a week. The oldest cohorts who had

worked for more than 20 years were excluded because their profiles might not be relevant anymore for our study population. In the multilevel models of postponement of motherhood, both the intercepts and the slopes are introduced in exponentiated format in order to restore the natural scale of earnings in Euros. The expected starting wages are expressed as deviations from each country's median in order to neutralize the high diversity in wage levels between countries and in order to focus on the diversity between study disciplines.

After 10 years of seniority in the labor market, the expected earnings tend to be highest for people who studied law or health care. They tend to be lowest for people with a "general" or "other" diploma or for people who were trained to work in personal care services. However, the diversity between countries in the rank order of the earning potential of study disciplines is high. We should bear in mind that these differences also reflect sampling error.

Gender composition

Lappegård (2002) found that Norwegian women who graduated in female-dominated disciplines are less likely to remain childless and, after becoming a mother, tend to have more births. In order to test whether a similar effect exists across Europe, I calculated the proportion of women among ESS2-respondents between 20 and 40 years old who obtained a degree in each of the nine study disciplines and 21 countries. Again, these calculations were carried out separately by country. Figure 2 displays these proportions in a dot plot.

[Figure 2. Proportion of women among 20 to 40 year olds in ESS2 by field of education and country – about here]

The gradient is dominated by study field rather than country: the means per country across disciplines do not vary greatly, but the means per study field across countries do.

Teaching and health care are the two most strongly female-typed study disciplines. Third are studies in personal care services. Among graduates in the natural sciences and technology-oriented disciplines, women are a minority. The residual category of “other” disciplines is male-dominated as well.

RESULTS

Model I describes the probability of postponement of first births as a function of the number of years enrolled in fulltime education and the level of the degree obtained. Model estimates are displayed in Table 4. As expected, on average across Europe, the longer the number of years enrolled in school and the higher the level of the degree obtained, the higher the probability that a woman has not yet become a mother at a given age.

[Table 4. Multilevel logistic regression models of the postponement of first births among European women aged 20-40 years – about here]

By including a random intercept on the country level, model I explicitly allows the extent of postponement to vary by country. Figure 3 shows the country-level variation in postponement. Net of the effect of differences in the composition of these countries in terms of duration and level of education, women postpone most strongly in Spain, Switzerland, and Portugal. The least likely to postpone are women in Ukraine, Poland and Estonia.

[Figure 3. Empirical Bayes estimates of country-level random effects in model I (labels on the vertical axis are exponentiated values that can be interpreted as factor effects) – about here]

Model II introduces random intercepts at the level of fields of education within countries. The estimated standard deviation of these random intercepts (u_{jk} in equation (2)) is 0.22 on the logit scale. The standard deviation of the random intercepts at the country level (c_k in equation (2)) remains the same as in model I, i.e. about 0.49 on the logit scale. The one extra parameter estimated in model II yields a decrease of the deviance statistic of 5.173, which is statistically significant (according to the chi-squared test with one degree of freedom, $p < .05$).

Model III introduces four characteristics of study disciplines within each country: prevailing attitudes towards gendered family norms, the proportion of women among graduates, expected earnings for starters in the labor market, and the steepness of the earning profile. First, women who graduated in a study discipline where stereotypical attitudes towards gendered family roles prevail are less likely to postpone their first births. Figure 4 illustrates the effect across the range of family attitudes observed among students in different countries and fields of education. The expected percentage of women still childless at age 30 is 33% for medium educated women who graduated in a country and discipline where family attitudes are at their median value. In the country-discipline combination with the most stereotypical attitudes (i.e. teachers in the Czech Republic), the expected proportion still childless at age 30 is only 21%. On the progressive extreme of the range (i.e. among law students in Norway), the expected proportion is 46% at age 30. So, family attitudes prevailing in study disciplines make a difference of at most 25 percentage points.

[Figure 4. Expected postponement probabilities by age and stereotypical attitudes towards gendered family norms prevailing in study disciplines* - about here]

The effect of the proportion of women among graduates is also statistically significant: the more female-dominated the study field, the less inclined graduates are to

postpone motherhood. Figure 5 plots the survival curves across the range of values observed for this covariate. At the minimum proportion of women of 7% (“other” disciplines in Denmark), the expected proportion still childless at age 30 is 40%. At the other side of the extreme, i.e. among teachers in Slovenia, where all 20- to 40 year old graduates in the sample are women, the expected proportion childless at age 30 is 28% only. So, in this sample, the gender composition makes a difference in terms of postponement of parenthood of maximum 12 percentage points.

[Figure 5. Expected postponement probabilities by age and the proportion female among graduates from study disciplines* - about here]

Finally, as to the earning profile, both the starting wage and the steepness of the earning profile make a statistically significant difference. Recall that the earnings for starters who have no seniority in the labor market are expressed as deviations from the median for their country. Overall, disciplines with a high earning potential are associated with more postponement. Both the starting wage and the steepness of the profile work in that direction. The left hand panel of Figure 6 shows that the probability of postponement is estimated at 17% for medium educated, 30 year old women with a starting wage at the lowest level observed in this sample. For their peers who earned the maximum wage at the start of their paid work, postponement at that age is modeled to be 49%, which makes a difference of 32 percentage points. In isolation, however, the starting wage is a bad indicator for the relative earning potential, because study disciplines with a relatively low starting wage may have a sharply rising earnings profile. An extreme case in point is law students in Switzerland, who have the lowest relative starting salary in this sample but who also have the highest slope for seniority. In contrast, law graduates in Norway have the highest relative starting salary of all country-discipline combinations, but they have a less than average slope for seniority. The

right hand panel of figure 6 suggests that the slope may have a greater effect on postponement than the starting wage. The difference in expected proportions childless at age 30 for the steepest as compared to the flattest earning profile is 41 percentage points (60% – 19%).

Are characteristics of study fields related to entry into motherhood only indirectly through the rate of partnership formation and marriage or do the estimated effects remain significant after controlling for partnership situation? To address this issue, model IV includes the number of years since first cohabiting with the current partner, if any (otherwise, this covariate is set to zero), and a dummy variable indicating whether the respondent is married or not. The models presented so far did not include individual-level covariates on the partnership situation because cohabitation and marriage may be strongly endogenous to entry into parenthood (Lillard 1993; Brien, Lillard and Waite 1999; Baizán, Aassve and Billari 2003). The strong and significant slopes for partnership situation in model IV therefore do not represent unidirectional causal effects on the postponement of first births.

[Figure 6. Expected postponement probabilities by age and (a) expected earnings for starters in the labor market (left); (b) steepness of the earning profile (right)* - about here]

Cohabitation with a partner is negatively associated with the postponement of motherhood. Yet, as found in earlier work (Lillard and Waite 1993), couple time has a curvilinear rather than a linear effect on childlessness. During the first years of cohabitation the likelihood of still being childless goes down. The significant second-order polynomial term indicates that couples who are still childless after a number of years are subsequently increasingly more likely to remain childless. After including this polynomial, the second-order polynomial term for current age is not significantly different from zero anymore.

Formal marriage is clearly associated with a higher rate of entry into parenthood. All effects of the characteristics of study disciplines remain significant after controlling for partnership situation. The effects of family attitudes and gender composition weaken somewhat but remain significant. The estimated effects of the earning profiles, if anything, become slightly stronger.

Finally, activity in the labor market may affect the timing of the first birth on the one hand and may be affected by actual or intended parenthood on the other hand. Again, for reasons of endogeneity, activity status was left out of the previous models. However, it may be argued that the earning profiles of fields of education affect the postponement of first births mainly through the timing of entry in the labor market. In order to check whether this is the case, Model V adds the age that women started to work in their first jobs. Respondents in the survey were instructed only to count jobs that lasted for at least six months during which they worked at least 20 hours a week. This variable is included in the model through a product term: women who never had such a job were coded with zeros for the “ever job” dummy variable. For women who did report to ever have had such a job, the dummy was multiplied with the age at entry. Obviously, the “ever job” and the “age at entry” variables should never be interpreted in isolation. The slope for the age at entry variable describes how the effect of work experience changes per unit increase of age at entry. For a woman who entered her first job at the age of 20, the effect of work experience on the logit is estimated at $-0.559 + 0.050 \times 20 = 0.441$. For a woman who entered at the age of 25, the effect is $-0.559 + 0.050 \times 25 = 0.691$. For any age at first job above age 11, the effect of activity in the labor market on postponement is positive. The higher the age at taking the first job was, the stronger the expected postponement.

The effects of the earning profiles of study disciplines within countries hardly change after inclusion of entry into the labor market. Both the starting wage and the steepness

continue to work in the same direction and with similar strength as before. It can be concluded that there is a direct effect of expected earnings on the postponement of first births. Not surprisingly, inclusion of entry into the labor market weakens the effect of a high level of educational attainment somewhat, as well as the effect of the duration of enrollment. This suggests that the effect of the level and duration of education to some extent operates indirectly through the age at entry into the labor market. The effect of family attitudes on the level of study disciplines, if anything, regains some strength. The effect of the sex composition of fields of education weakens and remains significant only at the $\alpha = .10$ level. It should be noted, however, that the power to detect effects in model V is somewhat weakened due to a reduction of the sample size (which is, in turn, due to non-response for the items about first job experience).

CONCLUSION

In recent decades, women have been catching up with men in terms of higher education to the extent that they now are the majority of those enrolled for university degrees in most EU-countries. Yet, women are still underrepresented in the more lucrative and powerful jobs. Women tend to end up predominantly in segments of the labor market characterized by relatively low and flat earning profiles. Typically, jobs in these segments can relatively easily be combined with mothering young children.

This paper aimed to see how study discipline is related to entry into motherhood in Europe through the attitudes towards gendered family roles that are associated with disciplines, the sex composition of graduates, and the expected earnings. Maybe women tend to be overrepresented in particular study disciplines because they think that these will lead to jobs that facilitate the combination with parenthood. This selection will be related to attitudes held about the family roles of men and women and about their respective priorities at home and in the paid labor market. More specifically, women selecting fields of education

characterized by relatively stereotypical views about gendered family roles are expected to make the transition to parenthood sooner than women selecting fields where more liberal views prevail. Studies leading to more lucrative jobs and a steep earning profile are typically more difficult to combine with parenthood and may therefore be associated with more postponement of parenthood.

In order to test these hypotheses, data from the second round of the European Social Survey about graduated women aged 20 to 40 years were used, covering 21 European countries. Multilevel logistic regression was used to model the probability that a woman is not yet mothering any children as function of her own educational characteristics, her country, and characteristics of the study discipline she graduated in. Study disciplines were treated as nested within countries, i.e. characteristics of study disciplines were calculated separately by country, and the random effects of study disciplines in each country were estimated independently from the random effect of belonging to a country.

The results indicated that women who graduated in a study discipline where stereotypical family attitudes are prevailing are indeed significantly less likely to postpone their first births. In line with that finding, it also appeared that the more female-dominated the field of education the less inclined graduates are to postpone motherhood. High earning potentials of study disciplines appeared to be associated with strong postponement. Both the expected starting wage and the steepness of the earning profile have that effect. Women with a degree in a field where fulltime working graduates are expected to have relatively high earnings at the time of entry in the labor market are significantly more likely to delay their first births than women who expect to have a low income during their first working years.

The effect of the steepness of the earnings profile with seniority works in the same direction: if a woman holds a degree where an additional year in the labor market is associated with a strong increase in monthly earnings, she is expected to postpone more than

when here expected earnings rise to a lesser degree with seniority. Given the range of starting wages and slopes with seniority observed in this sample, it appears that the effect of the steepness of the earning profile is stronger than the effect of the starting wage. These findings are in line with economic theories suggesting a later entry into motherhood when the opportunity costs are high: women with a high earning potential are expected to enter motherhood at a later stage in their employment career, when they consider themselves more established in their jobs and when taking a break from paid work may be perceived as less damaging to their careers. The alternative hypothesis that women with a steep earning profile would be inclined to have their children early in their careers, when foregone earnings would still be relatively low, is not supported by the European data presented here.

These effects of characteristics of study fields within countries are largely independent of the partnership situation. Cohabitation and marriage are clearly associated with faster entry into parenthood, but controlling for this hardly changes the effects of family attitudes, gender composition, and earning profile. The effect of the latter, if anything, becomes slightly stronger. The effects of family attitudes and gender composition weaken just slightly. Inclusion of the timing of entry into the labor market in the model weakens the estimated effect of a high level of educational attainment, as well as the effect of the duration of enrollment in fulltime education. The effect of family attitude, as a characteristic of field of education, if anything, becomes somewhat stronger. The estimates for earning profiles hardly change at all, while the effect of gender composition is weakened but continues to work in the same direction.

In sum, the choice of study discipline appears to be clearly related to entry into motherhood in Europe. This paper has empirically identified four characteristics of fields of education that matter significantly: the expected starting wage, the steepness of the earning profile, the gender composition, and the family attitudes prevailing in study disciplines and

countries. The latter variables were constructed on the macro-level in a way to avoid the problem of reverse causation.

Still, the cross-sectional nature of the European Social Survey implies several limitations. First, women who have complex educational careers, for example women who have multiple degrees, cannot be treated adequately with these data. Second, women who have children while studying or who were still enrolled in education at the time of the interview had to be omitted from the analysis. The latter selection implies that highly educated women have a lower chance of being included in this study, and countries may vary in the degree that this selection biases the results. Thirdly, last but not least, with these cross-sectional data we cannot distinguish between two alternative explanations for the empirical associations. One possibility is that that field of education indeed causally affects family attitudes and career prospects, and that these attitudes and prospects affect childbearing behavior later on in the life course. Another possibility is that an antecedent set of characteristics, including personality traits and family attitudes, both causally affect the choice of study discipline and first childbearing. The first and the second process are not mutually exclusive. Rather, they may actually be mutually reinforcing. The second pathway need not involve any causal effect of study discipline on entry into parenthood. It would rather imply that women who are prone to make the transition to motherhood are selected into particular study disciplines.

In order to sort out selection from causation, we need measurements of family attitudes and career expectations *before* or at the very start of the educational career, followed by measurements at the end of the educational process but before family formation. This would involve a long term panel study. Unfortunately, there are no relevant panel data that cover Europe in an internationally comparable way.

REFERENCES

- Agresti, A. 2002. *Categorical Data Analysis*. Hoboken (N.J.), USA: Wiley.
- Baizán, P., A. Aassve, and F.C. Billari. 2003. "Cohabitation, Marriage, and First Birth: the Interrelationship of Family Formation Events in Spain." *European Journal of Population* 19:147-69.
- Bates, D. and D. Sarkar. 2006. *Lme4: Linear Mixed-Effects Models Using S4 Classes*. R Package Version 0.995-2.
- Billari, F. 2005. "Partnership, Childbearing and Parenting: Trends of the 1990s." Pp. 63-94 in *The New Demographic Regime. Population Challenges and Policy Responses*, edited by M. Macura, A. L. MacDonald, and W. Haug. New York/Geneva: United Nations.
- Billari, F.C. and D. Philipov. 2004. *Education and the Transition to Motherhood: a Comparative Analysis of Western Europe*. Vienna: Vienna Institute of Demography of the Austrian Academy of Sciences. (European Demographic Research Papers 2004-3)
- Blossfeld, H.-P. 1995. "Changes in the Process of Family Formation and Women's Growing Economic Independence: A Comparison of Nine Countries." *The New Role of Women-Family Formation in Modern Societies*, edited by H.-P. Blossfeld. Oxford: Westview Press.
- Blossfeld, H.-P. and J. Huinink. 1991. "Human Capital Investments or Norms of Role Transition? How Women's Schooling and Career Affect the Process of Family Formation." *American Journal of Sociology* 97:143-68.
- Brien, M.J., L.A. Lillard, and L.J. Waite. 1999. "Interrelated Family-Building Behaviors: Cohabitation, Marriage, and Nonmarital Conception." *Demography* 36:535-51.
- Brown, C. and M. Corcoran. 1997. "Sex-Based Differences in School Content and the Male-Female Wage Gap." *Journal of Labor Economics* 15:431-65.

- Courgeau, D. and E. Lelièvre. 1992. *Event History Analysis in Demography*. Oxford: Clarendon Press.
- Eurostat. 2007. *Europe in Figures. Eurostat Yearbook 2006-07*. Luxembourg: Office for Official Publications of the European Communities.
- Gustafsson, S. 2001. "Optimal Age at Motherhood. Theoretical and Empirical Considerations on Postponement of Maternity in Europe." *Journal of Population Economics* 14:225-47.
- Gustafsson, S. 2005. "Having Kids Later. Economic Analyses for Industrialized Countries." *Review of Economics of the Household* 3:5-16.
- Gustafsson, S. and S. Worku. 2005. "Assortative Mating by Education and Postponement of Couple Formation and First Birth in Britain and Sweden." *Review of Economics of the Household* 3:91-113.
- Häder, S. and P. Lynn. 2007. "How Representative Can a Multi-Nation Survey Be?" Pp. 33-52 in *Measuring Attitudes Cross-Nationally. Lessons From the European Social Survey*, edited by Roger Jowell, Caroline Roberts, Rory Fitzgerald, and Gillian Eva. Los Angeles/London: Sage.
- Hakim, C. 2000. *Work-Lifestyle Choices in the 21st Century: Preference Theory*. Oxford: Oxford University Press.
- Hank, K. 2002. "Regional Social Contexts and Individual Fertility Decisions: A Multilevel Analysis of First and Second Births in Western Germany." *European Journal of Population* 18:281-99.
- Hoem, J. 1986. "The Impact of Education on Modern Family-Union Initiation." *European Journal of Population* 2:113-33.

- Hoem, J.M., G. Neyer, and G. Andersson. 2006a. "Education and Childlessness. The Relationship Between Educational Field, Educational Level, and Childlessness Among Swedish Women Born in 1955-59." *Demographic Research* 14:331-80.
- Hoem, J.M., G. Neyer, and G. Andersson. 2006b. "Educational Attainment and Ultimate Fertility Among Swedish Women Born in 1955-59." *Demographic Research* 14:381-404.
- Jansen, M. and M. Kalmijn. 2000. "Emancipatiewaarden en de levensloop van jongvolwassen vrouwen: een padanalyse van wederzijdse invloeden [Emancipatory values and the life courses of young adult women: A path analysis of mutual influences]." *Sociologische Gids* 47:293-314.
- Jowell, R. and the Central Co-ordinating Team. 2005. *European Social Survey 2004/2005: Technical Report*. London: Centre for Comparative Social Surveys, City University.
- Jowell, R., C. Roberts, R. Fitzgerald, and G. Eva, eds. 2007. *Measuring Attitudes Cross-Nationally. Lessons From the European Social Survey*. Los Angeles/London: Sage.
- Jurajda, S. 2003. "Gender Wage Gap and Segregation in Enterprises and the Public Sector in Late Transition Countries." *Journal of Comparative Economics* 31:199-222.
- Kalmijn, M. 1996. "Effecten van opleidingsniveau, duur en richting op het tijdstip waarop paren hun eerste kind krijgen [Effects of Educational Level, School Enrollment and Type of Schooling on the Timing of the First Birth] ." *Bevolking en Gezin* 1996:41-71.
- Kline, R.B. 2005. *Principles and Practice of Structural Equation Modeling. Second Edition*. New York/London: Guilford Press.
- Kravdal, Ø. 1994. "The Importance of Economic Activity, Economic Potential and Economic Resources For the Timing of First Births in Norway." *Population Studies* 48:249-67.

- Kravdal, Ø. 2004. "An Illustration of the Problems Caused by Incomplete Education Histories in Fertility Analyses." *Demographic Research*, Special Collection 3 (Article 6): 133-154.
- Lappegård, T. 2002. "Educational Attainment and Fertility Patterns Among Norwegian Mothers" *Documents*, 2002/18. Oslo: Statistics Norway.
- Lappegård, T. and M. Rønsen. 2005. "The Multifaceted Impact of Education on Entry into Motherhood." *European Journal of Population* 21:31-49.
- Liefbroer, A.C. and M. Corijn. 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.A. 1993. "Simultaneous Equations for Hazards: Marriage Durations and Fertility Timing." *Journal of Econometrics* 56:198-217.
- Lillard, L.A. and L.J. Waite. 1993. "A Joint Model of Marital Childbearing and Marital Disruption." *Demography* 30:653-81.
- Machin, S. and P.A. Puhani. 2003. "Subject of Degree and the Gender Wage Differential: Evidence From the UK and Germany." *Economics Letters* 79:393-400.
- Mandel, H. and M. Semyonov. 2006. "A Welfare State Paradox: State Interventions and Women's Employment Opportunities in 22 Countries." *American Journal of Sociology* 111:1910-49.
- Marini, M.M. 1984. "Women's Educational Attainment and the Timing of Entry into Parenthood." *American Sociological Review* 49:491-511.
- Martin, S.P. 2000. "Diverging Fertility Among U.S. Women Who Delay Childbearing Past Age 30." *Demography* 37:523-33.
- Moors, G. 1997. *The Dynamics of Values-Based Selection and Values Adaptation*. Brussels: Vrije Universiteit Brussel (VUB), Centrum voor Sociologie (PhD thesis).

- Morgan, S.P. and L.J. Waite. 1987. "Parenthood and the Attitudes of Young Adults."
American Sociological Review 52:541-47.
- Neyer, G. and J. Hoem. 2008. "Education and Permanent Childlessness: Austria Vs. Sweden. A Research Note." Pp. 91-112 in *Demographic Challenges for the 21st Century. A State of the Art in Demography. (Liber Amicorum Ron Lesthaeghe)*, edited by Johan Surkyn, Patrick Deboosere, and Jan Van Bavel. Brussels: VUB/Academia Press.
- R development Core Team (2006), *R: A language and environment for statistical computing*. Vienna, Austria: R Foundation for Statistical Computing.
- Rindfuss, R.R., K.B. Guzzo, and S.Ph. Morgan. 2003. "The Changing Institutional Context of Low Fertility." *Population Research and Policy Review* 22:411-38.
- Rindfuss, R.R., S.P. Morgan, and G. Swicegood. 1988. *First Births in America. Changes in the Timing of Parenthood*. Berkeley, California: University of California Press.
- Rindfuss, R.R., S.P. Morgan, and K. Offutt. 1996. "Education and the Changing Age Patterns of American Fertility: 1963-1989." *Demography* 33:277-90.
- Singer, J.D. and J.B. Willett. 2003. *Applied Longitudinal Data Analysis. Modeling Change and Event Occurrence*. Oxford: Oxford University Press.
- Skirbekk, V., H.P. Kohler, and A. Prskawetz. 2004. "Birth Month, School Graduation, and the Timing of Births and Marriages." *Demography* 41:547-68.
- Sobotka, T. 2004. *Postponement of Childbearing and Low Fertility in Europe*. Groningen/Amsterdam: Rijksuniversiteit Groningen/Dutch University Press.

TABLES

Table 1. Countries included in the analysis, country codes and (unweighted) number of graduated women aged 20 to 40 years in the sample

Country	Code	N	Country	Code	N	Country	Code	N
Austria	AT	329	Greece	GR	390	Portugal	PT	323
Belgium	BE	270	Hungary	HU	240	Slovakia	SK	11
Czech Republic	CZ	431	Ireland	IE	377	Slovenia	SI	170
Denmark	DK	203	Luxemburg	LU	230	Spain	ES	255
Estonia	EE	222	Netherlands, the	NL	305	Sweden	SE	244
Finland	FI	267	Norway	NO	261	Switzerland	CH	374
Germany	DE	372	Poland	PL	285	Ukraine	UA	314

Table 2. Fields of education

Code	Categories in this study	Original ESS2-categories	N
TEA	Teaching, training or education	- Teacher training or education	401
ART	Arts & Humanities	- Art - fine or applied - Humanities	392
TEC	Science & Technology	- Technical & engineering, including architecture and planning, industry, craft, building trades, etc. - Science, mathematics, computing etc.	533
HEA	Health care	- Medical, health services, nursing, etc.	720
ADM	Private and public administration	- Commerce, business administration, accountancy, etc - Public administration, media, culture, sport and leisure studies, social & behavioral studies, etc.	1486
LAW	Law and legal services	- Law and legal services	94
PER	Personal care services	- Personal care services - catering, domestic science, hairdressing, etc	702
GEN	General or no specific field	- General or no specific field	1370
OTH	Other	- Agriculture & forestry - Public order and safety - police, army, fire services, etc - Transport and telecommunications	175

Table 3. Descriptive statistics of the dependent and independent variables used in the regression analyses

	Mean	SD	Min	Max	N	%
<i>Individual-level variables</i>						
Dependent variable: still childless?						
- 0 = no					3503	62.7
- 1 = yes					2081	37.3
Age	31.6	5.5	20	40	5584	
Level of education						
- low					1228	22.0
- medium					2882	50.5
- high					1534	27.5
Years enrolled in fulltime education	13.3	3.4	0	32	5584	
Years since first cohabiting with current partner	6.6	6.5	0	27	5502	
Married?						
- 0 = no					2551	45.7
- 1 = yes					3033	54.3
Ever had steady job (six months, 20 hours/week)						
- 0 = no					307	5.5
- 1 = yes					5275	94.5
If yes: Age at first steady job	19.9	3.6	3	37	5275	
<i>Characteristics of study fields</i>						
Stereotypical attitude towards gendered family roles	-0.41	0.45	-1.60	0.87	151	
Proportion of women among graduates	0.59	0.23	0.07	1.00	151	
Starting wage relative to country's median, in 100 euros	0.19	4.67	-19.78	15.44	151	
Steepness of the earning profile (slope)	1.03	0.03	0.92	1.17	151	

Table 4. Multilevel logistic regression models of the postponement of first births among European women aged 20-40 years

	Model I		Model II		Model III		Model IV		Model V	
	b	SE	b	SE	b	SE	b	SE	b	SE
Intercept	0.793 ***	0.228	0.862 ***	0.235	-6.336 ***	1.909	-6.211 **	2.149	-6.519 **	2.231
<i>Individual covariates</i>										
(Age - 20)	-0.411 ***	0.027	-0.413 ***	0.027	-0.388 ***	0.026	-0.192 ***	0.031	-0.222 ***	0.032
(Age - 20) ²	0.009 ***	0.001	0.009 ***	0.001	0.008 ***	0.001	0.001	0.001	0.002	0.001
Level of education (ref.=low)										
- medium	0.492 ***	0.107	0.485 ***	0.109	0.288 **	0.102	0.421 ***	0.116	0.400 ***	0.120
- high	0.780 ***	0.135	0.783 ***	0.139	0.530 ***	0.133	0.731 ***	0.155	0.595 ***	0.161
Years enrolled in fulltime education	0.100 ***	0.013	0.096 ***	0.014	0.086 ***	0.013	0.065 ***	0.016	0.056 ***	0.016
Years since first cohabiting with current partner							-0.331 ***	0.025	-0.329 ***	0.025
(Years since first cohabiting...) ²							0.012 ***	0.001	0.012 ***	0.001
Married? (1=yes, 0=no)							-1.008 ***	0.104	-1.061 ***	0.107
Ever had steady job X...									-0.559 †	0.308
... Age at first steady job									0.050 ***	0.013
<i>Characteristics of study fields</i>										
Stereotypical gendered family roles attitude					-0.464 ***	0.114	-0.310 *	0.127	-0.329 *	0.131
Proportion of women among graduates					-0.585 **	0.211	-0.530 *	0.237	-0.406 †	0.242
Starting wage relative to country's median, in 100 euros					0.045 ***	0.012	0.054 ***	0.014	0.051 ***	0.014
Steepness of the earning profile (slope)					7.378 ***	1.858	7.786 ***	2.093	7.904 ***	2.168
<i>Standard deviations of random components</i>										
- Country-level	0.498		0.497		0.100		0.101		0.103	
- Field of education by country			0.223		0.269		0.271		0.276	
Deviance	5590		5585		5618		4323		4130	
N (women)	5584		5584		5584		5502		5286	

† $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$

Figure 2. Proportion of women among 20 to 40 year olds in ESS2 by field of education and country

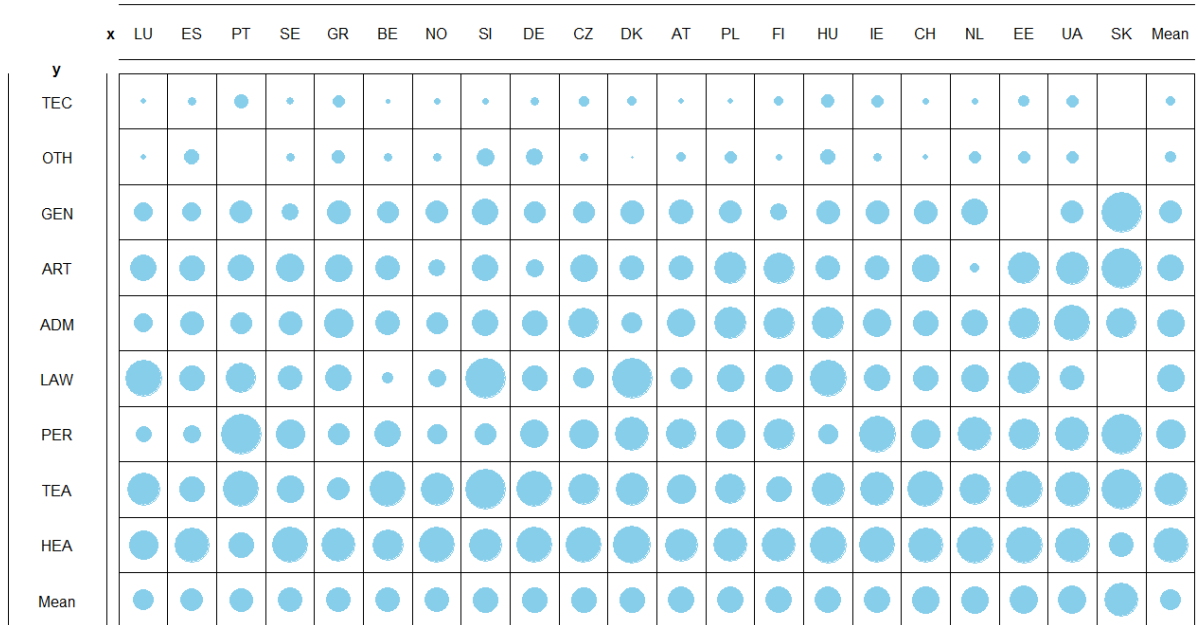


Figure 3. Empirical Bayes estimates of country-level random effects in model I (labels on the vertical axis are exponentiated values that can be interpreted as factor effects)

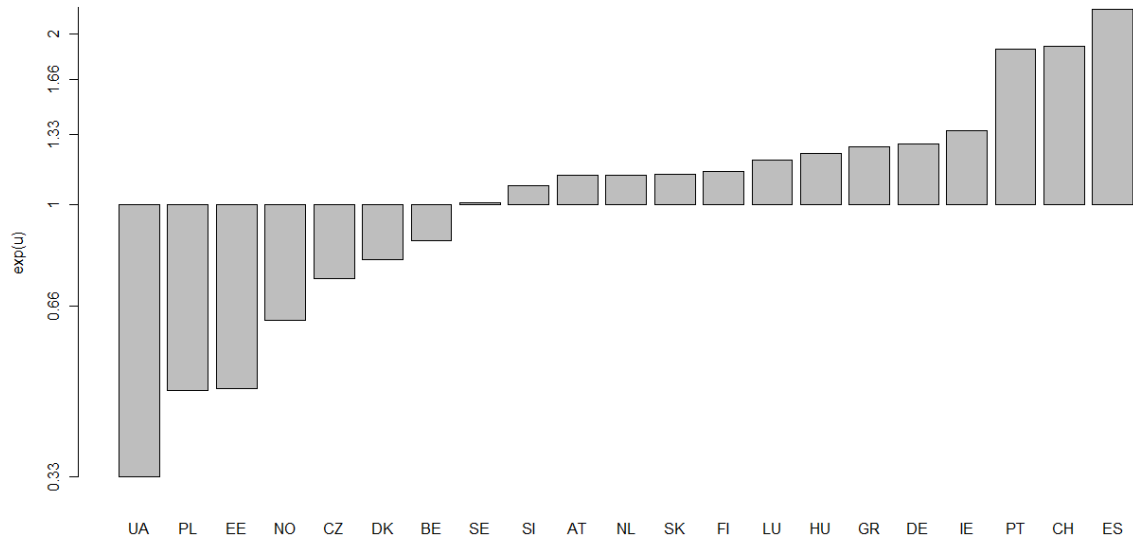
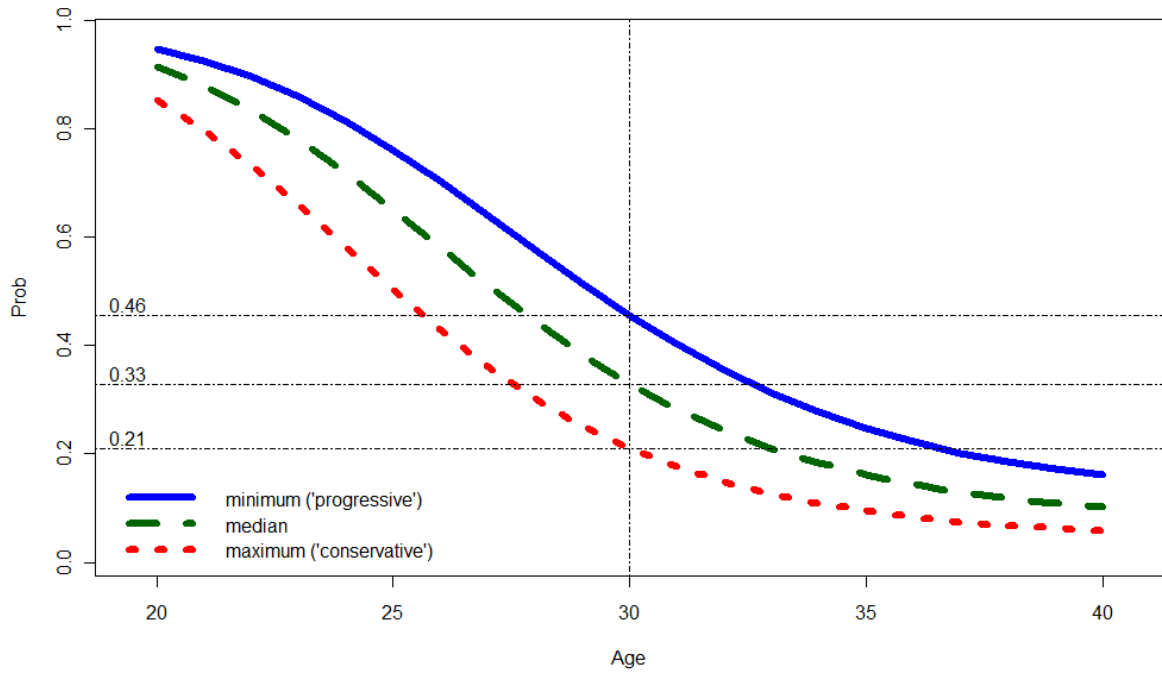
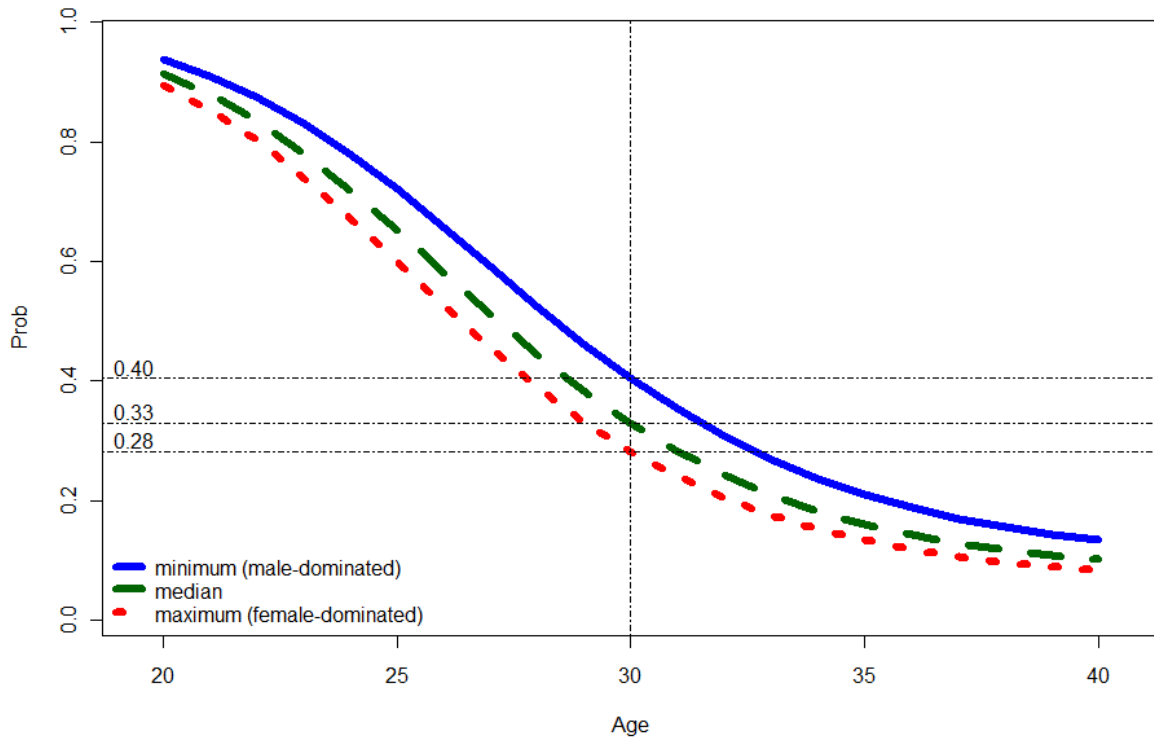


Figure 4. Expected postponement probabilities by age and stereotypical attitudes towards gendered family norms prevailing in study disciplines*



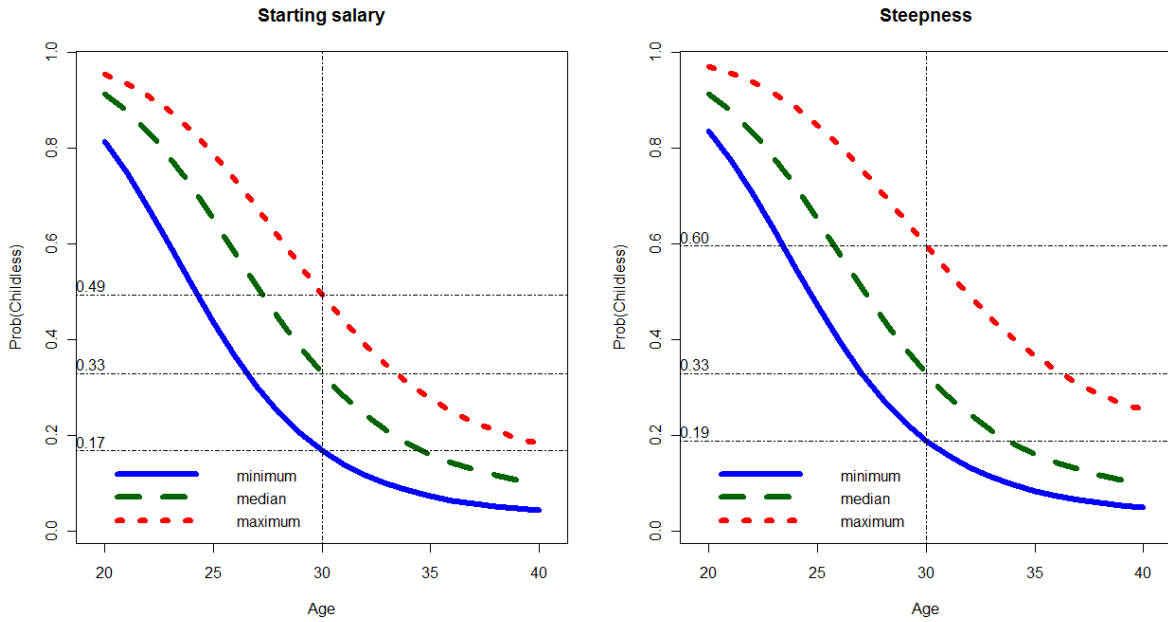
* Expected probabilities for medium-educated women who were enrolled in education for 12 years; all other covariates set at their median values

Figure 5. Expected postponement probabilities by age and the proportion female among graduates from study disciplines*



* Expected probabilities for medium-educated women who were enrolled in education for 12 years; all other covariates set at their median values

Figure 6. Expected postponement probabilities by age and (a) expected earnings for starters in the labor market (left); (b) steepness of the earning profile (right)*



* Expected probabilities for medium-educated women who were enrolled in education for 12 years; all other covariates set at their median values