Marriage and Educational Attainment: A Dynamic Approach to First Union Formation*

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Abstract: The article looks at the relationship between partnership formation and women's education in the Czech Republic. Education can serve as a proxy for cultural capital and earning potential. Therefore, it is expected to play a significant role in partnership formation. Analyses of data from the Family and Fertility Survey show that the level of education has an impact on the timing of the first union. However, when school enrolment is controlled, education does not play a significant role in the tendency to enter into marriage or cohabitation. It is not possible to demonstrate that the accumulation of human capital itself has an impact on union formation in the Czech Republic. Nor do data confirm the expectation that the influence of education should increase after the collapse of communism and the introduction of the market economy.
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During the second half of the 20th century, the family as one of the most important social institutions underwent some fundamental changes. Family-related norms and behaviour changed, and the previously standard model of starting a family – marriage, setting up a household, having a child – transformed, and lost its imperative character.[1] A significant number of people now give preference to a different order of events or choose not to enter into a marriage at all. The more or less tolerated, and at a certain time of life even preferred, form of partnership has become cohabitation.

The Czech Republic experienced a rapid demographic transition in the 1990s. The total number of new marriages declined by one-third (from 81 000 in 1989 to 55 000 in 2000). The mean age at the time of marriage for first marriages has risen from 24.6 to 28.9 for men and from 21.8 to 26.5 for women. Similarly, the fertility rate has declined. While in 1989 the total fertility rate (TRF) was 1.89, at the end of

[1] The fact that this model was standard does not mean that the entire population adhered to it. Concubinage, for example, has a long historical tradition. What is important, however, is that the traditional model represented an unambiguous and unquestionable standard, and other modes of behaviour were viewed as deviant.

the 1990s the TRF hovered between 1.1 and 1.2. At the same time illegitimate fertility has grown from 9% to over 20%.

Many attempts have been made in Czech sociological and demographic literature to explain the demographic changes of the 1990s. This paper focuses specifically on the connection between education and union formation. The first part presents a summary of the most important sociological theories explaining the demographic shift. Then a set of hypotheses on the influence education may have on union formation is derived. In the second part of the paper an attempt is made to verify the hypotheses using empirical data.

Theoretical explanation

The demographic changes of the first half of the 20th century led to the formulation of a number of sociological theories on the subject. These can be classified into two major groups: normative theories and rational choice theories [Friedman, Hechter and Kanazawa 1994]. *Normative theories* ascribe the changes in family life to a shift in values, aspirations and expectations. Although the normative theorists differ with regard to which of the 'modern' values is the key factor in demographic change, they all emphasise secularisation, individualism, the growing significance of autonomy, and new ideologies concerning gender roles. While normative theories do not reject the influence of structural and economic factors, they are based more on the assumption that modernisation, technological changes and the development of the social state brought about changes in values and preferences, and these led to changes in human behaviour.

Normative theories

The most influential example of a normative theory comes from Ronald Inglehart [1990]. Inglehart's approach is derived from a concept of culture as a set of beliefs and values developed by a given group to cope with external adaptation and internal integration. In Inglehart's view, during the early period of industrialisation the economic factor became central, and it was possible to interpret society using economic models. However, in the advanced industrial society, the economic factor has reached the level of diminishing returns, and values have become more important for explaining human behaviour [Inglehart 1990].

Inglehart interprets declining marriage rates and the lower percentage of people living in marriages in the context of a general shift away from 'materialist' and towards 'post-materialist' values. Inglehart's conception of 'materialism' and 'post-materialism' differs from the common usage of these words. While 'materialist' values are connected with physical well-being and a craving for security, 'post-materialist' values put emphasis on the quality of life. In Inglehart's view, the family and the emphasis on family stability are related to the need for safety and security, and

as values can thus be ranked as 'materialist'. Cohabitation or life without a partner represent a 'post-materialist' way of life, as it is only once people have a sense of security that they no longer need to worry about creating primary ties and permanent relationships, and instead place greater emphasis on independence, self-fulfilment, and self-expression.

The *theory of the second demographic transition* [Van de Kaa 1987; 1988; 1993; Lesthaeghe and Moorse 1992, cit. in Manting 1994: 20; Wiersma 1983] similarly stresses the concurrent effect of social and economic influences (particularly a weakening in the normative control of society and the rise of the economic independence of women), cultural factors (secularisation) and modern technology (contraception). These influences transformed people's preferences in favour of individualism, freedom and independence, and thus led to a decline in the rate of marriage and to the spread of cohabitation. Although Van de Kaa [1993] admits that these processes are interdependent, he attributes major importance to the change in values and assumes that modern technology could only have succeeded as a result of this value change. He points to the example of modern contraception. The discovery of contraception itself did not change behaviour, but contraception was able to spread only due to the fact that values had changed.

Anthony Giddens [1992] is also one of the authors of a normative theory. In Giddens' view, it is the principles on which relationships are founded that have changed, as the former relationship of romantic love has been displaced by a 'confluent' relationship, that is, a relationship in which two people face each other as fully independent individuals.

One example of a normative theory in Czech sociological literature is found in the work of Ladislav Rabušic [2001a, 2001b], who has applied Inglehart's theory and the theory of the second demographic transition to the case of the Czech social environment, arguing that the demographic changes that took place in the Czech Republic in the 1990s are primarily connected to value changes.

Most authors argue that the spread of 'modern' (or 'post-modern' or 'post-materialist') values has in some way been related to educational achievement. Inglehart [1990] believes that education is an indicator of security and that people with more education should therefore also be more 'post-materialistic'. This tendency is further strengthened by the fact the people with higher education are members of specific communication networks where liberal values are prevalent. Liefbroer [1991] also argues that for people with higher education autonomy and independence are more important.

Rational choice theories

The second group of theories that have attempted to explain the changes in demographic behaviour is comprised of various versions of *rational choice* theories. Unlike the previous group, these theories explain the transformation of family behaviour

through economic and institutional factors, and primarily through the changes that have occurred in the labour market. While rational choice theories do not actually reject the importance of values (preferences, utilities), they concentrate more on economic and structural factors and avoid the relatively complex problem of value specification.[2]

The theories are founded on the basic assumption that human behaviour is goal-oriented and that people adopt the kind of behavioural strategies that are intended to lead to this goal. Rational choice theories concentrate on the means whereby to reach a goal and often ignore or just postulate the goal itself. Their view is that demographic change can be attributed to a change in the price not a change in preferences. In so far as education is an important factor in defining a person's constraints, chances and economic position, rational choice theories are relevant to any analysis of the interdependence between education and family formation.

The emphasis on rationality does not mean that rational choice theories ignore the question of emotions, nor do the theories assume that people make conscious calculations regarding what they will get out of a relationship and what advantages are to be had from it. The theories base themselves rather on the idea that the institutional structure of a society influences behaviour, especially on the macro-structural level, as it defines the impulses that motivate behaviour [Coleman and Fararo 1992]. In a choice framework, the context determines the extent to which a person is free to establish priorities and to allocate time and energy accordingly. In other words, it defines the options from which a person may choose [Willekens 1989: 17]. Consequently, in most cases rational choice theories address the relationship between the social macro-structure and human behaviour, but they do not deal with the motivations of individuals.

Gary S. Becker [1972, 1973, 1996] probably developed the most influential theory within the rational choice framework (New Home Economics). He based his analyses on the concept of a marriage market and made the assumption that each person tries to do as well as possible and searches for a partner with whom they will be able to maximise utility. It is reasonable to speak about a marriage market since many men and women compete when they seek mates and their success depends on what they are able to offer [1972]. Since marriage is practically always a voluntary initiative, made by either the persons marrying or their parents, it may be as-

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[2] The principal difficulty involved in specifying values derives from their unobservability. Usually, therefore, two different methods have been used to specify values, both of which are, however, problematic [Friedman, Hechter and Kanazawa 1994: 377–378]. One method is simply to ask people what their values and preferences are, while the other method is to deduce the values from their real behaviour. The problem is that declared values are often quite vague and inconsistent, and do not conform to a given situation. This is especially true of values and preferences connected with family and partnership behaviour [Heaton and Jacobson 1999; Fialová and Tuček 1997; Moors 2000; Blossfeld and Mills 2001]. Deducing values on the basis of real behaviour is equally problematic, as it is not possible to distinguish to what extent the behaviour is influenced by values and to what extent by objective constraints.

sumed that the persons marrying (or their parents) expect to increase their utility level beyond what it would be were they to remain single.

The utility from the marriage is derived not only from the goods and services purchased on the market, but also and especially from the goods produced by the household. The household production includes material commodities like meals, but also love, companionship, prestige, the quality of leisure time, and especially children. Becker believes that the main reason why men and women marry is to 'produce' children. They do so not only with respect to quantity, but in modern society also and primarily with regard to their quality. Consequently, people who want fewer children tend to postpone marriage and divorce earlier and more frequently.

According to Becker, specialisation and the division of labour is the most rational and efficient way to manage a household, so that each partner can cultivate a separate type of human capital. Becker illustrates this point with the example of two people who possess exactly the same qualifications to work in the household and the same qualifications to work in the market. Should these two people devote x amount of hours to paid employment, the result will be the same as when one of them spends 2x the amount of hours in paid employment and the other devotes time fully to the household. However, should each of them begin to invest their time in specialised capital then the effectiveness of both will rise and the total household 'product' will also increase.

The efficiency and rationality of the division of labour influences men's and women's behaviour on the marriage market. An important characteristic of any match is whether men's and women's human capital, income, time and other investments are complements or substitutes. The mating of likes is optimal when the traits are complements. Therefore, men and women do marry people who are similar in non-market traits, e.g. height, interests, appearance, intelligence. Conversely, optimal sorting with regard to market traits is negative. The utility is maximised when a high-wage person marries a low-wage person, since it corresponds with the rationality of the division of labour. The person with cheaper time can concentrate on household production while the high-wage person can specialise in the market.

Becker believes that the demographic change in the second half of the 20th century can be attributed to two factors. First, the earning potential of women is growing. The growth in women's earning power increases the value of the time spent at childcare and on other household activities, which in turn reduces the demand for children and encourages substitutions in the place of parental time. The gain to be had from marriage is reduced because a sexual division of labour within the household is less advantageous [Becker 1996: 55]. The second factor that explains the demographic change is connected with the development of the modern state and the market economy, which took over the responsibility for education and childcare, etc., from the family.

In the light of Becker's theory it can be concluded that education will play an important role in the tendency to marry in the case of both men and women. The higher earning potential of women with better education should lower their ten-

dency to marry, while the higher earning potential of men should make them more attractive and increase their chances of marrying.

Valeria Oppenheimer [1988] also ascribes the decline in the marriage rate to changes in the labour market, but she is one of the main critics of Becker's theory. In Oppenheimer's view, the postponement of marriage is wrongly interpreted as its decline. The theories that emphasise specialisation and a division of labour care only capable of explaining the decline and not the postponement of marriage. Therefore, Oppenheimer formulated an alternative theory within the rational choice framework. Her theory is also based on the concept of the marriage market, but it does not identify any universal factor that would explain the postponement of marriage for both men and women. Nevertheless, in both cases she focuses on the labour market and assumes that partner selection is more complicated that it used to be in the past.

Why do women marry later? The explanation can be found in changing gender roles. In the past, women could enter into marriage at a young age because the information on the features that were fundamental to their success in the marriage market (basic personal characteristics, physical attractiveness, religious confession, or social background) were already apparent at a young age. But according to Oppenheimer the entry of women into paid employment changed the selection criteria, and the significance of a woman's income has been growing. This means that even in the case of women it has become necessary to wait until the information on their earning potential is available. In contrast to Becker's theory, it is expected that women with higher education will marry later, but that in the end their chances of marrying will be higher.

The reason men postpone marriages is seen to lie in the deteriorating economic position of young men [Oppenheimer, Kalmijn and Nelson 1997; Oppenheimer 1994]. The first unstable career phase has extended and it takes longer to figure out what a man's earnings and lifestyle will be like. Oppenheimer claims that this factor is important among all social strata. Although the higher social classes are better off and objectively they could afford to establish a household, they also expect a higher living standard and acceptable household income.

Oppenheimer argues that cohabitation offers the advantages of both marriage and being single: it gets young people out of high-cost search activities during a period of social immaturity, but without incurring the penalties of either heterosexual isolation or promiscuity. It often provides the benefits of marriage, including the pooling of resources, while also providing some of the advantages of being single, since the long-run obligations are relatively low [Oppenheimer 1988: 583–584].

Mellinda Mills and Hans-Peter Blossfeld [2000] explain the change in family behaviour as a part of the more general globalisation theory. They point out that although the international economy at the start of the 21st century is integrated roughly to the same degree as it was before the First World War, technological developments and modernisation have altered the demands made on the labour force [Mills and Blossfeld 2000]. Today it is necessary for the labour force to be more flexible and

more dynamic, while at the same time people are faced with a less predictable future, their life courses are more diverse, and the transition between different phases in the life cycle are less clearly and sharply defined. Young people in particular are sensitive to the considerable economic insecurity surrounding social and economic roles, since they are the 'outsiders' in the labour market. Therefore, they try to put off making long-term commitments, and their rational response is to move away from marriage and towards cohabitation, which does not entail any commitments for the future [Mills and Blossfeld 2000].[3] It may be assumed that people with higher education will be better equipped to cope with these challenges and with growing insecurity. They study longer, which leads to a postponement of marriage. However, once they finish their education, they should be capable of establishing the stable career that is a necessary precondition for marriage much more quickly.

All the theories mentioned suggest a relationship between education and union formation. Education can be viewed as a proxy for human or cultural capital as well as earning potential. Thus, it should be an important predictor of union formation, especially marriage formation. In the following section, I will summarise previous research on this topic. Further, I will formulate specific hypotheses concerning relationship between education and union formation and test the hypotheses on empirical data.

The socio-demographic background – a summary of previous empirical research

It is somewhat difficult to summarise the results of the empirical research that, since the 1970s, has focused on the connections between union formation, assortative mating, and education. Although in the majority of societies the choice between marriage and cohabitation does not occur randomly, there is no universally valid pattern that the choice between the two types of union follows. Another difficulty is that the relationship between marital behaviour and socio-economic standing has changed over time. Historically, cohabitation (concubinage) was associated with the poorer strata of society [Laslett et al. 1980], but during the 20th century it began to spread from the working classes into the middle and upper classes, among whom in some countries it ultimately became even more widespread.[4]

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[3] Although these tendencies are generally in evidence in all modern Western societies, the particular ways in which they develop are connected with nation-specific institutions. For example, the presence of strong job protection in a society can lead to a guarantee of stable employment for those who are a part of the labour market, but it can also block entry into the labour market for newcomers and especially young people, and thus worsen their prospects.
[4] The first studies of cohabitation in the United States used small university-based samples and thus evoked the erroneous impression that cohabitation spreads from the academic environment. Later studies on the American environment, like studies from Sweden and France, have shown however that it was the students who were imitating the lifestyle of the lower strata and not the other way around [Carmichael 1995: 54].

The connection between education and whether people choose to live in a marriage, cohabitation, or remain alone is also not universally applicable but rather nationally specific. In the United States, people with lower levels of education tend to choose cohabitation [Spanier 1983; Bumpass and Sweet 1989; Blackwell and Lichter 2000; Brown and Booth 1996; Metanahan 1995]. In France, however, studies indicate either that the connection with education cannot be confirmed, or that the reverse is true, and associate cohabitation with higher educational groups [Carmichael 1995: 63; Šalamounová 2001]. The studies from the United Kingdom have not revealed any clear pattern [Carmichael 1995: 63]. According to Kiernan [2000], in some European countries (France, Austria, and Hungary) it tends to be women with lower levels of education who enter directly into marriage without premarital cohabitation, while in other countries (e.g. former West Germany, Sweden) the trend is parabolic in form: those entering directly into marriage tend to be women with either the lowest or the highest levels of education [ibid.: 53–54].[5]

In the Czech Republic there are several studies that have focused on the issue of cohabitation. Ivo Možný [1987] analysed a specific sample of people from the city of Brno who filled out an application for a marriage license. He found that cohabitation was typical for people who had not completed even the lower levels of secondary education[6] [ibid.: 122]. Ladislav Rabušic and Ivo Možný [1992] continued this analysis in another study on a similar sample from Brno and reached similar results. Rychtaříková [1994] analysed common-law marriages in the 1991 Census, and she also found that they were a typical union among the less educated strata of the population. However, Hamplová and Pikálková [2002], whose analyses looked at pre-marital cohabitation, did not observe a similar tendency and did not find any pattern.

Hypothesis and method: the life-course approach

This study is based on the life-course approach and takes into account the timing of events. The life course is defined as the chain of closely interrelated events from various fields of life (family, study, work), which an individual goes through from birth up until death. In the analysis of the life course the order and timing of these events must be interpreted in relation to the order and timing of preceding events [Manting 1994: 35].

Empirical research on the life course therefore requires specific data samples, so-called event-history data, which record the requisite events in the life cycle and

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[5] Kiernan's analyses of course use only the roughest educational categories (post-secondary, secondary, lower). [Kiernan 2000: 53]

[6] Možný presents the proportion of those in cohabitation according to a socio-professional classification. In the case of male and female unskilled workers already working working, 64% lived with their partner prior to marriage. To compare, among those who had post-secondary education, 26% of men and 31% of women had lived in a relationship of cohabitation.

their timing. Event-history data are gathered retrospectively, and unlike classic longitudinal data they do not contain any gaps between the individual waves, but cover the entire life course [see Blossfeld and Rohwer 2002].

The event-history method analyses the transitions between different states. This analysis works with a risk set: only those who can experience a transition are taken into account (e.g. once a person enters a union, he or she is no longer a part of the risk set). This is possible owing to the fact that the unit of an analysis is not a person but an episode (i.e. time period). Every episode records the beginning and end, and the original state and destination state. An episode can end in an event (e.g. marriage), or it can be 'right-censored'. Right censoring means that the episode ended (the person is no longer at risk), but no event occurred. For example, all people who did not form a first union by the time of the interview date are right-censored.

The hazard rate (sometimes called risk, risk function, hazard, transition rate) is estimated. The transition rates give a local, time-related description of how the process evolves over time. A transition rate can be interpreted as a specific state's propensity to change, but this propensity is defined in relation to a risk set. Only those individuals that have not already been through the event before time 't' can then experience the event [Blossfeld and Rohwer 2002: 33]. The hazard rate thus reflects the likelihood as well as the timing of an event.

In the case of the Czech Republic, event-history data relating to demographic events is available from the 1997 Family and Fertility Survey (FFS). The disadvantage of these data is that they represent only the female population. Consequently, in the analytical part of this paper the focus is on hypotheses specific to women alone. Primary attention is devoted to education as a measure of earning potential and human capital. The control variables are derived from the information on family origin. Below is a summary of the variables and the initial hypotheses applied in this research.

Control Variables

Among the basic factors influencing partnership behaviour is the experience drawn from the family of origin. To determine the degree of social control exercised by the parents and the quality of socialisation several variables are usually employed. They include parental divorce, size of the family, age of the mother at the time of the respondent's birth, and the size of the location in which the family resided [Manting 1994: 72]. The FFS data are able to provide information on parental divorce and on the total number of children that the mother of the respondent had.

Parental Divorce
Michael and Tuma [1985] analysed the relationship between entry into marriage and parental divorce in the United States and found that the poorer economic conditions

of children from divorced families contributed to hastening the children's entry into marriage [cit. in Manting 1994: 1972]. According to Thornton [1991], children from divorced homes are subject to less social control, are forced to take on adult responsibilities earlier and mature more quickly. Therefore, there is a higher probability that they will begin to live with a partner at an earlier age [cit. in Manting 1994: 73]. However, it would be possible to assume that the experience of the parents' divorce would reduce the willingness of the children to take on long-term commitments and to enter into marriage. *Therefore, the hypothesis in this study is that while people from divorced homes will be more likely to enter earlier into a partnership union, they will also be more inclined towards cohabitation and less inclined towards marriage.*

Size of the original family

Manting [1994] interprets the size of the family as an indicator of how much money, time and energy the parents were capable of devoting to their children. He assumes that children from small families are often led to invest more in other areas of life (work, education) and are drawn away from an early marriage [ibid.: 74]. In the Czech case this tendency may be further reinforced by the fact that large families in this country are usually families with a strong religious (especially Catholic) orientation, in which a stronger pro-family orientation is to be expected. *Therefore, the tested hypothesis is that people who grew up in smaller families will be less inclined to enter into a partnership.*

Age

Entry into marriage is closely connected with the age of a person and the given phase in the life course that they are in. The influence of age, however, is not monotonous, but is rather distributed along a bell-shaped curve: with the increase in age, the probability of entry into a union also increases, but later this tendency reverses and the probability decreases. Blossfeld and Huinink [1991: 153] therefore propose controlling the influence of age with the aid of two logarithmic functions. If we assume that people are at risk of entering into their first union between the ages of 15 and 44, then: (1) log (impact of age 1) = log (current age – 15), (2) log (impact of age 2) = log (44 – current age). Here it is necessary to measure age as a time-varying covariate.

Cohort membership

The analysis in this paper works with three age cohorts: 1952–1961, 1962–1971 and 1972–1982. A typical feature of socialist Czechoslovakia was the East European demographic regime, characterised by a high marriage rate at a low age. In the 1990s a sharp decline occurred in the marriage rate, but this decline was partially compensated by the increase in cohabitation. *Therefore, it is possible to assume that the generation born after 1971 will exhibit a lower likelihood of entering into a marriage but a higher likelihood of entering into cohabitation.*

Main explanatory variables – hypotheses

Highest completed level of education

If we consider education to be a measure of earning potential, economic independence, potential employment, and the cultural milieu within the labour market, then according to the majority of theories it should have an important influence on demographic behaviour.

According to Becker [1996], marriage brings employed, economically independent, and more educated women fewer advantages, and consequently the likelihood that they will enter into a marriage decreases. Similarly, Van de Kaa [1987] and Lesthaeghe and Moors [1992] see the economic independence of women as one of the main factors that caused a change in family behaviour [cit. in Manting 1994]. Moreover, Liefbroer [1991] points out that for people with higher education autonomy and independence are more important. This should further decrease the hazard of entering marriage for people with higher education.

Hypothesis 1: It is possible to assume that women with higher levels of education would enter into marriage less often and at a later age. The lower marriage rate could, however, in part be compensated by the fact that they are more likely to enter into cohabitation.

On the other hand, Oppenheimer expects that women with higher income have better chances of marrying. If education is a proxy for higher earning potential, it could therefore be assumed that women with higher education will marry later, but at a higher rate.

Hypothesis 2: The women with higher education will marry later, but they will have better chances to marry.

Educational enrolment

Educational enrolment is measured as a dynamic time-varying covariate. It records the point in time at which the female respondent completed her full-time studies, i.e. ended her enrolment as a full-time student. According to Carmichael [1995: 64] and Blossfeld and Huinink [1991], the status of being a student decreases the likelihood of entry into any kind of partnership, although the influence is strongest with respect to marriage. The fact of being enrolled at school has a negative impact on the hazard of entering a union because students often do not have the economic means for setting up their own household. Moreover, the cultural definition of adulthood is closely connected with the end of full-time schooling and students are often not viewed as mature enough to form a union (especially marriage) [Blossfeld and Huinink 1991].

Hypothesis 3: School enrolment will have a negative effect on entry into a partnership union and this effect will be somewhat stronger in the case of marriage.

According to some longitudinal studies [Blossfeld and Huinink 1991; Liefbroer 1991], the negative effect of education on entry into marriage stems from the longer period of school enrolment, but not from higher education as such.[7]

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[7] But while this is true for entry into marriage, it does not apply in the case of the birth of a child.

According to the authors of these studies, the higher earning potential of educated women, their higher human capital, and their better employment opportunities in the labour market do not in themselves influence the formation of partnerships. As soon as more educated women complete their studies they exhibit the same likelihood of entering into a partnership union as women with lower education levels. Moreover, in accordance with Mills' and Blossfeld's globalisation theory even the reverse trend may occur, since people with higher education are better able to cope with insecurity. Once their education is finished they may more often be able – i.e. in a position – to marry.

Hypothesis 4: If it is true that the differences between educational groups stem only from the timing of events, that is, women with higher education levels simply study longer, it could be assumed that in the model that controls the end of education as a time-varying covariate the influence of education will decline, will cease to be significant, or will be reversed.

The cohort shift in the impact of education

Socialist society was artificially homogenised and allowed people to apply their education and human capital only to a limited extent. However, it could be expected that with the rise of a market economy and the development of an open society the life courses of various social groups would have gradually diversified. It is also possible that, while in the past educational differences were unable to manifest themselves, in the case of the younger cohorts space allowing this would now have opened up and differences would have begun to appear. It may now have become important how women invest in the market capital. If in today's society education is a more significant factor than it was prior to 1989, it could also be assumed that the effect of school enrolment would be stronger in the youngest cohort. The data cover only a relatively narrow time window after 1989. However, it may be possible to discover some basic tendencies.

Hypothesis 5: Both school enrolment and highest completed levels of education will have an even greater effect in the case of the youngest cohort.

Data and results

The 1997 Family and Fertility Survey (FFS) involved the participation of 1735 women aged 15–44, and for 1677 of these respondents information is available on whether and when they began living with their first partner, and whether they were married at that point in time. If people entered into marriage within a month of starting to live together they were included among direct marriages. The probability of entry into a partnership union is here modelled with the event-history (survival) analysis.

It is possible to obtain a basic idea of the rate of entry into a partnership union through survival functions, which model the likelihood that up until a certain point

Figure 1. Partnership formation by birth cohorts and age (survival function)
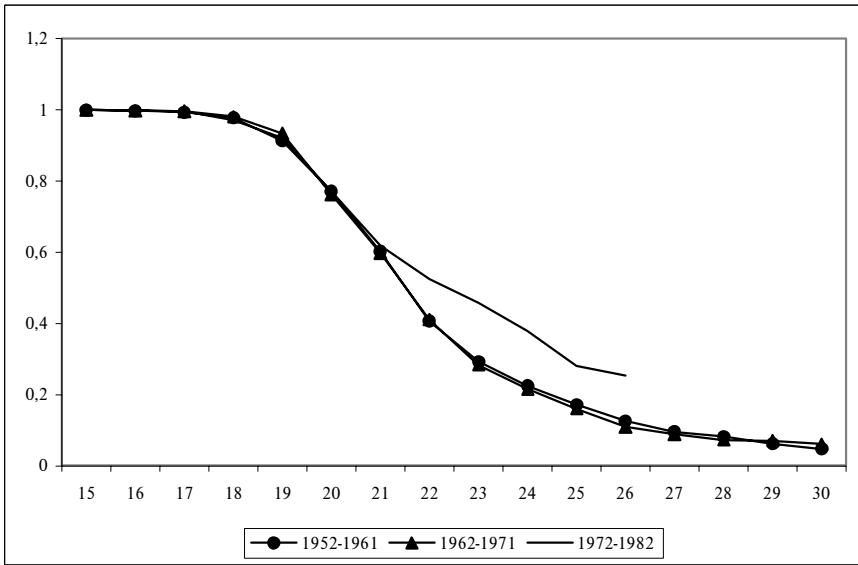
Source: FFS 1997

Figure 2. Partnership formation by education (survival function)

Source: FFS 1997

along an x-axis people will not form a union. Figures 1 and 2 illustrate the survival functions for four educational groups and three cohorts. The graphs allow two basic observations to be made. First, people born in the years 19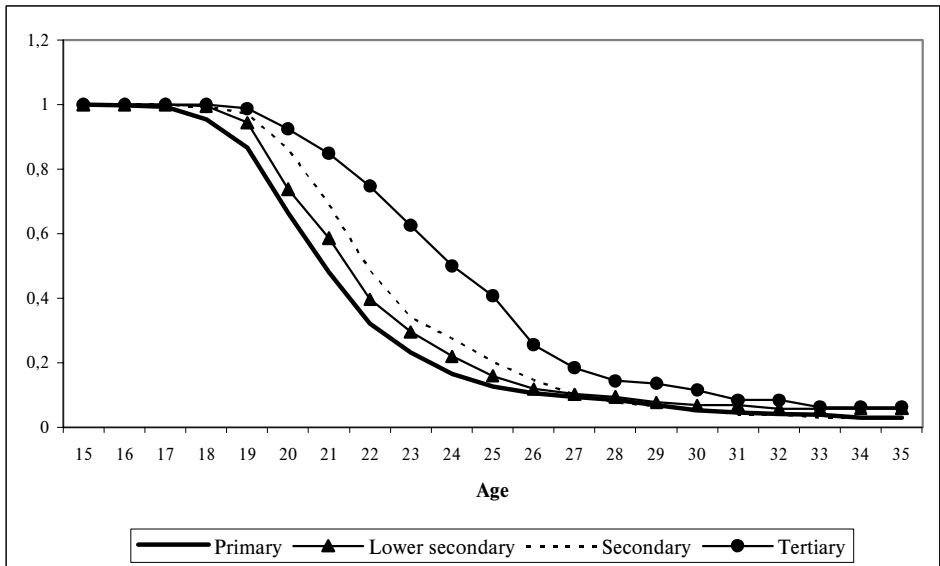72–1982 exhibit an overall lower probability of union formation altogether, regardless of whether this means marriage or cohabitation. Therefore, it is not possible to confirm that the decline in the marriage rate during the first half of the 1990s was fully compensated by the spread of cohabitation. Second, women with higher education have at first a lower likelihood of entering a union, but at a later age they catch up with their less educated peers.

It is not possible to determine from the survival functions the influence of several factors at once or even the inter-cohort shift. Therefore, the use of some of the exponential transition rate models would appear to be useful here. One positive attribute of these models is that they offer the possibility to control the effect of several variables at once. A disadvantage is that the coefficients of individual variables and the transition rate reflect the influence of the variable on both the speed of the process and the likelihood that the process will occur [Blossfeld and Rohwer 2002: 99; Bernardi 2001]. If from a theoretical perspective it is necessary to distinguish between timing and the likelihood that an event will occur, it is possible to create a survival function for the given variable.

Hypotheses on the background variable

Tables 1 and 2 contain three types of models: entry into a partnership in general (table 1), and entry into marriage and entry into cohabitation as competing risks (table 2).[8] Model 1 assesses only the effect of the background variables; all of them were shown to be statistically significant. Entry into a partnership union was closely connected with age, and at the same time the influence of age was not monotonous. The number of brothers and sisters had a positive effect on entry into a partnership union. Equally, the hypothesis that those respondents whose parents were divorced begin living with a partner earlier than people whose parents were not divorced was also confirmed. While the likelihood that they will enter into marriage is the same as for people whose parents were not divorced, people from divorced families do tend to cohabit more often and at an earlier age.

Hypotheses on education:

Hypothesis 1: The negative influence of education on a woman's risk of marrying.
Hypothesis 2: The positive influence of education on a woman's risk of marrying.

Models 2 and 3 consider the effect of the highest completed level of education (as a time-constant covariate), measured both as the number of years of study and according to four educational categories. In models 2 and 3 the level of education

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[8] In competing risk, marriage and cohabition are viewed as two ways in which singleness comes to an end. This means that once a woman enters a marriage, she is not at risk of cohabition and is not part of the risk set anymore. Conversely, if a woman starts to cohabit, she is not at risk of marriage.

Table 1. Union formation: all unions (exponential transition rate model)

	MODEL 1	MODEL 2	MODEL 3	MODEL 4	MODEL 5	MODEL 6	MODEL 7	MODEL 8	MODEL 9
								cohort	
								1952–71	1972–82
Log (current age – 15)	**2,1197****	**2,2063****	**2,1968****	**1,3533****	**1,3565****	**1,3547****	**1,3563****	**1,4882****	**1,0788****
Log (44 – current age)	**5,4553****	**5,5945****	**5,5811****	**4,3658****	**4,4287****	**4,4847****	**4,5283****	**4,8447****	**4,1001***
Parent's divorce	**0,2484****	**0,2386****	**0,2392****	**0,2444****	**0,2487****	**0,2543****	**0,2571****	**0,2727****	0,2081
Number of siblings	**0,1053****	**0,0749****	**0,0801****	**0,0627****	**0,0610****	**0,0555****	**0,0547****	**0,0506***	0,1066
Education (in years)	.	**–0,0712****	.	0,0020	.	0,0017	.	.	.
Primary (Comparison category)	.	.	.	.	.	.	.	.	.
Lower secondary	.	.	**–0,1711***	.	–0,0644	.	–0,0451	–0,0132	–0,2200
Secondary	.	.	**–0,2904****	.	–0,0677	.	–0,0539	0,0245	**–0,3931***
Tertiary	.	.	**–0,6540****	.	0,1060	.	0,0888	0,1221	–0,3079
School enrolment	.	.	.	**–1,3479****	**–1,3737****	**–1,3432****	**–1,3653****	**–1,3034****	**–1,5561****
Cohort 1952–1961 (comparison)									
Cohort 1962–1971	.	.	.	.	.	0,0103	0,0147	.	.
Cohort 1972–1982	.	.	.	.	.	**–0,2468****	**–0,2328****	.	.
Constant	–44,1039	–44,3955	–44,8504	–34,3400	–34,6602	–34,9550	–35,1755	–37,5394	–31,7764*
Log-likelihood (starting)	–7221,91	–7215,43	–7215,43	–7142,80	–7142,80	–7142,80	–7142,80	–5740,08	–1373,84
Log-likelihood (estim.)	–6549,69	–6515,69	–6517,29	–6329,54	–6327,84	–6323,49	–6322,41	–5118,32	–1196,40
Events	1280	1279	1279	1266	1266	1266	1266	1039	227

Data: FFS 1997

**Significant at the level 0,01

*Significant at the level 0,05

**Table 2. Union formation: marriage and cohabitation, competing risk
(exponential transition rate model)**

MARRIAGE	MODEL 1	MODEL 2	MODEL 3	MODEL 4	MODEL 5	MODEL 7
Log (current age – 15) (dynamic measure)	**3,3147****	**3,4144****	**3,4016****	**2,3900****	**2,3981****	**2,4123****
Log (44 – current age) (dynamic measure)	**9,7162****	**9,895****	**9,8477****	**7,9093****	**7,9677****	**8,3253****
Parent's divorce	–0,0254	–0,0344	–0,0367	–0,0200	–0,0175	0,0059
Number of siblings	**0,1080****	**0,0751****	**0,0800****	**0,0654****	**0,0640****	0,0459
Education (in years)	.	**–0,074****	.	0,0001	.	.
Primary (comparison cat.)	.	.	.	.	.	.
Lower secondary	.	.	–0,1688	.	–0,0795	–0,0154
Secondary	.	.	**–0,2600****	.	–0,0525	–0,0017
Tertiary	.	.	**–0,7439****	.	0,0387	0,009
School enrolment (dynamic measure)	.	.	.	**–1,3432****	**–1,3586****	**–1,3373****
Cohort 1952–1961 (comparison)						
Cohort 1962–1971	.	.	.	.	.	–0,0834
Cohort 1972–1982	.	.	.	.	.	**–0,8172****
Constant	–73,5443	–74,0776	–74,3563	–59,0409	–59,3741	–61,2714
COHABITATION						
Log (current age – 15) (dynamic measure)	**1,0479****	**1,0899****	**1,0841****	**0,7401****	**0,7352****	**0,7229****
Log (44 – current age) (dynamic measure)	**1,9768****	**1,9799****	**2,0083****	**2,1965****	**2,2920****	**1,9308****
Parent's divorce	**0,7226****	**0,7097****	**0,7179****	**0,7076****	**0,7176****	**0,7025****
Number of siblings	**0,1072****	**0,0802***	**0,0864***	0,0675	0,0664	**0,0895***
Education (in years)	.	**–0,0689****	.	–0,0088	.	.
Primary (comparison cat.)	.	.	.	.	.	.
Lower secondary	.	.	–0,1931	.	–0,0785	–0,1617
Secondary	.	.	**–0,3893****	.	–0,1912	**–0,2520***
Tertiary	.	.	**–0,4843****	.	0,1463	0,1921
School enrolment (dynamic measure)	.	.	.	**–1,1407****	**–1,1968****	**–1,2301****
Cohort 1952–1961 (comparison)						
Cohort 1962–1971	.	.	.	.	.	**0,2978****
Cohort 1972–1982	.	.	.	.	.	**0,7403****
Constant	–21,2916	–20,6617	–21,3347	–20,7487	–21,2937	–19,3537
Log-likelihood (starting)	–8012,92	–8006,06	–8006,06	–7926,21	–7926,21	–7926,21
Log-likelihood (estimates)	–7282,57	–7247,22	–7247,27	–7068,25	–7065,53	–7019,46
Events						
Marriage	885	884	884	874	874	874
Cohabitation	395	395	395	392	392	392

Data: FFS 1997

**Significant at the level 0,01

 *Significant at the level 0,05

has a negative effect on entry into a partnership, and the higher the level of education a woman has the lower the transition rate is. We can obtain a more insightful idea of the influence of education by transferring the coefficients to the percentage change of the transition rate:[9] women with lower secondary education have a 16% lower transition rate, those with full secondary education a 25% lower transition rate, and women with higher education even a 48% lower transition rate than women with only elementary education. At the same time, the negative influence of education is stronger in the case of marriage than cohabitation. These models seem to correspond to the rational choice theories in that they confirm the negative influence of education (and thus of earning potential and human capital applicable in the labour market) on entry into a partnership. The results correspond more to Becker's or to the normative theories, which assume that education has a negative impact on the likelihood of marriage.

Hypothesis 3: The negative effect of school enrolment on entry into a partnership and especially on the risk of marrying

Model 4 includes school enrolment 's' as a dynamic measure, time-varying covariate. As expected, it was revealed that school enrolment has a negative effect on entry into any kind of partnership and that this effect is stronger in the case of marriage. School enrolment decreases the risk of marrying by 73% and the risk of cohabiting by 68%.

Hypothesis 4: The impact of education can be explained by a longer period of attending school. Once the model controls the end of education as a time-varying covariate the influence of education ceases to be significant or may be reversed.

The important finding is that, when school enrolment is controlled in the model, education ceases to have an influence on the transition rates, both in the case of marriage and cohabitation. Thus the hypothesis that women with higher levels of education will show a tendency to reject marriage and more often opt for cohabitation is not confirmed. Data also failed to confirm the positive effect of higher education on marrying. The FFS data thus essentially correspond to the results of the studies by Blossfeld and Huinink [1991] or Liefbroer [1991], and fail to confirm that the level of education (and consequently also the accumulation of specialised human capital) in itself has a negative effect on entry into marriage (or cohabitation). However, the level of education does shift the age at which one of these events will occur.

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[9] The coefficients explaining the variables can at the same time be very easily transferred to the likelihood of the change of transition rate (exp(alfa) − 1)*100.

**Table 3. Union formation: marriage and cohabitation, competing risk
(exponential transition rate model). Models including interactions**

	MODEL 10		MODEL 11	
MARRIAGE	Marriage	Cohabitation	Marriage	Cohabitation
Log (current age – 15) (dynamic measure)	**2,409****	**0,739****	**2,412****	**0,746****
Log (44 – current age) (dynamic measure)	**8,299****	**2,050****	**8,314****	**1,966****
Parent's divorce	0,008	**0,685****	0,005	**0,674****
Number of siblings	0,046	**0,089****	**0,047***	**0,087****
Primary (comparison cat.)	.	.	.	.
Lower secondary	–0,023	–0,145	.	.
Secondary	–0,009	–0,234	.	.
Tertiary	–,008	0,352	.	.
Less than secondary education (comparison)			.	.
Secondary and more			0,027	**0,105****
School enrolment (dynamic measure)	**–1,335****	**–1,224****	**–1,336****	**–1,167****
Cohort 1972–1982	**–0,779****	**0,632****	**–0,664****	0,786
Tertiary edu*Cohort 1972–1982	0,120	–1,179	.	.
More than secondary edu* Cohort1972–1982			–0,239	**–0,653****
Constant	**–61,147****	**–20,145****	**–61,266****	**–19,787****
Events	874	392	874	392
Log-likelihood: starting values	–7926,21			
Log-likelihood: estimates	–7020,32			

Source: FFS 1997

*Hypothesis 5: Both school enrolment and highest completed levels of education will have
an even greater effect in the case of the youngest cohort.*

Models 10–12 cover the interaction between the level of education and the co-
hort (table 3). It is necessary to approach the cohort differences with some caution.
It must be taken into account that the youngest cohort includes respondents who
are between 15 and 25 years of age. A large number of them have not yet complet-
ed their education, and thus have not yet entered the phase in the life course in
which they begin to live with a partner. Equally, it is necessary to consider the fact
that if the decline in the marriage rate in the 1990s stems from the postponement of
marriage until a later age, this fact could not yet have manifested itself, as these
women have not yet reached that 'later' age. This explains why the influence of age
measured as log (44 – current age) ceased to be significant in the model for the
youngest cohort, as women born in the years 1972–1982 had not yet reached the sec-
ond part of the curve at the time when the data was collected.

Table 4. Union formation: marriage, cohabitation by cohorts (exponential transition rate model)

		MODEL		11	MODEL		12
	Cohort	1952–1961	1962–1971	1972–1982	1952–1971	1962–1971	1972–1982
MARRIAGE	Log (current age – 15)	**2,502****	**2,688****	**1,705***	**2,496****	**2,680****	**1,768***
	Log (44 – current age)	**7,851****	**9,865****	5,849	**7,752****	**9,861****	6,022
	Parent's divorce	0,086	0,045	–0,455	0,093	0,048	–0,447
	Number of siblings	**0,101***	0,004	0,029	**0,102****	0,005	0,015
	Education (in years)	0,001	0,000	–0,010			.
	Primary (comparison cat.)			.			.
	Lower secondary			.	–0,084	0,070	–0,186
	Secondary			.	0,080	0,000	–0,287
	Tertiary			.	–0,098	0,044	–0,020
	School enrolment	**–1,354****	**–1,256****	**–1,462****	**–1,326****	**–1,271****	**–1,456****
	Constant	–59,154	**–71,135****	–44,88	**–58,561****	**–71,101****	–46,047
COHABITATION	Log (current age – 15)	**0,482****	**1,103****	**0,945****	**0,476****	**1,062****	**0,943****
	Log (44 – current age)	**1,513****	**1,888***	**4,747***	**1,515***	**1,876***	**4,716***
	Parent's divorce	**0,668****	**0,791****	**0,585****	**0,661****	**0,828****	**0,586****
	Number of siblings	**0,155****	–0,045	**0,158***	**0,150****	–0,041	**0,163***
	Education (in years)	0,024	–0,013	**–0,088***			.
	Primary (comparison cat.)			.			.
	Lower secondary			.	–0,440	–0,046	–0,238
	Secondary			.	0,152	–0,270	**–0,498***
	Tertiary			.	0,398	0,087	–0,721
	School enrolment	**–1,516****	**–0,486***	**–1,621****	**–1,566****	**–0,593***	**–1,598****
	Constant	**–16,666****	**–20,328****	–35,079	**–16,438**	**–20,142****	–35,546
	Log-likelihood (starting)	–2877,72	–3449,96	–1529,57	–2877,73	–3449,96	–1529,57
	Log-likelihood (estimates)	–2558,10	–3095,21	–1344,34	–2255,83	–3093,73	–1342,93
	Events						
	Marriage	369	405	100	369	405	100
	Cohabitaton	106	159	127	106	159	127

Data: FFS 1997

**Significant at the level 0,01

 *Significant at the level 0,05

From the separate models for the older and for the youngest cohorts it appears that, in the case of the youngest cohort, the influence of variables characterising family background (number of brothers and sisters, parental divorce), which previously hastened entry into a partnership relationship, has decreased. The cohort comparison reveals that the effect of whether a woman studied or not has no clear pattern. Even though the effect of school enrolment is stronger in cohorts born after 1971 in comparison with the 1962–1972 cohort, the same does not hold true for the 1952–1961 cohort. It seems that for the cohort born in 1962–1971 the effect of school enrolment was weaker in comparison with older and younger cohorts. The hypothesis relating to the level of completed education cannot be confirmed in these models, as the coefficients reveal very little in the way of a clear tendency. Of course, this is owing to the fact that a large portion of the women in this age group are still studying.

Models 10 and 11 cover the interaction between the highest completed level of education and the age cohort. Given the size of the sample no other interactions are incorporated into the model and education has only two basic categories. From these models it is not possible to conclude that tertiary education is beginning to influence entry into marriage among the youngest cohort. If we choose a different categorisation for the level of education attained (primary and lower secondary versus higher), it seems that in the youngest cohort the life courses of women with different levels of education are really beginning to differ, but are so in exactly the opposite direction than what was assumed in the initial hypothesis. It is women with lower education who more often choose cohabitation.

Conclusion

In the previous section I attempted to summarise the basic theories explaining the changes in demographic behaviour. I focused attention primarily on the connection between demographic behaviour and education since education may serve as a proxy for cultural capital and for the position on the labour market.

It is argued that people with higher education opt for lifestyles that give them more independence. Equally, the education and growing earning potential of women are usually viewed as an important reason for the declining marriage rates and the growing proportion of people who have never married. Marriage, the argument claims, is less advantageous for more educated women, since their education offers them more opportunities outside the traditional family setting.

Data confirmed that previous experiences drawn from the family background of an individual influence the timing of partnership behaviour, as well as whether a person chooses to enter into marriage or a relationship of cohabitation. However, the basic hypotheses concerning education and union formation could not be confirmed in the case of the Czech Republic. The data reveal that while more educated women do enter into marriage later, this deferral can be fully explained by the fact that they

study for a longer period of time. From the moment when they complete their schooling they exhibit the same transition rates as women with lower levels of education. It is equally untrue that they more often choose to enter into cohabitation.

Since education was measured as a time-constant covariate, it traces more the cultural capital and earning potential than the actual socio-economic status of the woman. Consequently, the results do not completely refute the rational choice theories, but they do indicate that the relationship between human capital and union formation is far more complicated. They lead back to the question of values and preferences. That women have a higher earning potential and have more opportunities outside of marriage does not necessarily mean that they opt for alternative life courses. On the contrary, the results from the cohort comparison indicate that better-educated women are less inclined towards cohabitation. However, this would need to be confirmed further by data that cover a longer period in the post-socialist social transformation.

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