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FAMILY LIFE TRANSITIONS OF YOUNG WOMEN IN A CHANGING SOCIETY:

FIRST UNION FORMATION AND BIRTH OF FIRST CHILD IN THE CZECH REPUBLIC, 1970-1997

A dissertation submitted in satisfaction

of the requirements for the degree of

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in

Demography

by

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I hereby declare that this dissertation is completely my own work and that I used only the cited sources.

March 2004   Vladimíra Kantorová

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CHAPTER 1

Introduction

1.1 Family life transitions of young women in a changing society

The last decade of the 20th century witnessed major changes in the occurrence and timing of family life transitions in the lives of young adults in the Czech Republic. Some of these transitions – e.g., first marriage or first birth – were postponed to a later phase of life or even foregone altogether. Other transitions – such as moving into unmarried cohabitation – gained in importance. At the population level, this was reflected in the changing values of demographic indicators. Period fertility rates declined sharply to one of the lowest levels ever observed (that is, a total fertility rate below 1.2 children per woman), accompanied by the unprecedented increase in the average age at first birth from below 22.5 years in 1991 to nearly 25 years in 2001. In the same manner, first marriages were also postponed and first marriage rates have fallen rapidly. Unmarried cohabitation became a more widespread form of union among young adults. The proportion of children born outside marriage markedly increased; while only 10% of first children were born out of wedlock in 1989, the proportion increased to 26% in 2000. This swift development was in absolute contrast to early and universal patterns of nuptiality and fertility in the 1970s and 1980s.

These complex transformations in the patterns of fertility, reproduction and family life progressed during an era of profound societal and economic transformation, marked by the establishment of democratic institutions and market economy. The state socialism of the 1970s and 1980s was characterized by a centrally planned economy based on extensive economic growth, state owned enterprises, a virtually non-existent private sector and strong social security and labor rights. Machonin (1996) described the Communist regime as a social system based on a combination of totalitarianism and the abolition of a market

economy and subsequently egalitarianism concerning the distribution of wealth, official incomes and, to some extent, egalitarianism of lifestyles. The end of the period of Communist party rule and the subsequent transition to democracy since 1989 mark a clear divide in the political economy of the Czech Republic. Institutional changes presupposed to be part of the post-communist transformation are the introduction of a pluralist democracy and a market economy. During the same transitional period, changes in the social welfare system and the educational system were launched.

Many aspects of these overarching changes directly affected individuals' daily lives. This was true in particular for young men and women standing at the threshold of their adult lives, when important decisions about their future lives had to be made. This period of life is coined as the *transition into adulthood*. It is structured by events generating the movement from economic dependence and participation in the family of origin, to economic independence and establishment of a family of procreation (Marini 1985). In this sense, the transition from education to work signifies an important change in the life conditions and life experiences of young adults. The same is true for the formation of unions and entry into parenthood, both transitions which set new demands for coordinating several domains of an individual's life (e.g. Buchmann 1989, Corijn and Klijzing 2001).

Education, work and family careers of young adults in the 1990s did not follow the same stable, continuous and highly predictable patterns of the careers of young Czechs entering adulthood in the 1970s and 1980s. This study explores the ways in which contemporary social and economic changes alter the nature of the life course, in particular, the family life transitions. In this sense, *"demographic events are milestones in people's lives"* (Willekens 1999:23). We examine demographic aspects of the life course of young women and focus on the initial stage of family formation – the transitions to first union and first birth. However, we endeavor to understand these events in a wider context of the life course and connect family life transitions to women's education and employment domains, which were undoubtedly strongly shaped by the institutional context of society.

This study's primary analytic focus is on the following questions: *What shifts occurred in the family formation of young Czech women entering adulthood in the 1990s compared with those entering in the 1970s and 1980s? Which groups of women 'transmit' shifts in family formation – that is, who are the 'trendsetters' and who are the 'laggers'?* A second major question is specific to the context of the Czech Republic: *How did institutional settings of the educational system, labor market and society in general influence family*

formation under state-socialism of the 1970s and 1980s and how did they influence it in the transition to a market economy in the 1990s? This second question aims to uncover the underlying factors of recent demographic changes by relating the macro-economic and macro-social changes to individual lives.

1.2 Theoretical and methodological background of the research

The dynamic changes in the demographic situation of the Czech Republic have received attention by many researchers investigating either the Czech Republic[1] or Eastern Europe[2] in general. At the beginning of this discussion, the investigations were based on macro level associations between reproductive behavior and economic and social development. An overarching generally accepted explanation of the described developments does not yet exist. A frequent reference was made to the 'second demographic transition' thesis and to the 'economic crisis' thesis. In the first view, the demographic developments in the Czech population became part of the 'second demographic transition' which took place in other parts of Europe already starting in the 1960s. The proponents of the 'economic crisis' thesis, on the other hand, stressed processes that were specific to the post-communist society – such as economic crisis, a declining standard of living, the loss of guaranteed employment, reduced welfare benefits, insecurity and uncertainty about future developments.

We started the introduction by presenting two macro-level findings: on the one hand, demographic development, and on the other hand, social and economic development. But in order to study the question of how institutional settings of the educational system, labor market and society might have influenced the family life of individuals, the investigations of macro-level relations are not sufficient. To answer this question, rather, it is necessary to analyze individual life courses. An analytical method accounting for this is known as the *life course approach*. It provides the opportunity to link demographic events to other aspects, which affect an individual's behavior. The life course approach is part of an important paradigm shift in the social sciences (e.g. Giele and Elder 1998, Coleman 1986) that is characterized by the linkage of individual action with social change and social structure. As

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[1]   e.g. Rychtaříková (1995, 1996, 2000), Rabušic (1996, 1997, 2001), Kocourková (1996), Stloukal (1998), Fialová and Kučera (1997), Kuchařová and Petrová (1997), Možný a Rabušic (1999), Mašková and Stašová (2001), Koschin (2001), Sobotka, Zeman and Kantorová (2003), Sobotka (2003), Kantorová (2003).

[2]   UN ECE (1999), UN ECE (2000), Rychtaříková (1999), Philipov and Kohler (2001), Kučera et al (2001), Philipov (2002), Sobotka (2002).

Riley (1998:29) described the crux of that paradigm: *"Changing lives (aging and the succession of cohorts) are in continuing interplay with changes in society and its structures"*.

In 1996, Courgeau and Lelièvre, heralded a 'paradigm shift' in demography, characterized by the move to individual life and event history analysis, based on the works of, among others, Hoem (1971, 1986), Courgeau and Lelièvre (1989), Yamaguchi (1991), Blossfeld and Rohwer (1995). This new statistical approach extended the traditional methods of life table techniques.

Event history analysis offers a way of analyzing on the individual level dynamically different domains of individual lives (such as family formation, education, employment). The point is to see how a particular event – whether of a family, economic or of a different nature – experienced by a woman will change the probability of another event happening to her over her lifetime. In a methodological view, the main purpose of our study is to model educational and working careers of women as a continuously changing process over a women's life course and to estimate their effects on the transitions to first union and first birth, with other important influences included in models.

For event history analysis, we need data, in which individuals are observed across their lifetime, or at least part of it, and in which a number of characteristics of each individual are collected. We need data that allow the use of statistical concepts that relate women's family decisions to their education and career experiences or other cumulated past life experiences. The data used in this study come from a retrospective survey conducted in the Czech Republic at the end of 1997 in the framework of the international project of the Fertility and Family Survey (Rychtaříková and Kraus 2001). We have analyzed data on 1,735 women who were born between 1952-1982; thus, they were 15-45 years old at the time of the interview in November 1997. The data provide us – among other information – with full retrospective histories of union formation and dissolution, childbearing, education, employment and occupation.

For a meaningful interpretation of results from event history analysis, it is important to move beyond the finding of statistically significant effects; rather it is crucial to uncover *causal* mechanisms as explanations for the observed relations. We account for it by formulating specific hypotheses concerning particular mechanisms connecting the life

domains of individuals. By doing this we address a variety of theoretical reasons and pay particular attention to the context of a developing Czech society.

Our first threefold objective is to review 'rational actor' models of the economics of family, clarify the explanatory categories in this approach and point out theoretical explanations which might be useful for understanding the current changes in family formation behavior. Our second objective, drawing on work by van de Kaa and Lesthaeghe, is to clarify the factors which gave rise to the second demographic transition, namely: changes in the economic and social structure of a society, cultural changes and technological innovations. We pinpoint the specific manifestations of the second demographic transition which are possible to investigate in the life course approach, such as a destandardization of the life course or a change in the relation of marriage and childbearing. As a third objective, we look at institutional explanations of life course patterns, both in the broad contextual setting of state institutions (comparing state-socialism with the transition period) and more particularly in the context of family policies (comparing those policies with strong pronatalist aims of the 1970s and 80s with the family policies in the 1990s, which were not clearly defined). Our last objective is to emphasize the role of the family system, social norms and gender relations for the characteristic patterns of family life transitions.

The different modes of theoretical reasoning presented above are not mutually exclusive. We see as particularly important the issue of heterogeneity in the population and the fact that *"theories may address specific mechanisms that are more recognisable in one context than in another"* (Lesthaeghe 1998). Event history analysis allows us to study the heterogeneity of demographic behavior across different population groups. Additionally, the theoretical explanations connect several life domains of individuals (such as the relation of education and childrearing), thus several domains of an individual's life have to be studied simultaneously. What we are ultimately looking for are new insights into the demographic developments of the Czech Republic.

1.3 Outline of the study

Chapter 2 describes the demographic characteristics of first marriage and first birth mainly on the basis of vital statistics data. We present the main developments of nuptiality and fertility with a particular focus on the features of first marriage (2.2), first birth (2.3), non-marital first birth and first birth in marriage (2.4). However, we have no information

from vital statistics concerning cohabitation; thus, we review the results from 1991 and 2001 census data and from 1999 survey data to estimate the prevalence of cohabitation among young adults. Against the background of these aggregate level data, we ask further questions regarding the transitions to first union (either by marriage or by cohabitation) and first childbirth and their interrelationship (2.5). These questions are the ones that are crucial for the interpretation of fertility and nuptiality development, but which remain unanswered by analyzing aggregate level data. They are then going to be the research questions for the *empirical* analysis.

Chapter 3 reviews the situation of the Czech society and economy under the communist regime of the 1970s and 1980s as well as during the social and economic transformation of the 1990s. Institutional changes are understood as changes in the economic or educational systems, labor market, gender relations, public policies or law. Chapter 3 is organized as follow: The first analytic section (3.2) describes the educational system. The next section (3.3) is about the labor market institutions. It reviews the development of some indicators of the macroeconomic situation and labor market characteristics in the centrally planned economy and in the transition economy. In particular, we discuss the specificity of women's position in the labor market, which resulted in dual-earner families being widespread. The last section (3.4) reviews the developments of public policies related to the family.

The first two chapters are mainly descriptive and serve to present, on the one hand, the demographic development of family formation (Chapter 2) and on the other hand, the social and economic developments (Chapter 3). In order to connect these two macro-level descriptions of the situation in Czech society, Chapter 4 introduces the life course conceptual framework, which enables us to see the ways in which institutional settings in the education system, labor market and society in general influenced family formation. We explain our rationale for using the life course approach (4.1) and we review basic terms of the life course approach as used in demographic research (4.2). Theories of family formation and the incorporation of the context of family formation are presented in section 4.3. In the next section (4.4), we introduce data and methods, discuss the advantage of methods of event history analysis for our research questions, elaborate the reasons for choosing the proportional hazard models (one of several techniques of event history analysis) as well as the reasons for choosing the Czech Fertility and Family Survey of 1997.

The empirical part starts in Chapter 5 with the investigation of the process of entry into motherhood. First, on the basis of the theoretical background presented in Chapter 4, we formulate research hypotheses (5.2) and introduce data, method and variables (5.3). Then, we proceed to the empirical investigations comparing the 1970s and '80s with the developments of the 1990s (5.4). As a first step, we look at the impact of women's education on the risks of first birth. In the second step, the transition to first birth is studied starting from the end of education. The third step concerns the role of women's employment careers for the entry into motherhood. In the next step, we look at the effects of union formation (both cohabitation and marriage) on the transition to first birth. In the last step, we investigate the influence of women's past life experiences, namely the number of siblings they had and whether they spent their childhood in a city or the country. In the concluding part (5.5) we discuss our results in light of findings from opinion surveys conducted among young adults.

In Chapter 6, we analyze the first union formation as one of two processes: entry into first union by cohabitation or by direct marriage. We formulate research hypotheses regarding the timing of union formation and in particular, the difference between cohabitation and marriage. After introducing the technique of competing risk analysis (6.3), in part 6.4 we present the empirical analysis of union formation. In particular, we investigate the effects of women's education or her situation in the labor market on first union formation. To unravel the relationship of entry into motherhood and first union formation we study the effect of anticipated parenthood on the transition to first union. In the following, we look at the influence of women's past life experiences, namely parental divorce, leaving the parental home, the number of siblings and whether the childhood was spent in a city or the country Finally we analyze how and when cohabiting first unions ended. The concluding part (6.5) reviews the results and discusses them along with findings from other studies.

The relation of first union and first birth is examined again in Chapter 7. We describe the sequences of both events in women's lives (7.2) and review the results from two previous empirical chapters (7.3). The last section (7.4) discusses the individual characteristics which possibly influence both transitions, to first union and to first child, but which were not included in our study. This concerns the concept of unobserved heterogeneity in event history analysis.

Chapter 8 reviews the central findings of the empirical investigation (section 8.2). As concerns the academic implications of the research, we discuss first how event history

analysis can contribute to the understanding of patterns of family formation in the Czech Republic, and second, the theoretical framework for meaningful explanations of such analyses (section 8.3). The last section (8.4) deals with policy implications of the research.

CHAPTER 2

Demographic patterns of family formation

2.1 Introduction

We focus on the events of first union formation and first childbirth of Czech women during the period of 1970-97. Chapter 2 describes the demographic characteristics of first marriage and first birth mainly on the basis of vital statistics data.

Figure 2.1.   Marriages of single women, first live births (biological order), and non-marital live births, 1960-2002.
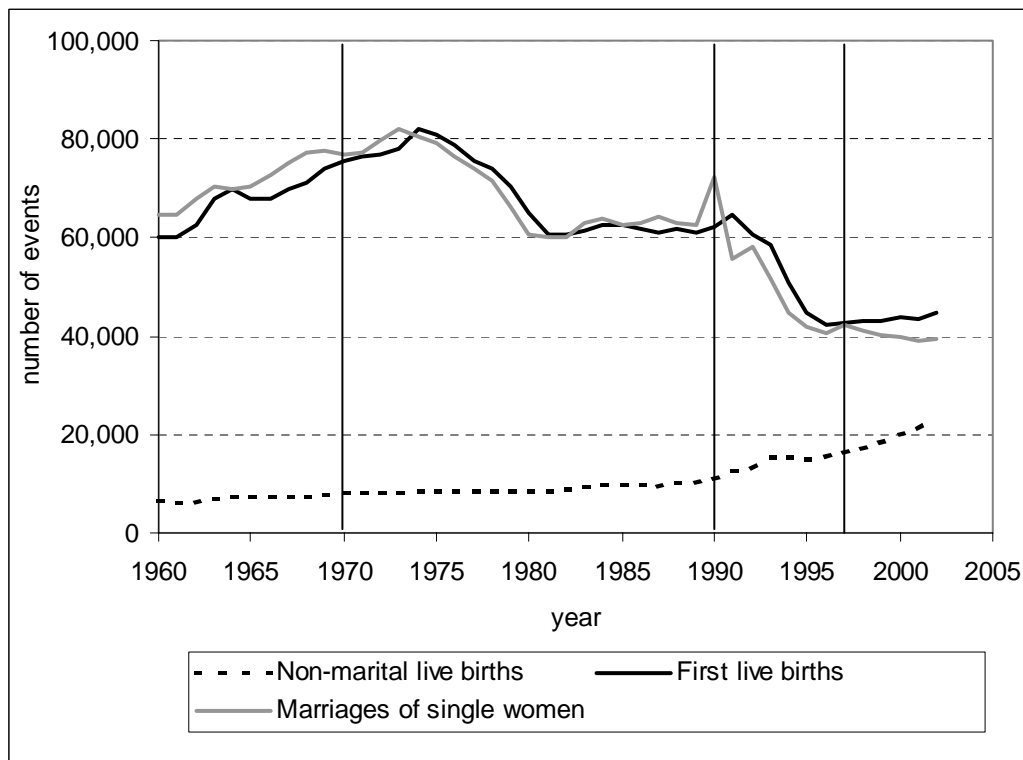
Source: Pohyby obyvatelstva, 1960-2002.

The number of first marriages and first births peaked in the first half of the 1970s for two reasons: the implementation of population policy measures and the fact that numerous cohorts (born in the early 1950s) had reached the age of family formation. While in the 1980s there was no change in the number of these events, the 1990s brought about their sharp decline. For example, in 1989, there were 62,737 marriages of single women and 61,853 first live births, while in 1997 there were only 42,382 marriages and 42,812 first births. In a latter period (1997-2002) the number of first marriages of women stopped declining sharply (with 39,318 in 2002) as the number of first births stagnated and even increased (44,745 in 2002). Therefore, the period analyzed (1990-97) is the period of unprecedented changes in first births and first marriages.

However, as regards the characteristics of cohabitation of young adults we have no information from vital statistics. Thus we present data from censuses 1980, 1991 and 2001 and from two surveys (Reproductive Health Survey 1993 and Fertility and Family Survey 1997). Adding to the background of these descriptive findings, we ask further questions regarding the transitions to first union (either by marriage or by cohabitation) and first childbirth and about their interrelationship. These questions are interesting for the interpretation of fertility and nuptiality development, but as they remain unanswered by analyzing aggregate level data, they will be the research questions for the empirical part of our research.

2.2 First union formation

2.2.1 Nuptiality – first marriage

Throughout the 1970s to 1980s, first marriage was an early and nearly universal event in young adults' lives. The high rates of nuptiality of singles were 90-95% for men and 96-97% for women. Furthermore, at first marriage women were on average 21.4 to 21.8 years old, while men on average were 24.2 to 24.9 years old (indicators are based on calculations from net nuptiality tables of singles, FSO 1989). Furthermore, 9-12% of women entered first marriage before the age of 18[1]. In over half of marriages, the bride was pregnant at the wedding. These patterns were highly invariable and persistent over the two decades.

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[1]   The legal majority age was 18. However, in cases in which a female minor became pregnant, partners could marry even if one of the newlyweds was below the age of 18.

In the year 1990, the number of marriages increased and the average age at first marriage even declined (Figure 2.2). The explanation can probably be found in policy changes[2]. Since 1991, there was a decline in the total number of registered marriages[3]. The decrease in nuptiality rates during the 1990s was mainly due to the reduction of the nuptiality intensity of singles below the age of 25 (Figure 2.2). The average age at first marriage rose throughout the 1990s to 29 years for men and 26.5 for women in the year 2000 (Figure 2.2). Compared to 1989, this represents an increase of 4.3 years for men and 4.6 years for women. Furthermore, the greater age differentiation of nuptiality behavior is documented by an increase of the inter-quartile age difference.

Figure 2.2.   Characteristics of timing of first marriages, 1989-2000.
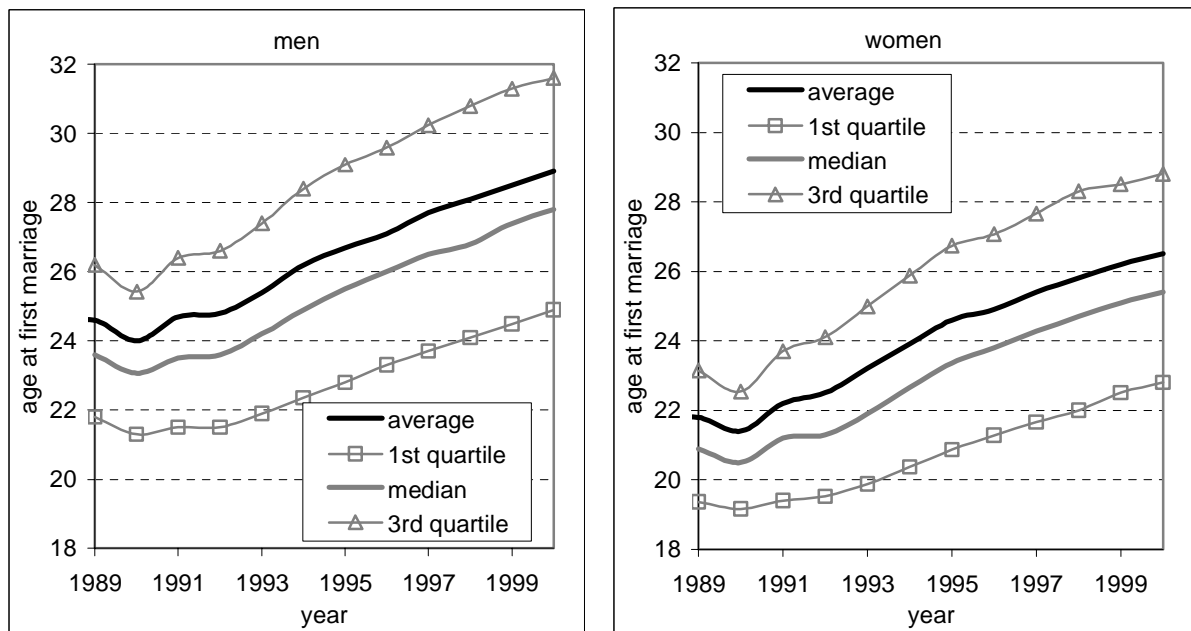
Note: Indicators are calculated on the basis of nuptiality tables of singles (Beranová 2002).

The postponement of marriage to an older age, possibly linked with an eventual rejection of marital ties, is reflected in the growth of the proportion of singles in the population (Figure 2.3). Whereas in 1989, 30-year old single men represented approximately

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[2]   In 1990, the government announced it was abolishing the generous state support for the system of newlywed loans (see Chapter 3) by January, 1991. Thus, many young, not-yet-married couples were aware of financial advantages of marrying in 1990 when newlyweds could still benefit from the previous system of loans.

[3]   The decline in number of marriages challenged the awaited growth in number of marriages resulting from numerous young adults being born during the 1970s natality wave. In the 1990s these young adults reached the age of the most intensive marriage rate so far. Despite the increase in the number of young adults, the overall tendency was a decline in the number of marriages.

17% of the population while 30-year-old single women represented only 6% respectively, their proportion in 2001 reached beyond the limit of 30% for men and 14% for women.

Figure 2.3.   The probability of marriage of single woman and proportion of single women in population, 1989, 1995 and 2000.
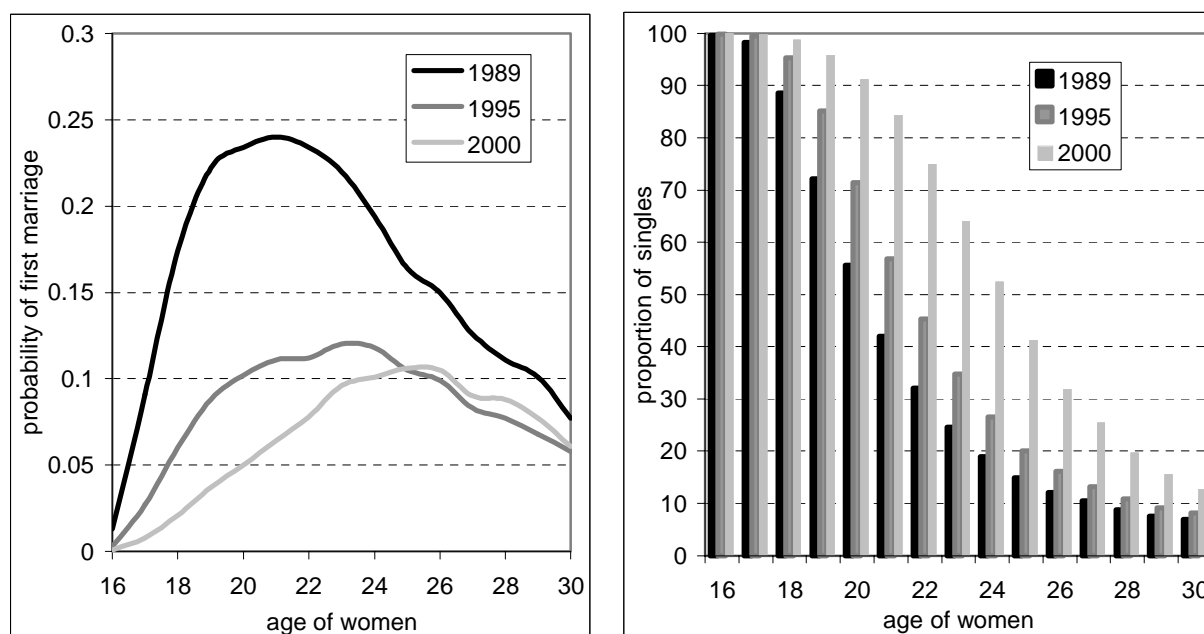
Note: The probability of marriage for a single woman is taken from net nuptiality tables of singles (Beranová 2002) and the proportion of single women is based on the real population at the 1st of January of respective years.

2.2.2 Cohabitation

In the 1970s-80s cohabitation was a rare form of union. According to the census from years 1981 and 1991[4], there were only slightly over 3 unmarried cohabiting unions per 100 existing unions (Table 2.1). Most unmarried cohabiting unions were formed by women who were divorced, widowed or married to other partner (Rychtaříková 1994). Unmarried cohabitation amongst single women was rare: in 1980 and 1991 only 10% and 18% of cohabiting women were single, increasing to 34% in 2001 (Zeman 2003).

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[4]   The only source of an information on unmarried cohabiting unions for the whole population is census. These data were collected at censuses 1930, 1970, 1980, 1991 and 2001. In 1991 the data were based on individual declaration of cohabitation and common place of official registration. However, during the treatment of census data from 1991 at the Czech Statistical Office status of unmarried cohabitation was attributed also to couples of opposite sex, living together in the same household, not married and not relatives, having certain age difference even if they did not declared themselves as cohabiting.

The fast spread of cohabitation among young adults is documented by an increasing proportion of cohabiting unions among all unions for young women: while at age 20-24 in censuses 1980 and 1991 there were 3-4 cohabiting unions, in 2001 there were 21 cohabiting unions per 100 unions (Table 2.1). This is documented also by data from the Reproductive Health Survey 1993 and the Fertility and Family Survey 1997, based on individual declarations of cohabitation[5].

Table 2.1. Share of cohabiting unions from all unions by age of women (in %), 1980-2001.

Age of women	Year				
	Census 1980	**Census 1991**	**RHS 1993**	**FFS 1997**	**Census 2001**
15-19	6.2	8.4	28.9	56.5	49.3
20-24	2.9	3.6	8.2	19.5	20.8
25-29	2.7	3.0	2.9	9.9	8.7
30-34	3.0	3.4	4.0	9.1	5.7
35-39	3.2	3.7	2.9	6.1	4.7
40-44	2.9	3.6	2.9	6.0	4.6
Total female population	3.4	3.4	4.6	10.2	5.4

Source: Census data (FSU 1982, 1992; CSU 2003; in Zeman 2003: p.20); RHS 1993 (4,497 women aged 15-44, in CSU 1995: p.28); FFS 1997 (1,735 women aged 15-44, own calculations).

Cohabitation of young single women, which would presumably point to a premarital stage of partnership, might be underestimated in census data. In the mid-1980s, Možný carried out a survey among newlywed couples (with 1,602 respondents) in Brno: 44.4% of them stated that they cohabited before marriage and another 29.3% lived together at least during weekends and holidays. The average duration of cohabitation before first marriage was 12.3 months among two single spouses. As concerns educational characteristics, the lower the educational attainment of the bride and her father, the higher proportion of marriages were preceded by cohabitation (Možný 1987). A similar survey from the year 1997 showed that 52% of spouses lived together before marriage and one-fourth of unmarried couples already had a child (Kostelecký 1997). The increasing prevalence of premarital cohabitation is evident also from the 1997 FFS survey: only 20-23% of women

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[5]   It is interesting to note that the incidence of unmarried cohabitation among young adults from survey data is higher compared to the estimates from censuses (Table 2.1). The question and the method of collection are actually very different. In the census, the definition of cohabitation is derived from a common place of official registration. Thus, the census data are underestimated to an unknown extent (Rychtaříková 1994, Pištora 2003). In surveys, data are based on individual declarations of unmarried cohabitation. Furthermore, instead of an incidence of cohabitation at a certain point in time, some retrospective surveys (such as the Fertility and Family Survey) observe the event in the perspective of life course – whether such an event occurred in an individual's life or not and when (see Chapter 6 for analysis of first union formation in a life course perspective).

entering their first marriage in the 1970s and 1980s had already lived in cohabitation, compared to 35% of women marrying in 1990-93 and 50% of women marrying in 1994-97.

According to the survey Decade of Societal Transformation from 1999 (4,750 respondents), unmarried cohabiting couples constituted 5.8% of all households surveyed. In 54% of cohabiting unions, the female partner was single and in nearly half of them she was below age 30. Since there is a short average length of cohabiting unions among single women, one might suppose that it serves primarily as a trial period of living together before getting married (Table 2.2).

Table 2.2. Cohabiting unions and their average duration by age and family status, 1999.

Family status	Composition (in %)	Duration of union (in years)	Age	Composition (in %)	Duration of union (in years)
Single	54.3	3.0	18-29	48.9	2.3
Divorced	41	6.5	30-49	32.4	5.3
Widowed	4.7	--	50-69	18.7	9.4
Total	100	4.5	Total	100	4.5

Source: Deset let společenské transformace 2000 (Data from the survey Decade of Societal Transformation, 1999, 4,750 respondents).

We might conclude that there was an increase in the prevalence of unmarried cohabitation among young women, mostly as a premarital form of partnership. However, all available analyses of cohabiting unions are based on descriptive findings related to the period. Data from FFS 1997 are further analyzed in Chapter 6 with a concentration on the first union of women (some descriptive findings regarding women's age and education or calendar time are presented in Table 6.3).

2.3 First childbirth

2.3.1 Overview of fertility development

In 1970-89 the Total Fertility Rate (TFR) ranged between 1.9 and 2.4 children per woman. The TFR peaked in the years 1972-1979 with a value over 2.2 as a reaction to implementation of the population policies of the early 1970s (see Chapter 3). In the 1990s, the fertility rate decrease proceeded at an unprecedented quick rate. Between 1991 and 1996 the yearly decline of the fertility rate was extremely strong and total fertility dropped from 1.89 in 1990 to 1.18 in 1996. In the years 1996-2002, the situation stabilized at a low level, with a total fertility rate below 1.2 children per woman. The total fertility rate of the first

birth order was around 0.9 in the 1980s and since 1992 has declined from this level to its minimum of 0.52 in 1996. Since then it increased moderately to a value of 0.56 in 2002 (Figure 2.4). While in the 1970s and 1980s, women became mothers for the first time at the average age of 22.5 years, the age of entry to motherhood increased during the 1990s to reach 24.9 years in 2000.

Figure 2.4. Total fertility rate (TFR), TFR of first order, tempo-adjusted TFR[6] and total induced abortion rate (TIAR), 1960-2002.
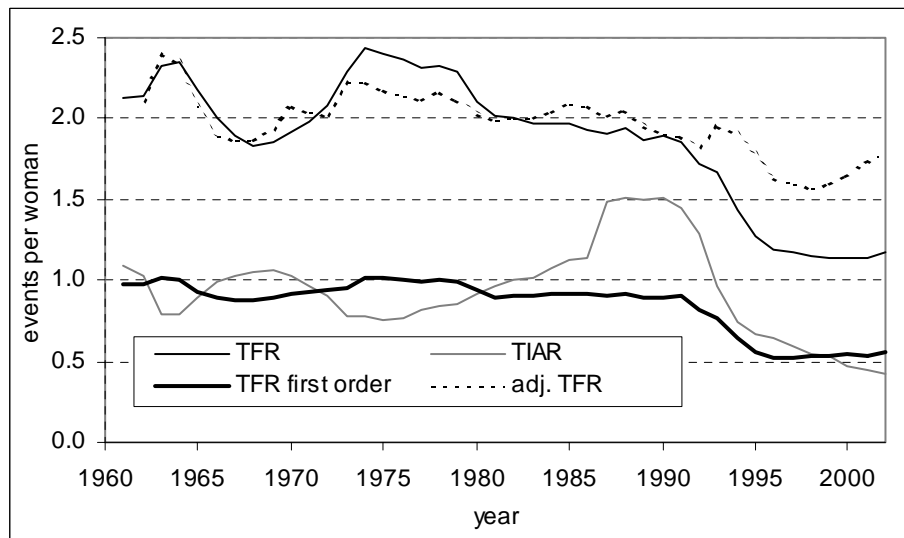
Note: Adjusted total fertility rates are computed on the basis of the Bongaarts-Feeney method (Bongaarts and Feeney 1998).
Source: POPIN Czech Republic and own calculations.

Since 1958, when the abortion law came into practice, fertility development moved in the opposite direction of the intensity of induced abortion (producing a so-called "mirror effect"; see Figure 2.4). In the 1990s, the decrease in the abortion rate (parallel with the fertility decrease) indicates a decline in unwanted pregnancies and an increase in the availability of modern contraceptives (further discussed in Chapter 5) as well as reflecting the Czech population's increasingly responsible sexual and reproductive behavior.

The outcome of the fertility intensity evolution during the 1990s is depicted by modified fertility rate curves by birth order (Figure 2.5). The changes in first-order fertility led to a slump in high fertility rates below the age of 20, and furthermore, to a shift of

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[6] There is a vast demographic literature on the topic of tempo adjustment of period fertility indicators. This method aims to control for the effects of fertility postponement to higher ages by controlling for the rise of average age at motherhood. The original article was written by Bongaarts and Feeney (1998) with further discussion on this topic by van Imhoff and Keilman (2000), Bongaarts and Feeney (2000) and Kohler and Philipov (2001). These methods were applied specifically for Central and Eastern European countries by Philipov and Kohler (2001), and Sobotka (2002, 2003).

fertility intensity values to an older age interval. In the same way, second and third birth order rates also declined and maximum values shifted to older ages.

Figure 2.5. Age-specific rates (frequencies) by birth order, 1980-1997.
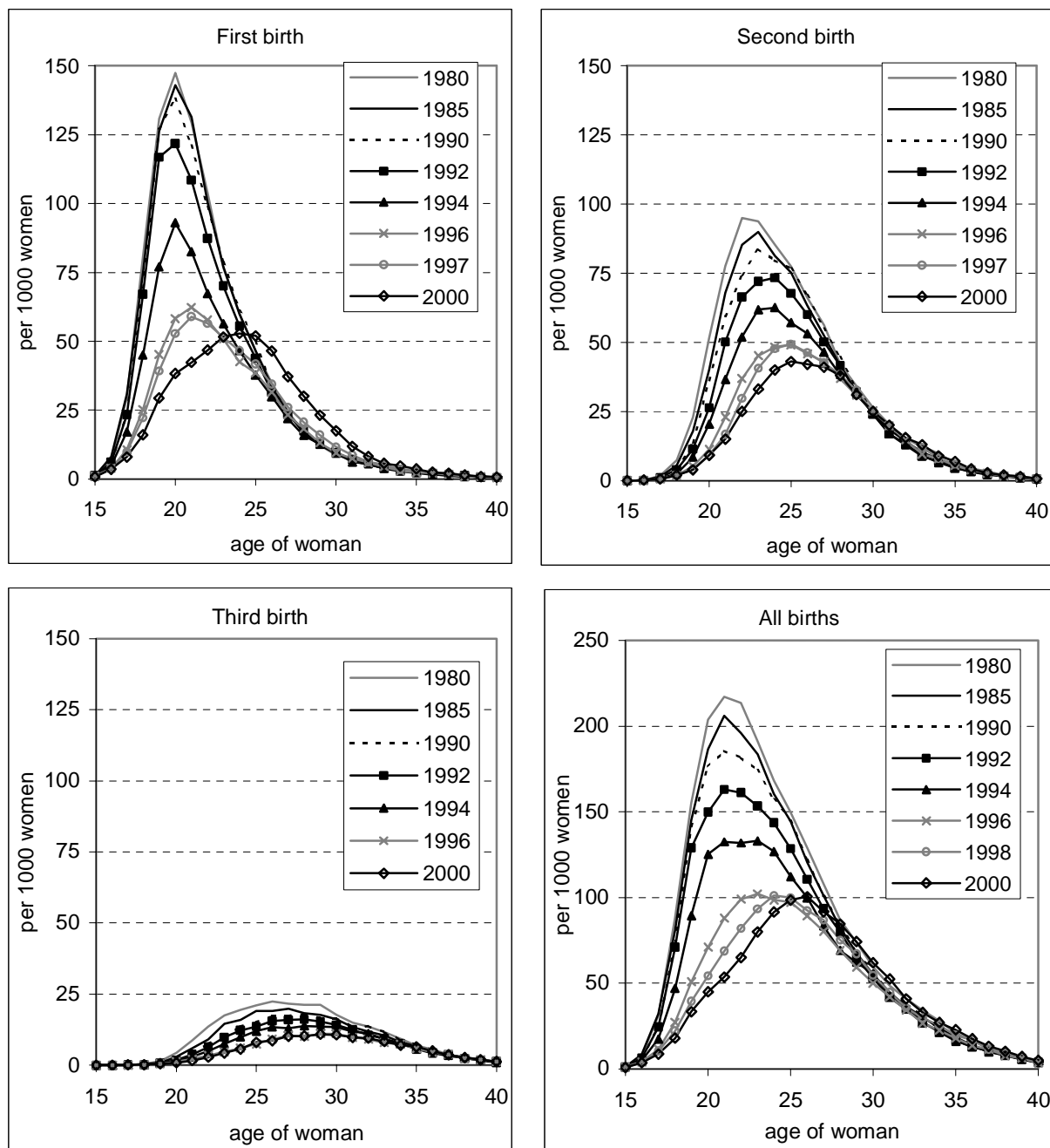
Source: Pohyb obyvatelstva 1980-2000. Own calculations. Only live births and by biological order.

First-order fertility between the ages of 18 and 20, as compared to the 1990 situation, fell to one-third of its value in 1997 (Figure 2.6). The recuperation of fertility is observed in higher ages after the mid-1990s, in particular around age 25 to 30. While the values up to age 22 were gradually falling, the values above the age of 24 rose, albeit at a slow pace. At

the precise moment when the fertility rate at an age superior to 25 and specifically above 30 would more than compensate for the decline to low values at a younger age, the total number of births and period indicators of fertility would rise again. Year 2002 seems to be the first such year of modest fertility increase.

Figure 2.6.   Fertility rates of first birth order by age, 1980-2002.
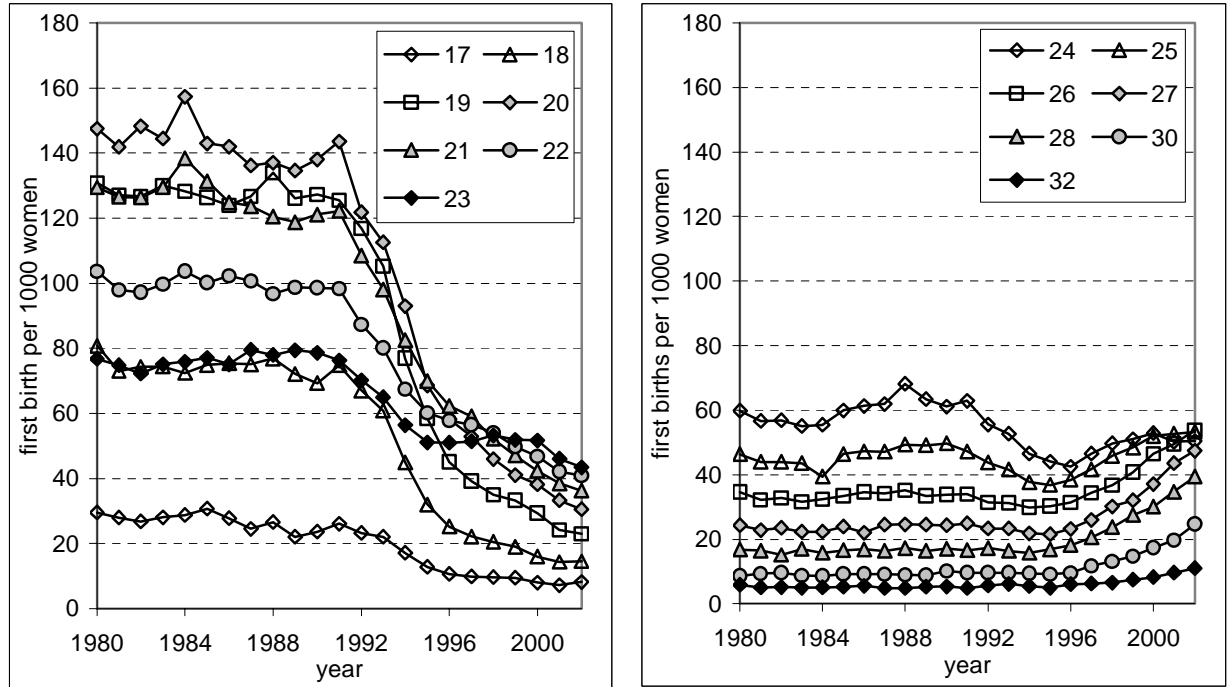
Source: Pohyby obyvatelstva, 1980-2002. Own calculations. Only live births.

2.3.2 Fertility tables by birth order

The method of parity-specific fertility tables accounts for the changes in the structure of female population according to parity. Instead of the frequencies (also called rates of *second kind or* reduced rates) the intensities (rates of *first kind* or *occurrence-exposure* rates) are used to describe fertility development[7]. For the Czech population, Sobotka (2002) computed the fertility tables for the period 1960 to 2000, in which the population by parity is

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[7]   For a profound discussion of the methods used for studies on fertility decline in the context of low fertility countries, see Kohler and Ortega (2002a, 2002b). They investigate parity composition effects (caused by changing structures of the female population according to parity) and tempo effects (caused by postponement of fertility to higher ages) on both intensity and frequency measures. They find that application of life table techniques leads to a distinction between tempo effects and parity composition effects. Furthermore, according to them, in a context of low fertility a key issue is the separate analysis of fertility by birth order.

estimated on the basis of the censuses of 1980 and 1991[8]. In Figure 2.7, the proportions of childless and single women obtained from life tables reveal low values and stable patterns throughout the 1980s. This trend changed abruptly in the 1990s. The fertility and nuptiality conditions of 1998 show that 24% of women would hypothetically never marry and 21% would remain childless. A substantially relevant finding of such analyses is that the fertility patterns observed in the 1990s in the Czech Republic do not imply particularly high levels of childlessness. If one looks at the total fertility rate of first births for the late 1990s (from age-specific rates), this implies a hypothetical childlessness level of around 45%. Once changes in the parity distribution of the female population are controlled for, the level of childlessness is less than 25% (Sobotka 2003b). Kohler et al. (2002) present similar findings, estimating the level of childlessness after tempo adjustments (i.e., the correction for the effect of postponement of first birth) for Czech women in years 1997-99 to be only 13%.

Figure 2.7.   Proportion of childless and single women: period fertility tables (1980-1999), period nuptiality tables (1980-1998) and cohort (1957-1969) indicators.
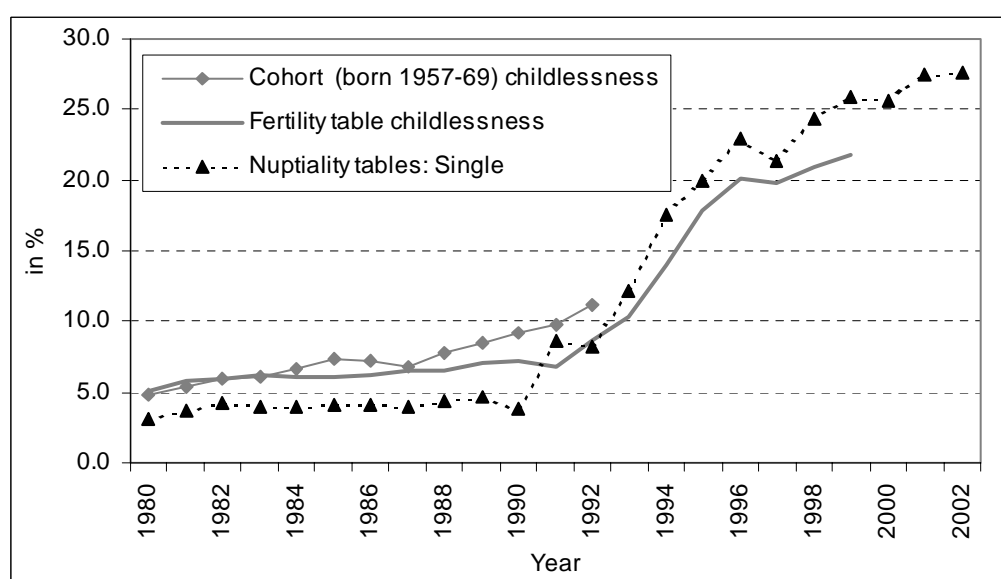
Note: The ultimate childlessness and ultimate proportion of single women are computed from period fertility tables (1980-1999) and period nuptiality tables (1980-1998). Indicators for birth cohorts (born in 1957-1969) are computed from fertility tables as the proportion of childless women in the respective cohort in 1999 and are positioned in the graph in the 23rd birthday year of the cohort.

Source: Fertility tables by birth order were kindly provided by Tomáš Sobotka.

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[8]   Birth intensities of first order (based on fertility tables from Sobotka 2003a, 2003b) are presented in Chapter 5 (Figure 5.2 and 5.3). The results of these analyses are used for comparison with the Czech Fertility and Family Survey 1997.

For the whole period of the 1970s and 1980s, the intensity of first births among childless women was very high with a maximum in the age group 20-24 (Figure 2.8). The fertility postponement in the 1990s lead to a shifting of the maximum of first birth intensities to the age group 27-30 with low probabilities of first childbirth among young women. The intensities of second birth were more influenced by changes in the population policies in the mid-1970s (see Chapter 3). After their decline in the late 1960s, with the introduction of population policies in the 1970s aimed at influencing higher order births in particular, the probability of second child births rose and furthermore was characterized by a young age pattern (with a maximum at age 22-25 in 1975).

Figure 2.8. Birth intensities by parity and age, 1965-2000.
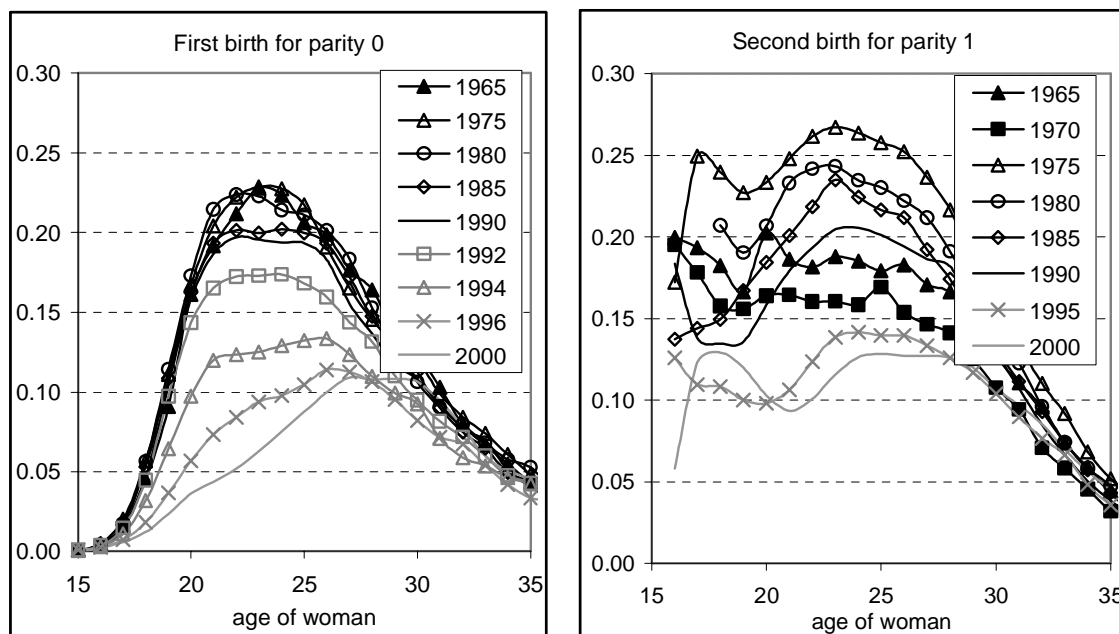
Source: Fertility tables by birth order were kindly provided by Tomáš Sobotka.

2.3.3 Cohort fertility by age and parity

The cohort fertility approach to the study of changes in women's childbearing patterns provides insights which do not come to light with the period approach. An analysis of completed fertility indicates the actual number of childbirths within an analyzed female generation. For generations born in the 1930s and 1950s there are on average slightly over 2 children per woman, with only 5-6% of women remaining childless (Frejka and Calot 2001, Sobotka 2003a). For the next generations the average number of children is going to be

lower, at 1.84 for the 1967 generation with childlessness increasing to 11% for the 1969 generation (Sobotka 2003a) [9].

One can also analyze cohort fertility patterns of *young* women and fertility patterns of the first birth order. This demonstrates how cohorts of young women start out and how they proceed through their reproductive paths. What is the timing of entry into motherhood for young women? Regarding data for generations born after 1970, there is a fertility delay in age groups which previously had a high intensity of first childbearing (Figure 2.9). While at the age of 22, over 50% of female generations born in the mid-1960s had at least one child, compared to generations born in the late 1970s (1977-1979) in which the figure was less than 20% (at 25 years of age, the situation is similar: 75% for older generations and less than 50% for younger ones). This finding bears witness to a sharp decline of the fertility rate at a younger female age, while specifically the 1973-1977 generations have greatly contributed (and still will) to modifying the period fertility age structure.

Figure 2.9.   Proportion of childless women by age, cohorts 1954-55 to 1978-79.

Source: Observatoire Démographique Européen's data on cohort fertility at the Max Planck Institute for Demographic Research.

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[9]   Data for the generation born in 1965 indicate that there were 1.9 children per woman in 2000, when these women were 35 years of age. In terms of an international comparative analysis up till now, cohort fertility for this generation is lower than for the same female generation in France or Sweden, but higher than in Southern Europe, Germany, Austria and some Eastern European countries such as Russia or Bulgaria (Frejka and Calot 2001).

2.3.4 Fertility by women's education and occupation

Results of the 1991census provide evidence on the relation between women's education and the number of children ever born. However, there was no direct information on education differences in the timing of childbearing. Comparison of the average number of children by length of marriage is partly free from the effects of different ages at entry into motherhood between education groups (Table 2.3). In the longest marriages (over 20 years, marriages concluded in the 1960s and earlier) the education differentiation is the most pronounced. In contrast, the differentiation is less apparent in marriages concluded in the 1970s and 1980s.

Table 2.3. Average number of children per married woman from current marriage by length of marriage and woman's education, census 1991.

Length of marriage	Education of woman				
	Basic	**Vocational**	**Complete secondary**	**University**	**Total**
0-4 years	1.11	0.67	0.87	0.84	0.90
5-9 years	1.55	1.84	1.61	1.56	1.62
10-14 years	1.86	1.91	1.82	1.78	0.85
15-19 years	2.12	2.03	1.92	1.85	2.01
20+ years	2.26	2.01	1.88	1.80	2.09
Total	2.09	1.77	1.62	1.56	1.81

Source: Plodnost žen (CSU 1994, data from census 1991).

According to occupational differentiation, after 10 to 14 years of marriage, the only distinct groups are manual workers in agriculture and economically inactive women having on average 2.4 children (the average among all women in a marriage of the same length was 2.1 children). On the other hand, married women in occupations in the educational and health sectors, in management and in technical professions had on average between 1.9 to 2 children (CSU 1994, data from census 1991).

2.4 Interrelation between marriage and childbearing

2.4.1 Children born outside marriage

Until the early 1980s the non-marital births represented less than 6% of the total number of births (Figure 2.10). This started to change slowly in the 1980s and reached a dramatic development in the 1990s with the proportion of non-marital births since 1999 over

20%[10]. In the Czech Republic, out of wedlock fertility was a distinctive feature of only certain female groups (Table 2.4).

Figure 2.10. Non-marital births and non-marital first births, 1970-2002.
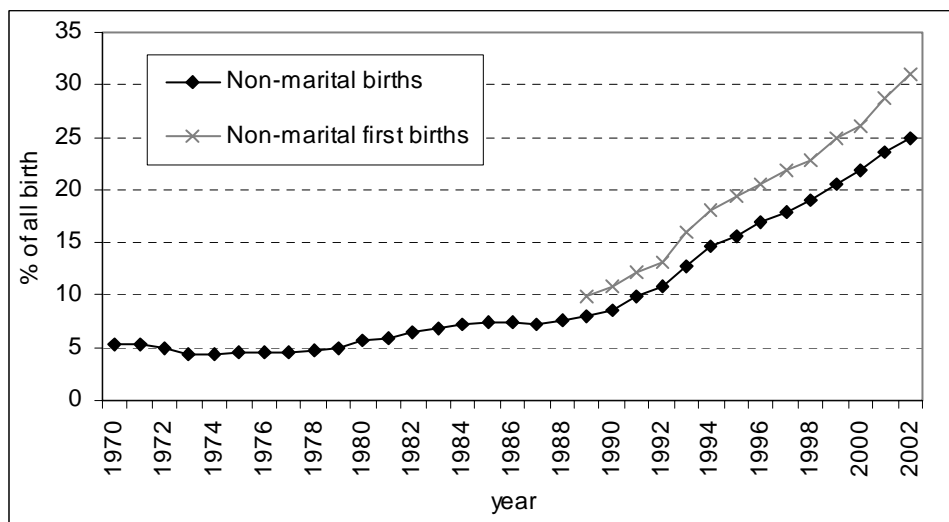
Source: Pohyb obyvatelstva 1970-2002. Only live births included.

The *first* one was that of very young women (14-19 year old), who indicated throughout the 1990s the most significant change proportionally: in 1990 single mothers represented 18% of all mothers within this age group but in 2000, this figure had already increased to 66%. A similar rise was observed within the 20-24 age group from a value of 6% to more than 25%. In 2000, this group represented more than half of all mothers who gave birth to their child out of wedlock (52%). The average age of unmarried mothers was on a long term basis somewhat younger than that of married mothers and during the 1990s it remained stable. This fact was specifically obvious for the first order, when the average age of *married* mothers grew between 1990 to 1999 by 2.6 years (from 22.5 to 25.1 years of age), while the age of *unmarried* mothers grew a mere 1.1 years (from 22.1 to 23.2 years of age). In 2000, the smallest proportion of children born out of wedlock was registered in the 25-29 age female group (15%).

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[10]   Until the early 1990s, the Czech Republic (with less than 9% of children born out of wedlock) belonged, along with countries of Southern Europe, Slovakia, Lithuania and Poland, to the group bearing the lowest representation of out of wedlock newborns. However, throughout the 1990s, the proportion of out of wedlock newborns gradually grew and since 1999 more than one fifth of newborns are to unmarried mothers. Thus in 2000, the Czech population ranks among the group of countries bearing average values of non-marital childbearing, together with for example Germany (22.1%) and the Netherlands (24.9%). As far as the European context is concerned, these are rather low values, since in the countries with the most unmarried couples, the rate of out of wedlock newborns is 40-60% (Northern Europe, Estonia and France).

The *second* female group indicating higher rates of out of wedlock newborns was an older one (30 years of age and older), whose higher order fertility was taking place within a new partner relationship following a divorce. A higher out of wedlock newborn rate was traditionally specific to this group and, already in the 1980s it reached higher values though it did not represent a significant rise during the 1990s. To this finding corresponds traditionally high proportions of non-marital births among third and higher order newborns (12% in 1990 and 26% in 2000).

An interesting finding is the education differentiation of childbirth out of wedlock (Table 2.4). At the birth of their child, half of mothers with a primary level of education were not married in 1997, compared to a quarter of mothers in 1990. On the contrary, university educated women most often gave birth to children within a married union and this tendency was still prevailing.

Table 2.4. Proportions of non-marital births of all births (in %) by birth order, age and education of mother, 1990-2000.

	1990	1995	1997	2000
Total	8.6	15.6	17.8	21.8
Order				
1.	10.9	19.4	21.8	26.6
2.	4.4	9.2	10.8	14.0
3.+	11.5	19.8	23.0	25.5
Age group				
14-19	17.9	36.2	48.8	65.8
20-24	6.0	13.0	16.5	25.3
25-29	5.8	10.8	12.0	14.6
30-34	10.6	14.7	15.6	18.1
35-39	17.1	20.1	23.1	25.0
40-44	22.7	30.0	21.7	28.6
Mother's education				
Basic	26.6	44.5	50.4	55.9
Secondary without *maturita*	7.7	14.4	17.3	23.1
Secondary with *maturita*	4.1	7.8	9.2	13.5
University	3.3	5.7	6.2	8.0

Source: Pohyb obyvatelstva 1990-2000. Own calculations. Only live births included.

If one concentrates on the age group 14 to 19 years, at the end of the 1980s there were 70 pregnancies for 1000 women of this age. However, only 10% of the pregnancies ended in non-marital births (Figure 2.11). Over the 1990s, apart from the overall decline in the pregnancy rate in the youngest age group, the willingness to enter marriage before

childbirth at this age group also declined rapidly and most of these pregnancies ended by induced abortions or non-marital births.

Figure 2.11. Pregnancy rates and pregnancy outcomes of teenage women (14-19 years), 1989-1999.
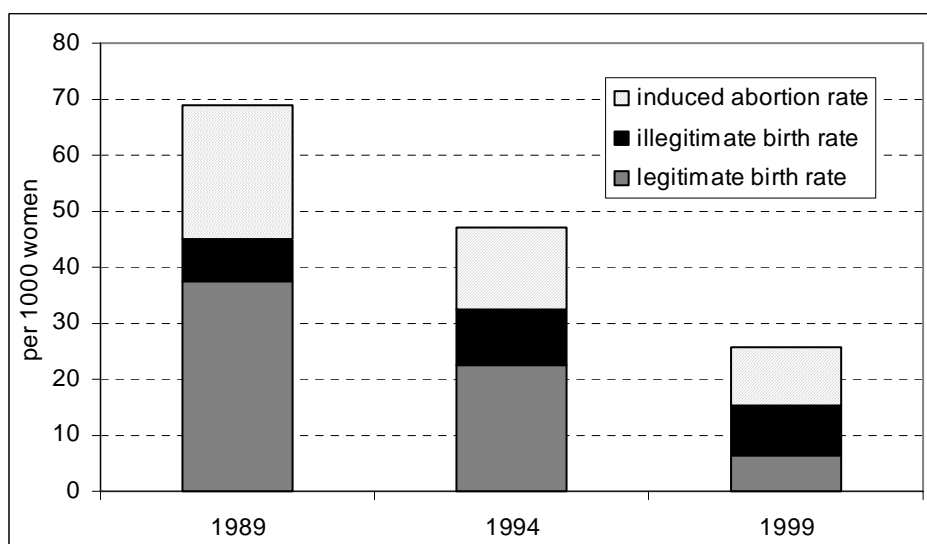
Source: Pohyb obyvatelstva 1989-1999. Own calculations. All births are included. Pregnancies terminated by abortion (not induced) are not included.

2.4.2 Timing of first birth in marital unions

In the 1970s-80s the difference between average ages at first marriage (below age 22) and at the birth of a first child (around age 22.5) was less than 1 year[11]. Furthermore, 55% of first children in marriage were born within 8 months after the wedding. The proportion of presumably premarital conceptions on first marital births started to decline only after 1995 and reached 42% in 2000. Throughout the 1990s, the time distance between the start of marriage and the birth of a first child was prolonged – the time distance in 1990 was on average below 1.2 years compared to 1.7 years in 2000 (Table 2.5). Thus, this structural change in reproductive behavior came later than other fertility and nuptiality changes in the 1990s.

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[11] Both mean ages at first marriage and at birth of first child are computed on the basis of intensities (from singles nuptiality tables and fertility tables), thus they are comparable.

Table 2.5. Births of first and second children in marital union by average duration of marriage, 1990-2000.

Birth order in marriage	1990	1992	1994	1996	1998	2000
First child	1.18	1.15	1.21	1.37	1.58	1.68
Second child	4.27	4.35	4.51	4.94	5.22	5.53
Difference	3.09	3.20	3.30	3.57	3.64	3.85

Source: Pohyby obyvatelstva 1990-2000. Own calculations.

2.5 Research questions for empirical analysis

The focus in this study is on the first steps in family formation: *first union* and *first childbirth*. Particularly interesting are the relations of these demographic events to other life domains (such as women's education or employment) in the changing society in which these women lived. To account for the historical developments influencing young women lives, explicit attention has to be given to the difference in patterns of family formation of the 1970s-80s in contrast with the 1990s. From the presented overview of demographic developments in these 30 years, one finds the development in the 1990s striking especially when compared to the lack of changes in the previous 20 years. The study of the demographic regime which typified the pre-1990 Czech population is an important part of the story about unprecedented changes in family formation in the 1990s[12].

First union formation

This research project attempts to widen the scope of demographic studies on marriage and cohabitation by investigating specifically the formation of first union – either as marriage or as cohabitation. A union is defined as a sexual and intimate relationship of a man and a woman, which starts in the case of cohabitation by moving together into a common residence and in the case of marriage, by the legal act.

The goal of the study is to gain insight into these questions:

- In the 1970s and 1980s – during the time of prevailing patterns of universal and early nuptiality – what was the position of cohabitation as the *first* union of young adults?

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[12]   Fialová and Kučera (1997:99) point out that in the 1970s-80s family formation was concentrated *"into a very narrow age range, so that only a limited number of people, primarily those aged 17-30, had any real influence on the number of marriages and births. In such situation even a slight change in the conditions*

- In the 1990s, did cohabitation compensate for the decline in first marriages? Or, is there a general postponement of first union formation?

- How long did such cohabitation last before its dissolution or convergence into marriage?

Two other questions examine the selection process for the start of a *first* union by cohabitation or direct marriage:

- How does the first union of young adults start (by cohabitation or direct marriage)? What are the selection processes into direct marriage or cohabitation?

- How do characteristics of the parental home (e.g., experience of parental divorce, number of siblings, place of residence in childhood, and leaving the parental home to live alone) or other life domains (women's employment career and education) influence the selection process into cohabitation or direct marriage?

Chapter 6 deals with answering these questions.

Entry into motherhood

As has been presented, entry into motherhood was an early and universal step in life for young women in the 1970s and 1980s. The 1990s brought a profound decline in the period fertility indicators. On the basis of these findings more specific questions arise which are discussed in Chapter 5:

- How do characteristics of the parental home (number of siblings and place of residence in childhood) or other life domains (employment career and education) influence the timing of the first birth?

- Was the process of entry into motherhood differentiated by women's characteristics (education, employment or previous life experiences) in the state-socialist period and in the 1990s? If so, how? In the 1990s, is it possible to identify some social groups of women who postponed (or refrained from) first births comparatively more than other women did?

Interrelated processes: First union and first birth

In particular, this analysis examines the complex and close relation of both events – first union formation and first birth. In Chapter 5, we study the partnership context in the

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in which this age group lives and reproduces can have a decisive effect on the overall growth of the population".

timing of the conception and birth of the first child. The viewpoint is different in Chapter 6, concerning how the arrival of the first child affects the union formation. And, in particular we take into consideration cohabitation.

- What was the role of cohabitation as a partnership context of entry into motherhood? Who were the women having their first children in a cohabiting union?

- What changed in the relation of first union and first birth in the 1990s? Were there some new patterns emerging among some groups of women?

The life course approach allows for an investigation of the dynamics of family formation and the linkage to other life domains (education, work and the relation of childbearing to union formation). Some of the questions aim to understand a broader picture about uniformity or diversity of patterns of family formation across different subgroups of a population. However, such insight cannot be gained by analyzing aggregate level data (for a discussion of this issue, see Chapter 4), thus chose to focus on individual level data from the Czech Fertility and Family Survey 1997 and the techniques of event history analysis.

CHAPTER 3

Institutional changes:
From state socialism to a society in transition

3.1 Introduction

This chapter reviews the situation of young adults in the Czech society under state socialism of the 1970s-80s and in the societal and economic transformation of the 1990s. Institutional changes are understood to be changes in the economic system, labor market, educational system and public policies or laws related to the family. Many aspects of these overarching changes directly affected individuals' daily lives. For example, the transition from school to work – one of the major life course transitions of young adults – was deeply modified by the economic transition in the 1990s. As a result, education and employment careers of young adults in the 1990s did not have the same stable, continuous and highly predictable patterns as the careers of young Czechs entering adulthood in the 1970s-80s.

Chapter 3 is organized as follow: The first section (3.2) describes the educational system. The next section on labor market institutions (3.3) provides an overview of the development of some basic indicators of the macroeconomic situation and the labor market characteristics in the centrally planned economy and in the transitional economy. In particular, we discuss specifically the position of women in the labor market, which resulted in a widespread dual earner family model. The last section (3.4) overviews the developments of public policies related to the family.

3.2 Education[1]

3.2.1 General characteristics of the educational system

Despite the ideological proclamations about the universal development of the individual, socialism undermined the value of education, both from an economic and a social standpoint (with lesser values of wages, socioeconomic status, living standards, and prestige) (Čerych et al. 1999). Two interrelated processes affected the educational system in state socialist Czechoslovakia: administrative intervention in the selection of students for upper secondary and tertiary education[2], and an 'equalizing' wage policy that significantly decreased economic returns to education.

First, many aspects of the educational system (e.g., the number and types of schools, the length of education, the number of students admitted every year to different kinds of schools, the conditions for admission) were strictly planned according to the needs of the economy. Those needs included providing white collar workers with a technical education and manual workers with technical apprenticeships for industry. The most pronounced result of this planning was a high proportion of those completing an apprenticeship education compared to those completing a secondary education with *maturita*. Since the educational path followed was only in part a result of individual decision, for some young people the

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[1]   English terminology related to the educational system in the Czech Republic differs across publications and data sources on education. Thus, we find it useful to define from the beginning the terms we are going to use in this study. We refer to the International Standard Classification of Education 1997 (ISCED97, for methodology issues see http:\\www.oecd.org) to define major educational levels. We make a distinction between *upper secondary education* concluded or not concluded by *maturita* (school-leaving certificate necessary for continuation in tertiary studies). *Upper secondary education* concluded by *maturita* is equal to level 3A in ISCED97. *University education* leads to obtaining an academic diploma, in ISCED classification 5A class. However, when we refer to data from other resources (Czech Statistical Office, etc.) we use their terminology. For valuable comments on classifications of the Czech educational system, I am grateful to Felix Koschin.

[2]   In the first phase of the 'building of communism' (the 1950s and 1960s), quota systems and special measures were introduced (favoring certain social classes while blocking others) to secure state control over the education selection process. In the second stage (the 1970s and 1980s) when the 'new class' had already been established, there were rather ambiguous bureaucratic rules and the network of informal relationships heavily penetrated the selection process (Matějů and Řeháková 1996). These conditions lead to a strong effect of parents' education levels on educational attainment (Matějů 1990, 1993) and had a serious implication for the quality of education. This is mirrored in the finding that the effect of the father's education first declined after the transition to Communism in 1948, but then returned to and exceeded its initial level (Matějů 1993). Despite the rhetoric of communist leaders, educational stratification by parents' social origins, parents' education and occupation was still present and in some aspects even reinforced.

path resulted in non-achieved ambitions in education (e.g., an early stop to the educational career, or a different type of education than previously desired).

Second, in economic terms, a long-term trend during the period of state socialism was the decreasing value of education (see section 3.3). Večerník (1996) concluded that *"education played its role less through wage differentials and more through other channels as various perks they offered (extra money, access to scarce goods or services, useful acquaintances) or better working conditions, resulting in a better quality of both work life and private life"*. There was little demand for higher education, especially among those unmotivated by other non-economic considerations. This situation was due to the erosion of links among education, competence, and economic success[3]. Matějů and Řeháková (1996:158) point out that *"egalitarian ideology, strong redistribution policies, and the corruption of transparent criteria for social and economic rewards have created a population highly sensitive to inequality, particularly its economic dimension [… and] as competition and individual interests were driven out of economic life, competence and merit also grew less important in the distribution of credentials (education, diploma), positions (mobility, promotion), and rewards (wage, income, status, and prestige)"*.

The post-communist transformation in the 1990s contributed to the renewal of meritocracy in the Czech Republic and thus, attitudes towards education changed. Education became more a matter of personal decision (not influenced by quotas as it was in the centrally planned economy). There were more economic incentives to obtain higher education in the 1990s which were not strong in the previous period. Higher education became increasingly valuable and offered new opportunities in the labor market ensuring access to more stable jobs with relatively higher earnings (see section 3.3.6). Moreover, having a higher education was a kind of 'insurance' against economic uncertainty, since highly educated people had lower risks of unemployment (see section 3.3.4).

3.2.2 Structure of the educational system

The educational system did not experience any major changes or reforms in the 1970s or 1980s. Primary school lasted for 8 years. Upper secondary education was provided

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[3]   In the spring of 1989, in a survey carried out among Czech children aged 14 years, higher education and competence (in comparison with other strategies such as "knowing how to earn money", "having influential friends", "working hard and well", etc.) scored comparatively low as a good strategy for success (Matějů and Řeháková 1996).

by secondary general schools (*gymnázium)* or secondary vocational schools (more specialized technical, healthcare or pedagogic education), in general concluded by *maturita* (school-leaving exam, the attainment of which is necessary to gain access to university and other forms of tertiary education). Other educational paths of upper secondary education – that were highly promoted by the state-socialist regime – lead to apprenticeships that generally took two to three years, were job-oriented and only rarely obtained the *maturita*. Studies at university lasted for four (pedagogical and some technical education) to six (medical education for doctors) years. The places at tertiary education were limited and the system of entrance exams was based not only on students' qualifications, but also on other characteristics (such as Communist party membership of a student or his/her parents). Part-time education was available either as evening courses at secondary schools (especially at vocational schools) to obtain the *maturita* or as long-distance studies in tertiary education.

In the 1990s, the inherited educational system had a low level of flexibility and a weak capacity to fully absorb the educational aspirations of young adults, especially for a university education. Furthermore, the Baby Boom generations born in the mid-1970s entered upper secondary and tertiary levels of the educational system. All levels of education, with the exception of universities, were opened to non-state providers. In regards to the structure of the upper secondary education system in the 1990s, it is notable that interest in apprentice schools decreased in favor of upper secondary education with *maturita* (Table 3.1). While in the 1989/90 school year, 61% of students around age 14-15 years enrolled in apprentice school, in the 1997/98 year that figure was only 46%. On the contrary, the number of new students at vocational secondary schools has increased from below 26% in 1989/90 to 38% in 1997/98. In secondary general school (*gymnázium*) the proportion was stable around 15 % in the period considered here (Čerych et al. 1999). During the 1990s more possibilities for further study opened for young adults after completion of secondary education (with *maturita*). There was the possibility of studying in the non-university sector of tertiary education, which offered more specialized studies (social work, lower medical professions, languages) or market-oriented studies (management, marketing). Since the beginning of the 1990s, at some universities there was a possibility to finish with a lower university degree (usually after 3 years of studies). University education was still exclusively state-run and there were – with some exceptions – no tuition fees. The number

of universities did not increase through the 1990s[4]. Young people strongly perceived a limitation still to be the low capacity of universities.

Table 3.1 The number of students in their first year by type of school (in thousands).

Type of school	1989/90	1991/92	1993/94	1995/96	1997/98
All secondary schools (in thousands)	198.5	173.7	211.2	208.9	172.3
Of which (in %):					
secondary general	13.2%	15.2%	14.3%	13.1%	15.6%
secondary vocational	25.7%	31.4%	35.0%	37.3%	38.0%
apprentice schools	61.1%	53.4%	50.7%	49.5%	46.4%
Post-secondary (in thousands)	--	--	1.6	3.0	13.2
University (in thousands)	26.8	23.9	33.0	40.5	44.5

Note: All programs, in which students are required to have passed *maturita* but education is not of a university-type, are included in post-secondary education.

Source: Institute for Information in Education (in Večerník 1999)

3.2.3 Educational attainment – changes and gender differences

The data from census 1991 offer a retrospective picture on the educational system in the 1970s and 1980s. In the generation aged 30-39 at the 1991 census, 22% of women had only a basic education and another 35% had not obtained *maturita* (an upper secondary education certificate). Just below 10% of women obtained a university degree, compared to nearly 14% of men who obtained a university degree. In the youngest generation, the proportion of women with a basic education declined while the proportion of women achieving at least an upper secondary certificate (*maturita*) increased.

In the 1990s, the proportion of young women over age 18 enrolled in education more than doubled between 1992 and 1999 (Figure 3.1). The wider opportunities for attending tertiary education extended the period spent in education for a large number of the younger generation. Even despite this rise in the number (in absolute and relative terms) of students enrolled in tertiary education, the level was still relatively low. Among 20-year-olds around 20% were enrolled in tertiary and 5% in non-tertiary education in 1999. The country mean for OECD countries was 29% in tertiary and 15% in non-tertiary education for 20-year-olds (OECD 2001) (Table 3.3).

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[4]   There were 23 institutions offering university education in the Czech Republic, with a total of 118,194 students in academic year 1990-91 and 155,868 students in academic year 1996-97 (CSU 2001).

Table 3.2 Educational attainment of population at censuses 1991

| | **1991** | | |
	20-24	**25-29**	**30-39**
Men			
Basic (or below)	9.5	8.9	11.7
Apprenticeship	56.1	48.5	51.3
Secondary vocational	1.2	1.2	1.2
Apprenticeship with *maturita*	7.2	5.2	1.2
Secondary vocational with *maturita*	17.1	18.0	18.0
Secondary general	4.2	3.1	1.9
Tertiary	3.6	13.9	13.8
Women			
Basic (or below)	9.1	11.2	22.1
Apprenticeship	41.5	33.0	31.0
Secondary vocational	1.3	2.1	3.9
Apprenticeship with *maturita*	3.3	1.9	0.6
Secondary vocational with *maturita*	30.6	32.5	27.4
Secondary general	10.1	6.7	4.3
Tertiary	3.2	11.7	9.9

Source: Scitani lidu, bytu a domu 1991, 2001.

Figure 3.1 Enrollment rates by level of education and age for female population, 1992 and 1999.
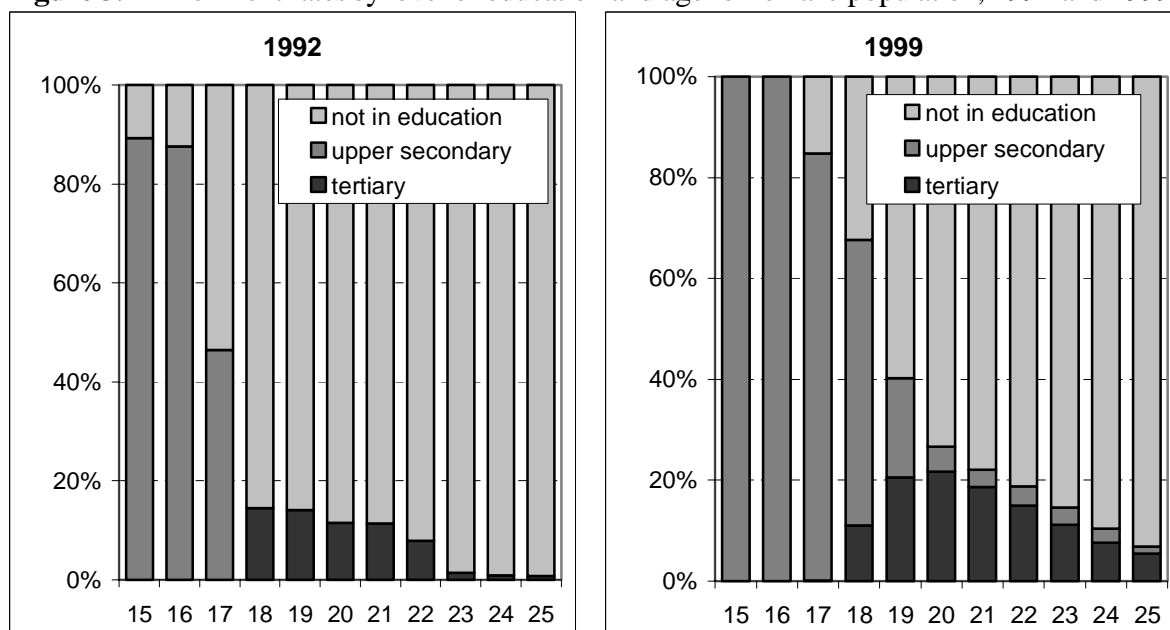
Source: Data on full-time education by age and type of education (OECD 2001) and mid-year age structure of population (Pohyb obyvatelstva 1992, 1999).

Table 3.3 Net enrollment rates in public and private institutions at age 20 by level of education and expected years of schooling under current conditions, selected OECD countries, 1999.

	Net enrollment rates at age 20			Expected years of schooling	
	Upper secondary	**Post-secondary**	**Tertiary**	**Men**	**Women**
Austria	5	4	20	16.1	15.9
Czech Republic	3	2	20	15.0	15.2
France	12	--	42	16.3	16.7
Germany	18	15	15	17.3	17.1
Hungary	8	9	24	15.8	16.2
Netherlands	25	1	31	17.4	16.9
Poland	13	8	30	15.6	16.4
Sweden	22	2	22	18.6	22.2
Country mean OECD countries	**12**	**3**	**29**	**16.5**	**16.9**

Source: Education at a Glance 2001 (OECD 2001).

Gender differences were pronounced both in type of school and in field of study (Table 3.4 illustrates this case in terms of university education). Women tend to concentrate in 'care-taking fields', such as pedagogy or healthcare. At upper secondary education, girls represented 97% of students in medical schools, 94% of students in pedagogical schools, and almost 80% of students in economic-business schools (Statistická ročenka 2000). Women were more represented in educational channels leading to less well-numerated or less 'marketable' jobs (such as teaching, healthcare), and were particularly underrepresented in vocational training and in technical science.

Table 3.4 Proportion of women of total number of students at universities by study program, school year 1999/2000.

Study program	Proportion of women	Number of women
Natural sciences	35%	3,897
Technology	21%	10,892
Agriculture and veterinary medicine	49%	3,408
Medicine and pharmacy	69%	7,707
Social sciences	61%	56,897
Culture and art	55%	2,283
All universities	47%	85,084

Source: Statistická ročenka 2000

3.3 Labor market institutions

3.3.1 Macroeconomic development: from a centrally planned economy to a market economy

In state-socialist Czechoslovakia, the economy was highly centralized and almost completely state-owned at the start of the economic transition. Throughout the period of the 1970s and 1980s, the main economic institutions remained unchanged, the inflation rate and growth of the gross national product were very stable and open unemployment did not exist.

Already in the first years of the economic transition, the Czech Republic went through a massive privatization of state property; however the restructuring of firms was left for a later period. In the early phase of the economic transition, the gross domestic product, industrial production and real wages all registered considerable declines. This period was further characterized by a high inflation rate, a liberalization of prices (with two main liberalizations in 1991 and 1993) and a rise in unemployment (Table 3.5).

Table 3.5 Selected economic indicators, 1970-2001.

Year	Inflation rate (CPI) 1)	GDP growth 2)	Unemployment rate 3)	Index of real wages 4)
1970	2.2	--	--	100.0
1980	2.9	--	--	124.7
1985	2.3	--	--	124.1
1990	9.7	--	0.7	124.6
1991	56.6	-11.6	4.1	91.8
1992	11.1	-0.5	2.6	101.3
1993	20.8	0.1	3.5	105.0
1994	10.0	2.2	3.2	113.1
1995	9.1	5.9	2.9	122.9
1996	8.8	4.3	3.5	133.7
1997	8.5	-0.8	5.2	136.2
1998	10.7	-1.2	7.5	134.6
1999	2.1	-0.4	9.4	142.6
2000	3.9	2.9	8.8	--
2001	4.7	3.6	8.9	--

Notes: 1) annual averages; 2) in constant 1995 prices, for the period 1970-1990 are not available comparable data; 3) unemployed registered at Labour Office, situation at year's end; 4) reference category = 1970.
Sources: CSU (Czech Statistical Office) www.czso.cz.

A major policy question that arose, as seen by Svejnar (1999), was how the transition economies could strike a balance between (i) reducing government intervention and completing the introduction of market incentives, and (ii) providing an adequate social safety net that ensures public support for the transition.

3.3.2 Labor market transition from a centrally planned economy to market principles

The centrally planned economy was characterized by a chronic labor shortage and direct bureaucratic control over employment and wages (Kornai 1992). The labor market in the centrally planned economy functioned as a mechanism for the allocation of the labor force according to the needs of production as well as a tool for the distribution of wages. Its form was significantly distorted by regulations from the planning center, rigorous administration of labor and centralized wage policy (Frýdmanová et al. 1999). Job protection and the right to work (or even the obligation to work[5]) were guaranteed for all people. Many work contracts were life-long and there was indeed a low degree of mobility between jobs.

In the 1990s, the pace of modernizing changes influenced the development of the labor market, with human capital becoming more valued in areas where modernizing trends were introduced. Firms started to act according to market forces and output, with employment and wages set by firms rather than by the planning center[6] (Svejnar 1999). However, some areas were influenced by the prevailing 'soft conditions' for transformation leading to the sustenance of inefficient firms.

3.3.3 Labor force participation of women

Since the 1960s, the proportion of employed women was very stable and fluctuated around 45%. The labor market adapted to the presence of a female work force in the whole spectrum of the qualification structure (Čermáková 1997). A model of continuous employment was typical for Czech women, who during their reproductive years combined

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[5]   There were some exemptions from the general obligations to work in cases when people fulfilled certain criteria (mothers of large families, etc.)

[6]   Svejnar (1999) reviewed the studies in which the Czech industrial firms were unresponsive in their employment settings before the transition but quickly started adjusting during the transition (measured by labor demand elasticities with respect to rising versus falling sales).

work and family. Women kept their jobs after marriage and the birth of their children, with maternity leave and the right to return to the same job in the same place guaranteed by law (see section 3.4.2). Most women, however, started to work before the end of maternity leave because their income was necessary to maintain the family's standard of living (Fialová and Kučera 1997).

High female employment coexisted with various gender inequalities and segregation, mirrored in the attitudes to gender work performance and career; working climate; women's professional expectations and satisfactions; and division of labor in households. In the Czech society under communism, both women's domestic work and work outside the home were assumed to be manageable by women. The character of work, working hours (most women worked around 42 hours per week) and the work profile over an economically active life of women were comparable to that of men. In 1988, according to data of the ILO, Czechoslovakia reported the longest working hours of all European countries for which data were accessible (Paukert 1991). This was especially the case in branches of the economy with high proportions of female workers (e.g., food industry, services)[7].

During the transformation period, participation in the labor force fell to the level common in market economies. Between 1989 and 1995, the overall employment level of the active-aged population dropped from 86.5% to 80%. A decline in participation was more pronounced among the female population. However, the share of women in the total labor force declined only slightly throughout the transition period (Pailhé 1998). Several factors influenced the development of female employment (Figure 3.2). At young ages, the participation in labor force declined in the 1990s because of the longer time spent in education. There were three main reasons why women in the 1990s stayed out of the active labor force or without employment for a certain time to a greater extent than men did. First, female unemployment was higher than male unemployment (these women formed part of the active labor force but currently were not employed). Second, parental leave was mainly taken by women. Third, some women were housewives and stayed at home because their income was not essential for the maintenance of the household and they were not

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[7] Furthermore, according to an ILO survey from 1988, 82% of Czech women, mostly working full-time, considered their working hours as satisfactory or in general satisfactory (Paukert, 1991). Only 18% of them had an opposing view, and these women were mostly aged 18 to 29 and mothers of small children. Moreover, the survey also showed that 70% of women were able to be absent from work for personal reasons during working hours: 37% could do it without problems always or sometimes while 33% could only do it exceptionally. This practice was slowly abandoned throughout the early phase of the transition and the official working hours were also gradually reduced.

sufficiently motivated to work outside the home. But these families in which only the man was employed and the woman stayed at home were very rare – of the female population over the age of 15 in 1998, only 4% were housewives and only 4.2% were women on parental leave (after 28 weeks of maternity leave) (Kuchařová 1999). Approximately 9% of employed women had a short-term work agreement, amounting to 53% of all temporary jobs (Kuchařová and Zamykalová 2000).

Figure 3.2 Female labor force participation by age
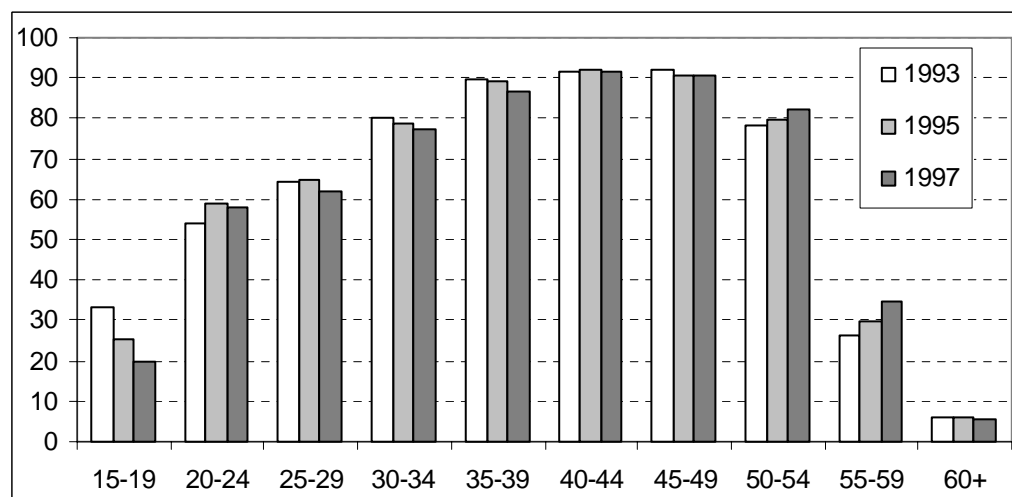
Source: Statistické ročenky (CSU, various years).
Note: Women on extended maternity leave or on parental leave (after maternity leave of 28 weeks) are excluded from the number of economically active women.

3.3.4 Unemployment

Since open unemployment did not exist in the state-socialist economy, this section focuses on the transition period. General unemployment remained relatively low[8] (Figure 3.3), while people were moving to tertiary occupations and to the private sector. However, some groups of the population were affected more than others. Women, in particular those women below the age of 34, as well as unskilled and/or poorly educated persons and 15 to 19 year-old persons were significantly affected (Table 3.6). Unemployment was always higher for females than it was for males (Figure 3.3), especially in the age group 20-35 years, as this is the period in which women have the most responsibilities for rearing small children.

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[8]   In all other transition economies unemployment rose to double digits in the 1990s (e.g., Transition Report 2000, Svejnar 1999). In comparison with other transition economies, the Czech labor market demonstrated flexibility with high degree of turnover in the pool of unemployed. Also degree of stability of jobs was comparatively high in the Czech economy (Sorm and Terrell 1999).

Figure 3.3 Male and female unemployment 1991-2001.
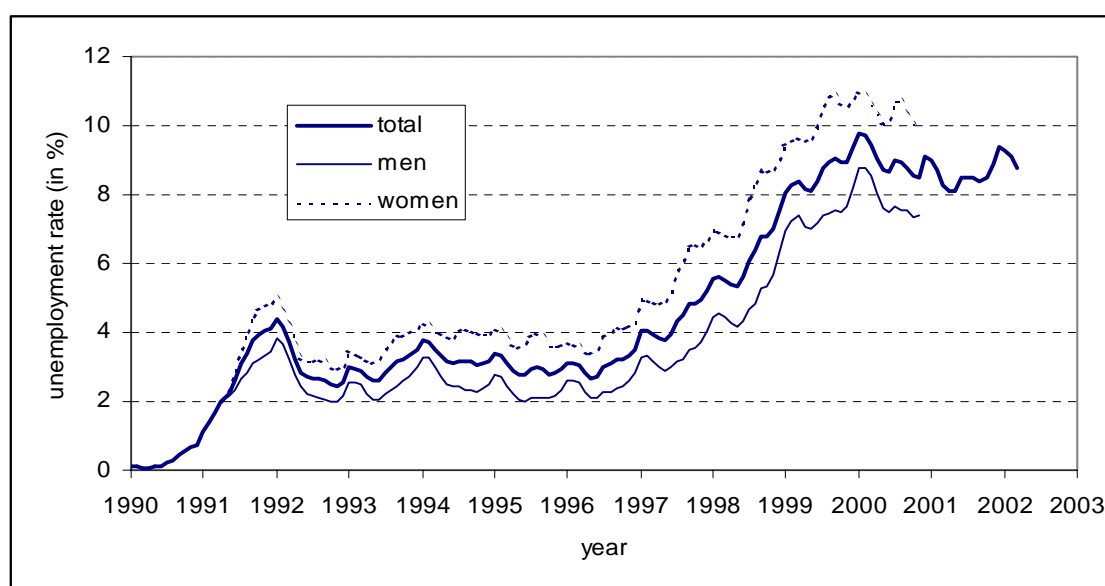
Note: Statistics are based on the number of unemployed people registered at the Labour Offices; monthly data Source: CSU (Czech Statistical Office) www.czso.cz.

Table 3.6 Gender, age and educational specific unemployment rates

	1993		1997	
	Men	**Women**	**Men**	**Women**
Age category:				
20-24	4.8	5.0	5.6	8.7
25-29	2.4	6.9	3.6	9.5
30-34	2.9	4.9	3.6	7.9
35-39	2.0	2.8	3.8	5.8
40-44	2.0	3.9	3.4	4.7
45-49	1.8	2.4	2.8	4.5
50-54	1.5	2.1	2.8	4.1
55-59	1.7	3.6	2.2	3.4
Educational level:				
Basic	8.4	7.6	14.9	12.8
Apprenticeship	2.7	4.7	3.7	6.8
Apprenticeship (with maturita)	4.7	7.3	1.0	7.5
Secondary general	5.8	3.7	4.9	6.7
Secondary vocational	1.9	3.1	2.7	4.9
Tertiary	1.4	1.6	1.3	2.7
Total	3.0	4.5	4.0	6.7

Source: Labor Force Surveys 1993-2002 (CSU 2003, www.czso.cz)

As concerns different duration of unemployment and different patterns of exit from unemployment to employment and from employment to unemployment Sorm and Terrell (1999) analyzed data from Labor Force Surveys for the period 1994-1998. Younger people were more likely than older folks to change jobs or become unemployed. Once unemployed, younger people were more likely to find jobs and less likely to leave the labor force. More educated people experienced more job stability and were more likely to be hired if unemployed or out of the labor force. Women (both single and married) had a lower level of job-to-job mobility than men.

3.3.5 Structures of labor market

The transition from a centrally planned economy to a market economy led, among other things, to a fundamental transformation of the occupational structure, an expansion of the private sector, a growing demand for qualified workers, but also an increasing demand for specialized education and well-paid jobs for white-collar employees (Svejnar 1995). From the start of the transition process to mid-1994 (according to results of the 1993 and 1994 Labor Force Surveys), almost one-half of male workers and over 40% of female workers changed their jobs at least once (Paukert 1995). The final effect of this vast reshuffling was a far-reaching transformation of the structure of employment by ownership (Table 3.7).

In the 1980s, the private sector was nearly non-existent (even in agriculture almost all production was on the basis of cooperatives). By contrast, in 1997 over 60% of all employees were employed in the private sector. This brought a higher level of difference in employment contracts, wages, accessibility of non-wage advantages and security. The proportion of women employees in the state and municipal sector was growing (from 46% in 1990 to 58% in 1996). The introduction of the private sector into the national economy in the early 1990s was highly gender- and age-biased. Young adults were more likely than older people to opt for self-employment, which offered higher gains but also greater risks and greater demands on their time. In 1990 – when 7% of all workers in the national economy were employed in private companies – only 17% of them were women. In 1996 the proportion of women employees was 41% in the private sector and 36% in the mixed ownership sector (Table 3.8).

Table 3.7 Number of workers and structure of the labor force by ownership

Indicator	1985	1990	1993	1997
Number of employees (in thousands)	5294	5387	4774	4970
By ownership (in %)				
State and municipal	85.5	79.6	10.2	21.0
Cooperative	12.9	12.3	5.7	3.3
Other	1.3	1.1	0.6	0.7
Mixed	--	--	6.4	11.4
Private	0.3	7.0	47.1	63.6
Total	100.0	100.0	100.0	100.0

Source: Statistické ročenky (CSU, various years).

Table 3.8 Proportion of women among the labor force by ownership

Proportion of women:	1985	1990	1993	1996
In total number of employees	46%	44%	44%	45%
By ownership (in %)				
State and municipal	46%	46%	51%	58%
Cooperative	49%	46%	49%	50%
Other	46%	49%	48%	44%
Mixed	--	--	41%	36%
Private	44%	17%	38%	41%

Source: Statistické ročenky (CSU, various years).

There were several reasons for the under-representation of women in the private sector and among entrepreneurs. Women's hesitation to change their working environment and their work-life patterns played an important role in their remaining in public sector employment. This sector was characterized as having a relatively weak work discipline in state-socialist times, better conditions for combining work with family life and more stability in wages and employment. The occupational structure of the female labor force was characterized by a high concentration in occupations such as teaching or health care. In these sectors most establishments were state-run. The recruitment in private companies was also not entirely free from gender bias (Pailhé, 2000). For the early transition period, Pailhé (2000) - by analyzing manager's attitudes toward female work and employment (ILO survey 1993) - concluded that entrepreneurs often considered that each female candidate would adopt the behavior the entrepreneurs imputed to women in general. Family responsibilities and 'female characteristics' prevented women from getting a job and thus – according to manager's responses – the women with family responsibilities had lower chances of recruitment. Such stereotypes were widely accepted by women as a part of life.

The change in the sectoral employment structure through the 1990s followed the pattern of continuous simultaneous decline of employment in agricultural and industrial sectors and increase in the finance, trade and tourism sectors. In the state socialist period, the sector of trade and the sector of banking and insurance were highly feminized (71.5% and 77% of workers in these respective fields were women in 1989). In contrast, with increasing wages and a high presence of private sector in the 1990s, the proportion of women in the total number of workers has diminished.

Table 3.9 Occupational structure of employment of men and women and its relation to educational structure.

Employment category	Proportion of women in %	Relative numbers in %		Average level of education	
		Women	Men	Women	Men
Legislators, managers and directors	22.2	3.7	9.1	5.6	6.2
Scientific and specialist non-manual workers	53.9	12.2	8.1	7.0	7.2
Technicians, health care workers and teachers etc.	54.4	22.3	14.9	5.7	5.7
Lower administrative workers - clerks	80.3	15.1	2.9	4.9	5.2
Retail staff in services and trade	68.7	18.5	7.2	2.7	3.8
Qualified labourers in agriculture and forestry etc.	49.2	2.4	2.1	2.2	2.8
Craftsmen and qualified manufacturers, processors, repairers	15.4	7.4	32.1	2.2	2.6
Operators of machinery plant	25.0	6.7	17.2	2.0	2.5
Ancillary and unqualified workers	60.1	11.8	6.4	1.8	2.1
Total		100.0	100.0	3.9	3.8

Source: Microcensus 1996, Statistické ročenky (in Human Development Report Czech Republic 1999: 69). Education is rated according to a nine-point scale of education, where 1 = basic and 9 = full scientific education.

The gender differences in education (see section 3.2) are narrowly connected to gender segregation in occupations of the labor market (Table 3.9). In 1996, Czech women had attained a slightly higher educational level on average than men had. However, in each employment category women were on average less educated than men were. The gender distribution by occupation was biased with extreme values in the case of managerial

positions (legislators, managers and directors) with a ratio of 22 women to 78 men and conversely, in the case of lower administrative workers, with a ratio of 80 to 20.

Since women had the main responsibility for rearing children (including through maternity leave, parental leave, and time spent with a sick child), they tended to choose jobs with higher security, the possibility for child care and the chance to work at home or with reduced working hours. The labor market in the 1990s was still relatively inflexible in terms of possibilities for part-time work or flexible working hour schedules for women with small children. In 1998, only 8.5% of employed women were working part-time (Kuchařová 1999).

3.3.6 Individual and household income

The socialist system of distributing outcome was focused on basic needs and the most egalitarian way to satisfy them. Earnings were leveled by certain categories in wage grids for all employees in the economy, so the differences in individual incomes would be as small as possible. Traditional rule of the state socialist distribution was that higher earnings should compensate manual work, and especially hard work in unpleasant conditions. The decreasing significance of education in determining the difference of individual incomes was a long-term trend during the observed period (the 1970s and 1980s)[9] and the rewarding system was characterized by the predominance of demographic factors such as age (Večerník 1996). Household incomes were determined by the number of economically active members and not by their economic contributions. Consumption expenditures were regulated by a turnover tax and by the control of supply: basic needs (especially foodstuffs) were favored, while 'luxuries' (mainly durable goods) were restrained (Večerník 1999). Links between work performance and family income, as well as between household income and consumption, were disrupted in this way.

Following the collapse of communism, wage regulations, formerly one of the main principles of the centrally planned economy, were quickly abolished. Inequality of individual income and disposable household income thusly rose in the period 1988-1996 (Table 3.10, Večerník 1999).

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[9]   Munich et al (1998) demonstrate that the wage grid maintained an extremely low rate of return to education during state-socialist times which remained intact until the very end of the communist regime.

Table 3.10 Characteristics of distribution of individual and household income

	Per household			Per capita		
	1988	**1992**	**1996**	**1988**	**1992**	**1996**
Variation	0.53	0.69	0.73	0.40	0.56	0.65
Gini coeffecient	0.29	0.32	0.33	0.20	0.23	0.26
Decile ratio (D90/D10)	5.12	4.95	5.21	2.43	2.51	2.91

Source: Microcensus 1988, 1992 and 1996 (Večerník 1999:124)

A wealth of studies summarized by Svejnar (1999) provide evidence of a rapid increase in wage dispersion during the transition, underlined in part by an increase in the returns to education[10]. The return to education, especially to the university level, increased significantly. According to micro censuses of 1988, 1992 and 1996 (Table 3.11), the wage level of university educated employees has risen from 134% of the average wage in 1988 to 144% in 1992 and to 165% in 1996 (Večerník 1999). The differentiation of wages according to educational level was higher for women under state socialism (university educated women received 133% of the average female wage compared to 125% of the average male wage for university educated men). This was due to a relatively high remuneration of physically hard work by men (miners, workers in machine industries), even though their level of education was generally low. In the 1990s, the differentiation of wages by education was similar for both males and females. The average wage gap between genders remained unchanged throughout the transition period (presented in the last row of Table 3.11).

Table 3.11 Earnings by education and sex (% of average)

Education	Total			Men			Women		
	1988	**1992**	**1996**	**1988**	**1992**	**1996**	**1988**	**1992**	**1996**
Elementary	90.5	75.7	69.9	90.5	81.0	73.0	93.1	80.3	74.6
Vocational	95.4	92.9	87.6	95.4	90.3	85.9	93.9	85.2	81.8
Secondary	101.4	103.7	106.9	102.2	104.5	110.3	104.3	112.6	122.7
Tertiary	134.0	144.0	164.7	124.6	140.0	161.3	133.1	145.4	160.7
Average	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
In % of total	100.0	100.0	100.0	115.3	119.3	116.4	79.6	77.8	81.7

Source: Microcensus 1988, 1992 and 1996 (Večerník 1999:119).

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[10] On the basis of micro data from 1984 and 1993 Social and Stratification surveys the rate of return to 1 year of education was 2.4% for males and 4.2% for females during the pre-transition period, followed by a rise through the early transition period to 5.2% for males and 5.8% for females. Those with a university education experienced a particularly large earnings increase. Unlike the return on formal education, the return on experience declined (Chase 1998). Munich et al. (1999) compared returns to education in 1989 for male employees (an increase in wages of 2.6% for 1 additional year of education) with the situation during the transition to a market economy in 1996 (an increase in wages of 5.8% in 1996 for 1 additional year of education). Other relevant studies are reviewed in Svejnar (1999).

Whereas wages in the production sector dropped during the transformation, wages in the tertiary sector rose to the average level. A leap upwards can be seen in the financial sector and even in the state administration (Table 3.12). Wages for public sector employees in health care and education in particular remained relatively low. This had important consequences for women since they comprised an important share of employees in these branches.

Table 3.12 Earnings by branch of employment (% of average)

Branch	1989	1993	1997
Manufacturing	104.4	101.3	100.5
Construction	111.2	112.3	104.9
Agriculture	108.2	87.7	79.5
Transport and communications	106.4	97.5	105.8
Trade and catering	83.3	88.6	98.1
Health and welfare	90.1	95.0	90.0
Education	89.8	90.3	88.1
Banking and insurance	98.3	177.7	174.5
Administration and defence	101.3	117.8	110.2
Total	100.0	100.0	100.0

Source: Statistické ročenky (CSU, various years)

During state socialism the gender differences in wages were explained by men's role as the breadwinner of the family and according to this reasoning, all child allowances in two-earner families were also attached to men's salaries. Gender differences in wages were not reduced and were also apparent during the transition period. The results of analyzing the gender wage gap, based on 1998 data from a survey called Information on Average Earnings, suggested that in the non-public sector, almost two-thirds of the total gap remains attributable to the individual's sex (Jurajda 2001). Pailhé (2000) showed using Social Stratification Survey data from 1993 that everything else being equal (professional, educational, regional and family characteristics of individuals) being a woman reduced one's wage level by 20%.

Differentiated earnings determined household incomes[11]. The redistribution through taxes and social transfers still existed[12], but its channels were clearly distinct from the

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[11] To put the Czech situation into the context of Central and Eastern European countries, a number of comparative studies (reviewed in e.g. Förster and Tóth 2001) suggested that, at the beginning of the 1990s, income inequalities and relative poverty were significantly higher in Hungary and Poland than in the Czech Republic and they continued to differ throughout the 1990s.

primary distribution of resources in the previous period (Večerník 1999). The most apparent change in the income distribution was that pensioners were replaced by children in the lower income strata (Table 3.13 shows the distribution of pensioners and children across income deciles).

Table 3.13 Distribution of children and pensioners by income deciles (1 = lowest level of income, 10 = highest level of income)

| Income decile | According to income per household | | | | According to income per capita | | | |
| | Share of children | | Share of pensioners | | Share of children | | Share of pensioners | |
	1988	1996	1988	1996	1988	1996	1988	1996
1	0.1	1.0	16.0	13.5	14.1	19.3	11.1	2.5
2	1.1	2.8	14.9	12.0	14.2	16.5	9.9	4.9
3	2.7	4.2	16.9	19.6	13.8	13.0	9.6	9.9
4	6.7	6.3	13.0	17.3	13.2	9.3	9.6	16.7
5	10.4	11.7	9.5	9.1	12.6	8.1	8.6	18.3
6	13.3	14.5	7.1	7.3	11.3	7.7	9.0	16.2
7	16.2	15.3	5.3	6.2	9.4	7.6	8.6	12.1
8	17.4	15.6	4.9	5.6	6.7	6.9	9.6	8.1
9	17.0	14.9	5.3	5.3	3.6	6.0	10.8	6.4
10	15.0	13.6	7.0	4.3	1.2	5.5	13.1	5.0
Total	100	100	100	100	100	100	100	100

Source: Microcensus 1988 and 1996 (in Večerník 2001a).

The number of children was no longer the prominent factor for both taxes and transfers as it had been under state socialism. Förster and Tóth (2001) suggested, on the basis of analysis of total household incomes, that social transfers in general and family benefits in particular, contributed to significantly reducing child poverty in the Czech Republic[13]. However, reduction rates decreased between the early and the later 1990s. Among families with children, those with three or more children (with poverty rates twice those of the entire population) and in particular single parents (with poverty rates five times those of the entire population) face the highest poverty risks. Poverty rates for single parents especially showed the most dramatic development, doubling between 1992 and 1996 (Förster and Tóth 2001).

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[12]   According to Večerník (2001a), regarding the level and degree of redistribution, the Czech Republic was much more redistributive in taxes and considerably more redistributive in social benefits that any other OECD country.

[13]   The data source for the Czech Republic is Microcensus for the years 1992 and 1996.

The public perception of rising inequality differs by education, social class and chances that individuals were able to use during the transition. According to surveys from 1992, Matějů and Řeháková (1996) found that those with a higher education level tended to interpret the transformation as improving their chances for getting ahead, while people with a lower education level (especially those without *maturita*) generally perceived their opportunities as declining[14].

3.3.7 Dual earner family

During the state socialist period, high labor force participation of women and relatively low earnings with small variations resulted in the need for both partners to participate in the labor market; thus, the dual earner family model was formed. The main breadwinner (in terms of a higher income) in complete families continued to be the man. However, in many families, a woman's job accounted for a substantial proportion of the family income.

With increases in women's educational attainment and labor force participation, it might be presumed that husbands and wives would be less likely to define women's roles traditionally; yet much of the research suggested that traditional gender roles persist in both work and family spheres. Čermáková (1997, 1999) carried out several investigations on the experience of women living in two-career families. Women's experiences reflected the gender contract in the Czech society which prescribed women and men specific roles and obligations. In compliance with this gender contract, employers paid lower salaries to women and generally invested less in their professional growth with the expectation of lower investment returns (Čermáková 1997). On the basis of results from opinion surveys, Kuchařová (1999) pointed out that there was a conflict of 'dual outlook', that men recognized the rights and abilities of women to self-realization outside the home (professional, etc.), but on the other hand they did not wish to 'relieve' them of their domestic roles. The division of labor in Czech households was characterized by the fact that housework was virtually always done by women. The quantitative difference in the division of work between men and women living in a two-income family was in 1996 as follows: on average men devoted 48.5 hours per week to their jobs and women devoted 42.5 hours,

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[14] Matějů and Řeháková (1996) support their results by other surveys from the very early phase of transformation (1991) in which people with university diplomas show the strongest tendency to interpret the post-communist transformation as progress towards distributive justice, while those with the lowest education exhibit the greatest reservations.

while on average men spent 10 hours and women spent 25 hours on housework. There were differences according to work position, the education of partners, or the number of children in the family (Křížková 1999). The contradiction between high female labor force participation and the traditional division of household work was apparent.

3.4 Public policies related to the family

For the purpose of discussion in this section, *family policy* is defined in a social welfare sense, as governmental financial support aimed at families with dependent children in order to decrease the difference in per capita income between childless families and families without dependent children. The aim of *population policy*, defined in a pronatalist sense, is governmental, mainly financial, support to families that are meant to act as an incentive to families to have children (more children or to have them as early as possible). This section reviews public policies, which have been supposed to directly or indirectly influence family behavior: a system of child benefits and parental leaves, housing policy, childcare availability, laws on the family or characteristics of the Labor Code.

3.4.1 Role of public policies

Family policies instituted on the territory of today's Czech Republic have a long tradition[15] that is related not only to the communist regime. Since 1948, the relationship of the state to the family in the socialist Czechoslovakia was quite ambiguous and pronounced on the one side through ideological proclamations and the other side through policy measures which were not necessarily consistent with each other (Kučera 2001). Ideological approaches of communism to the family were mirrored in practical politics either directly or indirectly. As noted by Stloukal (1999: 24), "*state socialist regimes always viewed social policies as an important political instrument for social planning and control. The task of social policy was to regulate the ways in which these rights were implemented while retaining a productive and loyal workforce. […] It was used in a frankly discriminatory way to favour the working class, to encourage the collectivisation of agriculture, and to influence the use and distribution of the labour force*".

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[15] Family allowances were introduced as early as 1888 for certain target groups, such as state employees. In 1926 the Czechoslovakian government introduced a law according to which families of civil servants were entitled to an allowance, such as financial contributions for educational expenses for first and

In the 1960s, family policies turned to a more mild ideological position towards the traditional family model and to more family-friendly policies. The change was supported by the Family Code of April, 1964. Successive reforms followed at the end of the 1960s and especially in the period 1970-1972. By that time, population policy was perceived as an integral part of state policy[16]. State support for families included not only direct subsidies on food and manufactured goods intended primarily for children but also subsidies for day care centers, nursery schools, after-school care, school canteens, transport, summer camps, etc. (Fialová and Kučera 1997). This all had a strong compensatory effect on the overall budget of families that had children (Večerník 1992).

The system of population policy also had many interesting features in the international scope, with a number of studies in the late 1970s and early 1980s focused on its characteristics and results (examples of this English-language literature are Pavlík and Wynnyczuk 1974, Heitlinger 1976, Frejka 1980). Hartl and Večerník (1990) draw attention to the fact that *"improvement of the material situation of the family which was highly appraised by state ideology was obviously one of the channels which could relieve the strain of social and political crisis of 1968-1969 and the following process of 'normalization'"*. In that sense, Stloukal (1999: 26) points out that *"population policy played its role in the regime's strategy to deter individual freedom and to eliminate the possibility of public unrest […] Czechoslovak pronatalist policies of the 1968-73 period are an example of efforts to restrict undesirable forms of behavior by strengthening the family"*. The impact of the social policy measures of the 1970s is often interpreted in terms of the rise of fertility[17]. However, there are several facts that must be taken into account. A strong cohort born in the 1950s reached fertile age in the 1970s, and furthermore, children whose births had been

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second children up to 18 years of age. In 1945, the Family Allowances Act was implemented, which improved maternity benefits (Wynnyczuk and Uzel 1999).

[16]   There were official institutions dealing with population issues that had close connections to government. The State Population Commission was established at the time of the abortion legislation in 1957 as an advisory body of government. In 1971 it was upgraded to a higher level and renamed the Government Population Commission, consisting of federal and national vice-ministers, plus representatives of trade unions, the Women's Council, and the media, along with university professors and heads of research institutes. From the beginning of the 1960s, the committee prepared suggestions for pronatalist measures. However, due to the political instability of the second half of the 1960s, these measures were introduced only after 1970.

[17]   For a discussion of the effect of family policies on fertility in this period, see e.g., Frejka (1980). Pronatalist measures mainly produced shifts in timing of childbearing and caused significant period fluctuations in fertility levels but not very significant increase in the ultimate family size. However, Frejka (1998) pointed out that without the pronatalist incentives, birthrates might have been lower (expressed in completed fertility by cohorts).

delayed at the end of 1960s were not born until the 1970s. Overall, the Czech population perceived the family policies positively, not regarding them as manipulations to encourage people to have children they did not want, but rather as a relief from the obstacles to childbearing that they were experiencing (Stloukal 1999).

A high prevalence of abortions was a typical feature of the demographic development in Central and Eastern European countries since the 1950s. On the one side, in the state socialist Czechoslovakia there was no mass production of modern contraceptives and on the other side, there was only limited importation, which was beyond the economic reach of most women. Failure to develop adequate provisions for modern contraceptives made women largely dependent on abortions (e.g. David 1999, Stloukal 1999, Wynnyczuk and Uzel 1999). In Czechoslovakia, abortions were legalized in 1957 (for further information on the condition of accessibility of abortions and changes in legislation see Wynnyczuk and Uzel 1999).

The need for transformation of family policies was formulated in the planned strategy for the social policy reform as early as 1990. The system of indirect social assistance, which in the past consisted of various price cuts and subsidies from the public budget, was continually reduced since 1990. Because of high inflation during the early transition period, child allowances and family benefits eroded to very low real values. Other measures (such as newly-wed loans in 1991) were cancelled. The new system of social support came into practice during the period October 1995 – January 1996. Measures and practices of the family policies in the former communist regime and changes in the transition are discussed in e.g., Vojtěchovská (1998) and Kocourková (2002).

3.4.2 Child benefits, maternity leave and parental leave

In the 1970s and 1980s, child benefits were not equal in amount per child[18] and for a family with 3 children, represented approximately one-third of an average monthly wage (Table 3.14). The benefits were never increased to compensate for the degree of inflation, nor were they related to the rise in wages. They were redefined from time to time (in period of the 1970s and 1980s in 1973, 1979, 1982, 1985 and 1987).

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[18] In 1945 the Family Allowances Act was implemented and until 1947 the child benefits were not differentiated by number of children. Since 1947, child benefits were not equal in amount per child and the highest increase in total child benefits was gradually reduced from the eighth child in 1947-53 to the

In the 1970s and 1980s, all insured women were entitled to take maternity leave. The period of entitlement was fixed at 28 weeks including 6 weeks prior to the birth of the child[19]. Maternity benefits were equivalent to 90% of net earnings. Since 1970, after basic maternity leave, women[20] could use the possibility of paid extended maternity leave with a guarantee of job security. The length of entitlement was originally until the child reached its first birthday, but since 1972, it was prolonged till the child's second birthday and again in 1987, until a child's third birthday. Women received a flat-rate childcare allowance. Only women with two or more children were entitled to receive this benefit. Women having a first child were entitled only to unpaid leave with job guarantee until the child was 2 years old (Kocourková 2002). As concerns a pension scheme, women have retained entitlements until the child reaches the age of 3 (Kocourková 2002).

The introduction of income testing (put in legislation in 1995, put in practice since January 1996) served to exclude highest-income earners from child benefit receipt and to target the lowest-income groups. The condition for claiming individual benefit is derived from household income compared to the subsistence minimum. The subsistence minimum is the state-recognized amount needed to ensure nourishment and other basic personal needs. Actual amounts of child benefits are defined as multiplies of the subsistence minimum of their recipients[21].

Since 1990, the number of children in a family ceased to be a criterion for entitlement to the child care benefit and parents of a single child also became eligible for the child care benefit. Parental benefit is fixed for all recipients, irrespective of previous income or number of children and amounted to approximately one-fifth of the average salary. Since 1995 the child care benefit may be paid an additional year until the child reaches the age of 4. Job protection is guaranteed until the child turns three[22]. The system of maternity and parental leave in the Czech Republic is very generous concerning length, however, the

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fifth in 1957-1959, fourth in 1968-72, and third in 1973-1990. In 1957-1968 amounts of child allowances were income-tested (Kučera 1994, 2001).

[19] It was originally fixed to 18 weeks by the National Insurance Act of 1948 and initially covered only civil servants (Wynnyczuk and Uzel 1999).

[20] Since 1985, it was offered also to fathers if the mother could not take care of the child (Kocourková 2002).

[21] There are three different benefit amounts depending on the level of household income. This was aimed as targeting the lowest income households with dependent children.

[22] However, there is a high level of difference, for example women or men employed in the public sector can fully benefit from the leave, while for self-employed people it is fully their decision, and in the private sector, problems of re-entry after leave were far from rare (Čermáková et al. 2000).

flexibility of combining parental leave with part-time work is very limited. The maximum hours a parent could work outside the home were 2 hours per day with a maximum amount of earnings fixed at a minimum subsistence level. Since 1990 also men became eligible for a childcare leave after basic maternity leave. However only since 2001 the condition of entitlement and job protection became equal for men and women (this leave is now referred to as parental leave. For further details see Kocourková 2002). Although the maternal leave has formally changed to the parental leave in the Czech Republic, fathers avoid taking it not only because of the legislation (until 2001) but also due to quite conservative opinions concerning gender within Czech society[23].

Female university graduates usually spend 2 years or less at home with a child, out of fear of losing achieved positions, qualifications, skills and knowledge, in the field in which they work (Čermáková et al. 2000). Women with lower education levels took prolonged parental leaves, perhaps due to the difficulties of finding a job or because forgone earnings were not very high. On the other hand, high job protection for females (with respect to long maternity and parental leaves, a right to leave in case of a child's illness and legislation protecting workers with female responsibilities) might cause resentment and therefore prejudices toward female employees.

Table 3.14 Overview of family policies in the Czech Republic, 1970s-1990s

	1970s and 1980s	**1990s**
Newly-wed loans	Introduced in 1973 Up to 30 000 CZK Repayments were partly cancelled out on the birth of a child: 1st birth 2000 CZK 2nd and higher birth 4000 CZK (it represented 92 resp. 185% of average income at that time (1))	State guarantee for them cancelled 1.1.1991
Birth grant	Since 1970 amount of 2000 CZK	From 1995 – 5 times subsistence minimum for child (2)
Maternity leave	28 weeks (37 weeks for single mothers and for multiple births) including 6 weeks prior to childbirth maternity benefit: 90% of net earnings	28 weeks (37 weeks for single mothers and for multiple births) including 6 weeks prior to childbirth maternity benefit: equal to amount of sickness insurance 1990-1992: 90% of daily wage (max. of 150-180 Kc)

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[23]   As late as 1994 (according to a survey by Rodina from 1994), 42% of men and 39% of women were not in favor of men going on parental leave or sharing child care responsibilities with women (Čermáková et al. 2000).

		1993: 67% of daily wage (max. of 190 Kc) since 1994: 69% of daily wage (until max. of 270 Kc)
Extended maternity leave (Parental leave)	since 1970: until the child age of 1 since 1972: until the child age of 2 since 1987: until the child age of 3 (for women with 2 and more children) with job guarantee childcare allowance: flat-rate for mothers of 2 or more children	Up to 3 (or 4 from 1995) years of age of child Fixed financial contribution to parents (1,1 times subsistence minimum of parent (2)) 3 years - right to work position parent held before parental leave
Child benefits	1968-1972 number of children: 1 – 90 CZK per month 2 – 330 CZK 3 – 680 CZK 4 – 1030 CZK more - +240 per child Average wage 1915 CZK in 1970 1973-1979 number of children: 1 – 90 CZK per month 2 – 450 CZK 3 – 880 CZK 4 – 1280 CZK more - +240 per child 1979-1982 number of children: 1 – 140 CZK per month 2 – 530 CZK 3 – 1030 CZK 4 – 1480 CZK more - +290 per child Average wage 2656 CZK in 1980 1982-1986 number of children: 1 – 180 CZK per month 2 – 610 CZK 3 – 1150 CZK 4 – 1640 CZK more - +330 per child	1986-1993 number of children: 1 – 200 CZK per month 2 – 650 CZK 3 – 1210 CZK 4 – 1720 CZK more - +350 per child Average wage 3286 CZK in 1990 1996- income-tested child allowance (receive only if family has less than 3 times subsistence minimum of household (2))
Other		1996- income-tested: transport benefit for child (to school) housing benefit social allowance

Source: Hartl and Večerník (1990), Čermáková et al. (2001), Vojtěchovská (1998) and Kocourková (2002), Ministry of Labor and Social Affairs (www.mpsv.cz).
Notes: (1) Average monthly gross wages per employee (Statistické ročenky, CSU various years). (2) For actual amounts of subsistence minimum and various benefits, see the website of the Ministry of Labor and Social Affairs (www.mpsv.cz).

3.4.3 Childcare

A massive development of childcare facilities during the period of state socialism was merely the inevitable solution to the general over-employment of women, since it helped to shorten women's periods of absence from the labor market[24]. Instead of mothers caring for their own children, the qualified child's nurses in crèches and teachers in maternity schools would take care of children (Kučera 2001). Public day care was easily accessible and not costly (it was heavily subsidized by municipalities or important employers in the region). In the 1950s, slots in kindergartens accounted for only around 35% of the population aged 3 to 5. This proportion increased throughout the 1960s and reached over 60% in 1970. In the 1980s places in kindergartens covered over 85% of the population aged 3 to 5 years (see Table 3.15).

Table 3.15 Kindergartens and children of respective age in population

Year	Kindergartens		Proportion of 3-5 year-olds
	Number	**Children**	
1970-71	5,582	258,567	62.4
1975-76	6,203	316,991	69.3
1980-81	7,396	463,565	84.5
1985-86	7,501	432,067	87.0
1990-91	7,335	352,139	89.0
1992-93	6,979	325,735	84.9
1994-95	6,526	338,722	88.7
1996-97	6,343	317,153	85.9
1998-99	6,028	302,856	94.2

Source: Kučera (2001) for period of the 1970s and 1980s, Statistické ročenky, Pohyby obyvatelstva (number of 3 to 5 year-olds at 31.12. of respective year) for period of the 1990s.

For younger children, there were fewer possibilities. Places in nurseries covered only 10-15% of children aged 0 to 2 years during the 1970s and 1980s (Table 3.16). So, if the economy required full employment of mothers, the number of places in childcare centers was inadequate. At the same time influential psychologists openly noted the poor quality of many child care facilities, manifested by high child to care provider ratios, excessive regimentation, and impersonal staff attitudes towards the children, all of which had detrimental effects on child development (e.g., Langmeier and Matějček 1975, cited in

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[24]   In the first decade of the communist regime (in the 1950s), the rhetoric on collective education of children was very radical; in fact, not only was child care considered for the daily basis, but also on the weekly basis so that parents would see their children only on Sundays (Kučera 2001).

Wynnyczuk and Uzel 1999). The special role of grandmothers was apparent from the 1970 housing statistics from the population census: 23% of households shared their living quarters, most frequently with a mother or mother-in-law (Wynnyczuk and Uzel 1999).

Table 3.16 Nurseries and children of respective ages in population

Year	Nurseries			Proportion of 0-2 year-olds
	Number	**Personal**	**Places**	
1970	1,155	6,113	47,393	11.3
1975	1,203	3,279	50,276	9.0
1980	1,398	7,510	59,888	12.0
1985	1,433	--	60,625	14.8
1989	1,313	--	55,955	14.4
1997	101	446	2,965	1.1
2000	65	300	1,865	0.7

Source: Kučera (2001) for period of the 1970s and 1980s, Zdravotnická ročenka 1997, 2000 (UZIS 1997, 2000), Pohyby obyvatelstva (number of 0 to 2 year-olds at 1.7. of respective year) for period of the 1990s (CSU, various years).

Throughout the 1990s, the proportion of children aged 3 to 5 years attending kindergartens remained stable (between 85 to 90%). Increasing number of children did not stay in kindergartens every day of the week or for full time (8-10 hours per day). In absolute terms, the number of kindergartens, places available in them and children enrolled in them declined. There were still very good childcare services for children aged 3 to 5. On the other hand, the greatest reduction occurred in the number of nurseries for children of ages 0 to 2 years. In 1997, only 1% of children aged 0 to 2 years had a place in nursery. The geographical distribution of nurseries was also uneven with 15% of all nurseries located in Prague and many of the rest in other big cities. The private sector had hardly entered this field in 1997, with only 3 out of 101 nurseries privately run. Thus, young mothers who would like to return to work before their youngest child is 3 years of age usually cannot rely on the availability of public child care.

Such a pattern can also reflect a shift in the preference of parents. Changes in social norms and attitudes regarding child care (pressure for more maternal supervision, weaker acceptability of non-maternal care for very young children, etc.) are apparent, and they are different from the public opinion of the 1970s and 1980s. The growth of fees might lead to a

diminished affordability of kindergartens for low-income families[25] and a rise in women's unemployment might lower the proportion of children of preschool age in kindergartens and nurseries. The practice of hiring nannies was practically impossible during socialism because of labor-law relationships. This practice was also not widespread in the 1990s – either because of lack of financial affordability or simply because it is not common in the Czech society (Čermáková et al. 2000).

3.4.4 Housing policy

The rejection of traditional forms of family lead, among other things, to calling into doubt the need for new housing construction in the 1950s and 1960s. Housing construction rose after 1970, but at that time already more than 200,000 flats were in need, especially for young families (Kučera 2001). Even if in the 1970s the increase in new housing construction was very progressive, there was a lack of suitable housing opportunities for young people. The gap between needed housing and the actual constructed housing widened through the 1950s and 1960s. In the 1970s numerous cohorts born in the 1950s reached adulthood. The conditions for acquiring a flat were differentiated: having priority over all others were those married couples with children in which the husband was a member of the communist party who worked in an industry promoted for political reasons (Kučera 2001). At that time it was common that young couples moved into their first own flat only after the births of two children. Until that time they lived with the parents of one of the spouses. Co-residence of more than one generation in the same house or flat was common. At the end of the 1980s, according to Fialová and Kučera (1997), it was already exceptional to find different families sharing a flat unless by choice; young couples, particularly those with one or two children, generally had their own flats, although their parents frequently helped them financially in obtaining these.

Newlywed loans were introduced in 1973. Most young couples used them to acquire housing or to buy furniture and household equipment. At that time, the amount of the loan (30,000 crowns) was more than 10 times the average monthly wage. Repayments of loans were partly cancelled out at the birth of children: 2000 crowns for the first child and 4000 crowns for the second and subsequent children. In this respect it was better for those

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[25]   The average monthly charge for pre-school facilities was approximately 10% of the average wage in the Czech Republic in 1998 (Čermáková 1999).

intending to marry in any case, to do so early and to have children soon thereafter, since this meant they became eligible for the low-interest loans.

The developments in the housing system of the 1990s are deeply rooted in the heritage of the communist housing system. Rents in the housing sector are still regulated and are only deregulated step-by-step. Despite a lower share of household expenditure for housing[26] than in west European countries, the increase in housing costs can mean quite a heavy burden for lower-income families. The government introduced housing allowances for low-income households in order to ease the burden of increasing rents (given for a maximum of 2 years).

Housing construction rapidly declined after 1989 (Table 3.17), in the mid-1990s reaching one-fourth the number of dwellings constructed yearly in the late 1980s. In the 1990s, the state subsidies for housing construction in cooperatives or private tenure have virtually ceased to exist and the rapid liberalization of prices sharply increased construction costs.

Table 3.17 Share of completed new dwellings in a particular tenure and intensity of construction, 1980-1994.

Year	State/municipal %	Enterprise %	Cooperative %	Private %	Completions per 1000 population
1980	21.45	20.00	34.03	24.52	7.81
1985	22.69	5.86	43.88	27.58	6.45
1990	20.09	3.16	38.25	38.51	4.30
1992	19.73	4.45	41.48	34.34	3.53
1994	23.26	5.31	30.84	40.59	1.76

Source: Sýkora 1996.

Contemporary housing policy uses measures that are helpful to higher-income households (who wish to buy) and low-income households who are already housed. Thus, in many demographic and sociological analyses of family formation in the Czech Republic throughout the 1990s, the insufficiency of affordable housing for young people plays an important role in the explanation of demographic trends, such as low fertility, and the spread of cohabitation among young adults who are still in education or at the start of their employment careers.

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[26] In 1995, the average rent for a three-room flat in state and private apartment houses was about 15% of the annual income of a typical Czech family with two employed adults, or 25% in the case of a pensioner's household (Sýkora 1997).

3.5 Concluding remarks

In the 1990s the Czech society found itself in a new situation with far-reaching political changes, an emerging market economy and changes in the system of social policy. With these changes, everyday life was radically altered, in particular for young men and women. Some young people had a certain education, knowledge and type of behavior that was required for the new conditions of the labor market. On the other hand, they were also the most exposed to labor market uncertainties (such as unemployment and lower job protection).

There are several ways in which individual partnerships and fertility behavior are influenced by the changes in society and economy.

First, the life of young adults in state-socialist times had stable and predictable patterns concerning education and employment careers, with secure jobs and wages. This presented a high level of security, but also a limitation in terms of opportunities and choices. In the 1990s, there were several structural changes – prolongation of education, wider choices for further education, and prolongation of the period spent in search of employment – which were direct reasons for the delay in family formation.

Second, individual rights and responsibilities in the economic sphere (a right to choose one's type of education, uncertainty and competitiveness on the labor market, and responsibility in work) promoted a different kind of behavior and life strategy in the domains of partnership and parenthood (spread of cohabitation as form of less binding relationship, increasing self-responsibility for the well-being of their own children).

Third, in the early transition period, one observes a worsening macroeconomic situation that might be seen as a situation unfavorable to family formation. However, perhaps more crucial than the level of macroeconomic indicators, was the role played by overall uncertainty about future developments and unfamiliarity with the new situation. Young people might have delayed family formation because they were not able to fulfill basic needs of a family.

Fourth, in the state-socialist period, population policies had some specific effects on family formation patterns. For example, there was a high preference for married couples with children in the housing distribution system, and married couples had access to newlywed loans. Furthermore, the early existence of legislation on maternity leaves and

developing childcare facilities helped women combine childrearing and employment. In the 1990s, state help to families was less systematic, and many of the previous measures were cancelled. There was now a clear tendency to restrict state support only to families in need.

Fifth, the gender relations in the state-socialist regime were ideologically proclaimed and characterized by high labor force participation of women, but traditional gender relations in families. The gender wage gap and gender segregation in the educational system and employment were characteristic for both periods. However, in the 1990s with a more competitive economic environment, the conflict of childrearing and employment for women was more pronounced for women than it had been under state socialism, which presumably influenced the family formation patterns of young women.

We are going to incorporate these contextual characteristics into the theoretical discussion (section 4.3) and later, into the formulation of the hypotheses for the empirical analysis (sections 5.2 and 6.2).

CHAPTER 4

Family formation in the life course perspective

4.1 Introduction

Demography has its roots in the study of demographic processes at the macro-level. However, there is a general consensus that demographic phenomena are based on the actions of individuals. Thus, explanations of demographic processes should be related to individuals, meaning they should be actor-based explanations. For explanations and theorizing, demographers need to turn to other disciplines: *"In theory, the other behavioral and social sciences hold the keys to the relations between demographic events and the behavior of individuals and social systems"* (Preston 1993:594). Drawing upon these considerations of an *interdisciplinary* nature and macro-micro level relations, Dykstra and van Wissen (1999:1-9) present the *life course* approach as a conceptual framework well-suited for population studies. First, the life course approach links and integrates insights from a variety of social science disciplines. Second, the approach considers both the *micro* level of behavior, and the *macro* level of institutional and cultural influences on behavior.

In what follows, we provide a general explication of the *life course* approach (section 4.2) which serves as a backdrop for the subsequent choice of theoretical concepts for formulating hypotheses (section 4.3) and the choice of methods for empirical research (section 4.4).

4.2 Family life transitions as part of the life course

People experience events – or life transitions – that involve important changes in their lives. As Willekens (1999) notes, *"demographic events are milestones in people's lives"*. We focus on first childbirth and first union formation. These events do not occur at random or in isolation, but have a certain structure. The fundamental concept in life course research underlying this structure is *time*. In the life course approach, three time dimensions are distinguished (e.g. Dykstra and van Wissen 1999:5-6):

1. *Biographical time*, which represents the chronological order in a person's life, and acknowledges that experiences earlier in life have an impact on choices made later in life. Events in one life domain may have an impact on events occurring in other life domain.

2. *Historical time* captures the effects of the historical changes on individuals' lives.

3. *Social time* reflects the effects of the social age calendar, such as institutions, and social norms and values.

Two central concepts are *events* and *states (*or *stages*) (Willekens 1999). Stages in life are ordered according to time of occurrence and they are delineated by events that occur at given points in time. The sequence of stages then forms a person's biography. Thus, family life might be divided into stages of living with parents, cohabiting with a partner, being married, being a parent, etc. These stages are then differentiated by events such as moving into cohabitation, concluding marriage, birth of the first child, etc. The *transitions* are the status passages that mark socially significant points of change in people's lives. Thus, we will refer to the transition to motherhood or the transition to first partnership.

Four aspects can describe each life event: type, time of occurrence, the likelihood of occurrence (risk of experiencing the event) and the reason for occurrence (effects of other events and processes). As regards the events, the properties of interest in demography are (a) the (non-) occurrence of an event during an interval, (b) the timing of the events, and (c) their sequence (Willekens 1999:25-26).

However, life course analysis has a larger (and more interdisciplinary) scope of interest regarding events. According to Willekens (1999) the objective of life history analysis is threefold: (a) to detect a pattern in the timing and sequence of life events, i.e. to identify and describe the 'life structure' (b) to determine whether and how different life

events are related, i.e. to explain the life structure by identifying the underlying elementary event process and describing how structure emerges from interactions among processes, and (c) to predict or reconstruct life histories from partial observations.

The life of an individual consists of several domains, such as partnership, childrearing, education or employment domains. These domains are dynamically linked and this is presented as interdependencies in the life course. Willekens (1991,1999) uses the notion of *career* in this discussion. Each life domain is associated with a career; they interact with one another and with their common environment. Career processes might depend on each other directly or indirectly through a third process. This is manifested in the coordination of careers in one's life. Some interactions may involve shifts in timing (e.g., the postponement of realizing an event) in order to solve incompatibility problems. Dependencies in the life course might be of two types: *status dependence* and *event dependence* (Willekens 1999). Status dependence means that the occurrence of events in one career depends on the state occupied in another (or the same) career. For instance, the probability of having the first child depends on education attainment or employment status. Event dependence means that the occurrence of an event in one career depends on the occurrence of another event (in another or the same career). We will examine how the probability of having the first child is influenced by the fact that a woman has finished her education.

A feature of any behavior or process at the micro level is that it occurs in a particular *context*. The feature is referred to as embeddedness (Willekens 1999). The context in which people live is a very general concept, ranging from other individuals around the individual to state and economic institutions, social norms and values. It includes both micro- and macro-level influences on the individual behavior (Dykstra and van Wissen 1999:5). The context provides opportunities and imposes restrictions; thus, it enables and restricts individual actions. Opportunities and restrictions might be associated with social norms, cultural beliefs, legal restrictions and access to economic and other resources.

The idea that the social and historical context organizes the life course draws attention to societal mechanisms that regulate and define the steps of life pathways. Mayer (1986:166-167) describes four such societal mechanisms. First, *institutional careers* impose order and constraints on people's lives (examples are the educational system with its sequence of steps, career-like sequences in the occupational domain, and the family cycle). Second, life courses are socially organized through *state-intervention and regulation*

(examples are legalization of entry and exit from marital status or entry and exit into formal education). Third, *cumulative contingencies* refer to the impact of the timing of early events on later life (for example, the delaying effects on marriage and childbearing of prolonged education). Fourth, individual life courses are influenced by the collective and widely varying *chances of birth cohorts*. Historically, this refers to the specific conditions that constitute the collective fate of cohorts (examples are the Great Depression, the Second World War and we might add the Fall of Communist regimes in Central and Eastern Europe in 1989).

How should one study the life course methodologically? The linkage between different life careers is examined by the use of event history analysis. As was said, occurrence of one event might depend on certain statuses. These statuses might vary over time (e.g., marital status, employment status) and in event history analysis they are referred to as *time-varying* or time-dependent covariates (Blossfeld and Rohwer 1995, Courgeau and Leliévre 1992). Other statuses are constant over the whole life span of an individual or are constant in the period studied (e.g. place of birth, number of siblings), they are referred to as *time-constant* variables. The event history method offers a formal testable model for the simultaneous integration of a large number of (time-varying or time-constant) determinants of the occurrence of certain events and makes it therefore possible to include different life careers in the explanations of the occurrence of events. Event history modeling is further presented in Chapter 4.4.

Event history modeling will help us to establish relevant empirical evidence as to how different life course careers are linked. However, the important task is to find mechanisms which link the cause and the effect. As Blossfeld and Rohwer (1995: 20) formulated it: *"The crucial point, however, is that a causal statement needs a theoretical argument specifying particular mechanism of how a cause produces an effect or, more generally, in which way interdependent forces affect each other in a given setting over time"*. Therefore, in the next section, we review theoretical concepts that are relevant for our research question and point out mechanisms which might be important for the explanations.

4.3 Theories and the context of family formation

In recent decades, life course research has gained in importance in many fields of the social sciences – among others, sociology of the family, microeconomics, social psychology, political science, migration studies, social mobility and status attainment. Largely due to common data and the methodological design of life course research, many disciplines are being brought into a common discourse on certain topic, though this involves competing approaches and theories (Mayer and Tuma 1990). Drawing on this development, Mayer and Tuma (1990:5) see the potential of a life course approach in *"transcending long-held distinctions between micro- and macro-analyses of social life, and between theoretical schools and scientific disciplines"*. In other words, the life course perspective is well-suited both for organizing a theoretical discussion and for including the context while formulating hypotheses.

Our research question concerns changes in family life transitions of young women in the context of profound political, economic and social change in the Czech Republic. Our first objective is to review the 'rational actor' model of the economics of family, to clarify the explanatory categories in this approach and to point out theoretical explanations which might be used for the current changes in family formation behavior. Our second objective is to clarify the factors which gave rise to the second demographic transition, namely: changes in the economic and social structure of a society, cultural changes and technological innovations. We pinpoint the specific manifestations of the process of the second demographic transition – such as a destandardization of the life course or changes in the relations of marriage and childbearing – particularly those one might investigate in a life course approach. As a third objective, we look at institutional explanations of life course patterns: in the broad context of the setting of state institutions (comparing state-socialism with the transition period) and more particularly in the context of family policies (comparing the strong pronatalist aim of the 1970s and 80s with the nonspecific aim of family policies in the 1990s). Our last objective is to emphasize the role of the family system, social norms and gender relations for the characteristic patterns of family life transitions. Thus, in what follows, we pay attention to the theoretical basis of the assumption being formulated and tested in the empirical part of our research.

4.3.1 Economics of family

The theoretical framework of 'New home economics', presented in the "Treatise on Family" (Becker 1993), is based on the rational actor model in which the individual choice is its fundamental premise. Maximizing individuals then choose the 'best' alternative from a set of alternatives or opportunities available to them[1].

Becker (1993) draws the following conclusions for family formation decisions from his economic approach:

1. Unmarried men and women are viewed as trading partners who decide to marry if each partner has more to gain by marrying than by remaining single. According to this approach, it is sex-specific specialization of labor that provides the major incentive for partners to marry.

2. Families use market goods and services, as well as time of parents, to achieve the goal to have children. The relative cost of children is significantly affected by changes in the value of the time of women, because the cost of the mother's time is a major part of the total cost of producing and rearing children.

The theoretical framework of family economics was formulated in the context of market economies. The central argument in the discussion of changes in family formation behavior over the past few decades in developed countries was the increasing participation of women in labor market activities and a growth in the earning power of women. The effects are that, first, women increasingly delay or even avoid marriage because the sex-specific division of labor has become less advantageous and, second, women's demand for children is decreasing because of the increase in the relative costs of children.

In the Czech context

Can this theoretical framework provide testable hypotheses for the change in family formation behavior of Czech women? In further considerations, we mainly discuss the transition to first child and in particular the education differentiation of first birth timing. According to the economic approach, the role of female human capital plays a central part in the timing of births (e.g. Gustafsson 2001). The relative costs of children are affected

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[1]   The basic explanatory categories of the rational actor models are 'preferences' – individuals are assumed to be capable of ranking alternatives - and 'opportunities' – the set of available or feasible alternatives. The 'New home economics' approach assumes that individual preferences are fixed and exogenous. Therefore, Pollak and Watkins (1993:467) point out that this approach explains fertility differences over time and across individuals or groups in terms of a single explanatory category, namely differences in opportunities.

significantly by changes in the value of the time that women have at their disposal. This is because the cost of a mother's time is a major part of the total cost of producing and rearing children (Becker 1993). Among the components that must be included in the costs of children, the theory discusses: (i) the opportunity costs of time spent with children instead of being in the labor market, (ii) the depreciation of the value of education and experience while caring for a child, and (iii) the net direct child costs (Cigno and Ermisch 1989, Cigno 1991, Walker 1995; these models are discussed in Gustafsson 2001). In these terms, the authors contemplated what it costs – in economic quantities – to have a child in different stages of a woman's life. Furthermore, these considerations are not the same for women with different characteristics, such as women's education. Even if the effect of women's education is not theoretically unanimous (Gustafsson 2001), it is generally considered to be harmful to have children during the phase of 'career building', in particular for women with a higher education (e.g. Liefbroer and Corijn 1999).

However, the contextual framework for which these explanations have been developed is different for the conditions of state-socialism and perhaps the transition to a market economy in the Czech Republic (Table 4.1). First, the theoretical concept assumes that there is an important penalty for career interruption and moreover that it is dependent on the stage of career in which the work interruption due to childbirth is taken. Second, the economic returns to education are supposed to be a result of market mechanisms. However, these assumptions have to be questioned in overall employment, definite work contracts and wage grids in a centrally planned economy. Third, the theory assumes an important incompatibility of childrearing with women's employment. Nevertheless, population policy of the state under socialism tried to alleviate women's childcare responsibilities by supporting public childcare. In what follows, we discuss the context of childbearing decisions in state socialism and the transition period and highlight the major differences which might be a possible reason for the postponement of first birth in the 1990s. In particular, we look at education differences in timing of first birth.

Under Czech state socialism, there were few educational differences in income or the standard of living because of wage regulations, an important redistribution of income and various kinds of subsidies from public sources (see Chapter 3). Therefore, applying to all women to a similar extent were (i) the opportunity costs of forgone earnings, (ii) the depreciation of the value of educational or job experience while caring for a child, and (iii) net direct child costs. We consequently assume that there was little differentiation by educational attainment for first birth risks.

Table 4.1. Items used in the economic theories of the timing of births and their content in periods of state-socialism and the transition to a 'market' economy

Item in career and childbirth planning	State socialism in the 1970s and 80s	Transition to market economy
Opportunity costs of childbearing (time*wage)	Low, small educational differences	Increasing educational differences
Perspective for life-time income (slope of earnings)	Income determined by wage grids – low uncertainty about and low variability of future income	Many factors on individual level with increasing importance of education, work performance etc.
• Education	Not decisive factor	High importance on start income and slope of incomes
• Age and experience	Main factor in wage grids in determination of female wage	On job experience valued
• Productivity, absence at work place at time of maternity leave or in time of child's sickness	Small effect on income	Decisive effect
• Potential detrimental effect of childbirth on woman's career	No	Important, if woman has career aspirations
Guarantee of work place after maternity leave	2 years	3 years
Financial support at maternity leave or parental leave	Maternity leave 26 weeks (28 weeks since 1987) Up to 2 years fixed contribution	Maternity leave 28 weeks (69 % of salary with maximum amount) Up to 3 (4) years fixed contribution
Child benefits in real prices	Relatively high, universal	Relatively low Income tested since 1996
Real expenditure on childrearing	Diminished by child allowances, regulated prices of basic consumption goods, children's clothes and subsidies for kindergartens, after-school activities, summer activities…	Relatively high (deregulation of prices occurred mainly in 1991 to 1993) Lower subsidies
Household income	Income sufficient according to basic needs	High level of differentiation by occupation, education, experience
• Women without work	-	Unemployment fee or resource from household income
• Women with primary education, unskilled worker	Income sufficient according to basic needs	Income on level of living minimum
Division of household activities	Traditional division	Traditional division - slow changes

In the 1990s, it can be argued in economic terms, that the (i) indirect costs of children (opportunity costs of mothers' time spent with children) continued to rise as the market economy widened options for young people, the labor market became more competitive and educational and job-related experience gained in importance. Apparently, (ii) the depreciation of female human capital while caring for a child also became a more important factor in considering fertility decisions. However, differences by educational attainment existed. While these considerations were of comparatively low importance to women with lower earnings and/or higher uncertainty on the labor market (with a higher risk of unemployment and difficulties finding a job), they rose for women with relatively high earnings and good career prospects. Thus, it became more important for women to time motherhood with respect to their employment career, in particular so for women with a higher education. The hypothesis following from this argument is that the educational differentiation of fertility augmented in the 1990s and women with a higher education had comparatively lower risks of a first birth.

The second hypothesis is based on different arguments than the previous one and discusses the role of 'economic hardship' accompanying the transition to a market economy. Expenditures on children were rising during the transition (through inflation or the canceling of subsidized prices) and the subsidies for families from public resources declined substantially. Therefore, in terms of economic theory (iii) net direct costs of children increased. The growing uncertainty resulting from the overall economic insecurity disproportionately affected young people and young families (Večerník 2001, Forster and Toth 2001). The former might have delayed childbirth because financial resources to fulfill the basic needs of the family were lacking. This argument supports the hypothesis emphasizing economic and social difficulties experienced in the 1990s, which created a specific and almost a 'crisis' behavior that was manifested in a decline of fertility (Rychtaříková 2000). At the individual level, the possible behavioral response to the economic hardship could affect to a considerably higher degree the groups of women who were the 'losers' in the economic transition than those who were not. Women with a low education had relatively lesser paid and less stable jobs, and they faced greater difficulties in establishing themselves on the labor market than their counterparts with a higher education did. They, therefore, faced stronger financial constraints when it came to family formation. Moreover, the subsidies for families from public resources formed an important part of the family budget. Thus, diminishing state financial support for families had a greater impact on these women. The hypothesis following

from this argument is that there was higher educational differentiation in fertility in the 1990s and women with a lower education level refrained comparatively more from a first childbirth than those with a higher education level.

To sum up, we formulated two competing hypotheses with different expectations concerning the role of education in the decline of first births in the 1990s (they are tested in the empirical investigation in Chapter 5).

As far as union formation is concerned, economic theories of family concentrate on marriage. With an increase in the evaluation of women's human capital (as is supposed for educated women in the 1990s), the significance of marriage is decreased, as highly educated women might postpone or even avoid marriage. This is one of the hypotheses tested in Chapter 6.

4.3.2   The notion of 'Second Demographic Transition'[2]

Shortly after Ron Lesthaeghe and Dirk van de Kaa first presented their hypothesis of the second demographic transition (van de Kaa disseminated the idea in English in 1987) the concept has attracted a lot of attention as well as critical scrutiny. Addressing the ongoing development, incorporating new ideas and responding to some criticisms, both Lesthaeghe (e.g. Lesthaeghe, 1995; Lesthaeghe and Neels, 2002; Lesthaeghe and Surkyn, 2002) and van de Kaa (e.g. van de Kaa, 1994, 1997, 2001a and 2001b) further elaborated the concept. As a result, it has become a complex theory, stressing a plethora of interconnected demographic changes and underlying mechanisms.

Initially, van de Kaa (1987: 4) considered the decline in fertility to a level *"well below replacement"* to be the principal demographic feature of the transition. Recently, the *postponement* of marriage and parenthood became a hallmark of the transition (Lesthaeghe and Moors, 2000: 124). Behavioral changes were characterized by four main shifts (van de Kaa 1987: 11): (1) from the *golden age of marriage* to the *dawn of cohabitation*; (2) from an era of the *king-child with parents* to that of the *king-pair with a child*; (3) from *preventive contraception* to *self-fulfilling conception*; and (4) towards *pluralistic* families and households.

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[2]   This chapter draws largely on the publication: Sobotka, T., Zeman, K. and Kantorová, V., 2003. Demographic shifts in the Czech Republic after 1989: a second demographic transition view, European Journal of Population 19:249-277.

Table 4.2. Stages of the second demographic transition in the Czech Republic, 1950-2000 compared with the scheme constructed by van de Kaa (1997, 2001).

No.	Sequence	van de Kaa*	Czech Republic: period
1	Decrease in age at first marriage. First child usually born soon after the marriage (within one year). The mean age of mothers at first birth decreases as well.	3	1950-1962
2	Decline in higher-order fertility, emergence of the ideal of the two-child family model.	1	1955-1962
3	Due to the liberal legislation (1950), divorces become more common and increasingly accepted by the society.	5	1955-1995
4	Legalization of abortion (1957). Abortion accepted as a substitution of contraception among married women. Abortion rates display inverse trends to fertility.	8	1957-1988
5	Modern contraception is disseminated to a certain extent. The quality, availability and choice of contraceptive means remain limited. Knowledge of contraception is low among young women. Abortions often substitute for contraception.		1966-1989
6	Cohabitation becomes more common among separated and widowed people	9	1970s-80s
7	Cohabitation commonly accepted as a distinctive stage before marriage. Some partners decide not to marry, even if the woman is pregnant. Share of nonmarital births is increasing, especially among young women having a first child.	7	1990+
	Decline in first marriage rates and first-birth probabilities. Total fertility rates are falling rapidly.	4	1991-1996
8	Modern contraception increasingly used among all groups of women. Young people often use contraception from the onset of their sexual life. Abortion rates are declining steadily.		1992+
9	Postponement of first births and first marriages, the incidence of early births and marriages is declining rapidly.	4, 6	1993+
10	Natural increase of population becomes negative. Immigration gains in importance; however, the total population size is declining.		1994+
11	Divorce rate stabilized at a high level.		1995
12	Fertility patterns becoming more diverse with regard to the timing, number of children and family status of mothers. Total fertility rates tend to stabilize at low levels.	11	mid-1990s+
13	Not all postponed children are born. Increase in lifetime childlessness and in the proportion of never-married women.	13, 14	1994+ Cohort 1961+
14	Cohabitation accepted not only as a distinctive pre-marital stage, but as an alternative to marriage. Proportion of nonmarital births further increases.	10	-----
15	Abortion rate stabilized at low level. Abortions mostly used by younger women at an early stage of their reproductive life.		-----
16	Postponement stops. Period fertility rate increases slightly.	12	-----
17	Cohort fertility stabilizes below the replacement level	15	

Source: Sobotka et al. (2003: 264-265). *Corresponding number of the stage in the scheme constructed by Van de Kaa (1997:8, 2001: 302).

Lesthaeghe and van de Kaa's discussions are focused on the dynamic changes over time rather than on any form of the envisaged final state. As Lesthaeghe pointed out, the second demographic transition *"is about 'trajectories' and not about the convergence or the final-state equilibrium"* (Lesthaeghe's remark in Bad Herrenalb, 27 June, 2001). One can perceive the second demographic transition as a progression of interlinked demographic changes, particularly in fertility, union formation and dissolution, and living arrangements. In Sobotka et al. (2003) the progression of the second demographic transition in the Czech Republic is compared to the generalized scheme of stages outlined by van de Kaa in 1997 (Table 4.2). However, they differ significantly. Drawing on this comparison, Sobotka et al. (2003) concluded: *"the transition proceeded sequentially and various stages followed each other in a logical fashion, creating space for the subsequent changes to occur. However, the logic of the process is too strongly determined by the country-specific historical and institutional context"*.

That is not a unique finding in the European context. For instance, Billari and Wilson (2001:3) compared demographic patterns of early adulthood in Europe and arrived at the conclusion that one should expect to find prevailing demographic differences between societies, particularly if one recognizes the importance of cultural inheritance, the specific socio-economic context and national path-dependencies.

In the following, we give emphasis to the specific manifestations of the process of the second demographic transition, which one might examine in a life course approach. First, the rise of parenthood within consensual unions made *cohabitation* a more stable and serious relationship (Lesthaeghe, 1995: 46). Thus, we look at the partnership context at the time of first childbirth (Chapters 5 and 7).

Second, an increased 'disorder' in the life course has made life transitions *"more frequent, less strictly patterned, and more complex"* (Lesthaeghe, 1995: 18), a development later coined as a *"destandardization of the life course"* (Lesthaeghe and Moors, 2000: 153). We investigate life transitions in several life domains (partnership, childbearing, education, and employment) with a micro-perspective to respond to whether (and how) life transitions are more variable.

Third, the notion of the transition as a gradual, ongoing process makes it, in theory, possible to identify the "leaders" and the "laggers", either between countries, or within

various subpopulations in one country[3]. Scandinavian countries have often been proposed as the leaders of the second demographic transition in Europe, particularly with respect to cohabitation, non-marital childbearing and a destandardization of the order of life transitions (e.g. Lesthaeghe and Moors, 2000: 165). Within countries, the young, more educated women living in large cities and not attending church who have political preferences well to the left of center, have been identified as the early adopters of the new behavior (van de Kaa, 1997: 9, quoting de Feijter, 1991). Within subgroups (defined by education, employment characteristics, past life experiences) we look for "leaders" in certain behaviors such as cohabitation as first union, childbearing in a cohabiting union, widening of the time distance between various life events, etc.

In what follows we discuss the factors which gave rise to the second demographic transition. Van de Kaa (1994) distinguished between three broad types of factors, namely: changes in the economic and social structure of a society (4.3.3), cultural changes (4.3.4) and technological innovations (4.3.5). This complex structure gave rise to a continual shift in *individual preferences* (towards individuality, freedom and independence), in *constraints* (towards less normative control, and less dependence on institutions such as the state, the church and the family) and in *opportunities* (paid employment for women, increased education and labor market opportunities).

4.3.3 Changes in the economic and social structure

The economic and social structure of societies, where the second demographic transition is supposed to take place, underwent various changes that have impacted the lives of young adults (Liefbroer 1999).

A first major change has been the *expansion of the education system*. Increased participation in the education system by young adults contributed to the postponement of family life transitions (Blossfeld 1995, Blossfeld and Huinink 1991). In Chapter 5, we take a closer look at the relation between education and fertility careers of women.

The second factor was the *increase in the labor force participation of women*, which is generally assumed to influence both childbearing and union formation (this mechanism is

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[3] For instance, empirical studies on European fertility decline during demographic transition have found that fertility control was evident first among urban dwellers, among the literate or educated, and among professionals (Pollak, Watkins 1993).

based on economics of the family reasoning and was described in section 4.3.1). To avoid the dilemma of reconciling motherhood and a career, women – particularly highly educated women – postponed marriage and motherhood.

The third major factor concerns *economic developments.* Surkyn and Lethaeghe (2002:1) point out that in an initial article on the second demographic transition, Lesthaghe and van de Kaa (1986) suggested that the economic recession of the 1975-85 decade enhanced the tempo shifts in fertility and nuptiality. Hence they envisaged the possibility of a joint operation of economic and cultural factors. A similar mechanism is also considered for central and eastern Europe (with the exclusion of CIS), since *"there is nothing mutually exclusive about the operation of both economic and cultural factors ... in fact they may be interwoven and mutually reinforcing"* (Lethaeghe and Surkyn 2002:2)[4].

Some authors made a direct connection between marriage and the fertility decline on the one hand and the effects of the difficult economic transition on the other (e.g. UNECE 2000). Some of these include rising unemployment, increasing visibility of poverty, the end of life-long employment guarantees or rising social inequality, etc.

The fourth structural factor is *change in the economic structure* (Buchmann 1989, Hakim 2000). The globalized economy almost inevitably brings about the demand for job flexibility, and as a result, growing uncertainty and declining ability among people to foresee the long-term consequences of their current decisions. Although somewhat neglected in the concept of the second demographic transition, increasing economic uncertainty in the early adult years has contributed to the postponement of childbearing and destandardization of the life course among young adults in Western and particularly Southern Europe. Such constraints are found in various forms in many European countries. For example, Castiglioni and Dalla Zuanna (1994: 136) point out the difficult housing situation in Italy; Baizán et al. (2001: 28) regard the high risks of unemployment as the driving force of the delayed transition to adulthood in Spain. The need to be flexible that is imposed by the economic environment, makes it difficult to combine a career and a family (Mulder and Manting 1994, Mills 2001). Unemployment – both female and male – is regarded as a discouraging factor in childbearing decisions (Meron and Widmer 2003).

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[4]   The issue of interweaving the effects of economic and cultural factors on change in family formation are theoretically developed in Lesthaeghe (1998) and Lesthaeghe and Surkyn (1988).

In the Czech context

For explanations of the changes in life course patterns of Czech women in the 1990s, economic factors – in particular, two aspects of economics – are supposed to play a crucial role. First, mentioned in the *economic crisis* view are mainly the decline in the country's economic performance, and the simultaneous increase of unemployment, inflation, insecurity and poverty, causing deterioration of family income[5]. Second, the view of profound *economic restructuring* is centered around the process of privatization and the introduction to a market economy leading to changes in the labor market, the need for flexibility of the workforce, an increase in income differentiation and a higher evaluation of education, etc. This development created new economic opportunities and constraints in life domains such as education and work, particularly for young adults.

We keep these two aspects – *economic crisis* and *economic restructuring* – in mind while interpreting differences in family life transitions within subgroups of the population.

4.3.4 Cultural changes

The core concept of the second demographic transition lies in the connection between demographic and value transformations (Lesthaeghe and Surkyn 2002:2), namely: *"(i) to the accentuation of individual autonomy in ethical, moral and political spheres, (ii) to the concomitant rejection of all forms of institutional controls and authority; and (iii) to the rise of expressive values connected to the so-called 'higher order needs' of self-actualization"*.

In the Czech context

Some of the cultural changes – such as *secularization* – were already strong in the society under socialism. However, the tight normative control of the Communist State granted only limited personal autonomy. Opening the society after 1989 introduced, into a predominantly uniform society, a wide range of self-realization, a series of new cultural impulses, and new patterns of consumer behavior and leisure activities (Machonin et al.

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[5] For instance, Rychtaříková (2000:101) emphasizes the economic and social difficulties experienced in the 1990s: *"Consumer prices, low real wage growth, high unemployment, and a rather 'medium' level of social protection have contributed to family income deterioration"*.

2002). This is reflected in the perception of an increased sense of individual freedom and self-realization in the 1990s compared to in the previous period (Table 4.3)[6].

Table 4.3. Perceptions of social justice, individual freedom, and self-realization of the population in comparison with the period before 1989 (In %).

	Social justice		Individual freedom		Self-realization	
	1995	1999	1995	1999	1995	1999
Definitely grew	6.2	4.7	35.5	38.2	38.9	32.4
Rather grew	14.5	15.3	40.0	40.1	42.3	39.9
Did not change	20.9	20.9	15.9	14.4	12.4	15.7
Rather lowered	38.7	42.1	6.3	5.1	5.2	9.1
Definitely lowered	19.7	17.0	2.3	2.2	1.2	2.9

Sources: Social transformation and modernization, 1995 (1220 respondents), Decade of societal transformation in the Czech Republic, 1999 (4,750 respondents) in Machonin et al. (2002).

Likewise, Rabušic (2000:15) concluded that the Czech population displayed a modest growth in post-materialism, and a higher level of tolerance and openness were direct results of a broader cultural and technological change enabled by the collapse of the totalitarian regime.

Upraise of new forms of household formation related to newly emerging value orientations is clearly visible in Central and Eastern Europe. Lesthaeghe and Surkyn (2002) showed that the patterns of value differentiation among people with different types of living arrangements strongly supported the 'second demographic transition thesis'.

In analysis of the change in values concerning the family, Rabušic (2001: 116) points out that the meaning of women's lives ceased to be predominantly associated with children and motherhood. The decline in the prominent position of the family and childbearing as well as the shift in the perception of women's roles may be illustrated by the EVS data. Two questions in this survey are of particular interest: 1. *"Do you think that a woman has to have children in order to be fulfilled?"*, and 2. *"Do you agree or disagree with the statement that marriage is an outdated institution?"*. Although only a minority agreed that marriage is outdated, there was a significant increase in the proportion of young people sharing this view

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[6] By contrast, the increasing social differentiation lead to changes in the perception of social justice and half of the population evaluated the development in the 1990s as lowering social justice (Table 4.2). Machonin et al. (2002) note that *"a clear-cut distinction between the positive evaluation of the post-socialist changes in so far as the increase of freedom and democracy are concerned, and the increasingly negative evaluation of security and social justice,[…]seem to be typical for the population of the post-socialist Czech Republic"*.

across virtually all age groups (Figure 4.2). The decline in the proportion of women who think that women need children in order to be fulfilled was pronounced across all age groups. We interpret this shift as a growing emphasis among women on activities and interest outside the family.

Figure 4.1 Percentage of women who agree with the following statements: a) Family is an outdated institution. b) Woman has to have children in order to be fulfilled. (EVS 1991 and 1999)
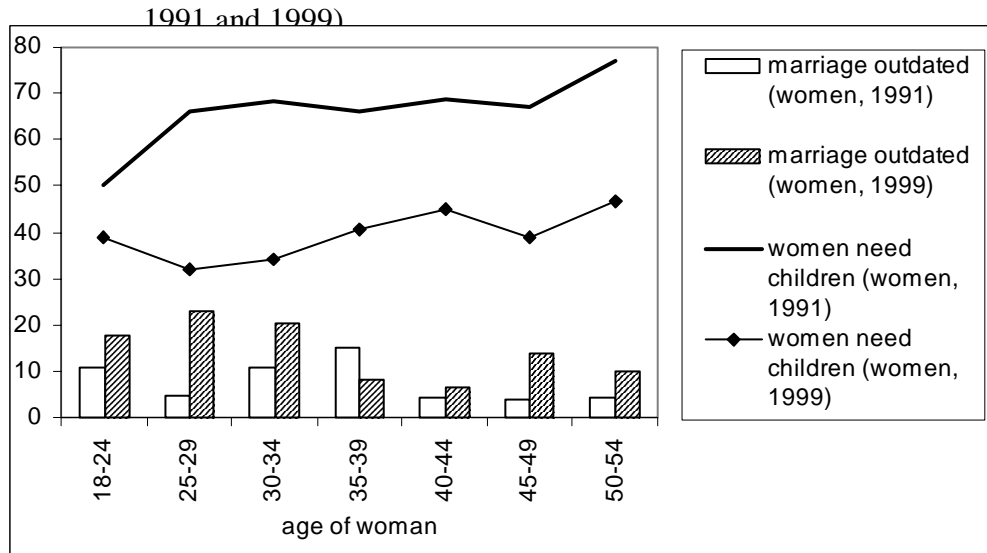
Source: EVS (1991, 1999), Sobotka et al. 2003.

There was a profound change in social norms[7] that define the 'appropriate' time for marriage and childbearing, mainly as a response to other life course changes such as prolonged enrollment in education, the importance of employment consolidation or partnership consolidation. The opinions regarding ideal age at marriage and birth of first child among contemporary young adults are presented in the discussion of empirical results (Chapters 5 and 6).

We do not directly investigate the relation between women's value orientation and the patterns of their family life transitions[8]. However, one might expect that women with

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[7]   In our usage, social norms are defined as *"internalized standards [which members of a particular society have] about the appropriate ages for key transitions such as leaving home or becoming a parent, and the sequence in which such transitions should be made. Such standards provide order and predictability in life and they create benchmarks against which individual development can be measured"* (Dykstra and van Wissen 1999).

[8]   In our approach we investigate the life course of women in a retrospective way; however the value orientations - including preference for family and children - present the opinion at the interview date. Therefore, this does not allow us to study the effect of value orientations in a comprehensive manner.

higher levels of education or living in towns were more tolerant towards non-traditional living arrangements. Thus, we might ask whether these women were proponents of living in cohabitation in their first union (Chapter 6).

4.3.5 Technological innovations

Technological innovations have been an important catalyst for the changes in family formation. First, introduction and widespread dissemination of the mass media have influenced the lives of young adults, since mass media assist us in creating and spreading 'new' ideas and behavioral patterns. For instance, in the 1990s young people's familiarity with, and acceptance of Western life styles has increased partly as a result of media attention given to the lifestyle in Western Europe both in informative and entertainment programs. The post-1989 changes brought a plurality of views and a boom in new forms of media; between 1989 and 1992 the number of regular newspapers and journals surged from 772 to 2,983 (CSU, 1993: 315). Furthermore, the pervasive spread of modern technologies – mobile phones, computers and the Internet – meant that young people now belonged to wider, long-distance social networks which nurture a fast spread of new ideas and lifestyles.

Second, the most noticeable innovation was the introduction and widespread distribution of modern contraception. In the explanatory framework of the second demographic transition both Lesthaeghe and van de Kaa (e.g. van de Kaa, 1987: 25-26, 1994: 113-114, 1997; Lesthaeghe and Neels, 2002) repeatedly emphasized the catalytic role played by the adoption of modern contraception, especially the pill (the "pill effect"). This gave individuals almost complete control over their reproduction, but also had a direct impact on the norms regarding sexual and reproductive behavior. Therefore, it played a key role in the postponement of marriage and parenthood, which has now become a hallmark of the transition (Lesthaeghe and Moors, 2000), as well as in the substitution of marriage by cohabitation: *"modern contraception laid the axe at the root of traditional relations between sex and marriage and between partners and their children"* (van de Kaa, 1997: 6). The introduction of modern contraceptives is considered to have played an important role in the transition towards a higher age at first birth in recent decades in European countries.

In the Czech context

In 1966 modern contraception (the pill and the IUD) were introduced in Czechoslovakia. However, modern contraceptives as well as information concerning sex and

reproduction generally remained in short supply, leading to the excessive use of abortion and a relatively high prevalence of unwanted and mistimed births and "shotgun marriages". Abortion was relatively easily accessible and generally accepted, particularly as a means of fertility limitation (a sort of "ex-post" contraception) among women who already gave birth to the desired number of children. It appears to be evident that a low age at the birth of the first child during state-socialism was linked to the limited spread of contraception and information about it, especially among young women starting their sexual life early (Stloukal 1999). Premarital sex was acceptable in terms of behavioral norms, although young adults had limited possibilities (and information about how) to avoid undesired pregnancies.

The spread of contraceptive use in the 1990s undoubtedly played a role in fertility behavior, since the motivation for changes in the timing of births had to be supported by the possibility of introducing them. An increase in the use of the pill did not precede the demographic changes, but has run parallel to the changes: the proportion of women aged 15-49 who were prescribed oral contraception has increased from 4.2% in 1990 to 19.5% in 1995 and 31.9% in 2000[9] (UZIS, 2001). The use of modern contraceptive methods spread very quickly, but at differing paces amongst different educational groups. Contraceptive use among Czech women appeared to increase with the level of education (Wynnyczuk and Uzel 1999).

In Chapter 5, we investigate the knowledge about contraceptive methods and the use of contraceptives among Czech women at the start of their reproductive career (before first marriage or at first sexual intercourse). We use data from the Czechoslovak Fertility Survey 1977 (CFS 1977) and the Czech Fertility and Family Survey 1997 (FFS 1997). The differences in usage and knowledge of contraceptives provide insights into interpreting diverging patterns of the timing and sequence of first family life transitions across calendar time or women's education.

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[9] The same trend is provided by data from the Reproductive Health Survey of 1993 and the Fertility and Family Survey of 1997, which depict an increasing popularity of the pill replacing the IUD and traditional methods of contraception. Among women aged 20-25 years living in unions, 12.5% used the pill in 1993 while fully 26.7% did in 1997; 15.3% used the IUD in 1993 and 7.4% did in 1997. Meanwhile, the use of traditional methods declined from 22.4% in 1993 to 9.3% in 1997.

4.3.6 State institutions and their impact on the life course

In research on life course patterns, as Mayer (1997: 204) points out, *"a connection is being assumed between certain institutional conditions on the macrolevel of societies, that is their political economy, on the one hand and specific life course patterns on the other hand."* In order to understand the demography of early adulthood, the main institutional considerations are likely to be those which pertain to the educational system, and to the housing and labor markets (Billari and Wilson, 2001). As concerns research techniques and interpretations of results, the modeling of single life transitions by means of event history analysis have to be embedded in institutional contexts, thus it is necessary to combine individual-level dynamic models with institutional explanations (Mayer 1997).

In the broad context of institutional variation among developed countries, Esping-Andersen (1990) depicted three welfare state models that are labeled as 'liberal', 'conservative corporatist', and as 'social democratic'. Others (e.g. Mayer 2001) add 'Southern European welfare state' as a distinct group. In this framework the (former) socialist countries would join the classification as a 'socialist' welfare state[10], though for the 1990s a 'conservative corporatist' labeling dominates (Novak 2001:115). However, in most theoretical considerations and comparative analysis of welfare states, the (former) state socialist countries are simply not included. Welfare states and the corresponding provisions differ from each other in various important aspects (e.g. Esping-Andersen, 1990).

Welfare states in practice influence individual life courses in terms of educational tracks, employment trajectories, occupational careers, family lives, retirement and old age[11]. The consequences of different institutional configurations and different political economies are seen in major changes in the temporal and social organization of the lives of men and

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[10] To the question of whether communist states can be described as welfare states, Gal and Klingman (2000) note that these states *"constituted a kind of (failed) welfare state, if only by the classic definition that a welfare state aims to secure the basic needs of its populace"*.

[11] Mayer (1997: 214) describes the influences of welfare states on individual lives as follows: *"First, ... by controlling and expanding education, by regulating the labor market and legislating on family transitions the welfare state defines and brackets out activities, events and transitions. Second, ... the welfare state not only impacts on the life course by positive law, but in addition by using age as criterion for entitlements, using age categories as targets for services and service occupations and by using monetary incentives such as stipends, maternity benefits, unemployment benefits and pensions. Third, the welfare state regulates life course as an employer with labor contracts, which generally contain more universal rules and more security than in private sector. Fourthly, as an aggregate result of these welfare-state-induced tendencies, ... [there is] not only greater stability and constancy of life courses in such societies, but also ... [there are] consequences for motivations and orientations of actors, for example, to behave according to state-provided incentive schemes or to avoid employment risks"*.

women in all advanced countries. Even if current social changes are supposed to be common to all advanced societies, according to Mayer (2001), *"major institutional, structural and cultural differences, partly based on century old historical foundations, do in fact exist... Even if pressures and challenges of global social change may to some degree be similar, the responses will vary widely given diverging institutions existing in any given country"*.

In the Czech context

The state under socialism was characterized by overwhelming and excessive concern for the welfare of its citizens. Ferge (1991: 431) claims that *"the original vision of welfare system was very idealistic, although, ultimately, it failed to prosper. After decades of implementing socialist principles of welfare, an over-centralized, non-democratic, paternalistic state evolved, which 'spoilt' its people by making them totally dependent on its provision of social services"*. The life course regime of the Czech society under state-socialism was characterized by distinct life phases: schooling, training, employment and retirement with stable employment contracts, long working lives in the same occupation and firm, and age-graded wages. Most women were incorporated into the workforce. There was high conformity to given roles within the economy and the family and the heterogeneity of life course patterns was limited.

In the 1990s, many institutions were under pressure to reorganize and adapt to the conditions of a market economy. State owned industry was gradually privatized and state interventions, subsidies, laws and other regulations limiting the market were mostly abolished. The labor market became more flexible, both in the private and public sector. Education expanded in level and duration. Entry into employment became more precarious, first work contracts were often temporary, employment interruption due to unemployment and further education or training increased. The rate of job shifts amplified and occupations were increasingly not life-long. The life course regime was, in contrast to the previous period, characterized by greater de-standardization across the lifetime and increasing differentiation and heterogeneity across the population.

Therefore, in examination of the demographic patterns of the life course (such as the transition to first birth or first union formation), it is crucial to include educational pathways and employment biographies. To the extent that these various aspects of individual lives can be seen as being both interdependent and institutionally regulated, they can be understood as manifestations of a particular life course regime (Mayer 1997). While discussing the results in Chapters 5 and 6, we stress the importance of institutional changes on the labor market, education system and welfare state on family-life transitions.

4.3.7 Public policies and their relations to family formation

In general, social policies related to the family differ a lot among developed countries (Gauthier 1996, 2002, Hantrais and Letablier 1996, Hantrais 1997, Neyer 2003). The majority of demographic investigations discuss effects of selected family policies on fertility decisions in individual countries (e.g. Ekert 1986, Hoem 1990, Kravdal 1996, Ekert et al. 2002, Hoem et al. 2001, Kreyenfeld 2002). These studies mostly concentrate on policies directly related to childbearing and childrearing such as changes in maternity and parental-leave systems, the fathers' uptake of parental leave, childcare provisions, family benefits systems, etc. However, in comparative perspective there is no unequivocal result regarding the impact of family policies on fertility (Gauthier 1996, 2002, Hantrais 1997).

In the Czech context

In the discussions on family formation in the Czech context, the question of population policies and the role of the state in general is of importance (e.g. Heitlinger 1976, Frejka 1980, and Wolchik 2000). To guarantee the growth of the future labor force was the major concern of the Communist governments with respect to population[12]. Decline in fertility over the 1950s and 60s lead the government to expand its population-related policies. Their objective was to provide financial benefits and welfare incentives to encourage births while enabling mothers to remain in the labor force. The relevant measures of pronatalist policies were introduced in the first half of the 1970s – prolongation of maternity leave, the introduction of further childcare leave with job guarantees, a maternity allowance and development of public childcare facilities (for further details see Chapter 3). Fialová and Kučera (1997:102) commented that the measures taken to increase the population in the late 1960s and early 1970s were successful because they were well calculated and they made it easier for young families with children to establish themselves; however, by the early 1980s there were already less effective. In empirical analysis we

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[12]   The first 20 years of the communist regime (1948-1968) compared to the 1970s and 80s were characterized by a more dogmatic and strong position with respect to family life and female employment with no special family-oriented policy. Kučera (2001) described an ideological approach to the family in the early period of building socialism and communism as firmly rooted in: First, considerations on whether the family as a product of a dismissed society is going to disappear or is going to survive in completely different forms (as an interpretation of Marx); second, in the conception of full employment of liberated women, which have a new position in society and are workers fully comparable to men; and third, in collective education of children enabling mothers to be released from responsibilities towards children and family.

discuss the impact of population policies on the timing of first birth (Chapter 5); and on the timing and, in particular, the type of first union formation (Chapter 6) in the 1970s and 80s.

After a twenty year period of emphasizing powerful state family policies, during the 1990s many changes occurred in the system of family policies (see Chapter 3). For instance, the system of maternity and parental leave (up to four years) became more generous but granted little flexibility for combining childrearing and employment. In addition, parental-leave benefits were far below income replacement levels, being based on a flat rate principle. Throughout the 1990s, the provision of places in kindergartens for the total aggregate of children aged 3 to 5 remained stable between 85 to 90%. By contrast, the greatest reduction occurred in the number of public nurseries for children aged 0 to 2 (to 1% of the population of same-aged children in 1997, see Chapter 3) causing difficulties for women willing to return to work early, since it became difficult to reconcile employment and childrearing. The prevalent type of family with children below age 3 was mainly that the man was the breadwinner (being in full-time employment) and the woman was temporarily a housewife staying at home and being financially dependent on the male partner.

Such prospects played an important role in childbearing decisions of young women, especially those with a higher education. By contrast, diminishing state financial support for families (see Chapter 3)[13] had a greater impact on women with low education levels since these subsidies formed an important part of the family budget and they therefore faced stronger financial constraints when it came to family formation. These two contrasting impacts of family policies are considered while interpreting education differentiation of first birth timing in the 1990s (Chapter 5).

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[13]   One might argue that the decline in fertility in Eastern European countries might be related to the demise in the 1990s of a formerly superior system of state-provided family services in these countries. For example, Chesnais (1996:736) argues in case of East Germany that the *"demise of that system, characterised by high female labour force participation rates, extensive coverage of family allowances, wide availability of nurseries and day-care facilities at the workplace, and special allowances for single mothers, is probably one of the main factors explaining an extraordinary fall in fertility"*.

4.3.8 Family system

The continuation of historical differences in family systems in European regions undoubtedly had an impact on regional differentiation of family formation behavior (e.g. Hajnal 1965, Reher 1998). Therefore, an additional perspective on family formation of Czech young adults can be seen in the enduring cultural inheritance of the family system.

In the Czech context

After the political crisis in 1968 and the tightening control over society, Czechs reacted by embracing family values. As the opportunities for a career, education or for leisure activities were limited, the family served as an arena for self-realization and individual self-fulfillment. For many people, the family constituted an unofficial sphere of existence, where they lived a kind of schizophrenic dual life, making clear distinctions between public and private behavior and morality (Machonin, 1997: 38)[14]. The Czech society retained many characteristics of traditional and patriarchal societies (Možný and Rabušic, 1999: 109). The 'escape into the family' was further supported by pronatalist measures which came into effect after 1971.

Young adults could not achieve economic independence as individuals through labor market activities or through living independently in their own households (it was virtually impossible to get a flat for a single person without children in housing distribution system). The other option of emancipation was the formation of one's own family and self-realization in it. However in many cases this did not imply financial independence. Although the government's housing policies favored married couples (especially those with children), many young families waited up to several years for their first separate apartment[15] and they lived in three-generation extended family households. Intergenerational ties were very strong. In view of the low level of migration of the Czech population, a young family usually

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[14] Some of the views on the family under socialism might be less popular and heroic, such as when Gal and Klingman (2000:70) note that *"the ideological opposition between state and family (public and private) and the valorization of family as authentic and honest that are so common in public discourse in region contradict the much more complex set of practices that linked families, households, and the states"*. In their view, the family economy was parasitic on the state, and vice versa, since private production used goods and time taken from the public sector. In post-socialist times, the image of a stable, autonomous family survived, despite many changes in family composition and the patterns of family formation over recent decades. This is the reason why, according to Gal and Klingman (2000:69-70), parental and child support arrangements or egalitarian gender relations within households attracted little political attention, since *"the general assumption seems to be that it is the 'public' that changes, not the 'private' sphere"*.

[15] According to the Czechoslovak Fertility Survey in 1977, only 42.6% (and below 40% in towns) of Czech women at the time of their first marriage had their own flat (Czechoslovak Fertility Survey in 1977, 2009 married women aged 18-44, Czech territory).

lived in close proximity to their parents and grandmothers often took part in childcare. Musil (1971) analyzed social organization of Czechoslovak families[16] and he argued that family patterns in socialist countries were not uniform but more complex than was often supposed. These results showed that mainly in white-collar type families where women had a higher education and income the help of grandparents or other relatives was very important[17]. On the contrary, in families in which women have a lower income, where one should expect the existence of extensive kinship help, only few respondents stated that their kin helped them in childcare. Even if on the basis of census data, in farmers' families three generation households were most frequent. According to Musil (1971:205-206) the prognosis of a rapid change of the family into the small, nuclear and conjugal type did not prove correct in the Czechoslovak context. His interpretation follows (Musil 1971:206): *"In socialist countries the social and economic conditions of running the households and organizing childcare, combined with a high rate of women's employment, strengthen the social function of kinship"*.

One's social network had a very strong impact on individual lives and events in early adulthood. In a society in which accessibility of many commodities was not regulated by market principles, the right connections between people were very useful. Many people evaluated their standards of living in terms of family welfare, thus Stloukal (1999) considers consumerism to be intimately connected with familism.

Therefore, a high acceptance of financial and service help of parents and the broader family, the acceptance of three-generation extended family households and the need for self-realization in one's own family contributes to an understanding of early family formation in the 1970s and 80s. In this period, a modern form of the nuclear family (a couple with children) coexisted with the broader family network functioning in a traditional way.

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[16] Data in this analysis come from a study on Married Women in the Family and Work from 1962-64 (4,848 employed women and 3,107 housewives from Czechoslovakia).

[17] In families where women have a university education, 10% of children were brought up by persons other than their parents (mostly grandmothers) compared to 2.7% in families where the women completed only an elementary school education. Musil (1971:204) commented on these findings by pointing to the compatibility of women's roles: *"The conflict between the family role and the career role of employed women is most acute in higher income groups, with university education. Many of these women are able to solve this conflict only with help of the older generation."*

4.3.9 Gender equity

In the public debate in Western European countries, the importance attributed to the *gender issue* lead to a reorganization of the life priorities of women, a diminished acceptance of the traditional division of labor and calls for policy measures aimed at improving the compatibility of work and motherhood. This was also mirrored in the changing agenda of welfare state research which incorporated the gender issue into its center (Sainsbury 1999, Esping-Andersen et al. 2002).

With respect to the relation of gender equity and fertility, McDonald (2000:1) suggested that *"sustained very low levels of fertility in advanced countries can be explained by incoherence between the levels of gender equity applying in different social institutions. In countries with very low levels of fertility, high levels of gender equity are postulated in institutions that deal with people as individuals, while low levels of gender equity apply in institutions that deal with people as members of families[18]"*. On the micro level it was shown that families which have a less traditional division of domestic labor also have a higher probability of having another child. Also, the father's uptake of parental leave makes it more probable that the couple will have another child (e.g. Duvander and Andersson 2003).

In the Czech context

The difference in gender equity in different social institutions seems particularly important. While public institutions were open for women, in private institutions traditional patterns remained. In the centrally planned economy, an extensive industrialization created the need for a new workforce and therefore women were strongly encouraged to participate in the labor force. However, women's work was hardly optional, because their contribution to the family budget was needed and the ideological pressure was strong. However, it has been argued repeatedly that employment dictated by the state did not necessarily translate into women's emancipation (e.g. Gal and Klingman 2000). By contrast, the traditional gender role within the family remained unchanged and was incorporated into the double role of the new 'socialist woman' – the working mother[19]. Men maintained the traditional view

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[18] The institutions that deal with people as individuals are education and market employment and the institutions that deal with people as members of families are work relations (the terms and conditions of employment), services, government transfers, and the family itself (McDonald 2000).

[19] The new model of the socialist woman expected that women would emphasize different roles at different stages of the life cycle. First they would obtain education and start to work, then they would focus on their maternal roles (supported by maternity leave and mother's allowances when children were small), then they would combine childrearing with work. The political leaders did not take the problems of gender

that housework and child rearing were 'women's work'. Therefore, women faced handicaps in the workplace because of their traditional roles in child rearing. State policy offered ample maternity leave, and women did not lose job seniority by taking it. Nonetheless, employers anticipated that women not only would be absent from work to have children but also would bear the primary responsibility for childcare within their families. Women's anticipated - but unpredictable - absence from the workplace influenced employers' allocation of jobs. The combination of employment and childrearing responsibilities was harder because of an underdeveloped service sector, the general lack of convenience items and limited childcare facilities for children below age 3 (see Chapter 3).

In the 1990s, the discord between public and private social institutions became even more pronounced than in the previous period. Education and employment gained in importance in the lives of young women, especially because an employment career became one possible way of self-realization. However, cultural conceptions of gender roles change slowly – e.g. prejudice of employers towards young women at job interviews or highly traditional division of housework (see Chapter 3). In the 1990s, the work interruptions in the early years after childbirth (up to child's age 3 or 4) was normatively expected by society and institutionally supported through the parental leave scheme. Public childcare for children below this age was very limited and the system of parental leave was inflexible (as concerns combining parental leave with part-time work or employment at home). The prevalent type of family with children below the age of 3 was mainly that the man was the breadwinner (in full-time employment) and the woman was temporarily a housewife staying at home and being financially dependent on the male partner.

Such prospects play an important role in childbearing decisions of young women, especially those with a higher education. Drawing on this assumption, one might suppose that the women with a higher education, in case the reconciliation of employment and childrearing was difficult, would choose to postpone childbearing. They might hope to cope better with this situation when they already have a stable employment position and financial resources to ensure childcare.

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equality seriously with respect to the depreciation of women's qualifications while being on childcare leave or to the perceptions others would have about the female workforce (Wolchik 2000).

4.3.10 Concluding remarks on the theoretical framework

The theoretical explanations presented above are not mutually exclusive. We did not opt for taking one main theoretical construction (and applying it as a whole to the development of family formation in the Czech Republic), but rather on the basis of existing theories we later formulate several hypotheses. Therefore, not one theory, but hypotheses based on a variety of theoretical rationale are at the center of interest while formulating specific hypotheses.

Furthermore, in line with Lesthaeghe (1998), we consider the *"multi-causal theory with strong contextual variations ... more likely to be the appropriate outcome, because of the existence of contextuality or path dependency"*. Whatever universal the new political, economic and cultural forces are in the European context, demographic behavior of the Czech society is going to keep its own characteristics – due to specific historical economic and social developments, the family system or gender relations. In this sense, Reher (1998: 221) concludes: *"No matter how nearly universal the factors of modernization may be, once they enter into contact with different historical, cultural, geographical, or social realities, the end result will necessarily be different in each context."* In agreement with this argument, many researchers pointed out persisting national differences, for example, with respect to the transition to adulthood (Billari and Wilson, 2001) or living arrangements of young women in the early parental phase (Kuijsten, 1996). Therefore, the hypotheses formulated for the following empirical analysis are embedded in the context of the development of the Czech society.

Since the theoretical explanations are based on actions of individuals, this is why life history data on individuals, and not aggregated longitudinal data, provide the most appropriate empirical evidence for hypotheses about demographic developments. We see as particularly important the issue of heterogeneity in the population and the fact that *"theories may address specific mechanisms that are more recognisable in one context than in another"* (Lesthaeghe 1998). Furthermore, the theoretical explanations mutually interact with several life domains of individuals (such as education and childrearing). Event history analysis allows for studying, first, the heterogeneity of demographic behavior across different population groups and, second, across several domains of an individual's life simultaneously. Thus, in the next section, we present event history analysis as a mean for quantitative analysis of individual life courses.

4.4 Methodological aspects: How to study family life transitions empirically

4.4.1 Why event history analysis[20]?

The study of life course patterns has always been an essential part of demographic analysis. To describe life course patterns, demographers use life tables, mostly to present in summary form the mortality patterns of a population (mortality tables), and recently also marriage or childbearing patterns (nuptiality or fertility tables). In Czech demography, these methods are well established and the data are available for a time period of several decades. At present, fertility tables by different parities exist for the period 1970-2000 (Sobotka 2003).

The method of life tables was developed on the basis of aggregate data such as registration statistics. Some demographers (e.g. Henry 1972) suggested that these methods are not sufficient for demographers to deal with two basic problems: the analysis of interactions between demographic phenomena, and the analysis of the heterogeneity of human groups (Courgeau, Leliévre 1989). For such research questions, other data sources are needed, in which individuals are observed across their lifetime, or at least part of it, and in which a greater number of characteristics of each individual are collected. Another multivariate technique is needed for such study. According to Hoem the relation to life table techniques is fundamental (1993:2, cited in Manting 1994*): "event-history analysis is an extension of the cluster of methods connected with the life table […]. With their regression-type features, these [event history analysis] methods allow us to study the interaction between the various dimensions of demographic behavior as well as mutual influence between demographic and other life arenas (such as labor-force participation and education) with a forcefulness that is shared with no other method at our disposal"*.

Furthermore, event history analysis is suitable for the investigation of causal relationships, which are *"designed to say something about how events are produced or conditioned by other events"* (Blossfeld and Rohwer 1995:19). In what follows, we present basic concepts of event history analysis focusing on particular methods, which we are going to use in the empirical sections of this work (Chapter 5, 6 and 7).

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[20] What we call event history analysis, can also be referred to as survival analysis or failure time data analysis.

4.4.2 Methods of event history analysis

Event history analysis is concerned with the patterns and correlates of the occurrences of *events* (Yamaguchi 1991). Demographers, for instance, study individual life events such as births, deaths, marriages or divorces. Following Yamaguchi (1991), we define event history analysis as the study of the duration of non-experience of one (or more) events during a period at risk. In other words, the outcome of interest is a duration (also called an episode, spell, or waiting time) from the moment when a subject became at risk to the occurrence of an event until its actual occurrence.

The basic analytical framework is the state space and a time axis. In this analysis we use a *continuous time axis* (or *time clock*) representing the waiting time from age 15 to the first union formation (Chapter 6) and the birth of the first child (Chapter 5) or the waiting time from the start of a cohabiting union until its dissolution or marriage (Chapter 6). The *states* are discrete and usually small in numbers in the empirical analysis. The set of possible states forms a *state space.* In case of the waiting time till first childbirth (Chapter 5), the woman is childless (in the *origin state*) and this waiting time till first childbirth is terminated by transition to the *destination state* of 'being a mother'. If more than one destination state exists, we refer to these models as *multi-state models.* For instance, the woman entering a first cohabiting union (origin state) started an episode which could be terminated either by marriage (first destination state) or by dissolution (second destination state). Models for this special case with a single origin and two or more destination states are called *models with competing events* or *risks* (Chapter 6).

One major advantage of event history models is their ability to deal with certain types of censored observations (Yamaguchi 1991:3-9, Courgeau and Leliévre 1992:50-67, Blossfeld and Rohwer 1995:34-36). In our analysis, we have to deal with right-censored observations since we use a retrospective survey (section 4.4.4), in which some individuals have not yet experienced the event of interest (birth of the first child or union formation) before the interview date. The risk period of experiencing a certain event starts in the observation period, however until the end of the observation period, the event has not occurred. Thus, the subject's observation is *censored on the right*[21]. Therefore, the

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[21]   For instance, in the analysis of the transition to first birth from age 15, the observations of women who did not experienced first birth until the date of interview are right censored.

estimation in event history analysis needs to take into account the intervals censored by the date of the survey.

Event history analysis models a *hazard function* (also referred to as hazard rate or transition rate). The hazard function h(t) describes the probability that an occurrence of the event will take place at time t, conditional on it not yet having occurred. The hazard function h(t) is also defined as the ratio of the *unconditional instantaneous probability* of having the event f(t) divided by survival probability (or *survivor function*) S(t), which is the probability of not having the event prior to time t.

In formal representation (as presented in Yamaguchi 1991:10-11), let T be a random variable for duration of the risk period for an event. Then the hazard rate h(t) is given as:

$$h(t) = \lim_{t \to 0} \frac{P(t + \Delta t > T \geq t / T \geq t)}{\Delta t} = \frac{f(t)}{S(t)} \tag{1}$$

where

$$P(t + \Delta t > T \geq t / T \geq t) \tag{2}$$

indicates the probability that the event occurs during the time (t, t + Δt) *given that the event did not occur prior to time t*.

The resulting survivor function is given as

$$S(t) = P(T \geq t) = exp\left[-\int_0^t h(u)du \right] \tag{3}$$

The unconditional instantaneous probability of having the event at time t, f(t), which is also called the *probability density function* for duration t, is given as

$$f(t) = \lim_{t \to 0} \frac{P(t + \Delta t > T \geq t)}{\Delta t} = h(t) exp\left[-\int_0^t h(u)du \right] \tag{4}$$

Mostly, event history analysis models the hazard rate h(t) rather than the probability density function or the survivor function.

These functions may be combined into a likelihood function covering both the censored and uncensored cases for a particular set of independent observations of duration i = 1,…,I

$$L = \prod_{i=1}^{I} h_i(t_i)^{\delta} S_i(t_i)$$ (5)

where t_i is the duration of the state at risk for the ith sample subject, and δ_i is a dummy variable defined for each observation i to indicate whether the event occurred in time t_i (for which $\delta_i = 1$) or the observation was right-censored at time t_i (for which $\delta_i = 0$). Both the hazard function and the survivor function have the subscript i because they depend on the values of covariates that are specific to each subject.

Following Courgeau and Leliévre (1992) we distinguish three major groups of hazard models depending on the specification of the hazard function h(t):

1. *Non-parametric* models make it possible to estimate, without further hypotheses being necessary, the probabilities of transition from one state to another. A problem occurs when one tries to introduce heterogeneity of observed populations. The studied population needs to be broken down into sub-populations that are sufficiently homogeneous regarding the different characteristics one wishes to focus on (such as educational attainment, number of siblings, etc.)

2. *Parametric* models require more restrictive hypotheses in the form of the hazard function. These models provide the possibility of modeling the effects of various characteristics on the occurrence of the event under study and thus of dealing with the heterogeneity of a population.

3. *Semi-parametric* models, introduced by Cox (1972)[22], do not require assumptions of how the hazard rate varies with time and allow for estimations of the parameters for the effects of various characteristics on the occurrence of events.

In our analysis, we use the Kaplan-Meier (Kaplan and Meier, 1958) survival function – meaning the *non-parametric* model – as a first step in the analysis of the transition to first birth with a distinction between women's education and birth cohort (Chapter 5) and the

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[22]   Model estimation is based on the partial likelihood function (Cox 1972) (for formal representations see Yamaguchi 1991:101-107 or Blossfeld and Rohwer 1995:213-217).

transition to first union with a distinction by birth cohort (Chapter 6). It has several shortcomings, such as the fact that the population under risk is divided into several subgroups of smaller sample sizes or the characteristic of women's education is included as being constant over the life of women (e.g., the final level of education at the interview). To overcome these shortcomings and to include more variables in the analysis, in further steps of analysis we use proportional hazard models.

4.4.3 Proportional hazard models

Proportional hazard models describe the probability that an occurrence of the event will take place at time t, conditional on its not yet having occurred. It might incorporate various individual constant and time-varying covariates. The mathematical representation of the hazard function is:

$$ln\,\mu_i(t) = h(t) + \sum_j \beta_j x_{ij}(t) \tag{6}$$

or

$$\mu_i(t) = \mu_0(t)\,exp\left\{\sum_j \beta_j x_{ij}(t)\right\} \tag{7}$$

where $\beta_j x_{ij}$ are observed covariates and their parameters for individual *i*, μ_0 is the baseline hazard by age and *t* is time passed from the initial point of analysis and *h(t) = lnμ_0 (t)*. The baseline hazard is a piece-wise linear spline in the log-hazards (a generalized Gompertz model), where h(t)= αT(t) and T(t) is a vector of a piecewise-linear spline transformation by time t:

$$ln\,\mu_i(t) = \begin{pmatrix} (min[t, \upsilon_1]), \\ (max[0, min[t - \upsilon_1, \upsilon_2 - \upsilon_1]]), ..., \\ (max[0, min[t - \upsilon_{n-1}, \upsilon_n - \upsilon_{n-1}]]), \\ (max[t - \upsilon_n]) \end{pmatrix} \tag{8}$$

with the nodes υ_n of the baseline spline set at certain ages. The vector α of the slopes of the linear segments between two nodes is the average percentage increase in the risk of experiencing an event over one year of life.

The covariates combine to shift the baseline hazard proportionally. It means that proportional hazard models assume no interaction effects of covariates with time. The effects of covariates can only induce proportional shifts in the baseline hazard but cannot change its shape[23].

Model estimations were performed in the software package aML (Lillard and Panis 2003). Finding a maximum likelihood estimator corresponds to finding the vector of parameters (of covariates and baseline hazards in equation (6)) that maximizes the value of the likelihood function (equation (5)). An example of the aML program for estimating the hazard model for the transition to first birth[24] is presented in Appendix D.

We proceed with the analysis in formulating simple models with few covariates – for instance, we model the transition to first birth including only women's age (see Model 0 in Appendix A) – to more complex models including more variables with their possible interactions (see for instance Model IV in Appendix A). Whether the subsequent steps in the analysis – meaning adding variables or their interaction – improve the fit of the models to the data is tested by a chi-square test between two nested models[25]. Two models are nested if one model is obtained by adding some parameter(s) to the other model (Yamaguchi 1991:19-21).

We prefer the proportional hazard model for several reasons:

First, as was pointed out, this model requires no assumptions of how the hazard rate varies with time. Therefore, for the demographic events studied in the following chapters one does not need to formulate any assumptions on the form of the hazard curve of fertility or union formation by women's age. Furthermore, the variation of the hazard rate with time is not really empirically known for some studied events - such as the entry into cohabitation,

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[23]   This assumption can be tested by graphical methods to examine the proportionality. However, it is feasible only in cases where there are constant-time covariates in the model (for further possibilities, see Blossfeld and Rohwer 1995:224-231).

[24]   The outcomes of the modeling procedure are a set of values of the slopes for estimating the baseline hazard of first birth risks, a set of the values for effects of covariates and the log-likelihood of the model.

[25]   As formulated in Yamaguchi (1991:21): *"The likelihood-ratio test for comparing the nested models test the null hypothesis that expected values from the models are identical except for differences due to random variation, It follow that if the difference in chi-square between two nested models is significant for a given difference in the degrees of freedom (which is the differences in number of parameters in these two nested models), we should reject the null hypothesis and conclude that the model that has more parameters improves the fit of the model with fewer parameters. On the other hand, if the difference in chi-square is insignificant, we should accept the model with fewer characteristics as having a more parsimonious fit with the data than the model with more parameters"*. We use this tactic several times in the analysis, for instance, in final models we do not include women's occupational status in the model of union formation, since these parameters did not show an improvement in the fit of the model (Chapter 6).

or the marriage rate of unmarried cohabiting couples. While using the proportional hazard model with a piece-wise linear spline (as applied in aML) we model, together with the effects of explanatory variables, the baseline hazard (for instance, log-hazards of first birth by women's age, Chapter 5).

Second, the model allows for a number of dimensions of time and duration dependency. It is possible to incorporate the effects of *'multiple clocks'* as developed by Lillard (1993). For example, in our analysis of the transition to motherhood 'multiple clocks' include the effects of a woman's age together with time passed since leaving school or the effects of a woman's age together with the duration of cohabitation or marriage (Chapter 5).

Third, this model is preferred because of the possibility of including a number of *time-varying variables* without major problems. Estimation of the effects of time-dependent covariates can be achieved by applying the method of episode-splitting (Blossfeld and Rohwer 1995, Mills 2000). Time-dependent variables are used to 'split' the whole time interval in which an individual is under observation. As an example of difference between time-constant and time-varying covariates might serve the presentation of *education attainment* as a variable measuring *final* education attainment at interview data (time-constant variable) or as a variable measuring education attainment throughout a woman's life (time-varying variable). In the first case, in some parts of life one assigns the education level to a woman who has not yet achieved it. In the second case, through the woman's life we follow both the family life career (as the dependent variable) and educational career (as one of the explanatory variables). The consequence for the results of the analysis and their interpretation are discussed in Chapter 5.

Fourth, it is possible to interact explanatory variables. It is of importance particularly if in theoretical assumptions the interaction of individual characteristics makes a difference for the outcome. For example, highly educated women with *no employment* might have a lower risk of the transition to first birth, because they would like first to consolidate their position on the labor market. By contrast, women with a lower education might not have the same motivations and they might have higher risks of the transition to first birth in the same employment situation (for further discussion see Chapter 5).

A *fifth* advantage is that the proportional hazard model permits the consideration of *competing risks* in one analysis. Competing risks are present if the occurrence of one event removes the individual from the risk of another event. Manting (1994) showed that this

facility is particularly important in the study of union formation. In this sense cohabitation and marriage can be viewed as competing risks in the analysis of first union formation, since the occurrence of marriage removes the individual from the risk of forming unmarried cohabitation whereas the start of cohabitation removes individuals from the risk of entering a first union by marriage (Chapter 6).

Sixth, in proportional hazard models one can deal with the *unobserved heterogeneity* characteristics of the population studied. Unobserved heterogeneity means that some variation across the sample members (or over time for the same sample members) is not included in the model due to measurement error in covariates or the omission of key explanatory factors[26].

The model specification with ε representing a vector of unobserved characteristics:

$$ln\,\mu_i(t) = h(t) + \sum_j \beta_j x_{ij}(t) + \varepsilon \qquad (9)$$

First, we present an example of the unobserved heterogeneity in the population under risk over time. Blossfeld and Hamerle (1992:157) characterized this aspect of unobserved heterogeneity as follows: *"Due to different characteristics among population groups the total transition rate is influenced through time by changing proportion of subgroups in population. Some of these characteristics are unobserved by selection of covariates in models. On the average those individuals will experience an event whose transition rate is high and there is a tendency of those individuals characterized by low transition rates to remain in the risk set."* Including an unobserved heterogeneity component in the hazard models allows us to control for the effect that these unobserved characteristics might have on the risk of experiencing an event over the time studied and on the effect of observed variables.

Second, we use these techniques to investigate whether there are *common* unobserved characteristics leading to both first childbirth and first union formation. This means that we examine the correlation between the unobserved heterogeneity components of the transitions to first childbirth and first union (Chapter 7).

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[26] This problem is well-known in demography. An extensive discussion of it can be found in e.g., Keyfitz (1985), Trussell and Rodriguez (1990). The application of the concept of unobserved heterogeneity of a population is studied in mortality analysis (e.g. Vaupel and Yashin 1985), in fertility analysis (e.g.

4.4.4 Choice of data: Fertility and Family Survey 1997

For event history analysis, we need data sources in which individuals are observed across their lifetime, or at least throughout part of it, and in which a number of characteristics of each individual are collected. We need data that allow the use of statistical concepts that relate women's family decisions to their education and career experiences or other accumulated past experiences. What we look for are data from an *event oriented observation design* (Blossfeld and Rohwer 1995:17), which records all the changes in variables and their timing. It can be population registers, prospective surveys (such as panel data) or retrospective surveys.

The data used in this study comes from the retrospective survey conducted in the Czech Republic at the end of 1997 in the framework of the international project Fertility and Family Survey (Rychtaříková and Kraus 2001). The Czech survey contains data on 1,735 women and also on 721 men who are the current partners of women in the sample. In the present analysis, we use only the female part of the sample[27]. Women in the Fertility and Family Survey were born between 1952-1982, meaning that they were 15-45 years old at the interview conducted in November of 1997. The data provide us with full retrospective histories of union formation and dissolution, childbearing, education, employment and occupation.

In a retrospective survey individuals are asked to give all the dates of occurrence of the events studied. Some of the intervals of exposure to certain events are right-censored at the date of the interview, since the event under study has not occurred in the life of the individual until the time of the interview. Retrospective surveys, however, present some problems such as memory problems of respondents or the selection of the surveyed population (biased by migration or mortality).

Heckman and Walker 1991, Kreyenfeld 2002) and family formation analysis (e.g. Lillard 1993, Lillard et al. 1995, Baizan et al. 2002, Baizan et al. 2001).

[27] To use information on woman's partner in analyses would be in many respects very helpful from the point of view of theoretical assumptions and explanations, since most of them deal with the couple as a unit of observation. However, there are methodological obstacles to using this information in our data set. An important part of covariates related to partner status would have missing values. First, we have only 721 partners of 1,735 women. Second, we are interested in first birth of woman and the male partner answering questions on his life history at interview date in 1997 is not necessarily the partner with whom the woman had her first child or who she was at risk of first childbirth with. Third, more than half of the women were not living in any union such as cohabitation or marriage around the date of conception.

Concerning the 'quality' of survey data in this international project, Festy and Prioux (2001) use the total number of children per woman as an indicator of the sample validity of the Fertility and Family Surveys. In the international comparison, the Fertility and Family Survey overestimates total fertility rates by more than 10 percent in Austria, Spain, Switzerland, the Czech Republic and Slovenia (Festy and Prioux 2001:23). This indicates that women who had more than the average number of children were over-represented in the samples. This could well be true: married women with children are easier to interview than single childless women. Festy and Prioux (2001) report for the Czech sample a 5 to 15% higher total fertility rate for the period 1990-1997 as the relative difference between the Fertility and Family Survey and vital statistics (see Figure 2, Festy and Prioux 2001:24). However, Festy and Prioux (2001:23) conclude that the *"unrepresentativeness of the sample for past events may not be an obstacle to the biographical analysis of the material collected on an individual basis"*. This is in line with a finding of Courgeau (1992) that the results obtained from event history analysis can be considered satisfactory even if there are certain types of response errors in the survey.

4.4.5 Choice of events under study and covariates in the analysis

We are interested in two demographic events that have a major influence on the lives of young adults; the transitions to first union and first birth (see Scheme 4.1).

The *first* event under study is the birth of a first child (Chapter 5). In our analysis, each woman is assumed to be at risk of entry into motherhood from an initial point – age 15 years – until the event (first-child conception) occurs or until the observation is right-censored (at the time of the interview).

The *second* event under study is first union (Chapter 6). Each woman is assumed to be at risk of entry into union from an initial point – age 15 years – until the event (moving into cohabitation or direct marriage) occurs or until the observation is right-censored (at the time of the interview). As was pointed out, in this sense cohabitation and marriage can be viewed as competing risks in the analysis of first union formation.

In the case when first union was formed as cohabitation, we are interested in further development of this cohabiting union. Each *cohabiting* woman is assumed to be at risk of marriage or dissolution from an initial point – start of cohabitation – until one of the events occurs or until the observation is right-censored (at the time of the interview).

Scheme: Events and covariates in the analysis

Event in woman's life			
First childbirth	First union formation		Marriage after cohabitation
	Cohabitation	Direct marriage	
(Chapter 5)	(Chapter 6)	(Chapter 6)	(Chapter 6)
Origin of investigation			
Age 15	Age 15	Age 15	Start of cohabitation
Right censoring in case of not experiencing of event			
Interview date	Interview date	Interview date	Interview date
Age 35	Direct marriage	Cohabitation	Dissolution of cohabiting union
	Age 35	Age 35	
Explanatory variables (time-varying)			
First union	Conception and birth of first child		
Participation in education			
Education level			
Employment characteristics			
Calendar time			
Explanatory variables (constant)			
Place of residence before age 15			
Number of siblings			
--	Leaving parental home		
--	Experience of parental divorce		

4.4.6 Concluding remarks on empirical methodology

From a methodological view, the main purpose of our study is to model educational and working careers of women as a continuously changing process over women's life course and to estimate their effects on the rate of entry into first union and first childbirth with other important influences included in models. The point is to see how an event of a family, economic or other in nature, experienced by the woman will change the probability of other events happening to her over her lifetime. We shall, for instance, try to discover the effect of educational attainment on the timing of first unions and first births in women's lives, the effect of educational completion on the first birth risk, or the effect of parental divorce on the type of first union.

However, such statistical associations of variables should not replace meaningful explanations. Thus, one has to keep in mind that behind variables are the individuals who are acting. Therefore, one should strive to use statistical analysis for both descriptive purposes and for testing theories. The crucial point is, in the words of Blossfeld and Rohwer (1995:20) that, *"causal statements need a theoretical argument specifying the particular mechanism of how a cause produces an effect or, more generally, in which way interdependent processes affect each other in a given setting over time."*

CHAPTER 5

Entry into motherhood

5.1 Introduction

The general patterns of fertility development in the Czech Republic during the period 1970-2000 were described in Chapter 2 with the use of vital statistics and census data. These analyses have the advantage of using large data sets; however, we are only able to focus on a few characteristics of reproductive behavior. The research questions presented at the end of Chapter 2 look for further individual characteristics differentiating the process of entry into motherhood in order to better understand the peculiarities of fertility development.

There are a notable number of studies investigating the effect of women's education and women's employment on timing of entry into motherhood in several developed societies[1]. The specificity of our contribution is that this relationship is examined in a society which has undergone profound societal and economic transition from a state-socialist regime. Thus, while formulating the hypotheses for empirical investigations, particular attention is given to changes in family policies and to the changing situation of young women in the education system and the labor market.

Chapter 5 is structured as follows: In section 5.2, we formulate specific hypotheses related to the impact of women's current life experiences (education, work experience,

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[1] In demographic studies it is Buber (2001) for Austria, Kreyenfeld (2000a,b) for East Germany, Blossfeld and Huinink (1991) for West Germany, Meron and Widmer for France (2002), Liefbroer and Corijn (1999) for the Netherlands and Belgium, Kravdal (1994) for Norway, J.M.Hoem (1986) and B.Hoem (2000) for Sweden, Rindfuss et al. (1980), Rindfuss et al. (1984), and Marini (1984) for the United States. In economic theoretical or empirical literature it is mainly Cigno and Ermisch (1989), Happel et al. (1984) for the United States, Heckman and Walker (1990), and Walker (1995) for Sweden.

occupation, unemployment, partnership formation) as well as to her childhood experiences (number of siblings, place of residence at childhood) on transition to motherhood. In particular, one has to take into account the specific context of state-socialism and the society under transition. To cope with these issues, a particular type of data set and technique must be used. In the present analysis, we use the Czech Fertility and Family Survey 1997 and event history techniques (see section 4.4). Section 5.3 deals with the sample selection, choice of variables and the definition of the hazard model used for the analysis of the transition to first birth. The empirical analysis in part 5.4 proceeds in this sequence: first, we analyze the effects of women's education attainment (section 5.4.2). In the second step, we answer the question of whether and how the time elapsed since the completion of education influences the timing of first-child conception and whether this effect varies with different levels of education (section 5.4.3). The third issue concerns the effect of women's employment and occupational status (section 5.4.4). Fourth, an important aspect having influence on entry into motherhood is the process of union formation. In Chapter 5, we investigate the effect of union formation on first birth risks - with differentiation between cohabitating unions and marriages (section 5.4.5). Thereafter, the analysis of relationships between union formation and first childbirth is further developed and analyzed in more complex ways in Chapter 6 and Chapter 7. Finally, the discussion in part 5.5 is based on a comparison of our results with findings from some opinion surveys conducted among young adults (mainly with the survey Young Generation 1997). In particular, the questions of ideal age at first childbirth or planned childlessness and the opinions regarding children enrich the conclusions of our empirical analysis for the 1990s period.

5.2 Formulation of hypotheses

5.2.1 Women's education and first birth

Women's education has generally been found to be a very important determinant of the timing of first births[2]. The major theoretical assumption in life course studies is that a woman's educational career has to be viewed in a dynamic way. Thus, from a methodological point of view, the inclusion of women's education and employment as a time-varying variable distinguishes between periods spent in and out of education. In this way, one distinguishes the impact of being enrolled in education from the *net* impact of education levels on first birth risks.

There are three main questions: How does *participation* in education impede childbearing? What is the effect of women's education on the timing of first births? What is the timing of first childbirth like after the completion of education?

Participation in education

A general finding is that being a student impedes childbearing; this is termed an *institutional effect of education* (e.g. Blossfeld and Huinink 1991, Blossfeld 1995). The *incompatibility of education and childbearing* might be seen as a lack of adequate income to pay for childcare and child-related expenses or as conflicting time commitments between a woman's dual role as a student and a mother. Moreover, normative expectations exist in society that young people who attend school are "not at risk" of entering parenthood. Also, finishing education is seen as one of the important steps for entering into parenthood (Blossfeld and Huinink 1991).

The hypothesis following from this argument is *that women in education had a lower risk of transition to motherhood.*

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[2]   However, there are also possible reverse effects of fertility on educational attainment and enrolment in education. The complex linkages between education and fertility are discussed in Rindfuss et al. (1980). They found a dominant effect from education to age at birth, with only a trivial effect in the other direction. Thus, education can be taken as one of the major determinants of age at the beginning of the childbearing period.

Level of education

The results of studies concerning the effect of educational attainment on the timing and quantum of entry into motherhood diverge. Some studies argue that higher educational attainment, when controlling for the time spent in education, is associated with deferred childbearing (e.g. de Witt 1994, Liefbroer and Corijn 1999). In this line of argument, deferred entry into motherhood for women with higher levels of education is interpreted as a conflict between childrearing and the career orientation of these women. Other studies do not find either any significant effect at all (e.g. Blossfeld and Rohwer 1995) or even an increasing effect (Blossfeld and Huinink 1991) of educational attainment on first-birth risks. In the last study, delayed first births among better educated women are largely linked with continuing educational activity, whereas a higher educational level has no net inhibiting effect on first birth rates.

In the Czech context

In state-socialist times, educational differences in lives of young women were not strongly pronounced *either* on the labor market (limited wage differentiation and small differences in employment characteristics) *or* in the system of public policies (general family benefits, etc. (discussed in Chapter 3)). In constrast, in the 1990s, compared to other educational groups, highly educated women had higher earnings, better job prospects, lower unemployment risks, and thus higher motivation and possibilities to use their education on the labor market. Therefore, highly educated women are more prone to spend their time on other activities and to postpone family formation to a later stage of life. This line of reasoning stresses the importance of '*expanding opportunities and choices*'.

The communist ideology postulated high gender equity, which was mainly achieved by high rates of women's participation in paid employment. Some of the measures of population policies were designed to make it easier for women to combine childrearing and employment (subsidies for childcare facilities, after-school and summer activities, the system of maternity leaves and child-sickness leaves, etc). However, gender equity was not achieved in reality – especially concerning the traditional division of work in Czech households and the existence of a gender wage gap and occupational segregation (see Chapter 3). The pressure on women was not pronounced through the necessity of choice between childrearing and employment, because both population growth and high female labor force participation were main goals of the state ideology.

In the 1990s most of the subsidies for facilities easing the combination of work and childrearing were abolished. Furthermore, in a more competitive labor market environment of the transition economies, the pressure on women was higher, especially concerning working hours, fear of possible unemployment, high wage differentiation by education and on-the-job-experience (Chapter 3). Reconciliation of childrearing and employment became an actual problem for many women willing and/or needing to participate in labor market activities. At the same time, this development was not reflected in the public policies concerning family or women's employment. The traditional household division of labor was only changing slowly. Therefore, *'higher pressure in gender relations'* is expected to be a part of the story about the postponement of family formation among young women. It is women with higher education who are willing to use their acquired education on the labor market who must consider the issue of work-family reconciliation in the new transitional state conditions most acutely. The easiest way to temporarily resolve this problem is to postpone family formation.

All these theoretical notions lead to the same expectation that *in state-socialism the education level attained had no influence on entry into motherhood. In the 1990s, differences in the transition to first birth are assumed to increase, with lower transitions to first birth among highly educated women.*

Scheme 1: Summary of hypotheses: woman's education and entry into motherhood (*'expanding opportunities and choices', 'gender inequality', 'contraceptive revolution' – see section 5.2.6*).

	Historical time	
	1970s-80s	**1990s**
Participation in education	-	--
Low level of education	0	+
Middle level of education	0	0/-
High level of education	0	-

Note: (1) A minus sign (-) indicates lower risks of entry into motherhood. (2) A plus sign (+) indicates higher risks of entry into motherhood. (3) A zero (0) indicates a non-significant impact. (4) Signs indicate relative relation in respective period, not the change in transition to motherhood between periods.

Time passed since end of education

To better describe the relation of the education period and the period of family formation, one can study first birth risks since the end of education. For example, Buber (2001) introduced to the analysis of first births in Austria the effect of time elapsed since the completion of education and found that its patterns were not the same for women with different levels of education[3].

In the Czech context

Incompatibility of family formation with the beginning of women's employment career was comparatively low in the state-socialist time. Also, the existing society's norms on early entry into motherhood were mirrored in the low average age of mothers at first birth (around 22.5 years of age). Thus, women involved in a university education had already passed this age and therefore they tended to have their first child comparatively swiftly after the end of education.

By contrast, the economic pressure on young adults at a crucial stage in the transition to adulthood rose considerably under the new conditions of the society in transition. In the 1990s, the sequence of the *end of education - entry into motherhood* is not timed to a short period of a woman's life anymore. In Chapter 4, we argued that it became more important for women to time motherhood with respect to their employment careers (career-planning hypothesis, see 4.3.1), in particular so for highly educated women. Thus, the delay of first birth after the end of education might be more important for highly educated women.

It is expected that *in the 1970s-80s the risk of entry into motherhood was high immediately after the end of education irrespective of a woman's educational attainment. In the 1990s, the postponement of motherhood was caused not only by a prolongation of their participation in education, but also by a prolongation of the period between the end of their studies and the onset of family formation.*

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[3]   Buber (2001) reported that time passed since the end of education had a significant influence on the entry into motherhood in Austria. For women with *higher* education levels she found clear evidence that the costs involved when having a child immediately after the completion of education were high, but that the intensity of conception strongly increased later, during the second or the third years. This is, according to Buber (2001), evidence of the 'real' catch-up effects for more highly educated women. These women were at least the age of 25 at the end of their studies and were under increasing pressure related to societal norms about age at first birth and to the perception of medical problems with lateness of first birth.

5.2.2   Women's employment and first birth

In the context of countries with high female labor force participation, the employment situation of young women on the labor market is expected to be an important factor for understanding the changing patterns of fertility. We ask three relevant questions of interest: In which part of the employment career do women enter motherhood? What is the effect of *not* being employed? How does a woman's occupational status influence the decision to have a child?

Effect of work experience

An important factor in the timing of first births is a woman's *'career planning' motives* (Gustafsson 2001, discussed in section 4.3.1). Having children involves an interruption of work activity, which might be harmful for women particularly at the start of a work career. However, as was pointed out in Chapter 4, the contextual framework for which these explanations have been developed is different to the conditions of state-socialism and perhaps the transition to a market economy in the Czech Republic. First, the theoretical concept assumes that there is an important penalty for career interruption and moreover that it is dependent on the stage of career in which the work interruption due to childbirth is taken. Second, the economic returns to education are supposed to be a result of market mechanisms. However, these assumptions have to be questioned in terms of the overall employment, definite work contracts and wage grids in centrally planned economies. Third, the theory assumes that there is a crucial problem of incompatibility between childrearing and women's employment. Nevertheless, the population policy of the state under socialism tried to alleviate women's childcare responsibilities by supporting public childcare.

In the Czech context

In the Czech state-socialist economy, there was a very low incompatibility of childrearing with the start of a woman's employment career. First, because of the guarantee of a work position for everybody (as postulated by the official communist ideology), women – even those with small children and/or no experience on labor market – did not generally fear having difficulties finding a job. Second, work-family reconciliation was made easier due to a relative abundance of childcare facilities for young children and after-school activities for older children. Third, the returns to education and on-the-job experience were relatively low, and thus educated women were not highly motivated to be 'career orientated' and to postpone family formation to a time when they were already established on the labor market.

In the transition to a market economy, the period of forming a position on the labor market became more important for several reasons. *First*, women had both higher motivations and possibilities to use their education on the labor market. Under the conditions of a market economy, women's education was valuable on the labor market only after acquiring some on-the-job experiences, in particular so for women with higher education. Women having both – high education and on-the-job experience – had a better position on the labor market after the interruptions due to childrearing compared to women having the same education but with no work experience. Women with small children searching for employment were the most affected by long-term unemployment and precarious jobs (such as involuntary part-time jobs, short-term employment, or jobs without proper work contracts). A *second* group of arguments is related to current family policies and work legislation. Women with employment were eligible for these measures under better conditions than women who had had no previous employment. For example, women had a guarantee of up to 3 years to the work position which she held before the birth of the child. Furthermore, during the 28 weeks of maternity leave, formerly employed mothers received income-related maternity benefits. In contrast, the maternity benefits for women not previously employed were much lower and only consisted of a flat rate (see Chapter 3).

The hypothesis on the *'importance of job and experience'* following from these arguments is that *in state-socialist times, the role of work experience on the timing of first birth was not strongly pronounced. In the 1990s, women with no work experience had a lower transition to first birth than other women did.*

Scheme 2: Summary of hypothesis: entry into motherhood and 'importance of job and experience'

	Historical time	
	1970s-80s	**1990s**
In school	-	--
No work, no experience	0	--
No work, some experience	0	-
Full-time employment	0	0/+
Part-time employment, precarious jobs	0	-
End of education	++	0
Time passed since end of education	0/-	+

Note: (1) A minus sign (-) indicates lower risks of entry into motherhood. (2) A plus sign (+) indicates higher risks of entry into motherhood. (3) A zero (0) indicates not significant impact. (4) Signs indicate relative relation in the respective period, not the change in transition to motherhood between periods.

Women's occupation

Aspects of different individual positions within the labor market and attachment to it can be studied through a variable describing occupational status. Theoretical or empirical investigations are rare. On the one hand, women in occupations with higher prestige and career orientation might be considerably more influenced by disruption of employment activity (Blossfeld and Huinink 1991). On the other hand, as Kravdal (1994) points out, women who are strongly attached to the labor market are also more able to purchase services (such as childcare and domestic help) that reduce disruption to their employment activity[4]. In the Czech context, the reasoning is closely related to other characteristics of a woman's position on the labor market (such as work experience, status, etc.) in centrally planned and transition economies.

It is expected that *there was no effect of women's occupational status in the period of state-socialism. In the 1990s, women with higher a 'career orientation' (women in highly qualified positions) had lower transitions to first birth.*

Scheme 3: Summary of hypothesis: *'career orientation'*

	Historical time	
	1970s-80s	**1990s**
Highly qualified position	0	--
Qualified position	0	-
Unqualified position	0	+
Skilled workers	0	+
Unskilled and semi-skilled workers	0	+

Note: (1) A minus sign (-) indicates lower risks of entry into motherhood. (2) A plus sign (+) indicates higher risks of entry into motherhood. (3) A zero (0) indicates not significant impact. (4) Signs indicate relative relation in respective period, not the change in transition to motherhood between periods.

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[4] Kravdal (1994) used three broadly defined groups – medical and teaching professions, sales and manufacturing services and others. This study revealed that in Norway women in the medical and teaching professions had a slightly higher first birth rate than the other two groups. These women might have better access to childcare, a lower level of incompatibility between job and family and they usually spent less time out of employment. Or simply in non-economic reasoning, women in highly qualified positions are more concentrated in medical and teaching professions, which might point to a higher degree of convenience and to the general affinity of the caretaker role.

Employed or not employed[5]

How will a young childless woman react when she is confronted with a period of *no* employment activity? Will she be more prone to have a child in that period of time because it is a time of low foregone earnings? Or, on the contrary, will she temporarily forego plans to have a child in consideration of an uncertain future? The effects of female unemployment might be seen from two perspectives – from the individual experience of unemployment or as a perception of possible unemployment risks. This part concerns the individual level effects.

The neoclassical economic framework (see Chapter 4) postulates a negative correlation between male unemployment and fertility and a positive one for female unemployment and fertility. However, these theoretical assumptions are based on a traditional division of work between genders and the notion that one income (in this case the male one) is sufficient for family expenses. This theoretical assumption could be presented in a different form under the hypothesis termed *'labor market discouragement'* (Kreyenfeld 2001). It might be that unemployed women – especially those without higher formal qualifications - are discouraged from labor market activities, particularly in times of a worsening economic situation. Since these women do not have motivations and possibilities to form a stable position on the labor market, they might opt for a more 'secure and predictable career', like that of mothers and housewives. For example, Kreyenfeld (2001) found that the correlation of high unemployment rates and low fertility rates on the macro level for East Germany does not necessarily transfer to the micro level, since at the individual level she reported finding a strong accelerating impact of women's unemployment on first-birth risks.

According to the hypothesis on *'labor market discouragement'* one expects *that women who are not employed had higher first birth risks.*

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[5] There is a theoretical difficulty presented in the definition of the status of a '*not employed woman*'. On the one hand, unemployment is considered as an involuntary state imposed by characteristics of the labor market. On the other hand, among those 'not employed women' are also women who stand deliberately out of labor market activities (such as homemakers). In fact, these two groups of women – unemployed and homemakers - can have different behavior with respect to entry into motherhood. Meron and Widner (2001) document this in a study for France in which unemployed women had a lower risk of births of a first child. In contrast, inactive women enter motherhood more quickly, suggesting that they attribute higher priority to family, children and household.

Scheme 4: Summary of hypothesis: *'labor market discouragement'*

	Historical time	
	1970s-80s	**1990s**
In school	-	--
No work, no experience	0	+
No work, some experience	0	+
Full-time employment	0	-
Part-time employment, precarious jobs	0	+

Note: (1) A minus sign (-) indicates lower risks of entry into motherhood. (2) A plus sign (+) indicates higher risks of entry into motherhood. (3) A zero (0) indicates not significant impact. (4) Signs indicate the relative relation in the respective period, not the change in transition to motherhood between periods.

On the other hand, it might be expected that in a society where female employment progressively became a norm (as is the case in the Czech Republic), women in an unfavorable situation on the labor market postpone the birth of their first child as long as their plans for stable employment are not realized. This theoretical notion is supported by the findings of Meron and Widmer (2002) in their study on France, in which periods of a woman's unemployment appear to result in postponement of first birth.

From these considerations it follows that *women currently not employed had a lower transition to first birth than employed women do.*

5.2.3   Effect of economic hardship in transition economies

What is the role of 'economic hardship' accompanying the transition to a market economy? This is a straightforward – but also the most intriguing – question related to the fertility decline in post-communist countries in the 1990s. There is a strong macro-level association between the two processes of fertility decline and economic hardship accompanying the transition to a market economy during the 1990s (e.g. UN ECE 2000). But, how is the relationship pronounced at the micro-level? For example, Kohler and Kohler (2002) analyzed the fertility decline in Russia in connection with economic hardship from both a macro and micro perspective. At the macro-level there is an association of these two processes, however, at the micro-level women or couples who are themselves affected by the

labor market crisis often had a higher probability of having another child in the period 1994-1996 than women or couples who were less affected by the crisis[6].

In the time of state-socialism, an important feature of communist ideology was a high primary redistribution of resources and incomes in society, and subsequently there were small differences in the level of living standards, especially for children. Women of a lower stratum of society did not have the concerns about resources for rearing, education and a basic living standard of their children (with the exception of large families) and consequently there were few uncertainties that could hinder the transition to first childbirth.

In the transition period, rising uncertainty due to overall economic insecurity caused by the transition disproportionately affecting young people and young families. For example, child expenditures were increasing during the transition period (through inflation or the canceling of subsidized prices) and benefits for families from public resources declined substantially (Chapter 3). In this context, young people might delay family formation because they were not able to fulfill the basic needs of their family. This line of reasoning is in accordance with the hypothesis emphasizing economic and social difficulties experienced in the 1990s that created a specific almost 'crisis-like' behavior as reflected in the decline of fertility (Rychtaříková 2000). One might ask whether the behavioral response (pronounced as a delay of or refraining from childbearing) at the individual level was observed more in groups of women who were on the side of 'losers' in the process of the economic transition. Women with low education levels had relatively lesser paid and less stable jobs and they faced more difficulties with establishing themselves on the labor market and more financial constraints with respect to family formation. Moreover, subsidies for families from public resources formed a more important part of the budget of these families and therefore, the diminishing financial support for families in the 1990s had a greater impact on these women.

On the basis of these arguments the following hypothesis on the *'economic hardship-fertility crisis'* is formulated for the 1990s: *young women with a lower degree of education, a difficult position on the labor market, and in unskilled occupations postpone the birth of a first child.*

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[6]   Kohler and Kohler (2002) interpret this finding, on the basis of work by Friedman et al. (1994), in the way that fertility serves as a 'global strategy' for uncertainty reduction which implies that individuals/couples who are more likely to use this strategy are those more excluded from pursuing alternative strategies (as is a stable career, use of accumulated human capital, etc.)

Scheme 5: Summary of hypothesis: *'economic hardship-fertility crisis'*

	Historical time	
	1970s-80s	**1990s**
In school	-	--
No work, no experience	0	--
No work, some experience	0	--
Full-time employment	0	0
Part-time employment, precarious jobs	0	--
Highly qualified position	0	0
Qualified position	0	0
Unqualified position	0	--
Skilled workers	0	-
Unskilled and semi-skilled workers	0	--
Low level of education	0	--
Middle level of education	0	-
High level of education	0	0

Note: (1) A minus sign (-) indicates lower risks of entry into motherhood. (2) A plus sign (+) indicates higher risks of entry into motherhood. (3) A zero (0) indicates not significant impact. (4) Signs indicate the relative relation in the respective period, not the change in transition to motherhood between periods.

5.2.4 Partnership formation and first birth

An important feature of our study is a consistent investigation of the role of partnership in the process of childbearing and the interrelation of both processes. Partnership is a crucial factor in the transition to motherhood. The relation between union formation and first birth is both strong and complex. While birth of the first child is a well-defined event which has a clear date of occurence, union formation is more subtle to define. The decision to cohabit or marry and to become parents may be made jointly. Thus, a causal relationship between them and also the use of partnership status as one of the covariates in the analyses explaining the transition to first birth are disputable. This is a much-debated question, with several authors approaching it differently:

1. A causal relation is hypothesized in a way that with the formation of a union starts the exposure time of transition to motherhood[7].

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[7] The *first* approach is typical for theoretical economic studies (e.g. Happel et al. 1984, Cigno 1989) in which the woman is considered under risk of having a child only if she is living in marriage. Cigno (1989) explains that births to women who have not yet formed a stable relationship (i.e. marriage) are likely to include a large proportion of unplanned pregnancies which can scarcely be explained by a deterministic decision model. This is a very strong assumption. In the context of modern societies, marriage has become

2. Partnership status is studied in a dynamic way as a time-varying covariate[8].

3. Partnership status of woman is not taken into account[9].

In the life course perspective, we investigate the effect of partnership status in a dynamic way with three categories – no union, cohabitation, and marriage. Marriage represents closer ties between partners and greater involvement in long-lasting decisions, most often including the decision to have children, whereas cohabitation might be formed without any decision to have a child or with the decision to postpone it till a later time. It is expected that *union formation has a strong impact on the risk of first-child conception with the effect of cohabitation being less strong than the effect of marriage.*

In the Czech context

A characteristic pattern of behavior for young Czech women included a low usage of contraceptives (see following section 5.2.6) together with pre-union sexual activity that was widely tolerated. Therefore, pregnancies of young women who were neither cohabiting nor married but merely in a dating relationship were common. In most cases after such an unplanned pregnancy, marriage or induced abortion followed. To a lesser extent, non-marital births were the result (see Chapter 2, Figure 2.19 for the situation on pregnancies among teenage women). With an increase in contraceptive use in the 1990s, women had more control over their reproductive lives and could better determine the timing of their first pregnancy. Thus, they postponed childbearing decisions until after formation of a union.

In terms of historical change, we have formulated the following hypotheses: *In the previous period, conceptions among unmarried or non-cohabiting women were not rare events. The risk of first-child conceptions increased immediately after union formation, and*

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an increasingly poor indicator of the onset of sexual activity and therefore can no longer be regarded as an adequate marker of the beginning of exposure to the risk of conception.

[8] Most of the studies proceed by first estimating models with the effects of educational or employment variables and in the second step add partnership status into the investigation (e.g. Kreyenfeld 2000). By incorporating time-varying information on union status, it is possible to check the effect of union status as a mediator of effects of other covariates. Kravdal (1994) estimates models for all women without regard to their union status, and subsequently estimates models separately for single women and for women who have partners. Blossfeld and Huinink (1991) choose another way of analysis by separately estimating two models (one for union formation and one for birth) and by comparing the covariates they attempt to identify those effects with on the timing of the first birth that is mediated through previous union formation.

[9] A third approach is used in the case of a data set which does not offer the possibility of including marital status as a time-varying variable (e.g. Kravdal 2002). On the other hand, some analysts (e.g. Rindfuss et al. 1988) ignore union status because the birth might determine union formation, rather than the other way around, and because first birth is the more precisely defined event, and because of the greater permanency of the transition to parenthood than the transition to living in a union.

then declined. In contrast, in the 1990s first-child conceptions took place to a greater extent in unions, and more often after a period of living together.

Scheme 6: Summary of hypothesis: partnership status and entry into motherhood

	Historical time	
	1970s-80s	**1990s**
No partnership	-	--
Cohabitation	++	+
Marriage	++	+
At time of union formation	++	+
Time passed since union formation	-	+

Note: (1) A minus sign (-) indicates lower risks of entry into motherhood. (2) A plus sign (+) indicates higher risks of entry into motherhood. (3) A zero (0) indicates not significant impact. (4) Signs indicate relative relation in respective period, not the change in transition to motherhood between periods.

5.2.5   Early life course experiences

Being brought up in a small or large family

The argument that women raised in *larger families* have a more rapid pace of transition to motherhood has been empirically documented in several studies (e.g. Blossfeld and Huinink 1991, Buber 2001, Meron and Widmer 2002). Blossfeld and Huinink (1991:159) point out this aspect of socialization in the family of origin because *"women who grew up in larger families are not only systematically disadvantaged in their educational career but are also more socialized toward a career as a housewife and mother"*. The effects of family background on both entry into marriage and parenthood were studied by Michael and Tuma (1985). They found that having a relatively less educated parent, growing up in a household with without a natural parent or with a stepparent, and having more siblings (controlling for the parent's education and employment), tended to indicate a lower per capita income. Young people might be relatively more attracted to changing one's status by becoming a spouse or a parent.

Theoretical notions predict that *women who were brought up in a small family have a lower and delayed transition to first birth.*

Growing up in a big town or in a small town/village[10]

Growing up in a small town or village probably means that these women are exposed to a more family-oriented environment. Moreover, such places offer fewer attractive alternatives. Alternatively, urban areas usually offer women broader opportunities for prolonged education or paid employment. Furthermore, the higher population density and tighter social networks of urban areas probably play a role in the transmission of new behaviors (through providing more information about alternative lifestyles and more individual experiences with these). Similar aspects are observed for distribution of contraceptive knowledge across populations since it is assumed that urban settings provide better access to birth control (e.g. Martin 1992).

In the Czech Republic, the expectation was that the effect of growing up in a city might be more pronounced in the 1990s, since information, alternative lifestyles, new life orientations, new opportunities and choices for young adults were changing the most in big cities.

Hence, one assumes that *for women who have grown up in urban areas, there is a reducing effect on the transition to motherhood.* In historical perspective, the effect is expected to be *stronger in the 1990s.*

Scheme 7: Summary of hypothesis: past life course experiences and entry into motherhood

	Historical time	
	1970s-80s	**1990s**
Big family	-	-
Small family	+	+
Place of residence:		
Big town	-	--
Small town or village	+	+

Note: (1) A minus sign (-) indicates lower risks of entry into motherhood. (2) A plus sign (+) indicates higher risks of entry into motherhood. (3) A zero (0) indicates not significant impact. (4) Signs indicate relative relation in respective period, not the change in transition to motherhood between periods.

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[10]   The environmental influence of the place of residence is often captured by a variable distinguishing between urban and rural areas. It might be an actual place of residence if analyses also take into account the process of migration (e.g. Courgeau 1985). More often the variable captures the influence of the environment in early life (for example, until age 15 in the analyses based on data from Fertility and Family Surveys – e.g. Buber 2001).

5.2.6   Change in contraceptive use patterns

Since the motivation for changes in the timing of births has to be supported by the possibility of introducing them, the quick spread of contraceptive use in the 1990s was of major importance. In Chapter 4, the role of the *'contraceptive revolution'* for the changes in reproductive behavior of young women was mentioned in the theoretical notion of the second demographic transition (van de Kaa 1997, 1998). Therefore, in this section we investigate the use of contraceptives among Czech women on the basis of the Czechoslovakian Fertility Survey 1977 (CFS 1977, Federal Statistical Office 1978) and the Czech Fertility and Family Survey 1997 (FFS 1997) and draw conclusions for the interpretation of empirical results.

In 1966 modern contraception (the pill and the IUD) were introduced. However, modern contraceptives as well as information concerning sex and reproduction generally remained in short supply. To plan the timing of childbirth women have to be informed about contraceptive methods. However, according to CFS 1977 only 31.2% of women were informed about contraceptive methods at first marriage. This share was even lower among women living in villages (20.8%) compared to women living in larger towns (34.7%). The later the age at which women got married, the higher was the share of those who were ever informed about contraceptive methods (Table 5.1). Knowledge and the use of contraceptive methods were closely related to the number of undesired pregnancies. Among married women aged 15-19 in 1977, 58% of pregnancies were unplanned (Table 5.1), of which 41% were absolutely undesired and 17% inconveniently timed.

Table 5.1. Information about contraceptives and undesired pregnancies.

Age	Women informed about contraception before marriage in percent (by age of the woman at marriage)	Undesired pregnancies from 100 pregnancies (by age of the woman at interview)
15-19	20.7	58.4
20-24	34.4	19.4
25-29	44.1	25.1
30-34	47.4	30.7

Source: Czechoslovak Fertility Survey 1977 (2009 married women aged 18-44 living on Czech territory), Federal Statistical Office 1978.

Women in the survey were asked which contraceptive methods they knew and used most frequently. Even if women knew about modern methods[11] (such as the pill or IUD), they used them only scarcely: those using the IUD were 18% while those on the pill only made up 13% of the women. Withdrawal was the most commonly used contraceptive method with a share of 32%[12].

Table 5.2. Knowledge of contraceptives, frequently used methods and structure of used contraceptives, Czech women, aged 18-44.

Methods	Knowledge of contraceptive methods (Percent of women acquainted with given method)	Most frequently used contraceptive methods (Percent of women using given method frequently)	Structure of used contraceptives (Percent, all methods =100)
Pills	88.7	16.4	13
IUD	89.9	23.1	18
Other female method	16.5	1.4	1
Condom	82.7	18.3	14
Sterile days	55.4	9.9	8
Withdrawal	76.8	39.1	32
Abstinence	22.3	1.9	1
Male sterility	-	0.1	-
Female sterility	-	3.1	3
Other methods	5.9		3
None	2.5		

Source: Czechoslovak Fertility Survey 1977 (2009 married women aged 18-44 living on Czech territory), Federal Statistical Office 1978.

The Czech Fertility and Family Survey 1997 provide us with information on contraceptive use at the start of the sexual life of women born 1952 to 1982. While in generations 1952-57 less than 30% of women used a contraceptive method at first sexual

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[11] On average, surveyed women were acquainted with 4.4 methods. However, there was a strong educational difference: Women with a basic education knew 3.6 methods, women with a lower-secondary education knew 4.1 methods, while women with an upper-secondary education knew 4.9 methods and finally, university graduates knew 5.2 methods (Czechoslovak Fertility Survey 1977, 2,009 married women aged 18-44 living in Czech territory, Federal Statistical Office 1978).

[12] There were important educational differences in the use of contraceptives. While the frequency of withdrawal usage is even at all levels of women's education, the share of women using pills, IUD and condoms increased with higher levels of education (Czechoslovak Fertility Survey 1977, 2,009 married women aged 18-44 living in Czech territory, Federal Statistical Office 1978).

intercourse, the number grew to more than 50% of women in generations 1970-74 (Figure 5.1).

Figure 5.1   Contraceptive use at first sexual intercourse; birth cohorts 1952 to 1982.
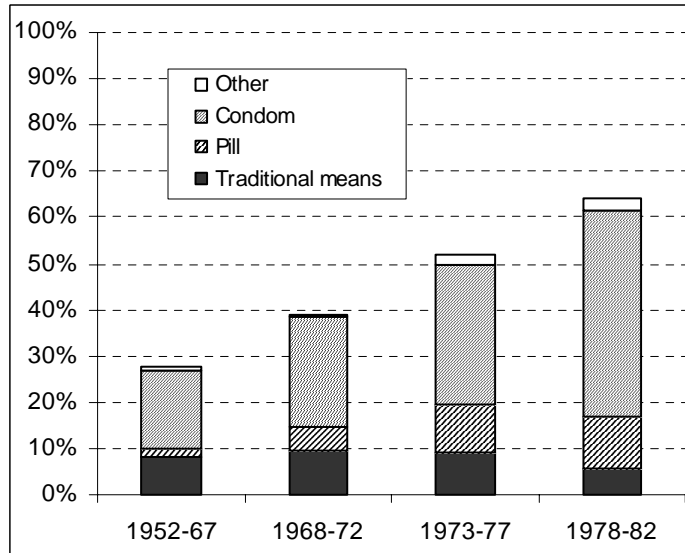
Notes: (1) 1585 women who experienced first sexual intercourse before date of interview (2) Own calculation, Fertility and Family Survey 1997.

Table 5.3. Use of contraceptives at first sexual intercourse by women's age and period.

Period of first sexual intercourse											
	- 1979			**1980 - 89**			**1990 - 93**			**1994 - 97**		
Age	**N**	**Contraceptives yes**		**N**	**Contraceptives yes**		**N**	**Contraceptives yes**		**N**	**Contraceptives yes**	
-14	4	2	--	6	1	--	6	2	--	2	0	--
15-16	105	23	0,22	150	44	0,29	61	32	0,52	52	34	0,65
17-18	312	84	0,27	371	132	0,36	123	55	0,45	70	48	0,69
19-20	87	20	0,23	106	42	0,40	32	23	0,72	18	14	0,78
21+	17	3	0,18	41	10	0,24	28	7	0,25	4	3	--
Total	525	132	**0,25**	674	229	**0,34**	240	119	**0,50**	146	98	**0,67**

Notes: (1) 1585 women who experienced first sexual intercourse before date of interview (2) Own calculation, Fertility and Family Survey 1997.

For the whole period studied, the most common ages at first sexual intercourse for women were 17 and 18. At this age in the 1970s, less than 30% of women used a contraceptive method; at the same age (17-18) in the early 1990s, the number of users rose to 45% and to a full 70% in the mid-1990s (Table 5.3). Among users of any contraceptives at first sexual intercourse, the favorite method was the condom with a 55-65% share. Pills

became important only in the 1990s (Table 5.4). This low level of contraceptive usage was also characteristic for more advanced stages of a woman's sexual life. In the 1970s, more than half of women never used any contraceptives before the birth of their first child.

Table 5.4. Contraceptive methods at first sexual intercourse by period.

	Period of first sexual intercourse							
	- 1979		**1980 - 89**		**1990 - 93**		**1994 - 97**	
Method	N	%	N	%	N	%	N	%
Pill	6	0,05	20	0,09	20	0,17	24	0,24
IUD	4	0,03	0	0,00	1	0,01	1	0,01
Condom	74	**0,56**	152	**0,66**	75	**0,63**	63	**0,64**
Traditional	48	0,36	57	0,25	22	0,18	10	0,10
Total	132	1,00	229	1,00	119	1,00	98	1,00

Notes: (1) 578 women who used some contraceptive method at first sexual intercourse. (2) The diaphragm and foam are classified into the method 'condom' also. 'Traditional methods' include withdrawal and periodic abstinence. (3) Own calculation, Fertility and Family Survey 1997.

Table 5.5. First use of contraceptives before birth of first child (or date of survey) among women not using them at first sexual intercourse.

	Period of first sexual intercourse							
	- 1979		**1980 - 89**		**1990 - 93**		**1994 - 97**	
Method	N	%	N	%	N	%	N	%
Pill	20	0,16	49	0,27	36	0,54	12	0,43
IUD	10	0,08	9	0,05	1	0,01	0	0,00
Condom	58	0,46	89	0,49	21	0,31	12	0,43
Traditional	39	0,31	34	0,19	9	0,13	4	0,14
Total	127	1,00	181	1,00	67	1,00	28	1,00
Never used	266		254		54		20	

Notes: (1) 1007 women who did not used any contraceptive method at first sexual intercourse. (2) 'Never used' includes women who did not use any contraceptives methods before the birth of their first child or for a childless women before the date of the survey (594 women). (4) The diaphragm and foam are classified into the method 'condom' also. 'Traditional methods' include withdrawal and periodic abstinence. (3) Own calculation, Fertility and Family Survey 1997.

Therefore, a low age at the birth of the first child during state-socialism was linked to the limited spread of contraception and information about it, especially among young women who started their sexual lives early. Behavioral norms deemed that premarital sex was

acceptable. Still, young adults had limited possibilities (and information concerning how) to avoid undesired pregnancies. It contributed to a high occurrence of pre-union pregnancies, leading to birth of a first child and marriage.

The spread of contraceptive use in the 1990s did not precede the demographic changes, but ran parallel to the changes: the proportion of women aged 15-49 who were prescribed oral contraception has increased from 4.2% in 1990 to 19.5% in 1995 and 31.9% in 2000[13] (UZIS, 2001). The 'm*odern contraceptive revolution'* expanded very quickly, but not at the same pace across different education groups. At first sexual intercourse the education differences in contraceptive use were already apparent in the 1970s-80s (Table 5.6). Women who attained (or were still enrolled in) upper-secondary education with *maturita* more often used a contraceptive method at first sexual intercourse than those women with lower levels of education. This is in sharp contrast to the realities for women involved in education leading to an apprenticeship or women not pursuing upper secondary education. This difference also persisted in the expansion of modern contraceptive methods throughout the 1990s.

Table 5.6. Use of contraceptives at first sexual intercourse by women's education and period.

Women's education	Lower			Higher		
	Use of contraceptives at first sexual intercourse (in%)					
Year of first sexual intercourse	Yes	No	N	Yes	No	N
-1979	20.4	79.6	284	30.7	69.3	241
1980-89	29.8	70.2	309	37.5	62.5	365
1990-93	44.9	55.1	118	54.1	45.9	122
1994-97	61.4	28.6	58	75.8	24.2	88

Notes: (1) 1585 women who experienced first sexual intercourse before date of interview (2) Level of education attained or being enrolled in education. Lower education: not upper-secondary or upper-secondary without *maturita*; higher education: upper-secondary with *maturita*. (3) Own calculation, Fertility and Family Survey 1997.

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[13] The same trend is provided by data from Reproductive Health Survey from 1993 and Fertility and Family Survey 1997, which depict an increasing popularity of the pill replacing the IUD and the traditional methods of contraception. Among women aged 20-25 years living in union 12,5% in 1993 and 26,7% in 1997 used the pill, 15.3% in 1993 and 7.4% in 1997 used the IUD and the use of traditional methods declined from 22.4% in 1993 to 9.3% in 1997.

The differences in knowledge about and the use of contraceptives provide insights into diverging patterns of family formation among women with different levels of educational attainment – namely the timing and sequence of first childbirth and first union formation.

Women with a higher education more often used contraceptives at the start of their sexual life and had better control over their reproduction, and therefore also fewer unplanned or mistimed first-child pregnancies. As concerns the sequence of first childbirth and first union formation, *women with a higher education had fewer first-child pregnancies outside of marriage or of a cohabiting union.*

5.3 Data and method

5.3.1   Discussion of method

We apply hazard regression techniques (see Chapter 4 for a discussion of these techniques) to model the risk of first-child conception as a function of an underlying risk modified by a vector of covariates. The hazard function is defined as:

$$\ln \mu_i(t) = y(t) + \sum_j \beta_j x_{ij}(t)$$

or

$$\mu_i(t) = \mu_0(t) \exp\left\{ \sum_j \beta_j x_{ij}(t) \right\}$$

where x_{ij} are covariates, μ_0 is baseline hazard by age and t is time passed from 15th birthday and $y(t) = \ln\mu_0(t)$. The baseline hazard is a piece-wise linear spline in the log-hazards (a generalized Gompertz). The dependent event in the analysis is the first live birth and the date of its conception, which is ascribed to nine months before the first live birth. We focus on the date of conception rather than on the first live birth date because events that occurred in the time after conception might be influenced by conception itself (end of participation in education, end of work, marriage, etc). Using aML software for an estimation of models allows us to use several duration splines in models which we describe in subsequent steps of the analysis.

5.3.2 Sample selection for analysis

The data used for the analysis comes from the Fertility and Family Survey of the Czech Republic, conducted in November-December of 1997 (see Chapter 4 for more information). In Chapter 5, the event of interest is the first birth[14] (expressed in the month and year of birth). The date of first childbirth is backdated by nine months to receive the approximate date of conception[15]. The event of conception of the first child is studied from the woman's age of 15 through 35. We have chosen to limit the age to 35 because of the very young age pattern of first-birth order fertility in the Czech Republic. The oldest women in the sample (born in 1952) were under risk of the event since their 15th birthday in 1967 and the youngest one (born in 1982) only in the year 1997. Censoring by interview date is attributed to approximately eight months (April 1997)[16] before the date of the survey (November, December of 1997) and to when a woman reaches the age of 35.

It is important to pay attention to the way we partitioned the data sample for the analysis (see Figure 5.2). There are two separate parts of the data set. The first part of the data set covers the period of the 1970s and 1980s and right censoring is attributed to the date of January 1st, 1990 or when a woman reaches age 35 years. The second part of the data set contains parts of women's life histories experienced from January 1st, 1990 to April, 1997. All women who turned 15 years old in this period are included. Furthermore, women who celebrated their 15th birthday before 1990 were inserted only if they were childless and not pregnant[17] in January, 1990. In practice, the observations for these women start at their respective ages at January 1, 1990 and the pre-1990 parts of female life histories are not included in the analysis of the second part of the data set.

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[14] All children that are not a natural child (it means step, adopted or foster child) are not taken into consideration.

[15] Note that these are the pregnancies resulting to the birth of first child, not pregnancies ended by miscarriages, abortions or by stillbirth.

[16] For the months February and March, 1997, we use the start of pregnancies leading to the first childbirth expected to be born in November or December, 1997. Even if in the survey there were questions about whether the woman was pregnant at the time of the interview and when this child was expected to be born, there were many obstacles to using this information. In this way miscarriages or abortions instead of childbirths could be included, even though they should not be. Also, perhaps not all pregnancies would be reported (especially those in early stages).

[17] To obtain the approximate date of conception, the date of childbirth is backdated by nine months. Therefore, the sample for the period after 1990 comprises only conceptions that occurred in January, 1990 and later, meaning births from October, 1990.

Figure 5.2 Partitioning of the data into two subsets: 1967-1990 and 1990-1997.
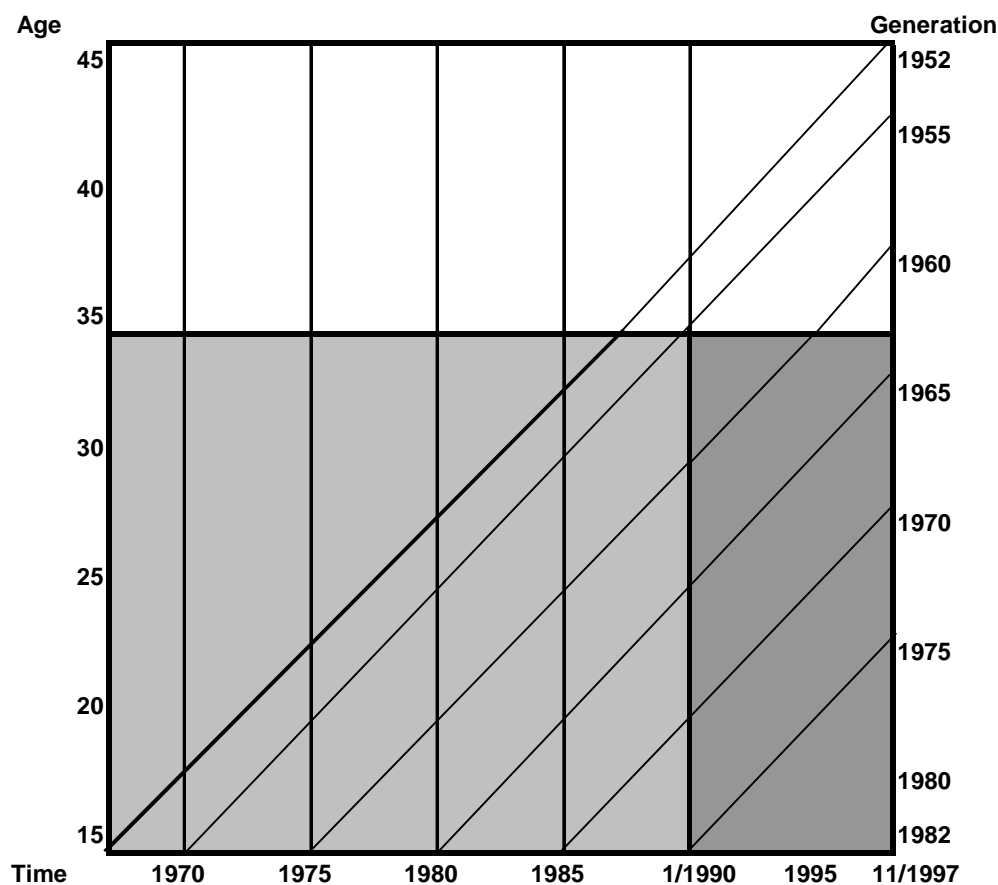
5.3.3 Variables in analyses

After excluding 26 cases, we worked with 1,709 female life histories[18]. There were in total 1,361 women exposed to the risk of first childbirth and 887 first births in the period between 1970 and 1989 and 806 women exposed to the risk of first childbirth with 333 first births occurring between 1990 and 1997 (Table 5.7). Some covariates – such as the year of birth of a woman, the number of siblings, whether the childhood was spent in a large town or in a village – are *fixed* for the whole observation period for one woman. Others, such as participation in education, obtained degree of education, work (in)activity, occupation, partnership status and calendar period all *vary with time* (as well as with the age of the woman). All events in the life histories were reported with both month and year. We attribute an occurrence of the events to the middle of the respective month. Time-varying

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[18] We excluded 26 female records. In 2 cases woman conceived their first child before the age of 15 and in 24 cases women did not reach the age of 15 before April, 1997 at the date of censoring the observations.

factors follow month-by-month the life of a woman whether she is single, cohabiting or married, and whether she is working full-time, working part-time or currently out of work. The period of life of every woman from the age of 15 until first-child conception or censoring is then divided into *spells* in which values of all time-varying covariates are constant. There are on average 3.4 spells for an individual woman in respective parts of the data set.

The following tables, Table 5.7 and Table 5.8, present measures of exposure within categories of the covariates included in models for the analysis of first birth. In Table 5.7 there are numbers and proportions of the spells with exposures to the particular covariate category. Table 5.8 presents the composition of characteristics of the sample at the level of *individuals*[19].

Education

Diverging results of studies reviewed in the previous section (section 5.2.1) may have resulted at least partly from the varying definitions or measures of educational attainment. For specification of educational attainment, some of the studies use the number of years spent in education while the others use the highest finished educational degree. The second case is a categorical variable. In the first case, years of enrolment in education might be included as a linear term (e.g. Blossfeld and Huinink 1991, Liebroer and Corijn 1999) or as a categorical term (e.g. Kravdal 1994, de Witt 1994). Since in the Czech Fertility and Family Survey there is a question about the education level obtained after each spell of education, the variable on education attainment is constructed as a categorical variable. 'No degree' includes female histories in which respondents had a primary education, apprenticeship or lower-secondary education (without *maturita*). 'Secondary school degree' corresponds to a completed upper-secondary education (with *maturita*). 'University degree' includes university graduates. Periods 'in education' and 'out of education' are distinguished in the

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[19]   In this case, the categories of time-varying covariates do not sum up to the total number of women in the analysis, since one woman during her time of exposure to the first birth might subsequently go through several categories. For example, a woman who is currently studying but has not yet acquired any degree is in the category *in education, no degree*. Later she acquires an upper-secondary education (with *maturita*) and continues in education (she is now in the category *in education, completed secondary degree*). Finally, she leaves with a university degree (she is in the category *out of education, with university degree*). These changes in her educational path have happened before first child's conception or censoring.

following manner. 'In education' is assigned only to periods of full-time education[20]. Periods 'out of education' are distinguished only if longer than 12 months; if they are shorter this part of the female life history is treated as 'in education'. Part-time education[21] is not treated as a period in education, but the degree gained in the studies is considered in the variable of educational attainment.

Employment and occupational status

Occupational status corresponds to a classification dividing occupations according to non-manual and manual types of work, the skills and qualifications needed. It is a time-varying variable. Current (in)activity on the labor market divides life history of women into periods of 'full-time employment,' and periods of 'part-time or short employment'[22] (this is a small and not homogenous category) and periods of 'no work'. The category 'no work' includes housewives[23] and unemployed (either officially registered or not) but not full-time students. Periods of 'no work' are then further divided into two distinct situations – women who have never been employed and women who have already been employed – in order to isolate the effect of work experience.

Partnership status

Inclusion of partnership status as a time-varying variable, despite the causality problem in interaction with other variables, allows us to get an impression of its importance as a mediating and conditional factor. Models in the present analysis were constructed with and without union status in order to elucidate the pathways through which various characteristics might influence the timing of first birth by means of their influence on union status itself. Cohabitation refers to a situation in which an unmarried woman lives in the same household with her partner.

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[20] Periods 'out of education' are distinguished only if longer than 12 months, if they are shorter this part of the female life history is treated as 'in education'.

[21] Part-time education in the Czech educational system included special evening courses to make it possible to obtain a complete secondary school degree (*maturita*) or university education, but not on a daily basis. In both situations, nearly all students of such programs were employed at the same time.

[22] Part-time work is considered as less than 35 hours per week or by a variable number of hours per week. Short employment includes periods in which each employment spell is less then 2 months long.

[23] However, it is very rare case to be a housewife for women without children. In 1998, housewives formed only 4% of the female population over age 15 (Kuchařová 1999).

Table 5.7. Composition of the sample for the multivariate analysis of first birth, level of spells

	period 1970-1989		period 1990-1997	
Total number of spells	100%	4681	100%	2733
	Exposures		**Exposures**	
Time-varying covariates	**%**	**N**	**%**	**N**
Educational degree obtained:				
no degree	35%	1643	31%	859
complete secondary degree	25%	1154	32%	872
university degree	2%	114	5%	149
in education, no degree	33%	1562	25%	681
in education, secondary or higher degree	4%	208	6%	172
Partnership status:				
not living in union	83%	3866	76%	2066
cohabitation	6%	278	12%	337
marriage	11%	537	12%	330
Current (in)activity on labour market:				
full-time	36%	1662	41%	1116
part-time or serie of short employment	4%	105	7%	202
no work, no experience	20%	934	13%	345
no work, in education	38%	1770	31%	853
no work, some experience	3%	151	8%	217
Cumulated occupational status:				
No position-never employed	56%	2621	42%	1141
Highly qualified position	2%	110	5%	128
Qualified position	11%	496	15%	412
Unqualified position	15%	691	25%	678
Skilled workers	7%	330	6%	165
Unskilled and semi-skilled workers	9%	433	8%	210
	Exposures		**Exposures**	
Time-constant covariates	**%**	**N**	**%**	**N**
Characteristics of parental home:				
No sibling	9%	398	8%	218
One sibling	47%	2203	55%	1516
Two and more siblings	44%	2080	37%	999
Childhood spent in village or small town	49%	2294	38%	1046
Childhood spent in town (>10 000)	51%	2387	62%	1687
Sample size:	**N**		**N**	
Total occurrences (first births)	887	65%	333	41%
Total number of individuals in data set	1361	100%	806	100%
Total number of spells with time-varying covariates	4681		2733	

Table 5.8. Composition of the sample for the multivariate analysis of first birth, level of individuals

	1970-1997		1970-1989		1990-1997	
Total number of individuals	100%	1709	100%	1361	100%	806
Time-varying covariates:	**%**	**N**	**%**	**N**	**%**	**N**
Educational degree obtained:						
no degree	100%	1709	100%	1361	81%	650
complete secondary degree	41%	697	37%	509	42%	337
university degree	5%	78	3%	44	6%	50
in education, no degree	94%	1604	93%	1268	64%	513
in education, secondary or higher degree	12%	209	11%	144	13%	103
Partnership status:						
not living in union	100%	1709	100%	1361	93%	746
cohabitation	20%	338	13%	182	22%	177
marriage	34%	584	28%	380	25%	201
Current (in)activity on labor market:						
full-time	70%	1189	71%	962	62%	497
part-time or serie of short employment	12%	207	8%	111	14%	114
no work, no experience	70%	1201	67%	906	39%	317
no work, in education	94%	1604	93%	1268	69%	560
no work, some experience	13%	230	9%	121	16%	132
Cumulated occupational status:						
No position-never employed	100%	1709	100%	1361	71%	572
Highly qualified position	6%	103	5%	63	7%	56
Qualified position	22%	371	20%	267	22%	174
Unqualified position	31%	526	27%	368	31%	248
Skilled workers	12%	212	12%	170	10%	80
Unskilled and semi-skilled workers	16%	278	16%	214	13%	102
Time-constant covariates	**%**	**N**	**%**	**N**	**%**	**N**
Characteristics of parental home:						
No sibling						
One sibling	8%	138	8%	107	8%	71
Two and more siblings	49%	831	47%	633	55%	433
Childhood spent in village or small town	43%	740	46%	621	37%	302
Childhood spent in town (>10 000)	47%	804	49%	665	42%	335
in village or small town	53%	905	51%	696	58%	471
Sample size:						
Total occurrences (first births)	1220	71%	887	65%	333	41%
Total number of individuals in data set	1709	100%	1361	100%	806	100%

5.4 Empirical findings

5.4.1   Age patterns of entry into motherhood

As presented in Chapter 2, during the 1970s and 1980s Czech women were becoming mothers at a young age with a maximum intensity in the age group 20-25 years (Figure 2.9 in Chapter 2). In this age group, the probability that a childless woman would give birth to her first child in the next year was around 20%. In the 1990s, the highest probability of becoming mothers was in older age groups (in years 1995-1996, the maximum was in the age group 25-28 years with a probability of 10 to 12%).

In Figure 5.3 and Figure 5.4, the hazard risks of first birth from the hazard model[24] are compared to the first-birth probabilities computed on the basis of vital statistics and census data (kindly provided by T. Sobotka). The estimates for first birth risks from the FFS sample fit very well for the period 1970-1989. However, for the 1990s, they over-estimate first-birth risks. This is comparable with the findings of Festy and Prioux (2001) using the total number of children per woman as an indicator in the international comparison of the sample validity of the Fertility and Family Survey, reporting for the Czech sample, a 5 to 15% higher total fertility rate for the period 1990-1997 as the relative difference between FFS and vital statistics data.

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[24]   In our models we use the hazard models with piecewise-linear baseline for the specification of first-birth risk by women's age. In such models, we need to specify when (at which ages) the spline for first-birth risks changes its direction. We use different age nodes for each calendar period. For the period before 1990 the baseline nodes are at a woman's ages of 18, 19, 22 and 25 years (describing a very young age pattern of first birth risks) and for the period after 1990 they are at a woman's ages of 18, 20, 25 and 28 years (describing a shift of first birth risks to older ages).

Figure 5.3   Hazard risks of first birth from event history model (period 1970-1989) compared with first-birth intensities computed on the basis of vital statistics and census data (selected years in period 1970-1989).
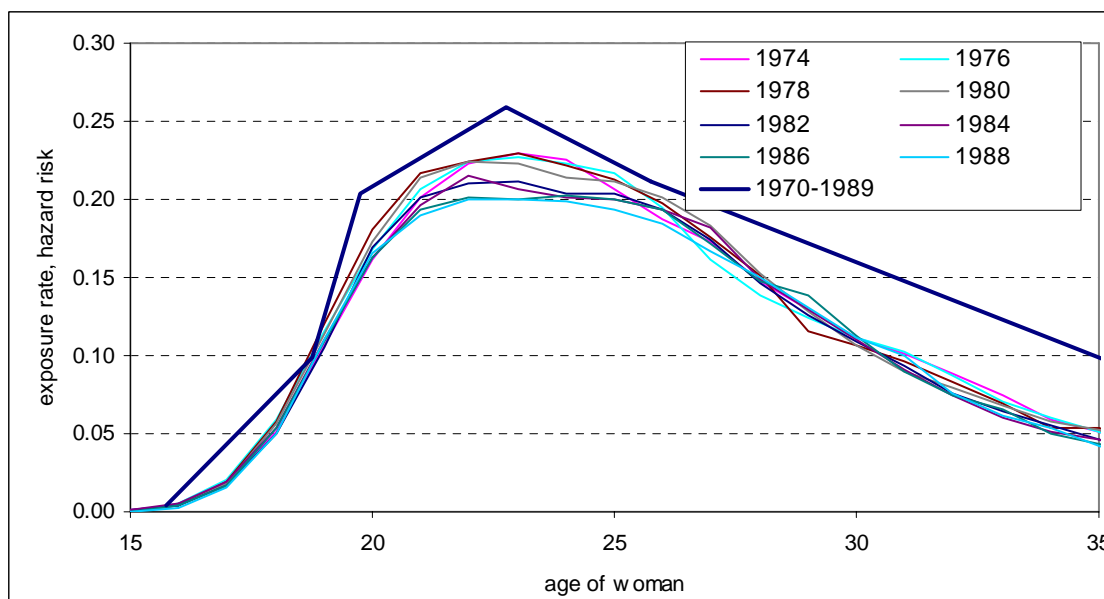
Figure 5.4   Hazard risks of first birth from event history model (period 1990-1997) compared with first-birth intensities computed on the basis of vital statistics and census data (single years in period 1990-1997).
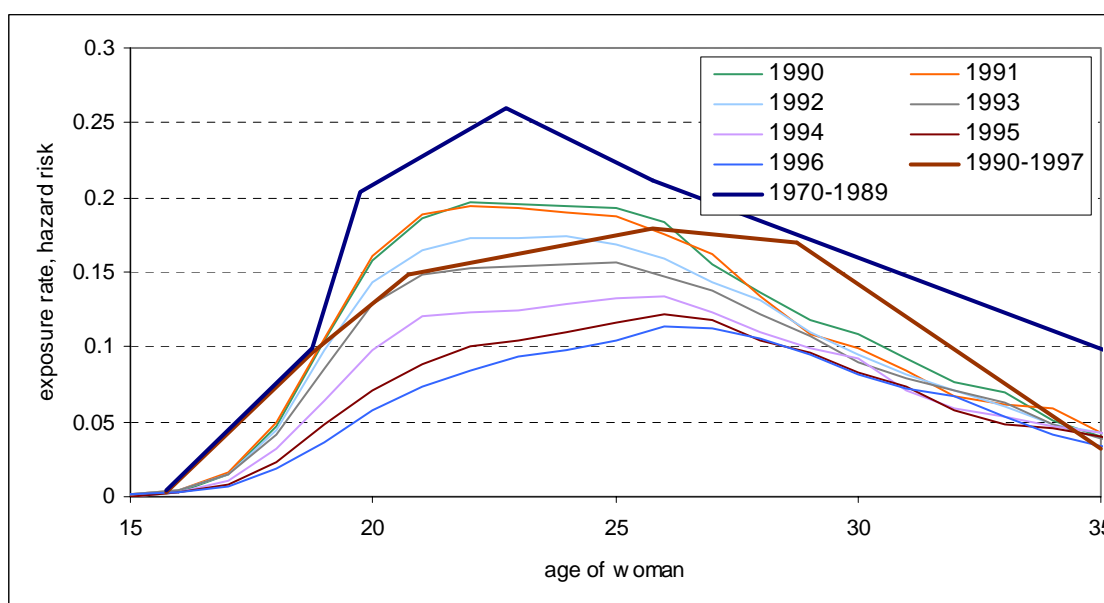
Notes: (1) Method: event history model (generalized Gompertz); dependent variable: transition to first child measured since age 15. Own calculations (see Model 0 in Appendix – Table A1), FFS Czech Republic 1997. (2) First-birth probabilities were kindly provided by T. Sobotka.

5.4.2 Women's education and entry into motherhood

Before addressing the role of women's education, it is worth it to look at the sequence and relation of *both* processes: finishing education and first childbirth. The cross-tables (Tables 5.9 and 5.10) show women's educational status at the time of conception and birth of the first child. Young women in the state-socialist period did not appear to perceive the incompatibility between childbearing and education to be *very* strong. Becoming pregnant and giving birth to a first child while being a student was not an extremely rare event. According to FFS data, in the 1970s and 80s every sixth first child (17.7%) was conceived when the women surveyed were still in education. Less than half of them (7.8% of all first children) were born when their mothers were still students. This points to the sequence of events in a short period: *conception – end of education – birth of first child* (10% of all first births) or *conception – birth of first child – end of education* (7.8% of all first births) as contrasted to *end of education – conception – birth of first child* (82.2%). Most women completed their education even if they were pregnant or already mothers; moreover many pregnancies took place in the last year of school or university. Between 1990-1997, the proportion of first children who were conceived and/or born while the mothers-to-be were still in education, dropped to 10% and 5% respectively.

Starting with survival curves of the transition to first birth disaggregated by the final level of education, one observes a postponement of first birth from the cohort born 1960-64 to that born in 1970-74 (Figure 5.5) especially for women with higher final levels of education. Women who are still in education at the time of the interview are excluded from the analysis. As expected, the curves for older generations are very similar to each other. The median age at first childbirth was for women with a lower education 21 years, for women with an upper-secondary degree (*maturita*) 22 years and for women with a university degree 25 years. Level of childlessness was very low for all educational groups. In sum, as concerns the age at first birth there were rather small differences by educational attainment before 1990. The intriguing question is how the role of educational attainment changed after that year. As expected, the median age at first birth has been rising for more recent generations (to 23 years for an upper-secondary education and 26 years for a university education in the generations 1970-74). However, in such an approach one cannot disentangle the effect of participation in education from the *net* effect of educational attainment (as presented in section 5.2.1).

Table 5.9. Women's educational status at conception and birth of first child[25], 1970-1989

At conception:	At birth: In education: below *m.*		after *m.*		Out of education: no degree		*maturita*		university		Total	%
In education:		%		%		%		%		%	Total	%
below *maturita*	44	4.9	1	0.1	41	4.6	35	3.9	0	0.0	121	13.4
after *maturita*			25	2.8			8	0.9	6	0.7	39	4.3
Out of education:												
no degree					430	47.7	5	0.6	0	0.0	435	48.3
secondary degree							279	31.0	0	0.0	279	31.0
university degree									27	3.0	27	3.0
	44	4.9	26	2.9	471	52.3	327	36.3	33	3.7	901	100.0

Notes: (1) Source: FFS Czech Republic 1997, own calculations.

Table 5.10. Educational status of women at conception and birth of first child, 1990-1997

At conception:	At birth: In education: below *m.*		after *m.*		Out of education: no degree		*maturita*		university		Total	%
In education:		%		%		%		%		%	Total	%
below *maturita*	10	3.0	1	0.3	9	2.7	5	1.5	0	0.0	25	7.4
after *maturita*			5	1.5			3	0.9	2	0.6	10	3.0
Out of education:												
no degree					144	42.7	0	0.0	0	0.0	144	42.7
secondary degree							134	39.8	0	0.0	134	39.8
university degree									24	7.1	24	7.1
	10	3.0	6	1.8	153	45.4	142	42.1	26	7.7	337	100.0

Notes: (1) Source: FFS Czech Republic 1997, own calculations.

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[25] All births of first order in the periods concerned are included in these tables. This means that cross-tables contain births to women over age 35, conceptions below age 15 and other births that are excluded or censored in hazard models.

Figure 5.5   Transition to first birth by educational attainment, selected generations.
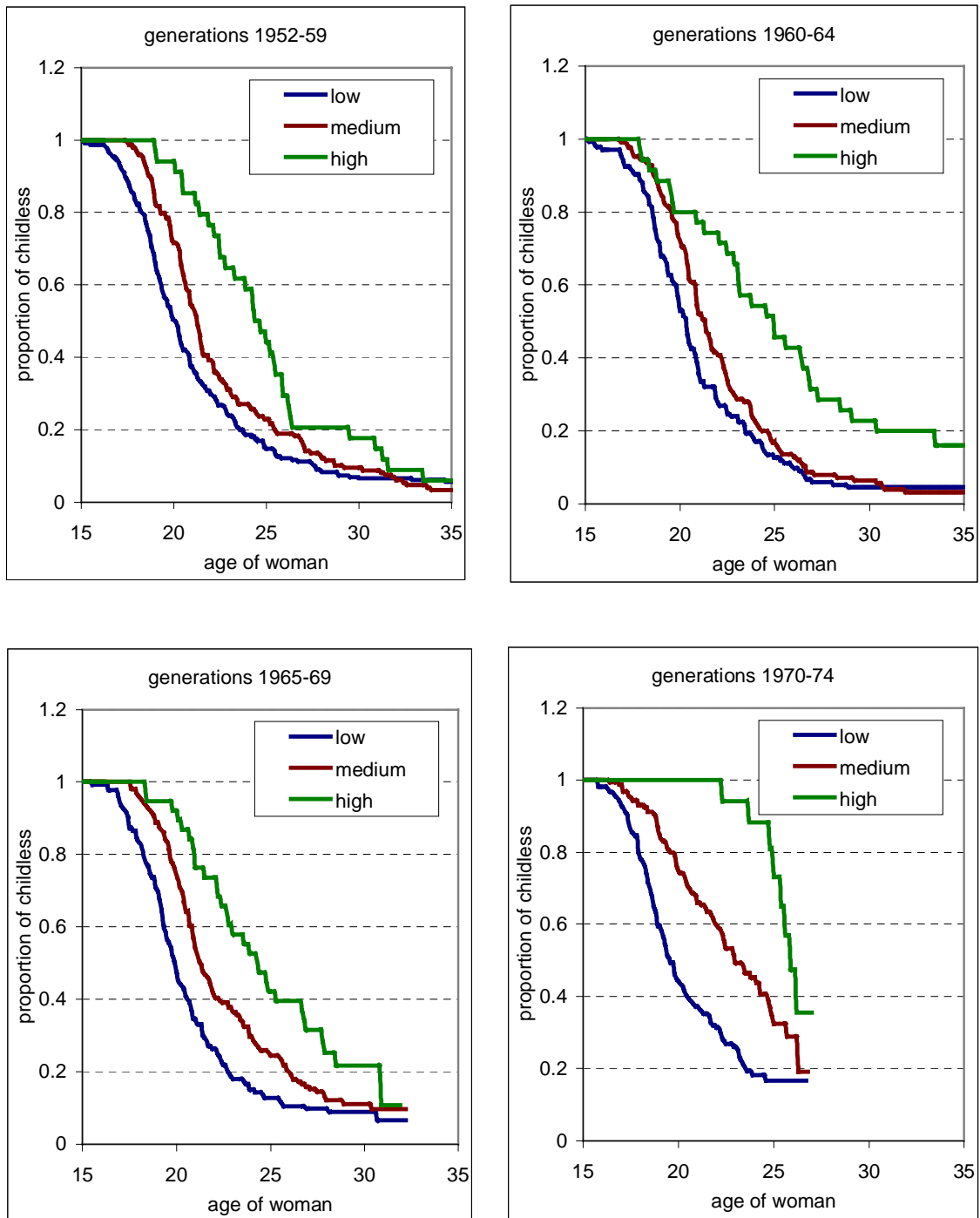
Notes: (1) Method: Kaplan-Meier survival plots; dependent variable: transition to first child measured since age 15. (2) Final educational attainment is measured at the date of the interview. Women in education at the date of the interview are excluded. Levels of education attained: low (no degree obtained), medium (*maturita*), high (university degree obtained). (3) Number of cases in analysis for generation 1952-59: 411 women, generation 1960-64: 294 women, generation 1965-69: 321 women, and generation 1970-74: 322 women. (4) Source: FFS Czech Republic 1997.

We will discuss two aspects of the possible influence of education on entry into motherhood. The first is being enrolled in education while the second deals with educational attainment (see section 5.2.1). In this sense, one might ask whether the educational differences in the age at first birth can be entirely explained by different lengths of participation in education. Regarding this, Blossfeld and Huinink (1991) claim that delayed first births among better-educated women are largely linked with continuing educational activity. In order to answer this question, one has to distinguish the period when the woman was enrolled in education from the period after she already completed her studies; this entails using time-varying covariates. One of the important advantages of an event history framework is that it allows for the use of time-varying covariates in the analysis. This aspect is of particular importance for analysis of first birth. The example above (Figure 5.5) with the survival curves by *final* educational attainment is a method of using time-constant covariates. Women in the sample are classified by their *final* educational attainment and one calculates the survival curves for the life span since age 15. However, for a part of this life span a woman does not yet have this educational degree. Thus one assigns her the educational degree which she gains *later* in her life[26]. This methodological problem is labeled as an *anticipatory analysis* (Blossfeld and Huinink 1991).

As a next step in the analysis, we estimate a multivariate model of the transition to first birth in which we include a woman's age and education characteristics (Table 5.11). The *first* question is: How does the fact of participation in education influence first birth risks? In both periods, the risks of first-child conception for women involved in education were low compared to women out of education. In the 1970s-80s, women in education had a smaller risk of entry into motherhood by a half compared to women out of education (a relative risk of 0.53 in Table 5.11). And women continuing in education after an upper-secondary degree (*maturita*) had a 60% lower risk of entering motherhood than women of the same age, who were already out of education (relative risk 0.38). In the 1990s, the transition to first child was even lower for women enrolled in a higher education - three times less (relative risk 0.27) compared to women of the same age, but already out of education.

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[26]   In this case, one wrongly classifies women who drop out of education because of pregnancy, i.e. the cases in which parenthood might determine the educational outcome. This aspect is called *reverse causation*. There are studies which show how an unplanned pregnancy increases the risk of drop-out from education and forecloses the chances of finishing the studies at a later age (i.e. in the U.S. context Marini 1984).

Table 5.11. First birth and women's education, 1970-1989 and 1990-1997. Model I: Effects of education.

	Model I Period 1970-1989				Model I Period 1990-1997		
	b	(SE)	exp(b)		b	(SE)	exp(b)
Baseline(woman's age):							
constant:							
15	-4.91	(0.33) ***		15	-5.03	(0.80) ***	
slopes:							
15-18	0.97	(0.13) ***		15-18	0.94	(0.28) ***	
18-19	0.46	(0.16) ***		18-20	0.14	(0.13)	
19-22	0.07	(0.05)		20-25	0.03	(0.04)	
22-25	-0.11	(0.06) **		25-28	-0.08	(0.10)	
25-35	-0.09	(0.04) **		28-35	-0.16	(0.09) *	
Educational degree obtained:							
Out of education:							
no degree	0.17	(0.08) **	1.18		0.31	(0.12) **	1.37
secondary degree = reference	0.00		1.00		0.00		1.00
university degree	0.19	(0.22)	1.21		0.05	(0.27)	1.05
In education:							
no degree	-0.64	(0.14) ***	0.53		-0.69	(0.30) **	0.50
after secondary degree	-0.97	(0.18) ***	0.38		-1.30	(0.33) ***	0.27
Log-likelihood of model	-5586.1						
Observations	1709						
Observations in period	1361				806		
First births in period	887				333		

Notes: (1) Method: event history model (generalized Gompertz); dependent variable: transition to first child measured since age 15. (2) Significance: * at 10%; ** at 5%; *** at 1%. Asymptotic standard errors (SE) are in parentheses. (3) Source: FFS Czech Republic 1997.

The *second* question concerns the effect of the level of education. In the 1970s and 1980s, a *university* education had a positive effect (relative risk 1.21, though not significant) on the transition to first child. When women finished their university education, they were at a high risk of first childbirth (with a higher intensity than childless women with *maturita*). The difference in the age at first birth between women with an upper-secondary degree (*maturita*) and those with a university degree was caused exclusively by longer involvement in education at university. The differences by education level were more pronounced in the period of transition. Women with *no* educational degree form a distinct group with high transition rates to first child - by one-third than other women (1.37, Table 5.11). Women with a *university* degree had the same relative risk of the transition to first birth as those with an upper-secondary degree (*maturita*).

Table 5.12. Transition to first birth, 1970-1989 and 1990-1997. Model III: Partnership status, education, labor market situation and characteristics of parental home.

	Model III Period 1970-1989				Model III Period 1990-1997		
	b	(SE)	exp(b)		b	(SE)	exp(b)
Baseline(woman's age):							
15	-5.16	(0.35) ***		15	-5.23	(0.82) ***	
slopes:							
15-18	0.97	(0.13) ***		15-18	0.91	(0.29) ***	
18-19	0.36	(0.16) **		18-20	-0.05	(0.14)	
19-22	-0.08	(0.05) *		20-25	-0.07	(0.04) *	
22-25	-0.16	(0.06) ***		25-28	-0.07	(0.10)	
25-35	-0.12	(0.04) ***		28-35	-0.17	(0.10) *	
Partnership status:							
not living in partnership	0.00		1.00		0.00		1.00
cohabitation	1.04	(0.11) ***	2.84		1.40	(0.15) ***	4.04
marriage	1.46	(0.08) ***	4.29		1.76	(0.14) ***	5.79
Educational degree obtained:							
Out of education:							
no degree	0.08	(0.10)	1.08		0.52	(0.15) ***	1.69
secondary degree = reference	0.00		1.00		0.00		1.00
university degree	0.21	(0.25)	1.23		-0.03	(0.28)	0.97
In education:							
no degree	-0.45	(0.15) ***	0.64		-0.34	(0.32)	0.71
after secondary degree	-0.64	(0.20) ***	0.53		-0.70	(0.36) **	0.50
Current (in)activity on labour market:							
Employed:							
full-time = reference			1.00				1.00
part-time and short employments	-0.06	(0.18)	0.94		0.19	(0.18)	1.21
Not employed:	0.00				0.00		
no experience	-0.02	(0.16)	0.98		-0.96	(0.41) **	0.38
some experience	0.77	(0.14) ***	2.16		0.16	(0.26)	1.17
Cumulated occupational status:							
Highly qualified positions	0.40	(0.22) *	1.50		0.14	(0.36)	1.15
Qualified position	0.09	(0.11)	1.10		0.18	(0.16)	1.20
Unqualified position = reference	0.00		1.00		0.00		1.00
Skilled worker	0.00	(0.12)	1.00		0.19	(0.17)	1.21
Un(semi-)skilled worker	0.17	(0.10) *	1.18		-0.09	(0.18)	0.91

(continuing)

Table 5.12 (continued)

	b	**(SE)**	**exp(b)**	**b**	**(SE)**	**exp(b)**
Characteristics of parental home:						
No sibling	-0.31	(0.15) **	0.73	-0.05	(0.23)	0.95
One sibling = reference	0.00		1.00	0.00		1.00
Two and more siblings	0.22	(0.07) ***	1.25	0.17	(0.12)	1.18
Childhood spent:						
not in town = reference	0.00		1.00	0.00		1.00
in town (>10 000)	0.00	(0.07)	1.00	-0.24	(0.12) **	0.79
Log-likelihood of model	-5306.6					
Observations	1709					
Observations in period	1361			806		
First births in period	887			333		

Notes: (1) Method: event history model (generalized Gompertz); dependent variable: transition to first child measured since age 15. (2) Significance: * at 10%; ** at 5%; *** at 1%. Asymptotic standard errors (SE) are in parentheses. (3) Source: FFS Czech Republic 1997.

In the second step of analysis, we include (besides education) a set of other covariates such as partnership status, employment status of the woman and parental home characteristics (Table 5.12). The results of the previous model are not robust for adding the covariate on partnership status. The effect of being in education is less pronounced. Women in education live more seldom in unions, so the effect of partnership status captures part of the lower intensity of the transition to motherhood for women in education.

5.4.3 Time elapsed since end of education: Another point of view on the effect of education

This part of the analysis attempts to discover whether and how transition rates to first birth develop over the time elapsed since the completion of studies and whether there were differences by educational attainment. In Tables 5.13 and 5.14, descriptive statistics showed that the events of finishing education and entry into motherhood (conception and birth of first child) are closely interrelated in the lives of Czech women.

For the 1970s and 1980s, the hypothesis is that an incompatibility of family formation with the start of a woman's employment career was low and that risks of entry into motherhood were high immediately after the end of studies irrespective of women's educational attainment (arguments presented in section 5.2.1).

The intriguing question is whether the *postponement* of the entry into motherhood in the 1990s was entirely linked to a *prolongation of studies* or rather whether there was also a *prolongation of the period after the end of studies*. In the present analysis, we distinguish between an effect of the end of schooling and an effect of the woman's age. We introduce another 'time clock' (in our case time passed since the end of schooling) together with the age of the woman. If there are multiple splines in a hazard-model (one by age of the woman and a second by the time passed since the end of schooling), they combine additively to form the overall risk of first birth in the log-hazard. Women end their education at different ages and at this moment the 'time clock' (since the end of education) is started in every individual case[27]. The mathematical representation can be written as follows:

$$ln\,\mu_i(t) = h(t) + c(t - e_i) + \sum_j \beta_j x_{ij}(t)$$

where $c(t-e_i)$ is a time-dependent linear spline term which enters the model only if a woman finishes her education and e_i indicates the time of the end of schooling relative to the age of the woman. The spline for the effect of end of schooling is characterized by an immediate effect (a constant) and a later development (with a change in slope of effect at 2 years from the end of education). In the present analysis, the effect of end of schooling is interacted with a covariate at the educational level. The covariate has three categories representing education with no degree, with an upper-secondary degree (*maturita*) and with a university degree.

Table 5.13 presents the results of the model with two variables – age of a woman and time elapsed since the end of education distinguishing three educational categories. In the 1970s and 1980s, the risks of first-child conception doubled (after the completion of studies at an upper-secondary or lower level) or tripled (after the completion of a university education) immediately after the woman finished her studies and continued to rise or remain stable for a few years before declining again. The end of education was strongly perceived as a start of the period when a woman forms her own family and has children. Women with a university education were at a high risk of entry into motherhood immediately after completion of university studies. In that period the mean age of mothers at first childbirth was 22 to 22.5 years, which was the 'ideal age' for first birth according to societal norms.

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[27]   In the present analysis, the end of full-time schooling is considered as the date at which a woman finished her education. If there is another period of schooling that starts less than 16 months after the end of the previous period, then the schooling is considered as not yet finished and the spline capturing the effect of time elapsed since the end of education is not started.

However, the age upon leaving the university was between 22 and 24 years. Therefore, women with a university degree tended to have their first child comparatively swiftly after the end of education, and age differences in entry into motherhood relative to women with other education levels were less than different lengths of participation in education.

Table 5.13. Transition to first birth, 1970-1989 and 1990-1997. Model V: Effects of end of education.

	Model V Period 1970-1989				Model V Period 1990-1997		
	b	**(SE)**	**exp(b)**		**b**	**(SE)**	**exp(b)**
Baseline(woman's age):							
15	-5.58	(0.32) ***		15	-5.78	(0.70) ***	
slopes:							
15-18	0.95	(0.13) ***		15-18	0.68	(0.29) **	
18-19	0.38	(0.15) **		18-20	0.01	(0.14)	
19-22	0.04	(0.05)		20-25	-0.12	(0.08)	
22-25	-0.06	(0.07)		25-28	-0.17	(0.12)	
25-35	-0.03	(0.06)		28-35	-0.24	(0.11) **	
Time elapsed since end of schooling:							
No degree obtained:							
Constant	0.93	(0.17) ***	2.54		1.97	(0.43) ***	7.19
Slopes							
0-2	0.14	(0.10)			0.02	(0.21)	
2+	-0.08	(0.04) **			0.08	(0.06)	
Secondary degree obtained:							
Constant	0.50	(0.21) **	1.65		1.16	(0.56) **	3.18
Slopes							
0-2	0.22	(0.13) *			0.02	(0.30)	
2+	0.00	(0.05)			0.21	(0.10) **	
University degree obtained:							
Constant	1.22	(0.42) ***	3.39		-0.84	(1.92)	0.43
Slopes							
0-4	-0.17	(0.20)			0.66	(0.52)	
4+	0.04	(0.23)			0.19	(0.09) **	
Log-likelihood of model	-5274.9						
Observations	1709						
Observations in period	1361				806		
First births in period	887				333		

Notes: (1) Method: event history model (generalized Gompertz); dependent variable: transition to first child measured since age 15. (2) Significance: * at 10%; ** at 5%; *** at 1%. Asymptotic standard errors (SE) are in parentheses. (3) Source: FFS Czech Republic 1997.

In the 1990s, the role of the time passed since the end of schooling on the decision to have a child was more important than it had been earlier. In the two years after finishing studies for women with a university degree, there is a lower risk of first-child conception followed by a subsequent rise in intensity. Thus, the childbearing time for highly educated women does not start immediately after the end of schooling. This empirical result goes with the hypothesis that between the period of education and the period of entry into motherhood, there is a distinct part of life in which young women form their position on the labor market and 'materialize' gains obtained from their education.

To better present the results of this part of the analysis on the transition to first birth, we do simulations based on the typical ages at which people complete their studies. The multiplicative effects for time elapsed since the end of schooling are added to the hazard risk of first birth by a woman's age. In both periods, we choose three women: one woman with no educational degree who finished her studies at age 17, one woman who finished her studies at age 19 with an upper-secondary degree and one woman who acquired a university degree at age 23 (Figures 5.6 to 5.7).

Figure 5.6 Transition to first birth. Model V: Effects of time elapsed since end of education for different levels of education, 1970-1989.
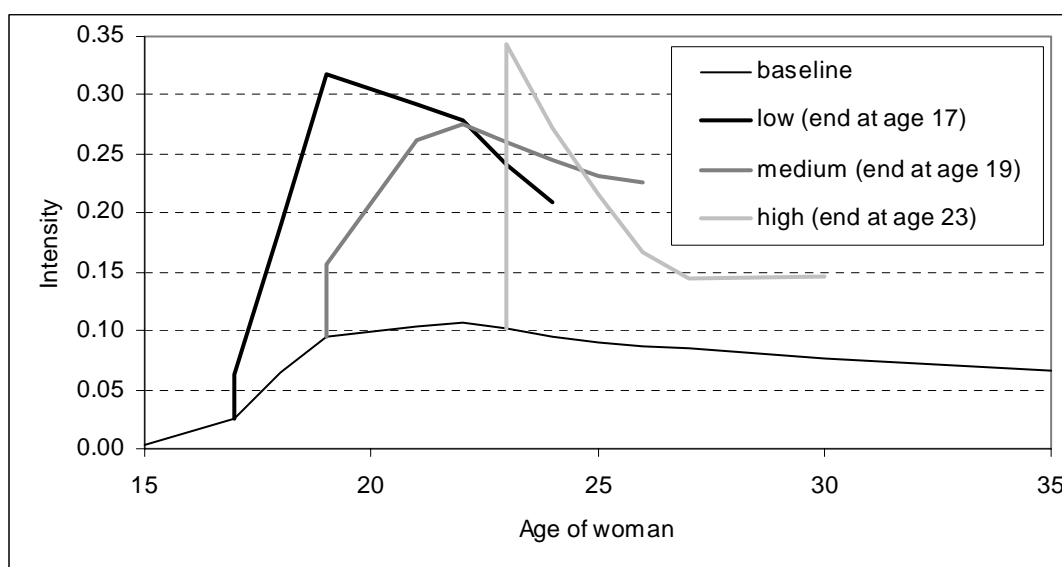
Notes: (1) Levels of education attained: low (primary or lower-secondary), medium (upper-secondary), high (university). (2) Age of end of schooling is attributed as follow: for low education 17 years, for medium education 19 years and for a university education 23 years.

Figure 5.7 Transition to first birth. Model V: Effects of time elapsed since end of education for different levels of education, 1990-1997.
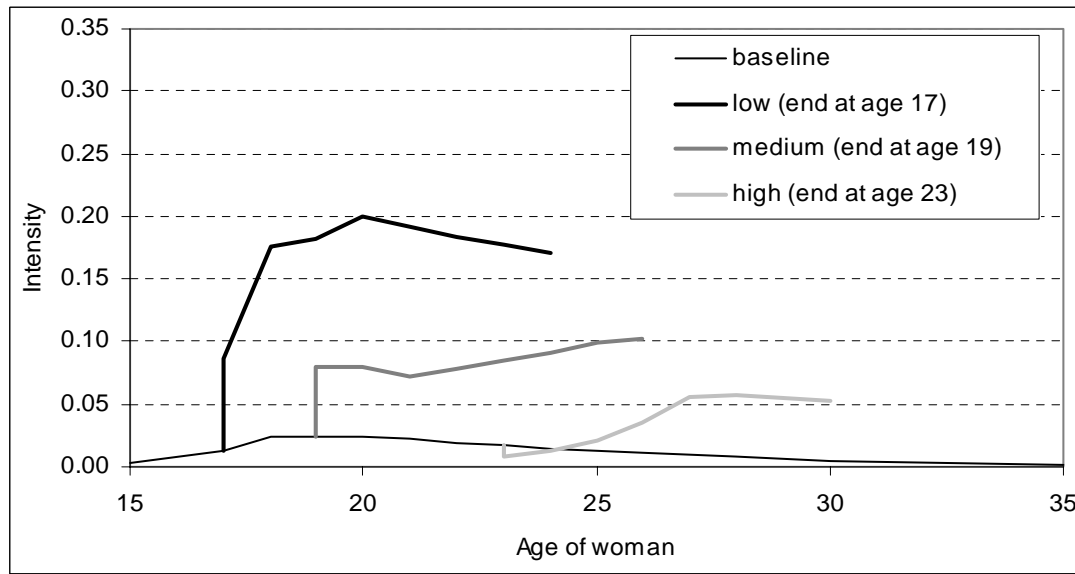
Notes: (1) Levels of education attained: low (primary or lower-secondary), medium (upper-secondary), high (university). (2) Age of end of schooling is attributed as follow: for low education 17 years, for medium education 19 years and for a university education 23 years.

Intermediate summary: Women's education and first birth

The analysis provided evidence that childrearing and receiving an education were incompatible for Czech women. Some of the first-child conceptions were situated in the last year of studies and the child was born shortly before or after the completion of education. In the state-socialist period, the early and universal pattern of entry into motherhood was present for all women irrespective of their education. The educational difference of the age at first birth (median age at first birth is 20 for no degree, age 22 for an upper-secondary degree (*maturita*) and age 25 for a university degree) is reflected even less than differences in the age at the end of studies (ages 15 to 17 for no degree, ages 18 to 19 for a complete secondary degree and ages 22 to 24 for a university degree). The empirical results go with the hypothesis that in the 1970s and 1980s there was a low level of incompatibility between family formation and starting a woman's employment career. Thus, the risk of entry into motherhood was high immediately after finishing studies irrespective of women's educational attainment.

How does the picture describing the role of women's education on the entry into motherhood change in the 1990s? A puzzling finding is the very high transition to first birth for women with a *lower* education. One might expect that women with low educational

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levels had the worst labor market chances and were the most affected by economic hardship in the time of economic transition. Therefore they should also more often refrain from or postpone entry into motherhood (as expressed in the *'economic hardship-fertility decline'* hypothesis in section 5.2.3). However, this hypothesis is not supported by the empirical findings at the individual level. On the other hand, perhaps these women were discouraged from labor market activities since women without higher formal qualifications did not have high motivations and possibilities to form a stable position on the labor market, opting instead for the more 'secure and predictable career' of mother and housewife (as was formulated in the hypothesis on *'labor market discouragement'* in section 5.2.2). However, this hypothesis is not supported by the data on female labor force participation. Women with a low education had high unemployment risks, but they did not have higher rates of economic inactivity (see Chapter 3), possibly due to financial reasons (i.e., they could not afford to stay at home as a housewife). Besides the economic situation, other aspects played a role in the early timing of entry into motherhood for women with a lower education, such as, their relatively infrequent use of contraceptives, which lead to a higher proportion of unplanned pregnancies for these women.

On the other hand, women with an upper-secondary and university degree postponed first births more often than other women in the 1990s. Findings for the 1990s are in line with the hypothesis that the *postponement of motherhood* was caused not only by a prolongation of the participation in education, but also by a prolongation of the period between the end of studies and the formation of a family. Moreover, highly-educated women especially refrained from entry into motherhood immediately after the end of studies. Against this background, the explanations based on increased evaluation of education and on growing differences between women of different educational backgrounds in choices and possibilities on the labor market (as expressed in the hypothesis on *'expanding opportunities and choices'*) are thus important when interpreting the changes in first birth intensities in the 1990s. The observed education differences in the 1990s correspond to the expectations that a woman with a higher education had better control over her reproductive life (the effect of *'contraceptive changes',* section 5.2.6) and that such women were under increasing pressure concerning gender relations in society (the effect of growing relative *'gender inequalities'*, section 5.2.1).

5.4.4   What is the role of the women's employment situation?

In a discussion of the Czech experience, the difficulties young adults face with establishing themselves on the labor market, unstable employment situations and unemployment are considered to be among the key factors which have contributed to a fertility decline in the 1990s.

Before addressing the situation during the economic transition, it is worth looking at the relation between fertility and women's employment during the state-socialist period. As discussed in section 5.2.2, the hypothesis is that under the conditions of a centrally planned economy all characteristics of a woman's position on the labor market play only a minor role in the transition to first birth. According to empirical findings, women currently *not employed* but already with *some work experience* had a transition rate to first birth three times higher than employed women (relative risk 3.25 in Table 5.14). Changes in jobs were rare and usually related to family reasons (marriage, formation of union) combined with a migration and the need to find another employment at the new place of residence. Therefore one might also suppose a higher transition rate to first birth. An interesting finding is that there was no difference between women in *full-time employment* and those *not employed with no experience*. Just after their studies women did not need to first start their employment only to afterwards have their first child. According to occupational status, all women revealed the same relative risks of transition to motherhood.

In the 1990s, young adults were the group (from the working-age population) most affected by uncertainties and difficulties while restructuring the labor market in the process of economic transition (see Chapter 3). According to the hypothesis connecting *'economic hardship and fertility decline'*, women who were at higher risk of experiencing difficulties on the labor market (unemployed women with low qualifications) postponed the birth of their first child more than other groups of women did (section 5.2.3).

The hypothesis on *'labor market discouragement'* operates in the opposite direction. Women who were at higher risk of experiencing difficulties on the labor market would solve this situation by choosing 'another strategy' – to be mothers and housewives, thus having a higher transition to first birth.

On the other hand, one could argue that the changes in the *institutional setting* of the labor market and the policies related to family-work reconciliation played an important role in the postponement of first birth. In section 5.2.2 these arguments were formulated in a hypothesis on the *'importance of job and experience'*. According to it, women with no work experience and/or no employment position had a lower transition to first birth.

Table 5.14. Transition to first birth: Effects of activity status and occupational status.

	Model II Period 1970-1989				Model II Period 1990-1997		
	b	**(SE)**	**exp(b)**		**b**	**(SE)**	**exp(b)**
Baseline(woman's age):							
constant:							
15	-4.96	(0.35) ***		15	-4.80	(0.81) ***	
slopes:							
15-18	0.98	(0.13) ***		15-18	0.92	(0.29) ***	
18-19	0.44	(0.16) ***		18-20	0.12	(0.14)	
19-22	0.06	(0.05)		20-25	0.04	(0.04)	
22-25	-0.12	(0.06) **		25-28	-0.09	(0.10)	
25-35	-0.10	(0.04) **		28-35	-0.16	(0.09) *	
Period:							
1970-1979 = reference	0.00		1.00	1990-1993	0.00		1.00
1980-1989	0.01	(0.07)	1.01	1994-1997	-0.41	(0.12) ***	0.66
Educational degree obtained:							
Out of education:							
no degree	0.16	(0.11)	1.17		0.39	(0.16) **	1.48
secondary degree = reference	0.00		1.00		0.00		1.00
university degree	0.18	(0.23)	1.20		0.01	(0.31)	1.01
In education:							
no degree	-0.60	(0.16) ***	0.55		-0.68	(0.32) **	0.50
after secondary degree	-0.92	(0.20) ***	0.40		-1.25	(0.34) ***	0.29
Current (in)activity on labour market:							
Employed:							
full-time = reference	0.00		1.00		0.00		1.00
part-time and short employments	0.02	(0.17)	1.02		0.25	(0.20)	1.28
Not employed:							
no experience	-0.11	(0.16)	0.90		-1.01	(0.40) **	0.36
some experience	1.18	(0.13) ***	3.25		0.26	(0.23)	1.29
Cumulated occupational status:							
Highly qualified positions	0.16	(0.22)	1.17		0.08	(0.33)	1.08
Qualified position	0.09	(0.13)	1.10		0.13	(0.18)	1.14
Unqualified position = reference	0.00		1.00		0.00		1.00
Skilled worker	-0.05	(0.12)	0.95		0.10	(0.18)	1.10
Un(semi-)skilled worker	0.12	(0.10)	1.12		-0.21	(0.19)	0.81
Log-likelihood of model	-5552.5						
Observations	1709						
Observations in period	1361				806		
First births in period	887				333		

Notes: (1) Method: event history model (generalized Gompertz); dependent variable: transition to first child measured since age 15. (2) Significance: * at 10%; ** at 5%; *** at 1%. Asymptotic standard errors (SE) are in parentheses. (3) Source: FFS Czech Republic 1997.

The empirical findings for the 1990s are presented in Table 5.14. Compared to women employed full-time, women with *no work and no experience* had a lower intensity of the transition to motherhood by 64% (relative risk 0.36). The *negative* effect of being *not employed* on first birth risks was not present in the cases where the woman had already been employed for some time (category *no work and some experience)*. These findings are in line with the hypothesis on the *'importance of job and experience'* - having finished one's studies and having *no experience* on the labor market together exercised a very strong negative impact on first birth risks.

In the next step, we consider the interaction of two variables: a woman's employment status and educational level (with a distinction between two levels – no educational degree and at least an upper-secondary degree). The reasoning underlying this analysis is that women with a higher education might place more importance to their position on the labor market, since they have spent relatively more time and effort through education that will now be valuable on the labor market. High education is highly valued on the labor market especially if a woman already has some on-the-job experience. Consequently, they might be more in need of balance between childbearing and working careers than women with no educational degree.

Table 5.15 presents the results of this part of the analysis. In the state-socialist period there was no educational gradient of the effect of employment status. Quite the contrary, in the 1990s among higher educated women the fact of being *without work and with no experience* strongly lowered the risk of having a first child (by 80% compared with women employed full-time), but the effect was not so strong for women with no educational degree. Furthermore, poorly educated women who are not employed but already have *some work experience* have an even higher risk of entry into motherhood (by 76%). To sum up, the importance of labor market experience and having a job before the onset of family formation was more apparent in the 1990s than in the state-socialist period. However, the results show that the hypothesis on the *'importance of job and experience'* is too general, because it neglects the educational component. Highly-educated women seem to be more attached to the labor market. Thus, it is more important for them to have a stable employment position, to gain some experience and to materialize the benefits of their education before the birth of their first child.

Table 5.15. Transition to first birth: Interaction of employment status and education.

	Model X Period 1970-1989				Model X Period 1990-1997		
	b	**(SE)**	**exp(b)**		**b**	**(SE)**	**exp(b)**
Baseline(woman's age):							
15	-4.75	(0.34) ***		15	-4.41	(0.76) ***	
slopes:							
15-18	0.96	(0.13) ***		15-18	0.82	(0.28) ***	
18-19	0.37	(0.15) **		18-20	0.04	(0.13)	
19-22	0.06	(0.04)		20-25	0.04	(0.04)	
22-25	-0.10	(0.05) *		25-28	-0.08	(0.10)	
25-35	-0.10	(0.04) **		28-35	-0.17	(0.09) *	
Lower education:							
Employed:							
full-time	0.09	(0.09)	1.09		0.12	(0.13)	1.12
part-time and short employments	0.25	(0.23)	1.28		0.85	(0.29) ***	2.35
Not employed:							
no experience	0.03	(0.19)	1.04		-0.52	(0.45)	0.60
some experience	1.13	(0.14) ***	3.08		0.56	(0.27) **	1.76
Higher education:							
Employed:							
full-time = reference	0.00		1.00		0.00		1.00
part-time and short employments	-0.08	(0.24)	0.92		-0.19	(0.28)	0.83
Not employed:							
no experience	-0.34	(0.29)	0.71		-1.73	(0.75) **	0.18
some experience	1.57	(0.38) ***	4.79		-0.14	(0.43)	0.87
In education	-0.81	(0.12) ***	0.45		-1.14	(0.23) ***	0.32
Log-likelihood of model	-5558.3						
Observations	1709						
Observations in period	1361				806		
First births in period	887				333		

Notes: (1) Method: event history model (generalized Gompertz); dependent variable: transition to first child measured since age 15. (2) Significance: * at 10%; ** at 5%; *** at 1%. Asymptotic standard errors (SE) are in parentheses. (3) Source: FFS Czech Republic 1997.

Intermediate summary: Women's employment and first birth

The analysis for the 1990s provided strong evidence of the growing importance of a stable position on the labor market for young women before entry into motherhood, as formulated in the hypothesis on the *'importance of job and experience'*. This finding is valid especially for women with a higher education who were more attached to labor market activities and were able to 'materialize' the benefits of their education on the labor market. Thus, there were several reasons why women might prefer to first establish a stable position on the labor market before giving birth to a first child. First, women who were employed in a secure position at the time of childbirth had the right to return smoothly to their job and thus it guaranteed them a continuous working career. This line of argument is valid *not* only from the perspective of *career orientation*, but also because female income was indispensable for the family budget. Furthermore, there were financial incentives associated with the system of maternity and parental leaves and benefits (e.g. maternity benefits depending on previous income). As concerns the perspectives of women with young child(ren) who are on the labor market, women willing to enter the labor market after maternity/parental leave with small children were more discriminated against at job interviews, faced a lower chance for employment and stayed unemployed for a longer time (see Chapter 3). Subsequently, for young women it was easier to enter the labor market and form a stable position before entering into motherhood. Furthermore, only a small number of women would chose (or could afford) to stay at home to take care of the children and household without ever (or only at a much later time) returning to the labor market.

The hypothesis on *'labor market discouragement'* (leading to a higher first birth risk of women with no employment) is not supported by empirical findings in the context of Czech society, since the dual-earner family model and the need for both partners to earn wages is very widely spread.

According to the *occupational status*, all women revealed the same relative risks of the transition to first birth (after controlling for an educational attainment and employment status). There were no important differences observed in the two periods. Therefore, *in case of first birth* there was no effect of uncertainty and low income for women on unqualified or unskilled manual positions (hypothesis on *'economic hardship-fertility decline'*), nor was there a specific effect of career building for women on highly qualified positions (hypothesis on *'career orientation'* in section 5.2.2).

5.4.5   Is cohabitation the same as marriage?

Previous steps of the analysis did not include the male partner's educational and employment characteristics. However, having children is a process related to couples. Since the data do not provide complete information on the partner, the only possibility in current analysis is to insert a variable indicating whether the woman was living with a partner or not. In the Czech context, the relation of cohabitation and marriage to first birth is an interesting question especially because of the very low proportion of non-marital births in the 1970s and 1980s and then because of its sharp rise during the 1990s (see Chapter 2).

The descriptive findings based in Czech FFS data provide the same picture (see Table 5.16). In the 1970s and 1980s only 13% of first children were *born* out of marriage (9% to woman not living in any union and 4% to cohabiting women). However, 52% of the first children were *conceived* at a time when the woman was not living in any partnership and 9% when the woman was cohabiting. The relationship of union formation and entry into parenthood has changed throughout the 1990s. At the time of *conception* of the first child, in 22% of the cases the woman was living in a cohabitating union without marriage, in 40% the woman was married and in 38% the woman was not living in any union. Afterwards, 7% of first children were *born* to a cohabiting woman and 83% to a married woman (Table 5.16). The proportion of first children born to mothers not living in any partnership (neither married nor cohabiting) has remained about stable around 10% for both periods.

If one analyzes the data from vital statistics on births to married and unmarried women (presented in Chapter 2), there is a sharp rise in the proportion of first children born out of wedlock. These findings do not distinguish between women not living in any union and cohabiting women. The results based on FFS data point to the fact that the rise in non-marital childbearing in the 1990s was, in the case of first births, caused by a rise in the proportion of unmarried mothers living in cohabitation out of the total number of mothers.

In the next step, partnership status was included in the models for transition to first birth as a time-varying covariate (see complete model in Table 5.12). As expected, living in a partnership strongly increases the transition to first birth. However, cohabitation and marriage have distinct features in the process of entry into motherhood, with cohabitation being less oriented towards childbearing.

Table 5.16. Distribution of first births according to the partnership situation of mother-to-be at time of conception and birth of first child, 1970-1989 and 1990-1997.

Partnership situation of mother at time of:		Conception in period:			
		1970-1989		**1990-1997**	
conception	**birth**	**N**	**%**	**N**	**%**
–	Single	74	8.2	28	8.3
	In first partnership				
–	Cohabitation	37	4.1	22	6.5
–	Married directly	611	67.8	173	51.3
–	Married after cohab.	152	16.9	95	28.2
Single	–	462	51.3	120	35.6
In first partnership					
Cohabitation	–	75	8.3	63	18.7
Married directly	–	265	29.4	95	28.2
Married after cohab.	–	72	8.0	40	11.9
Single	Single	74	8.2	28	8.3
Single	Cohabitation	19	2.1	6	1.8
Single	Married directly	346	38.4	78	23.1
Single	Married after cohab.	23	2.6	8	2.4
Cohabitation	Cohabitation	18	2.0	16	4.7
Cohabitation	Married after cohab.	57	6.3	47	13.9
Married directly	Married directly	265	29.4	95	28.2
Married after cohab.	Married after cohab.	72	8.0	40	11.9
After first partnership					
	Single	6	0.7	6	1.8
	Cohabitation	3	0.3	2	0.6
	Married directly	7	0.8	3	0.9
	Married after cohab.	8	2.4	8	2.4
Single		8	0.9	3	0.9
Cohabitation		4	0.4	7	2.1
Married directly.		7	0.8	1	0.3
Married after cohab.		5	0.6	2	0.6
All first births		901	100.0	337	100.0

Notes: (1) Own calculation based on FFS Czech Republic 1997.

5.4.6   Effect of first union formation

In the 1970s and 1980s, an early entry into motherhood was associated with a strong relation between formation of first union and first childbirth. Less then 4% of all first children were born in a second or higher order union (calculations based on FFS data). In the next step, the analysis is concentrated only on first partnerships and investigates the effects of moving together into cohabitation or getting married on the entry into motherhood[28].

As in the analysis investigating the time passed since the end of schooling, we construct models with several time-dependent splines: one for the time elapsed since age 15, a second for the time since the start of a cohabitation, a third for the time passed since a marriage after cohabitation and fourth for the time passed since a direct marriage[29]. The mathematical representation can be written as follows:

$$ln\,\mu_i(t) = h(t) + a_1(t - c_i) + a_2(t - cm_i) + a_3(t - m_i) + \sum_j \beta_j x_{ij}(t)$$

where $y(t)$ is a spline by age of woman which describes the transition to first birth since age 15. There are three other time dependent linear spline terms. First, $a_1(t-c_i)$ enters the model only if a woman is living in a cohabitation and c_i indicates the starting time of the cohabitation. Second, $a_2(t-cm_i)$ enters the model only if a woman experiences a marriage after cohabitation and cm_i indicates the date of the marriage after a previous cohabitation. Third, $a_3(t-m_i)$ enters the model only if a woman is living in a marriage not preceded by cohabitation and m_i indicates the date of the marriage. The events are expressed relative to the woman's age. In results, splines for the effect of union formation are characterized by an immediate effect (constant) and a later development.

Table 5.17 presents the results of such a model. The hazard risks of first-child conception by a woman's age – unexplained by including a covariate on partnership status – are higher for the 1970s and 1980s. The risk of first-child conception for women not living in any union is highest at ages 18 to 22 years. In this age range the highest number of first-child conceptions for women who were neither cohabiting nor married was concentrated.

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[28]   Thus, there is another possible censor date (when we stop the analysis of the transition to first birth), which is attributed to the month at the end of the first partnership in cases where the woman lived through her first union without giving birth to a first child.

[29]   First, second and third splines can be added together in cases of the occurrence of sequence: *cohabitation – marriage (– date of conception)*. The fourth spline can only be combined with the first one and thus it represents the sequence: *direct marriage (– date of conception)*.

Quite the contrary, in the 1990s the transition to first-child conception for women not living in any union was relatively low at all age groups. Thus, this result provides strong evidence that in the 1990s first children were conceived in already formed unions more often than in the previous reproductive regime. In both periods, entry into partnership had a strong immediate effect on first-child conception. Similarly stated, *both* events - union formation and first-child conception - were concentrated into a short period of a woman's life.

Table 5.17. Transition to first birth: Effect of formation of first union.

	Model VII Period 1970-1989				Model VII Period 1990-1997		
	b	**(SE)**	**exp(b)**		**b**	**(SE)**	**exp(b)**
Baseline(woman's age):							
15	-5.52	(0.32) ***		15	-6.53	(0.85) ***	
slopes:							
15-18	1.04	(0.13) ***		15-18	1.17	(0.32) ***	
18-19	0.51	(0.15) ***		18-20	-0.06	(0.15)	
19-22	-0.04	(0.05)		20-25	-0.05	(0.05)	
22-25	-0.11	(0.05) **		25-28	-0.05	(0.07)	
25-35	-0.06	(0.05)		28-35	-0.06	(0.02) ***	
Start by cohabitation:							
constant	1.47	(0.30) ***	4.34		2.40	(0.38) ***	11.04
slope 0-0.5 year	-0.49	(0.73)			-0.41	(0.94)	
slope 0.5+ year	-0.22	(0.10) **			-0.18	(0.12)	
Start by direct marriage:							
constant	1.80	(0.19) ***	6.05		2.76	(0.37) ***	15.88
slope 0-0.5 year	-0.23	(0.46)			-0.44	(0.88)	
slope 0.5+ year	-0.16	(0.05) ***			-0.08	(0.07)	
Marriage after cohabitation:							
constant	0.75	(0.22) ***	2.12		0.44	(0.29)	1.56
slope	0.01	-0.07			0.16	(0.16)	
Log-likelihood of model	-5331						
Observations	1709						
Observations in period	1361				806		
First births in period	887				333		

Notes: (1) Method: event history model (generalized Gompertz); dependent variable: transition to first child measured since age 15. (2) Significance: * at 10%; ** at 5%; *** at 1%. Asymptotic standard errors (SE) are in parentheses. (3) Source: FFS Czech Republic 1997.

The results are best presented in graphical form using the simulations in which we choose four women. Two women live in the state-socialist period: one started to cohabit with her partner at age 22 years and married with the same partner one year later while the second woman married directly at age 22 years. Furthermore, two women live in the 1990s: one started to cohabit with her partner at age 24 years and married the same partner one year later while the second woman married directly at age 24 [30]. Simulations are presented in Figure 5.8 for the effect of moving together into cohabitation and a possible subsequent marriage and in Figure 5.9 for the effect of direct marriage.

Figure 5.8 Transition to first birth: Effects of starting cohabitation and getting married afterwards, 1970-1989 and 1990-1997.
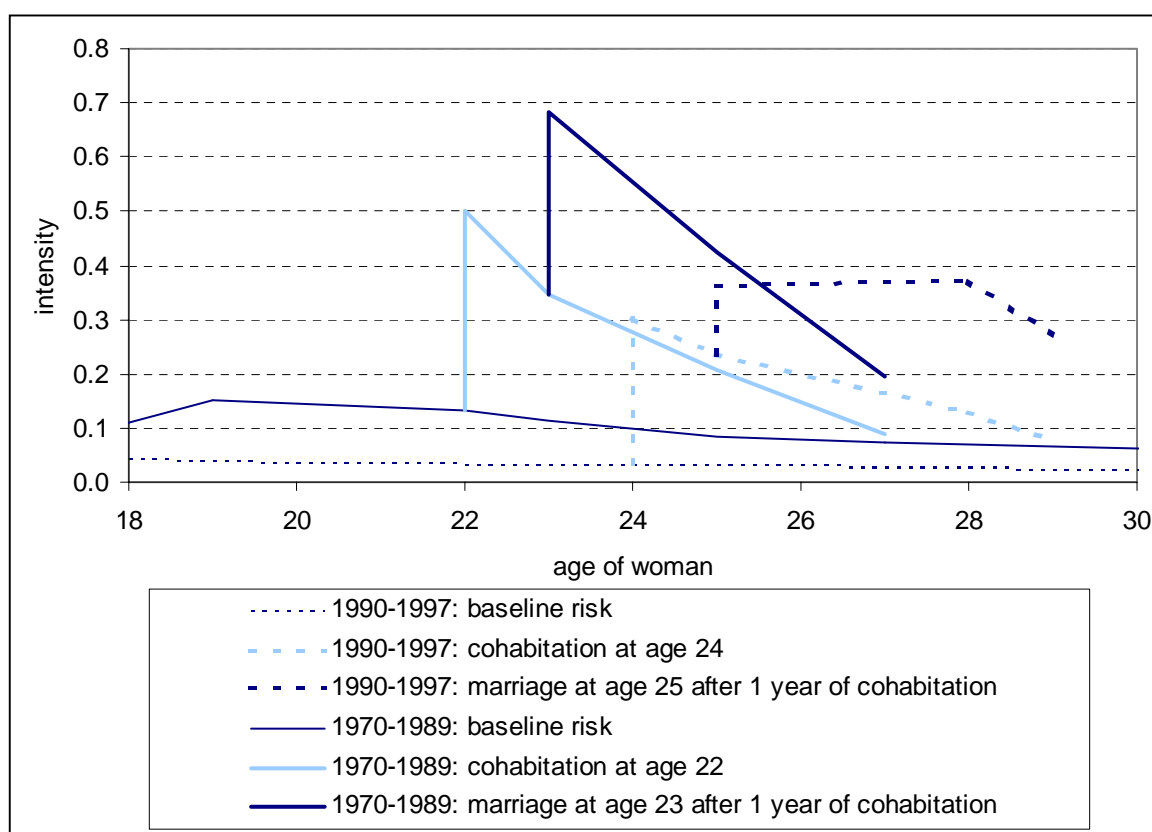
Notes: (1) Event history model with baseline by age of mother; (2) Simulations are based on model in Table 5.11; (3) For simulation as start ages were chosen: for period 1970-1989 age 22 years for cohabitation, age 23 for marriage after cohabitation, for period 1990-1997 age 24 respectively 25 years.

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[30] Ages at particular events (start of cohabitation, marriage) used in these simulations are illustrative for the purpose of a more clear graphical presentation. For example, the time passed since the start of cohabitation to subsequent marriage used in this simulation is 1 year. In reality, according to FFS data, 50% of cohabitation unions which transitioned into marriage lasted less than 10 months while 80% lasted less than 2 years (for further information see Chapter 6).

Figure 5.9 Transition to first birth: Effects of direct marriage, 1970-1989 and 1990-1997.
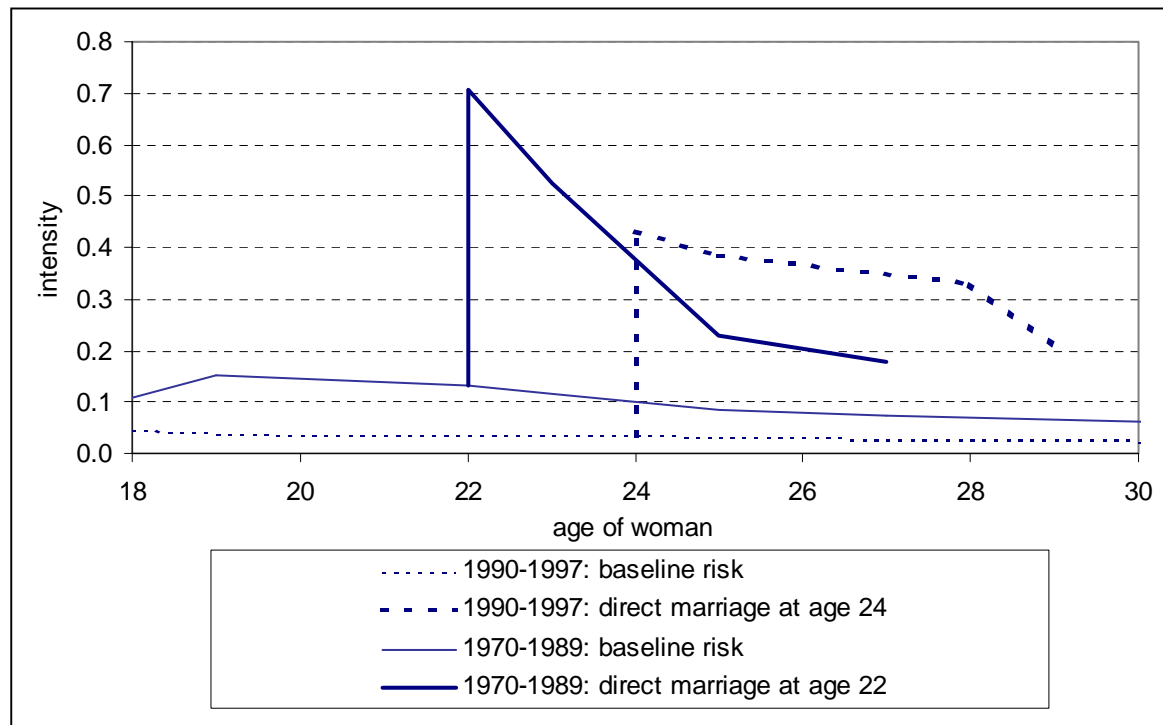
Notes: (1) Event history model with baseline by age of mother; (2) Simulations are based on model in Table 5.11; (3) For simulation, start ages of direct marriage were chosen: for period 1970-1989 age 22, and for period 1990-1997 age 24.

5.4.7   The role of education in the relation of union formation and first birth

In the 1970s and 1980s formation of first union and first childbirth were closely linked together through close timing within a short time interval. In the previous section, the results emphasized the fact that in the 1990s it was *not* only a shift of both events to later stages of a women's life cycle, but also a separation of the occurrence of both events to a longer time interval.

In the present section, the intriguing question is whether there are educational differences in the relation of union formation and the birth of the first child. Therefore, we have added an educational gradient to the investigation of the role of partnership in the process of entry into motherhood. The reasoning for the possible educational differences in the Czech context is based on the following arguments. *First* one concerns the availability and use of contraceptives that differ by educational levels. Women with a higher education have more information and are more able to make use of the higher availability of modern contraceptives in the 1990s (see the hypothesis on '*contraceptive change*' in section 5.2.6).

And, as discussed above in the section on education, they might have a greater motivation to control the timing of first births.

The *second* argument touches the qualitative aspects of the role of partnership (function and satisfaction) with respect to entry into motherhood which might be differentiated by education. Women with higher levels of education tend more often to appreciate a fulfilling partnership between two persons (as expressed in e.g., Mills 2000). These relationships are not defined as children-based relationships in which children are expected to be born very soon. To sum up, both arguments lead to the hypothesis that women with higher educational levels live in childless unions for a longer time after the formation of a union and thus enter into motherhood later (than lesser educated women do).

The results regarding the effect of partnership in the interaction with an educational gradient (see Table 5.18) show *no* educational differences for the 1970s and 1980s. This means that, irrespective of their education, all women were at high risk of first-birth conception after union formation.

On the other hand, in the 1990s among women *not* living in a union, having *no* educational degree tends to raise the probability of becoming a mother. Women with lower educational levels still keep to the previous pattern of a high prevalence of out-of-union conceptions of the first child, which is related to a relatively low use of contraceptives among these women in the 1990s. Furthermore, there are some educational differences for women already living in unions. In both forms of union – cohabitation and marriage – those unions in which the female partner has a higher level of education tend to have lower transition rates to first-child conception. The results provide evidence that women with a higher education form the 'not-child-related' partnerships more often and stay in the 'childless' phase of partnership longer. Meron and Widmer (2002) also present the same finding - that women with higher educational attainment remain in childless unions for a longer time than others - for the case of France.

Table 5.18. Transition to first birth: Interaction between partnership status and education, 1970-1989 and 1990-1997.

	Model IX Period 1970-1989				Model IX Period 1990-1997		
	b	**(SE)**	**exp(b)**		**b**	**(SE)**	**exp(b)**
Baseline(woman's age):							
15	-4.80	(0.34) ***		15	-5.01	(0.79) ***	
slopes:							
15-18	0.92	(0.13) ***		15-18	0.83	(0.28) *	
18-19	0.30	(0.15) *		18-20	-0.03	(0.13)	
19-22	-0.09	(0.05) *		20-25	-0.08	(0.04) *	
22-25	-0.13	(0.05) **		25-28	-0.05	(0.10)	
25-35	-0.12	(0.04) ***		28-35	-0.18	(0.10) *	
Partnership status:							
not living in partnership							
lower education	0.14	(0.12)	1.15		0.41	(0.21) **	1.51
higher education=reference	0.00		1.00		0.00		1.00
in education	-0.69	(0.14) ***	0.50		-0.59	(0.28) **	0.55
cohabitation							
lower education	1.26	(0.15) ***	3.51		1.87	(0.20) ***	6.51
higher education	0.93	(0.20) ***	2.54		1.25	(0.26) ***	3.49
in education	0.40	(0.34)	1.49		0.60	(0.72)	1.83
marriage							
lower education	1.54	(0.11) ***	4.67		2.22	(0.21) ***	9.21
higher education	1.51	(0.12) ***	4.51		1.78	(0.20) ***	5.93
in education	1.42	(0.29) ***	4.15		1.31	(0.67) *	3.71
Log-likelihood of model	-5338.9						
Observations	1709						
Observations in period	1361				806		
First births in period	887				333		

Notes: (1) Method: event history model (generalized Gompertz); dependent variable: transition to first child measured since age 15. (2) Significance: * at 10%; ** at 5%; *** at 1%. Asymptotic standard errors (SE) are in parentheses. (3) Source: FFS Czech Republic 1997.

5.4.8 Early life course experiences

The models investigating the role of the size of the family of origin and the place of residence during childhood also include as controls the variables for women's education, employment status and partnership status.

We hypothesized that women who grow up in large families have a higher propensity to enter motherhood (section 5.2.5). Families with two children have been the most common Czech family size for long time. Women in the sample for our analysis were raised in 8% of cases without any siblings (this is a stable value in all generations), in 49% of cases with one sibling (with a growing proportion in younger cohorts) and in 43% of cases in larger families (with a declining proportion in younger cohorts). There is a positive relation between the number of siblings of respondents and the intensity of entry into motherhood.

Having grown up in urban areas is assumed to reduce the risk of transition to motherhood (for theoretical arguments see section 5.2.5). Results of our analysis reveal a difference between city and rural areas that is especially apparent in the 1990s, with women in urban areas having a lower propensity to enter motherhood. As we hypothesized, this might be due to broader opportunities for paid employment for women or to a generally better economic situation in urban areas in times of economic transition. Furthermore, in urban areas women have better information about and more individual experiences with alternative life styles, which facilitates the transmission of new behavior.

Table 5.19. Transition to first birth: Effect of number of siblings and childhood spent in urban/non-urban area (Selected part of Table 5.12).

	b	(SE)	exp(b)	b	(SE)	exp(b)
Characteristics of parental home:						
No sibling	-0.31	(0.15) **	0.73	-0.05	(0.23)	0.95
One sibling = reference	0.00		1.00	0.00		1.00
Two and more siblings	0.22	(0.07) ***	1.25	0.17	(0.12)	1.18
Childhood spent:						
not in town = reference	0.00		1.00	0.00		1.00
in town (>10 000)	0.00	(0.07)	1.00	-0.24	(0.12) **	0.79

Notes: (1) Method: event history model (generalized Gompertz); dependent variable: transition to first child measured since age 15. (2) Significance: * at 10%; ** at 5%; *** at 1%. Asymptotic standard errors (SE) are in parentheses. (3) Source: FFS Czech Republic 1997.

5.5 Discussion and concluding remarks

In Chapter 5, we investigated the role of a woman's education, employment status and union formation in the process of entry into motherhood. In the interpretation of our results, we stress the importance of the institutional environment (political setting, institutions of the labor market, the education system and public policies) in fertility behavior.

What are the main findings concerning the transition to motherhood in the 1970s-80s?

1. The transition to motherhood was a universal and early step in women's adult lives.

2. There were no important educational differences in the level of childlessness.

3. Women, particularly university graduates, faced high risks of the transition to first birth immediately after their completion of education.

4. There was no differentiation by employment or occupational status.

5. Family formation behavior was characterized by a concentration of *both* events - union formation and first-child conception - into a short period of a woman's life with the most common sequence (around 43% of first children): *conception – formation of union (in most cases by marriage) – birth of first child*. When the female partner was not pregnant at the formation of her first union, she was at high risk of first-birth conception directly afterwards (with no difference by education level).

In the Czech society of the 1970s and 80s, the labor market provided little room for upward and downward mobility (as it was characterized by overall employment, no open unemployment, rigid rules for career advancement and wage grids based mainly on age). In this situation, the timing of work interruptions related to maternity leaves did not have any major influence on the future employment and earnings of a woman, since both of them were institutionally regulated. At the same time, population policy facilitated the reconciliation of childrearing with women's employment by supporting public childcare and developing a system of maternity leaves and benefits. Financial costs of children were alleviated by important family benefits and subsidies. Besides, strong incentives provided by public policies favored a low age at first childbirth. Easier access to housing for couples with children and reduced repayments of newly-wed loans with the birth of each child are examples of such pronatalist policies. As concerns reproductive health policies of the state,

modern contraceptives were never propagated by the state and never properly included in sex education at schools. On the regulated market modern contraceptives remained in short supply. Abortions were accessible; however, abortion committees were less accepting of applications for the interruptions of pregnancies of young childless women.

This combination of, on the one hand, the lack of incentives and weak constraints on the labor market and, on the other hand, incentives provided by population policies, led to universal and early entry into motherhood with little impact of educational differentiation.

What has changed in the transition to motherhood during the 1990s?

1. There were unprecedented changes in age patterns of fertility of first-birth order, in particular the decline of fertility at young ages. Entry into motherhood was postponed to later phases of a woman's life.

2. The *postponement of motherhood* was related not only to the prolongation of years spent in education (as documented in Chapter 3), but also to the prolongation of the period between the end of education and family formation. In particular, university educated women had very low first-birth risks immediately after the end of their studies.

3. *Education differentiation* became more pronounced. Women with primary or lower secondary educations had a higher transition to first birth compared to women with at least an upper-secondary education. In result, there was a higher differentiation in the timing of first birth possibly accompanied also by an increase in the education differentiation of childlessness.

4. The *importance of employment* grew for young women before entry into motherhood. Women with no employment and/or no previous work experience had a lower transition to first birth than employed women. This relation was valid in particular for women with at least an upper-secondary education; however, this relation was not found for women with a primary or lower-secondary education who had higher risks of first birth irrespective of their employment situation.

The study supported theoretical assumptions that changes in opportunity structures and institutional settings induced changes in fertility behavior among young women. The transition to a market economy was characterized by profound and swift changes in the framework conditions of the labor market – such as entry and exit patterns, earnings, and the

value of education or job experience. Women with higher educations made use of the new employment opportunities and career prospects, and their education received greater importance in terms of prestige or income than in the state socialist era. Women seemed to postpone family formation to a time after the consolidation of employment. This means that they tried to acquire some job experience, to make the most of the education they had attained, and to create improved conditions for prospective maternity leave with the right to a period of job protection. Thus, it became more important for women to time motherhood with respect to their employment career, in particular for highly educated women. Furthermore, it then became difficult to reconcile employment and childrearing especially for mothers with children below age 3. Public childcare for children below this age was very limited and the system of parental leave was inflexible (as concerns combining parental leave with part-time work or employment at home). Such prospects play an important role in the childbearing decisions of young women, especially those with a higher education.

In the example of women's education and employment situation, we have shown how previously universal patterns of entry into motherhood became differentiated in the 1990s.

How did the relation of first union formation and first birth change in the 1990s?

1. In the 1990s there was *not only* a shift of both events to a later stage of women's life cycle, but also a prolongation of the time interval between these events.

2. Living in a partnership strongly increased the transition to first birth. Particularly, in the 1990s women not living in any union had a much lower propensity to experience first-child conception compared to women in the same situation in the 1970s-80s. Thus, in the 1990s most children were conceived while their parents-to-be were already living in unions as opposed to in the 1970s-80s when there was a high proportion of out-of-union conceptions. The most common sequence of these events in the 1990s was: *union formation – conception – birth of first child.*

3. The prominent position of marriage as the institutional setting for the birth of the first child changed, since the proportion of children born to cohabiting couples increased.

4. Cohabitation and marriage were different as concerns the conception and birth of the first child. Women living in marriage had significantly higher effects of experiencing a first-child conception. Thus, cohabiting couples were less oriented towards childbearing compared to marital unions.

5. However, there were important educational differences. In the 1990s, women with lower educations were still maintaining the previous pattern of the high prevalence of out-of-union pregnancies. These women experienced union formation and first birth in a shorter time interval than other women did. By contrast, highly educated women tended to have a lower transition to first birth in both forms of unions – cohabitation and marriage. In contrast, women with lower education levels had high risks of first birth after union formation. The results provide evidence that women with a higher education stay in a 'childless' phase of partnership longer.

6. From the data in vital statistics one observes a rising proportion of first children born out of wedlock. In our analysis we distinguished between women not living in any union and cohabiting women. The presented results provide evidence that in the case of first birth, there was *no* rise in the proportion of children born to single mothers out of the total number of first children, but rather there was an increase in the proportion of children born to unmarried mothers living in cohabiting unions.

We conclude that the increasing educational differentiation in the relation of union formation and first birth was related to educational differences pertaining to the use of modern contraceptives and in the values regarding partnership. An interesting finding is that women with higher levels of education experienced the conception and birth of a first child in unions, particularly in marriage, more often than women with lower levels of education did. Therefore, the expectation that, especially for highly educated women, cohabitation might be in this aspect equal to marriage is not supported by these findings (see further discussion in Chapter 7).

To compare these presented findings with a similar study in the Czech context, we use the survey documenting the opinions of young adults with respect to family formation. The survey "Young generation 1997" was conducted in the same year as the Czech FFS. Furthermore, the interviewed group (632 *single* men and 662 *single* women aged 18-30 years) and the questions on the attitudes towards marriage and parenthood make this survey highly interesting for comparative purposes with the results of our analysis done in Chapter 5.

The survey shows that young people still considered children to be a natural part of their lives, a solid majority of them felt that they will have children, while a planned childlessness was negligible (below 4% among men and below 2% among women). In this

survey, women with a university degree or students of universities did not answer the questions regarding children in a less 'family-oriented' way than others. Diverging results were present only in opinion towards the statement that people without children have an empty life. Women with a university education agreed with this statement much less often than other women did (Fialová et al. 2000:81).

Which age did young adults consider as ideal for giving birth to their first child? In the opinion of both men and women the best age was on average 24.5 years with a maximum of 25% of answers situated to age 25[31]. A top border was considered to be ages 26-28 for women. The fact that the answers covered a 10-year period documents diverging opinions on reproductive behavior. Older or more educated women positioned the ideal age for entry into motherhood on average 1 to 2 years higher age than respondents of younger ages or with lower educations. Regarding the postponement of childbearing to older ages, it is interesting to know which age young adults consider as an acceptable age for a woman to give birth to her *last* child. For women it is on average 35 years (with high variability and most of the answers concentrated in the 'round' ages of 30, 35 and 40 years) (Fialová et al. 2000:63-65). To put it into the context of real demographic behavior: in 1997, the average age of women at the birth of their first child was 24[32]. Interestingly, the unprecedented changes in family formation behavior were not completely reflected in the opinions of young adults. The 'ideal age' for entry into motherhood reported by young childless women was comparatively low (on average 24.5). These results suggest that the shifts in opinions regarding the timing of first birth were not the driving force of the postponement of childbearing. Young women still kept on reporting a low 'ideal age' at first birth, but in real life they postponed motherhood to a later stage of life possibly due to their situation in other life domains. When these 18 to 30 years old single women were asked about their plans in the next few years, 80% considered it important to acquire a good job position, 80% to have time for their hobbies and interests and less than 60% to have children (and it was not only a question of age; in the

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[31]   According to survey "Family 1996" (Rodina 1996, 1496 respondents) a woman's ideal age at birth of first child was in average 24 years and the last child should be born at woman's age 32 years. Young married men and women asked in the survey "Populacni klima 1996" (1705 respondents) positioned birth of first child even to younger age of women – 22 years (reviewed in Fialova et al. 2000:25). Both examples of other surveys show the stability and slow changes in the opinions regarding the ideal age at entry into motherhood.

[32]   Furthermore, on basis of the comparison with vital statistics, one notes that real age at entry into motherhood in years after 1997 was higher than the 'ideal' age presented by young adults in the value survey "Young generation 1997".

age group 27-29 years still less than 70% of singles stated having children among their plans for the next few years) (Fialová et al 2000:52-57).

The survey went further and asked a question about which circumstances were important in making a responsible decision to have a child (Table 5.20). Women most often (85%) considered having their own home and economic independence as being important. They highly valued (at 77%) the importance of finishing their education before starting their family formation, since the birth of a child usually means the end of possibilities for further studies. The fourth most common answer was the proven ability to live together with a partner (66%). By contrast, young adults did not relay very much information about parents' support or state support for families (these being considered as important items by only 35% of young adults). This signified a greater feeling of independence and responsibility on the part of young adults at the start of their new family lives.

Table 5.20. Importance of some circumstances for a responsible decision to give birth to a child

Circumstance		Level of importance (in %)					Score
		the least	Less	yes/no	very	the most	
Finished education	M	2.9	5.6	11.8	36.5	43.2	4.12
	W	3.3	6.1	14.0	27.6	49.0	4.13
Economic independence	M	2.3	1.2	6.8	39.7	50.0	4.34
	W	2.8	1.8	8.8	35.1	51.5	4.31
On job experience and position	M	2.9	12.3	39.3	34.9	10.6	3.38
	W	2.6	14.5	39.7	32.7	10.5	3.34
Possibility of independent housing	M	2.6	1.8	5.8	40.7	49.1	4.32
	W	3.7	1.5	9.4	37.1	48.3	4.25
Proven ability of living together	M	7.4	12.3	18.5	31.2	30.6	3.65
	W	8.8	9.8	20.2	30.7	30.5	3.64
Certainty of parents' help	M	6.7	19.4	36.5	26.2	11.2	3.16
	W	5.5	19.8	40.0	24.4	10.3	3.14
Certainty of state help	M	7.9	17.1	39.1	25.0	10.9	3.14
	W	8.8	20.1	37.2	23.0	10.9	3.07

Source: Young generation 1997 (632 single men and 662 single women aged 18-30), Fialová et al 2001:83.

In light of the survey results, Fialová et al. (2000) concluded that the decline in the marriage and birth rates in the 1990s appears to be a pragmatic shift of these important life steps toward an older age.

The importance of finishing an education, economic independence and the proven ability to live together with a partner is in accord with the analysis of the life biographies of young women. In the 1990s, women tended to have their first child some time after the end of education, when they were economically independent (through work) and after some period time in which they had lived with a partner. As documented, this was particularly evident among more highly educated women. But in the 1970s-80s the sequencing of the events from different life careers was not as clearly pronounced as in the 1990s. Therefore, the change in the relations with other life domains (such as education or employment) seems to be the main explanation for the observed delay of entry into motherhood among Czech women.

Against the background of our results, rises the intriguing question of whether low first-birth risks in the 1990s are related to (i) a postponement of entry into motherhood, or to (ii) an increase of childlessness among Czech women[33]. This question remains at present unanswered. One may assess the importance of both effects on the decline of fertility in the 1990s when the cohorts of women born in the 1970s reached the age limit of childbearing. Meanwhile, an interesting finding of our analysis is that women with a higher education seemed to postpone entry into motherhood or to refrain altogether from childbearing more so than women with a lower education did.

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[33]   Realistic estimations of childlessness hover at around 15% for the generations currently in their reproductive period (Sobotka 2003a,b). It seems as though this number will be three or four times higher than the one observed in previous generations, but it is still within the middle range given the current situation in European countries.

CHAPTER 6

First union formation: Timing and type of union

6.1 Introduction

Most of what is known about union formation of young adults in the Czech Republic derives from cross-sectional studies on marriage or cohabitation. In what follows, we investigate in particular the formation of first union – either by marriage or by cohabitation - in a life course perspective. Throughout the 1990s, cohabitation has been on the increase and the appearance of cohabitation in the lives of young adults might have a strong relation to the delay of marriage and childbearing in the 1990s. In this context, it is highly instructive to study the factors that influence decisions about the form of the first union and the duration of non-marital cohabitation. The goal of the study, as formulated in Chapter 2, is to gain insight into these questions:

- In the 1970s and 1980s' period of prevailing patterns of universal and early nuptiality, what was the position of cohabitation as a *first* union of young adults?

- In the 1990s, did cohabitation compensate for the decline in first marriages? Is there a postponement of first union formation in general?

- How long did cohabitation as a first union last before its dissolution or convergence into a marriage?

Two other questions investigate the selection process of starting a *first* union by cohabitation or direct marriage:

- How did the first union of young adults start - by cohabitation or direct marriage? What were the selection processes into direct marriage or into cohabitation?

- How did women's past life experiences (parental divorce, number of siblings and childhood spent in town or village) or the experiences in other life domains (employment career and education) influence the selection process into cohabitation or direct marriage?

Therefore, there are two aspects to be studied. The first one concerns the timing of first union formation. The second one discusses the form of first partnership whether young adults start their first partnership by cohabitation or directly by marriage. The main asset of event history analysis is in the feasibility to respond to such a question as: Are there some individual characteristics of a woman that lead to a higher propensity to marry without previous cohabitation or to form a cohabiting union as a first union?

First, we formulate research hypotheses regarding the impact of women's education and employment characteristics or women's past life experiences on the type and timing of first union formation (section 6.2). The relevant issues in the discussion of first union formation are, among others: in the socialist period the system of newlywed loans and housing distribution gave advantages to young married couples, and during the 1990s the issues stemmed from the sudden increase in the uncertainties that young adults face on the labor market and the opportunities for further studies and a different kind of employment career.

Second, we present methods of competing risk analysis (section 6.3) which we further use in empirical analysis (section 6.4). In particular, we investigate the effects of a woman's education or her situation in the labor market on first union formation (sections 6.4.2 and 6.4.3), because one might suppose that institutional changes in the labor market and education system changed the character of a young adult's life course. Next, since during the 1990s first-child conceptions outside of union became less prevalent, this subsequently resulted in fewer unions being formed with the pressure of anticipated parenthood. Thus, to unravel the relationship of entry into motherhood and first union formation we study the effect of anticipated parenthood on the transition to first union (section 6.4.4). In the following, we look at the influence of women's early life experiences, namely parental divorce, number of siblings and childhood spent in a town or village (section 6.4.4). As a final analysis, we explore how and when cohabiting first unions ended (section 6.4.5). The last part (6.5) compares our results with the findings of other surveys, in particular the opinions regarding marriage and cohabitation.

6.2 Formulation of research hypotheses

6.2.1 First union formation: Cohabitation or marriage?

What are the differences between the first unions started by cohabitation and by direct marriage? From an economic view, cohabitation offers many of the benefits of marriage, including the pooling of resources and the economies of scale that living together provide. However, cohabitation also provides some of the advantages of being single and the long-run financial obligations are relatively low (Oppenheimer 1988:583-584).

By living together while unmarried, couples have time to get to know each other in daily life situations. Thus, cohabitation serves as a trial period and marriage is postponed as a consequence of the emergence of cohabitation. However, as Manting (1994) points out, it is likely that, in the longer term, fewer marriages occur since the relatively unsuccessful matches do not reach the stage of marriage. And some of the cohabiting unions remain as an alternative to marriage.

In view of legal regulations, marriage offers a set of standard rights and obligations described by law. Therefore, cohabitation may be seen as an institution with a lower level of commitment and fewer barriers in the case of a break-up than marriages have. Some couples may be motivated to enter into marriage by practical reasons, for example, by the advantages for marital couples in the family policy system or the pension system and the regulation of rights and obligations towards children.

Concerning value orientation, couples holding more traditional values and attitudes towards family, sex roles and marriage itself marry without having previously cohabited (Clarkberg et al. 1995). On the other hand, people starting their partnership by cohabitation might have a lower commitment to a permanently shared life and wish to be more independent in their relationships.

What is the situation at first union formation among young women in other countries of Europe? Schoenmaeckers and Lodewjickx (1999) compared the union formation of young adults in several European countries since the 1960s. They show that in North- and West-European countries the proportion of women having experienced a partnership by age 24 did not decline across cohorts, but in contrast, the proportion of women having experienced a

marriage by that age declined substantially[1]. In consequence, cohabitation seems to be a substitute for marriage in the lives of young adults at an early stage of their partnership career.

In the Czech context

In the 1970s-80s, cohabitation among young people was a rare event. First, marriages were the more socially accepted form of first partnership of young adults, especially when the female partner was pregnant. Second, the existing system of public policies created a pressure and motivation to get married at young ages – young *married* couples had better chances to get a flat in the system of housing distribution and they were eligible for the newlywed loans guaranteed by the state (for a description of these policies, see Chapter 3). Therefore, there were only scarce possibilities for housing for unmarried young couples.

In the 1990s, the public policies preferring marital unions (as the newlywed loans or the housing distribution system) were changed or abandoned. Furthermore, the institutional changes in the educational system (prolongation of the years spent in education and wider choice in educational path), the position of young adults on the labor market (unemployment or precarious jobs, the difficulties of finding a stable job) resulted in the postponement of union formation. The increase in contraceptive use (see Chapter 5) led to fewer first-child conceptions out of union. Consequently, there were fewer direct marriages following a pregnancy of the female partner.

It is supposed that *in the 1970s and 1980s women were entering the first partnership at young ages and mostly by direct marriage. In the 1990s, women postponed entry into their first partnership; they did so less by direct marriage. Cohabitation as a first partnership was preferred more often than in the preceding period.*

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[1] Schoenmaeckers and Lodewjickx (1999) did the international and intergenerational comparison on the basis of the Fertility and Family Surveys in several European countries. For example, among French women aged 45-49 at the interview, 80%% experienced a partnership and 65%% entered a marriage before age 24 compared to women aged 25-29 at the interview who experienced a partnership in the same proportion (80%%), but only 20%% experienced a marriage by the age of 24. A similar development in patterns of union formation of young adults can be seen in Austria, the Netherlands, Norway and Finland (Schoenmaeckers and Lodewjickx 1999:222). Similarly, in individual country studies on first union formation, this change is clearly evident: For instance in France, women from an older generation, born from 1949-1953, started their first union in 75%% of cases by direct marriage, at odds with women from generation 1964-68 who has done so only in 25%% of cases (in both cases this concerns unions before the age of 25) (Toulemon 1997). In Finland, whereas only about one-tenth of the first unions of women born between 1938 and 1942 began as consensual unions, after the cohort of 1962 only one-tenth started as formal marriages (Finnas 1995).

Scheme 1: Summary of hypothesis: first union formation – cohabitation or direct marriage in historical time.

	Historical time	
	1970s-80s	**1990s**
Union formation	+	-
Start by:		
Cohabitation	-	++
Marriage	++	-

Note: (1) A minus sign (-) indicates lower risks. (2) A plus sign (+) indicates higher risks. (3) A zero (0) indicates not significant impact. (4) Signs indicate relative relation in transition to cohabitation or transition to marriage separately.

6.2.2 Women's education and first union formation

Effect of participation in education

Women enrolled in education have a lower tendency to start the process of family formation – to give birth to their first child (as documented in Chapter 5) or to enter their first union. This is because of the fact that students have fewer financial resources, less time for a relationship and are less inclined to commit themselves to marriage (Hoem 1986). Another explanation points to the societal norm that young people still enrolled in education should not marry (Blossfeld and Huinink 1991). As a consequence, school enrollment decreases the rate of union formation and it might have greater effects on marriage than on cohabitation. This is explained in that cohabitation, requiring less financial commitment and possibly fewer couple-oriented activities, is more compatible with being a student (Thornton et al. 1995, Berrington and Diamond 2000).

Therefore, it is postulated that *women participating in education have low cohabitation, marriage and union formation risks.*

Effect of women's educational attainment

The theoretical framework links education and union formation not only through the incompatibility of educational and marital/cohabiting roles – the effect of *enrollment in education* – but also through the level of education attainment (Blossfeld and Huinink 1991, Hoem 1986). For example, in the collection of international studies in Blossfeld (1995), the effect of female education attainment is analyzed net of participation in education. The results reveal that marriage was strongly retarded for highly educated women in Italy, while

in France and the Netherlands marriage was slightly delayed and in West Germany and Hungary education attainment had no effect on entry into marriage. The effect of education on first union formation is therefore dependent on the contextual factors in society – the norms regarding marriage and the 'ideal age' at marriage, the status of never married persons, the system of social policies, gender relations in labor market activities and the gender division of domestic labor in marital unions in comparison with cohabiting unions, etc. These factors, exhibiting very different features throughout the European context, had influence on the differences in the timing and type of first unions not only between countries, but also on diverging patterns of the effect of women's education.

First, several life course studies (Blossfeld and Huinink 1991, Blossfeld and Jaenichen 1992, Hoem 1986, Liefbroer 1991) have found that the level of education did not significantly delay the timing of marriage, provided that the dynamic measure of the education enrollment was included in the model. Women with higher education marry later only because of longer participation in the education system. This means that education influences union formation only via *different lengths of enrollment in education.*

Second, according to some findings (Bracher and Santow 1998), the role of educational attainment is similar for the timing of first cohabitation, its subsequent progression to marriage or in timing of first marriage without previous cohabitation. Once women with a high educational degree finish their education, they are quick in all transitions to union formation. This might be called a *'catch-up' effect.* In some societies the role is played by strong norms regarding the 'ideal' age at which woman should enter marriage or form her first union. Since women with higher educational levels leave the education system later, they might already approach (or have passed) this 'ideal' age at the end of their studies.

Third, in the view of neoclassical economic theories, a high level of *women's economic independence* reduces women's gains from marriage and thus a high level of education attainment should lead to a lower marriage rate. The results of Manting (1994) point in this direction. Highly educated Dutch women had a much lower risk of marriage even after controlling for education enrolment. Moreover, higher education hampers entry into marriage, but it stimulates entry into cohabitation. What is the reasoning for the relation between higher education and the higher transition to cohabitation? The lower opportunity costs of unmarried cohabitation would make this living arrangement especially attractive for better-educated women. Besides, higher educated young adults might attach a greater value to independence and autonomy than young adults with low educational attainment, so they

marry later and start their partnership career by cohabitation (Liefbroer 1991). Findings for France (Leridon and Toulemon 1995), and the Netherlands (Liefbroer 1991, Manting 1994) seem to support this conclusion.

Fourth, contrary to Becker's (1993) economic theory of marriage, other findings report that more educated women do not marry less often (Berrington and Diamond 2000, Oppenheimer 1995). Berrington and Diamond (2000:148) suggested that *"there are social, psychological and economic gains to marriage that are not captured within an economic theory of marriage based on a traditional sexual division of labor."* With the increasing labor force participation of women and the existence of two-earner families, women's education and earning potential are as important as the earning possibilities of her male partner – therefore, *the role of female and male characteristics are similar* in the process of union formation. As concerns cohabiting unions, they often involve a shorter-term commitment and less investment than marriage. Thus, less educated individuals tend to substitute cohabitation for marriage, while those with greater school accumulation are more likely to marry (Thornton et al. 1995).

Scheme 2: Summary of hypothesis: women's education and union formation

	Marriage	**Cohabitation**
Participation in education	--	-
"different length of enrollment in education"		
Low level of education	0	0
Middle level of education	0	0
High level of education	0	0
"catch-up effect"		
Low level of education	0	0
Middle level of education	0	0
High level of education	+	+
"rising women's economic independence"		
Low level of education	+	-
Middle level of education	0	0
High level of education	-	+
"the role of female and male characteristics are similar"		
Low level of education	-	+
Middle level of education	0	0
High level of education	+	-

Note: (1) A minus sign (-) indicates lower risks. (2) A plus sign (+) indicates higher risks. (3) A zero (0) indicates not significant impact. (4) Signs indicate relative relation in transition to cohabitation or transition to marriage separately.

In the Czech context

In the 1970s-80s, the role played by the public policies giving preference to marital unions was thought to be strong and there is no justification to expect that certain educational group of young women would be influenced in different ways than others. All women were entering their first unions at young ages, after finishing education and mostly by marriage. As a result, the only possible difference seems to be the *'catch-up effect'* for women with higher levels of education, who just after the end of schooling were in the age of high nuptiality considered as ideal for family formation. Therefore, the intensity of marriage among them might be even higher.

In the 1990s, was there any group of women exhibiting distinct behavior in relation to formation of marital or cohabiting unions? We present two possible explanations for the relationship of education and type of union formation among Czech women.

The first hypothesis is based on the theoretical consideration that young people had more space for the fulfillment of individual goals and lifestyles; for traveling, education and self-realization in work (as expressed in Rabušic 1996, 1997). These possibilities were accessible especially for young adults with higher education and economic resources. Therefore, one might conclude that people with higher education were more *confronted with the life-styles* of young people in Western Europe and had better financial resources to make the cohabitation with their partner possible. As a result, it assumes that the changing partnership arrangements of young Czech adults – in this case pronounced in the spread of cohabitation as the first step of union formation – are diffused from highly educated to lower educated women. Furthermore, women willing to have more equal gender roles in partnership might be more inclined to start their relationship by cohabitation, since traditionally the division of labor in marriages was still strongly gender divided. This line of hypotheses would be supported if the *transition to cohabitation for women with a higher education were higher than among women with a lower education.*

The second hypothesis stresses the role of the *economic hardship* that young people in the Czech society faced. Women and men with low education, as is shown in some family surveys (Kuchařová et al. 1997, Fialová et al. 2000), have very positive attitudes toward marriage. They are willing to enter into marriage and preferably at an early age. On the other hand, they might not have enough economic resources to do so at the time they would like to. Young people with low education levels face higher uncertainties on the labor market -

difficulties with finding a stable job, higher risks of unemployment, etc. – and this might be the objection to marriage. This reasoning leads to the conclusion that *women's lower education is connected to comparatively lower marriage intensity.*

6.2.3 Women's employment and first union formation

This part of the study examines the role of women's employment in the formation of first union (either as marital or cohabiting union). The theoretical and empirical studies concerning the effect of women's employment status on entry into cohabitation or marriage are quite rare. For instance, economists in their theoretical background (see Chapter 4) have tended not to single out cohabitation for specific attention and were interested only in marriages.

In developed societies, marriage rates have fallen while the participation of women in the labor force has increased. The aggregate level observation leads to the suggestion that economic independence reduces women's incentives to marry. At the individual level this argument proposes that the increased economic independence of women reduces gains from marriage for women and represents higher opportunity costs of marriages with a traditional division of roles (Becker 1993). Thus, employed women are supposed to have a lower transition to marriage. However, as Oppenheimer (1988:576) points out, it might only be the case of marriage markets where *'highly differentiated gender roles [are] central to marriage as an institution'*.

Oppenheimer (1988) draws another scenario of when women's economic roles resemble those of men and working careers of both men and women had an important impact on marriage timing. This suggests that Becker's specialization and trading model of marriage (Becker 1993) may be outdated. Increasing uncertainty in an industrial society – lying in the nature of adult economic roles and in the timing of the transition to a stable work career – influences the postponement of marriage formation. And the increasing prevalence of cohabitation among younger people may represent one type of response to the increasing uncertainties at an earlier adult age (Oppenheimer 1988:583). Cohabitation may provide an attractive alternative for those who are in a partnership but lack the economic well-being required for marriage or lack the occupational stability that would make them attractive candidates for the long-term contract that marriage implies. Thus, women who are economically unstable are likely to cohabit (Clarkberg 1999).

On the other hand, economic independence might enhance the union chances both by cohabitation and marriage. According to Bracher and Santow (1998:275) it could be that employed women have extended social contacts; or that these women are more attractive as partners because they would not be dependent on their partners; or because in current society economic independence signals some sort of progression to adulthood. In the societies with a high participation of women in the labor force, women first establish their positions on the labor market before they form their first union. For example, Ekert-Jaffe and Solaz (2000) show for French women that the first job generally comes before the first union and that unemployment or having an insecure job for women delays first couple formation (for French women the first union starts mostly by cohabitation). The importance of stable employment for both forms of union formation is documented in e.g. Bracher and Santow (1998) for Sweden or Sweeney (2002) for the United States.

In the Czech context

While investigating the Czech experience, one has to take into account the specific position of women on the labor market in two contexts – a centrally-planned economy and the transition to a market economy.

The same relations are expected for marriage – representing a long-term commitment in the lives of young adults – as for the entry into motherhood (Chapter 5). During state socialism, women's employment status only had a limited effect on marriage formation while in the 1990s, a stable position on the labor market before the entry into a marital union grew in importance. Uncertainty in employment (no work and/or no experience) is thought to lower the risk of marriage. Concerning cohabitation, women with unstable employment positions (no work experience, short-period or part-time employment) did not necessarily have a lower risk of entry into cohabitation, since cohabitation could be an alternative form of union formation for young people lacking economic stability.

To sum up, the expectation is that *women in unstable employment situations (no work and/or no experience, part-time or precarious jobs) formed a marriage at a lower rate than employed women did, but the same relation was not necessarily true for entry into cohabitation.*

Scheme 3: Summary of hypothesis: women's employment career and union formation.

	Cohabitation	**Marriage**
In school	-	--
No work, no experience	0	-
No work, some experience	0	0
Full-time employment	0	+
Part-time employment, precarious jobs	0	-

Note: (1) A minus sign (-) indicates lower risks. (2) A plus sign (+) indicates higher risks. (3) A zero (0) indicates not significant impact. (4) Signs indicate relative relation in transition to cohabitation or transition to marriage separately.

6.2.4 Effect of pregnancy and birth of first child

Anticipated parenthood greatly increases the rates of union formation both by cohabitation or direct marriage. The fact that a woman not living in any union is pregnant may have different effects on the entry into cohabitation or direct marriage. In the case of cohabitation the stimulant effect of pregnancy is smaller. It might be caused by the fact that single persons expecting the birth of their child get married directly since marriage is considered more appropriate for childbearing. Moreover, the duration of pregnancy plays a different role in the formation of union by direct marriage or by cohabitation. In the earlier months of pregnancy couples are prone to marry directly and in later months to cohabit. These patterns have been found previously, for instance, in Great Britain (Berrington and Diamond 2000). These results make substantive sense given that it takes time for pregnancy to be recognized and that women are unlikely to celebrate a wedding in the late stages of pregnancy.

The hypothesis is *that the effect of pregnancy on entry into marriage was very high in the second trimester of pregnancy, then declined. For cohabitation these effects were smaller with a peak at the later phase of pregnancy. After birth of the child the effects were small, both on marriage and cohabitation.*

Scheme 4: Summary of hypothesis: pregnancy/birth of first child and union formation.

	Cohabitation	**Marriage**
Pregnancy:		
Early phase	+	++
Later phase	+	+
After first childbirth	0	0

Note: (1) A minus sign (-) indicates lower risks. (2) A plus sign (+) indicates higher risks. (3) A zero (0) indicates not significant impact. (4) Signs indicate relative relation in transition to cohabitation or transition to marriage separately.

6.2.5 Early life course experiences influencing first union formation

Being brought up in a small or large family

If a woman originates from quite big family – measured by number of siblings – she might be more prone to marry directly, because she has grown up in the environment that favors more marital and family ties. Similarly, women who have more siblings also bear more children and earlier (see Chapter 5), and consequently enter marriage at younger ages. The families with more children probably live more often in small towns or villages that have a more traditional environment, and in this environment young people tend to form marital unions at an earlier age. The theoretical notions predict that *women who were brought up in a big family will have a higher marriage rate but a lower cohabitation rate.*

Growing up in a big town or in a small town/village

The geographical region of residence is found to be more important in affecting the decision to cohabit rather than to marry directly (Berrington and Diamond 2000). Thus, new demographic behavior – cohabitation as the form of first union certainly belongs to this group – begins to emerge in large cities, while small cities or the countryside lag behind.

It is expected that *a woman, who spent her childhood in a bigger town, is more prone to start her first partnership by cohabitation and less prone to marry directly in comparison with woman who grew up in a small town or village.*

Experience of parental divorce

The divorce of one's parents in childhood strongly influences the behavior of an individual at the adult age. An economic interpretation of the effects of parental divorce focuses on the deterioration of the financial situation in families following divorce. Such family circumstances might lead to an early marriage (Michael and Tuma 1985). It might be that the experience of parental union disruption might force the individuals in adult ages to think over these decisions and to start a partnership that demands less engagement. Because their parental home was arguably dysfunctional, young people tend to leave this environment earlier and not only for marriage but also to live alone or to live in a cohabiting union. In empirical studies, there is evidence that women who lived through the experience of parental divorce are more prone to start their own first partnership at young ages and that they have an increased tendency to cohabit (Thornton 1991, Manting 1994, Berrington and Diamond

2000). The hypothesis derived from above is that *women experiencing parental divorce entered their first union at an early age and had a higher tendency to cohabit.*

Leaving the parental home

Berrington and Diamond (2000) highlighted the importance of the transitions in other domains such as leaving the parental home in encouraging cohabitation. They argue that the move away from the parental home, and the type of living arrangements of young adults in such a situation, may encourage entry into cohabitation. Since they have a housing unit by their own, they have a better opportunity to move into cohabitation (Liefbroer 1991). On the other hand, living away from family in early adulthood might delay entry into marriage by providing young people with independence and autonomy, which they would have to refrain from partly when marrying (Goldscheider and Waite 1987).

In the Czech environment the issue of leaving the parental home before the formation of one's own family was largely linked with the housing distribution system in which advantage was given to married couples with children. Because of the insufficiency of affordable housing for single people, the proportion of people leaving the parental home before the formation of their own family was very low. In socialist times, young people who did not reside with their parents anymore, lived in accommodation for single people (belonging to factories, universities, etc). Mostly, such accommodation was not suitable for cohabiting couples and young people living outside the parental home did not necessarily have a higher transition to cohabitation. It is supposed that *those women living away from the parental home for a certain time are less likely to marry directly than others are.*

Scheme 5: Summary of hypothesis: past life course experiences and union formation

	Cohabitation	**Marriage**	**First union**
Family of origin: Small family	+	-	-
Living independently: Yes	0	-	-
Parental divorce: Yes	+	0	+
Place of residence: Big town	+	-	-

Note: (1) A minus sign (-) indicates lower risks. (2) A plus sign (+) indicates higher risks. (3) A zero (0) indicates not significant impact. (4) Signs indicate relative relation in transition to cohabitation or transition to marriage separately.

6.2.6 Outcome of cohabiting unions: marriage or dissolution?

In cases when first union is started by cohabitation, an important question is whether and when young people convert their cohabitation into marriage. In this section we examine the factors determining the outcome of cohabiting first partnerships – either subsequent marriage or dissolution.

Duration of cohabiting union

The duration of a cohabiting union is one of many important determinants in the transition to subsequent marriage. In general, if many cohabiting first unions are converted into marriage after a short period then one might suppose that cohabitation is taken only as a temporary phase before marriage and not as a permanent type of living arrangement. In Czech society which has a high preference for marital unions of young adults it is expected that *the tendency to get married is very high early after the start of cohabitation.*

Calendar time

As cohabitation becomes increasingly common and accepted, one might expect the meaning of this arrangement to change. In some countries in Europe (e.g. Sweden), as cohabitation became more prevalent, it moved from having a deviant status to becoming an acceptable alternative to marriage. Likewise there is a trend towards greater equality of the obligations and rights of cohabiting couples relative to married ones – expressed in the changes of family law, the formulation of family policies, etc. The expectation is that *the inclination to marry after cohabitation declines with calendar time.*

Women's age at the start of cohabitation

The age at which women entered cohabitation may well be important. Young cohabiting women may be less 'ready' to marry and to bind themselves to long term decisions. The expectation is that *women who started to cohabit at a young age had a lower probability to marry, but a higher probability of union disruption compared to women who entered cohabitation at an older age.*

Expecting the birth of a child

Pregnancy might be a key factor promoting marriage among cohabiting women. As in the case of direct marriage, many women view the arrival of a child as an important motivation to marry. Thus, *a pregnancy leads to higher marriage rates and lower disruption rates among cohabiting couples.*

Women's education

Berrington and Diamond (2000) suggested that there are social class and educational differentials in the likelihood of female cohabiters experiencing marriage and thus this suggests that the meaning of cohabitation varies according to socioeconomic background. For example, in Finland consensual union as a permanent lifestyle is generally connected to a low level of women's education (Finnas 1995). This differs from Dutch cohabiting women with lower education levels who have a higher propensity to marry than women with higher education (Manting 1994). The theoretical discussion is similar as in the case of the decision between cohabitation and marriage at first union formation (sections 6.2.2 and 6.2.3).

Early life course experiences

It is supposed that *women who left the parental home already some time before the start of cohabitation, women who grew up in a small family or women who experienced parental divorce had lower marriage rates than other women.* The theoretical reasoning is similar to the discussion of the effect of early life course experiences on the type of first union (section 6.2.5).

Scheme 6: Summary of hypotheses: marriage or dissolution in cohabiting first union.

	Marriage	**Dissolution**
Duration of cohabiting union:		
Early phase	++	+
Later phase	-	0
Conception of child:		
Yes	++	--
Age of woman at start of cohabitation:		
Young	-	+
Older	+	-
Leaving parental home before first union:		
Yes	-	-
None or one sibling:		
Yes	-	-
Parental divorce in childhood:		
Yes	-	+
Place of residence in childhood:		
Big town	-	0
Calendar time:		
1970-1989	++	0
1990-1997	0	0

Note: (1) A minus sign (-) indicates lower risks. (2) A plus sign (+) indicates higher risks. (3) A zero (0) indicates not significant impact. (4) Signs indicate relative relation in transition to cohabitation or transition to marriage separately.

6.3 Method and covariates in analysis

6.3.1 Method discussion: Framework of competing risks analysis

Using a life course approach one can identify family background and current life experiences which affect both the *timing* and *type* of first-partnership formation. To achieve this, we apply hazard regression techniques to model the competing risks of first union formation – either by cohabitation or by direct marriage – as a function of an underlying risk modified by a vector of covariates. Liefbroer (1991), Manting (1994) and Berrington and Diamond (2000) showed that competing risk analysis is particularly important in the study of union formation, where underlying causes may differ in the transitions to cohabitation and direct marriage (meaning marriage without previous cohabitation). Women not living in any union are at risk of two competing events: cohabitation or marriage. At the moment women enter into a first union by marriage, they are not exposed to the risk of starting a first union by unmarried cohabitation. Similarly, women forming a first union by cohabitation are no longer exposed to the risk of marriage not preceded by unmarried cohabitation. In cases, where neither cohabitation nor marriage is observed, a woman's life history is censored by the interview date. Two separate models form a competing risk analysis.

In the first part, we analyze the process of first union formation:

1. The observed event is direct marriage, the competing event is the start of cohabitation.
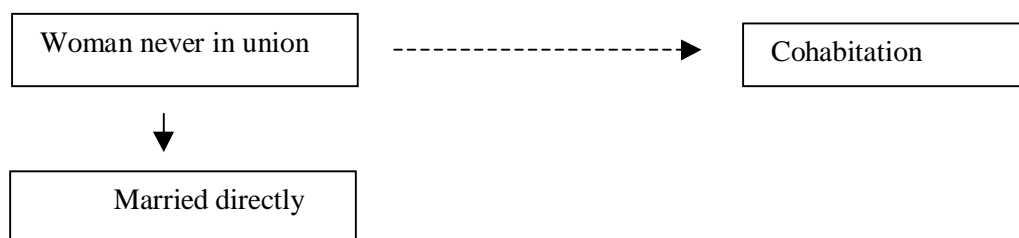
2. The observed event is cohabitation, the competing event is direct marriage.
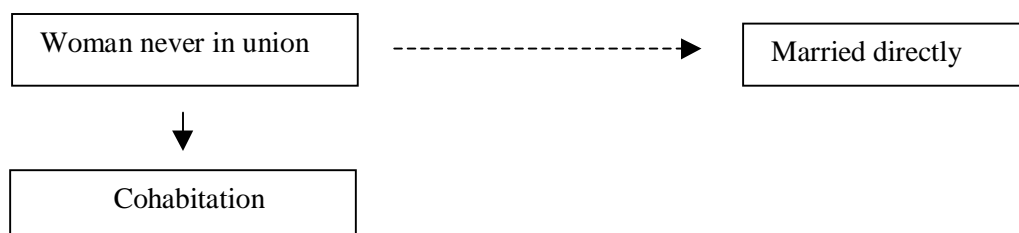
The clock, measuring time in the process of first union formation, starts at age 15 and stops at the moment a union is formed (by cohabitation or direct marriage), or at the moment of the interview. Mathematical representation of the model with two competing hazard risks is written as follows (on the example of first union formation):

- entry into cohabitation: $\ln \mu_{1i}(t) = y_1(t) + \sum_j \beta_{1j} x_{ij}(t)$

and

- marriage formation: $\ln \mu_{2i}(t) = y_2(t) + \sum_j \beta_{2j} x_{ij}(t)$

where x_{ij} are covariates common for both processes but with different parameters β_1 and β_2 resulting from the model estimation. Although both events involve the same covariates, each of the two events has an independent set of parameters that determines its occurrence. $y_1(t)$ and $y_2(t)$ are baseline hazard functions by age and t is time passed since the 15th birthday. The baseline hazard is a piece-wise linear spline in the log-hazards (generalized Gompertz).

In the second part, we examine the subsequent development of cohabitation as the first union of women.

1. The observed event is subsequent marriage, the competing event is dissolution of cohabitation.
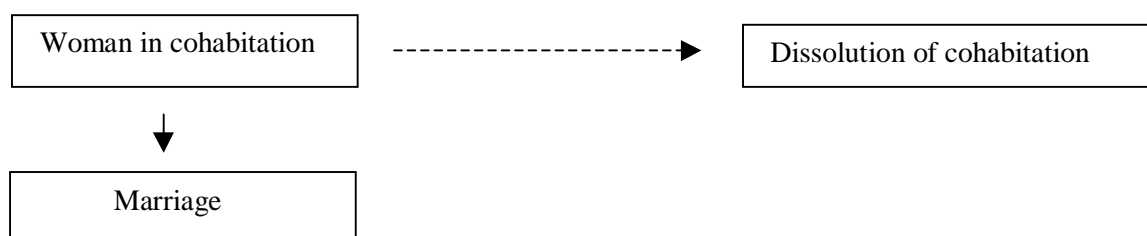
2. The observed event is dissolution of cohabitation, the competing event is marriage.
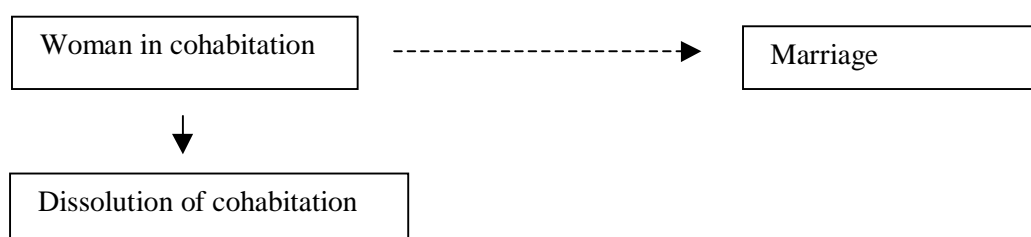
The clock measuring the personal life starts at the moment a woman begins to cohabit. After that moment she runs the risk of either subsequent marriage or dissolution of cohabitation. The period may therefore end either by marriage or by dissolution, or be cut short at the interview date.

6.3.2 Covariates in analysis

After excluding 28 cases, we work with 1,707 female life histories[2]. There were a total of 1,333 first unions observed between 1970 and 1997 – 418 cohabiting unions and 915 marriages without previous cohabitation (Table 6.2), 364 female life histories (22%) were censored at the end of the observation period. The average length of the observation period – in which women did not live in any union – was 5.6 years after age 15.

Some covariates, such as the year of birth of the woman, the number of siblings, whether childhood was spent in town or in a village, and the experience of parental divorce are *fixed* for the whole observation period for one woman. Others, such as participation in education, educational degree obtained, work (in)activity, calendar period, pregnancy or childbirth all *vary with time* (meaning with a women's age). All events in the life history were reported in both month and year. The occurrence of an event was attributed to the middle of the respective month. The period of a woman's life from age 15 until the first union formation or censoring was then divided into *spells* in which values of all time-varying covariates were constant. The following tables, Table 6.1 and Table 6.2, present the measures of exposure within categories of the covariates included in the models for the analysis of first union formation. Table 6.1 presents the composition of characteristics of the sample at the level of the *individual*. Table 6.2 shows the numbers and proportions of the *spells* with exposures to the particular covariate category.

Education

The variable on *education attainment* was constructed as a categorical variable derived from the education level attained. 'No degree' included parts of female histories in which respondents had a primary school education, apprenticeship or vocational education (without an upper-secondary leaving exam - *maturita*). 'Secondary school degree' corresponded to a completed upper-secondary education (with *maturita*). 'University degree' included university graduates. 'In education' was assigned only to those in full-time education[3]. Part-time education was not taken as a period in education, but the degree gained in the studies was considered in the variable on educational attainment.

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[2]   We excluded 28 female records. In 4 cases women entered their first union before the age of 15 and in 24 cases women did not reach age 15 before April, 1997, at the date of censoring the observations.

[3]   Periods 'out of education' were distinguished only if longer than 12 months; if they were shorter, this part of the female life history was treated as 'in education'.

Employment status

Current (in)activity on the labor market divided the life histories of women into periods of 'full-time employment,' 'part-time or short employment'[4] (this was a small, non-homogenous category) and 'no work'. The periods 'no work' were then further divided into two situations – women who had never been employed ('no work, no experience') and women who had already been employed ('no work, some experience').

Table 6.1. Composition of the sample for the multivariate analysis of first union formation, level of observation.

	Women		Cohabitation		Direct marriage	
	N	**%**	**N**	**%**	**N**	**%**
Observations	1707	100%	418	100%	915	100%
Education at date of interview						
In school	166	10%	1	0%	1	0%
Low	766	45%	221	53%	448	49%
Middle	653	38%	161	39%	391	43%
High	122	7%	35	8%	75	8%
Calendar time of first union formation						
1970-1989	953	56%	231	55%	722	79%
1990-1997	410	24%	187	45%	193	21%
Never in union	344	20%	--	--	--	--
Siblings						
0	134	8%	32	8%	63	7%
1	814	48%	194	46%	415	45%
2+	759	44%	192	46%	437	48%
Residence at age 15						
Small town or village	794	53%	166	40%	487	53%
Big town	913	47%	252	60%	428	47%
Divorce of parents before age 18						
No	1462	86%	334	80%	810	89%
Yes	245	14%	84	20%	105	11%
Leave parental home before first union formation						
No	--	--	315	75%	837	91%
Yes	--	--	103	25%	78	9%
Pregnancy before first union formation						
No	--	--	350	84%	436	48%
Yes	--	--	68	16%	479	52%

Notes: (1) Own calculations, FFS Czech Republic 1997.

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[4] Short employment includes periods in which each employment is less than 2 months long.

Pregnancy and birth of first child

The date (in the month and year) of childbirth was backdated by 9 months to obtain an approximate date of conception of the child. This resulted in 16% of cohabitations and 52% of direct marriages being preceded by the start of pregnancy. In models, we used division points at the 3rd and 6th months of pregnancy, another at the birth and the last at the child's age of 3 months to analyze different effects of pregnancy and first childbirth on union formation.

Table 6.2. Composition of the sample for the multivariate analysis of first union formation, level of spells.

	First union formation	
Total number of spells	100%	6748
	Exposures	
Time-varying covariates	**%**	**N**
Educational degree obtained:		
no degree	34%	2294
complete secondary degree	25%	1687
university degree	2%	135
in education, no degree	34%	2294
in education, secondary or higher degree	5%	337
Current (in)activity on labor market:		
full-time	37%	2497
part-time or serie of short employment	4%	270
no work, no experience	19%	1282
no work, in education	40%	2699
no work, some experience	4%	297
	Exposures	
Time-constant covariates	**%**	**N**
Characteristics of parental home:		
No sibling	8%	540
One sibling	47%	3172
Two and more siblings	45%	3037
Childhood spent in village or small town	47%	3172
Childhood spent in town (>10 000)	53%	3576
Sample size:	**N**	
Total occurrences – first unions	1333	78%
Total occurrences – cohabitation	418	24%
Total occurrences – direct marriages	915	54%
Total number of individuals in data set	1707	100%
Total number of spells with time-varying covariates	6748	

Notes: (1) Own calculations from sample for event history analysis, FFS Czech Republic 1997.

6.4 Empirical findings

6.4.1 Age patterns and types of first union formation

There are two questions of interest: First, in the 1970s-80s in the time of prevailing patterns of universal and early nuptiality, what was the position of cohabitation as a *first* union of young adults? Second, in the 1990s, did cohabitation compensate for the decline in first marriages? In Chapter 2, one observed a clear decline and postponement of the nuptiality of singles in the 1990s, but the question is whether there was a postponement of first union formation in general. In Figure 6.2, older generations (born 1952 to 1969) reveal very constant patterns of early and universal entry into first union: at age 19, around 30% of women had already lived in a partnership and by age 25, only 10% had not yet done so. The proportion of women who had never lived in a union rose in the generations born after 1975. However, the intergenerational changes are not of such a magnitude as in the case of first births (see Chapter 5).

Figure 6.2 Transition to first union in selected generations.
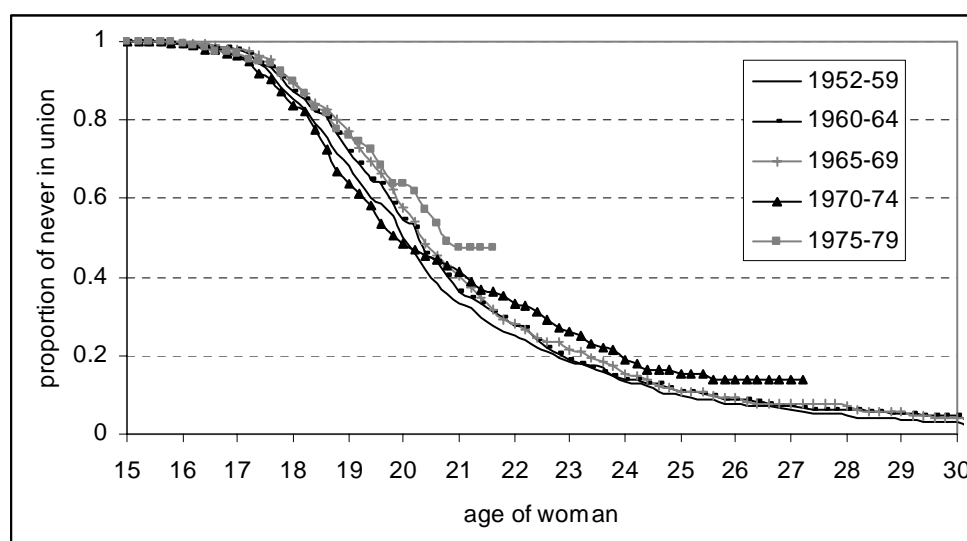
Notes: (1) Method: life table; event: transition to first union measured since age 15. (2) Own calculations, FFS Czech Republic 1997.

In the next step, the transition to first union is analyzed separately for cohabitation and direct marriage (Figure 6.3). It is evident that the transition rates to cohabitation were lower in all age groups. While the peak of the intensity of direct marriage was around age 20, for cohabitation it was later – around age 25. Across the generations, the intensity of

direct marriages declined, in particular in generations born after 1970. By contrast, the probability of entering a cohabiting union was stable or slightly increasing across generations (Figure 6.4).

Figure 6.3 Transition to first union by cohabitation or direct marriage, 1970-97.
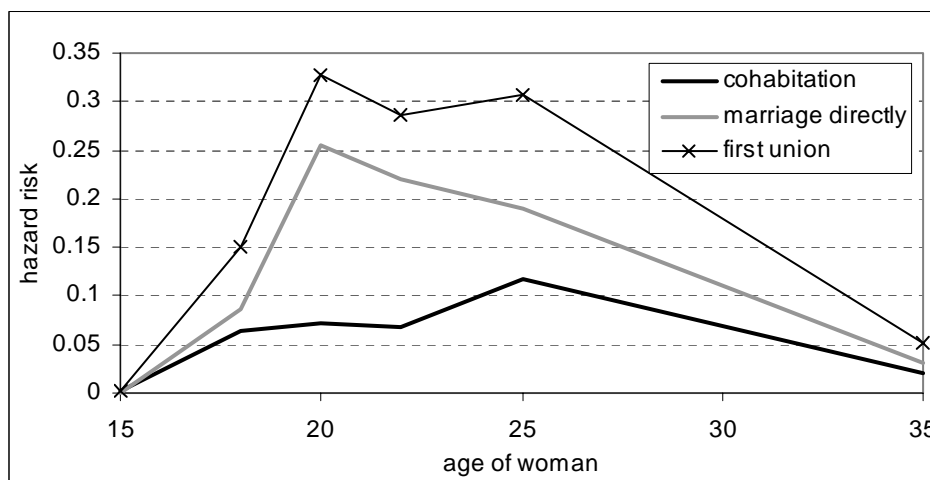
Notes: (1) Method: event history model (generalized Gompertz); dependent variable: transition to first union measured since age 15. (2) Own calculations, FFS Czech Republic 1997. (3) Graph constructed on the basis of the model with only one covariate - women's age (Table B1 in Appendix B).

Figure 6.4 Transition to first union by cohabitation or by direct marriage in selected generations.
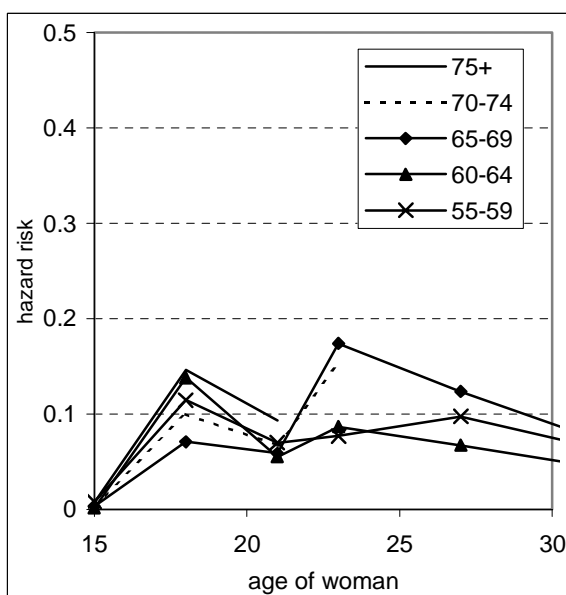
a) cohabitation   b) direct marriage
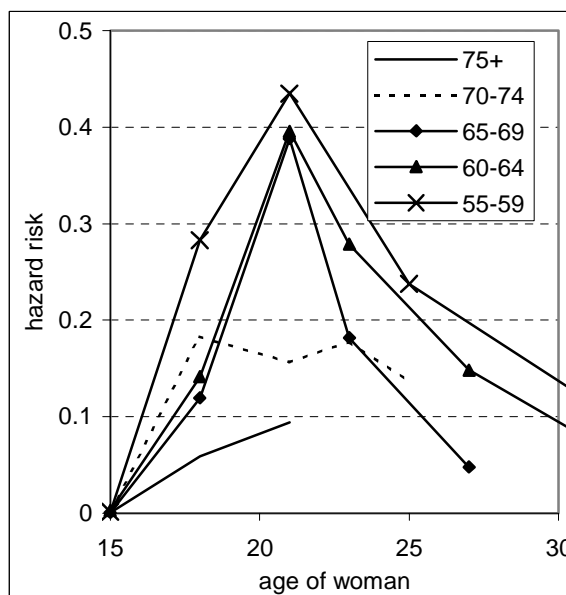
Notes: (1) Method: event history model (generalized Gompertz); dependent variable: transition to first union measured since age 15. (2) Own calculations, FFS Czech Republic 1997.

One-third of all surveyed women started their first unions by cohabitation (Table 6.3). However, one might suppose that not all groups of women had the same propensity to start their first union by cohabitation. More than half of the first unions of very young women (aged 15 to 17) were cohabitation. At ages 18 to 24, the age group with the highest intensity of first union formation, only 30% or less were cohabiting unions. Interestingly, there were no differences by women's education. However, a very important distinction was found in the fact of whether the first union was formed before or after the year 1990. Only every fourth union formed before 1990 was cohabitation. In particular, more than 80% of women aged 20-24 started their first union by direct marriage. By contrast, after 1990 the proportion of cohabitation and direct marriages on first union formation was equal.

Such simple cross tabulations do not allow us to control for the interactions between the individual characteristics (for instance, between the effects of women's education and calendar time). In this case, event history models including several covariates allow us to distinguish the effect while controlling for other characteristics. Table 6.4 represents the results of the complete model in which, together with calendar time, women's education and employment characteristics and women's past life experiences were included. Therefore, what is the effect of historical time? Are cohabitation and direct marriage intensities different in the periods before 1990 and after 1990? Similar to the process of entry into motherhood (see Chapter 5), the period before 1990 is characterized by *no* changes in cohabitation and direct marriage intensities (see Table 6.4). The 1970s are, in this respect, very similar to the 1980s in that young adults made their first steps in their partnership careers in a very similar way for the whole 20-year period. In the 1990s, women *not* living in any union had a 60% (for the period 1994-97) to 80% (for the period 1990-93) higher probability of moving into cohabitation than women in the same situation in the 1970s-80s. At the opposite end, in the 1990s the risk of direct marriage was 31 to 64% lower (relative risk 0.69 for period 1990-93 and 0.36 for period 1994-97, Table 6.4) than in the previous period (under the condition that other observed characteristics – women's education and employment characteristics, past life experiences – were the same).

To conclude, a notable finding is that cohabiting unions did not substitute for the observed decline in first marriages. There was a general delay of first union formation in the 1990s (Figure 6.2). The results show a decline in direct marriage risks at young ages and a growing preference for cohabitation as a first step in the partnership career of young women.

Table 6.3. First unions started by direct marriage or by cohabitation according to a women's age, education and calendar time.

Women's age at union formation	First unions started by marriage	cohabitation	First unions	Start by cohabitation (%)
	All women			
15-17	57	70	127	55%
18-19	349	158	507	31%
20-24	456	158	614	26%
25+	53	32	85	38%
Total	915	418	1333	**31%**
	Women with low education			
15-17	44	20	64	31%
18-19	198	98	296	33%
20-24	183	95	278	34%
25+	23	7	30	23%
Total	448	220	668	**33%**
	Women with middle education			
15-17	13	9	22	41%
18-19	122	61	183	33%
20-24	239	74	313	24%
25+	17	17	34	50%
Total	391	161	552	**29%**
	Women with high education			
15-17	0	2	2	..
18-19	13	3	16	..
20-24	49	22	71	31%
25+	13	8	21	38%
Total	75	35	110	**32%**
	First unions started before 1990			
15-17	44	52	96	54%
18-19	267	84	351	24%
20-24	372	82	454	18%
25+	39	13	52	25%
Total	722	231	953	**24%**
	First unions started after 1990			
15-17	13	18	31	58%
18-19	66	74	140	53%
20-24	100	76	176	43%
25+	14	19	33	58%
Total	193	187	380	**49%**

Notes: (1) Sample size for analysis 1707 women. (2) Only women with completed education at time of interview included. (3) Source: FFS Czech Republic 1997.

Table 6.4. Relative risks of first union formation, the Czech Republic 1970-1997. Model IV with education, labor market situation, calendar time and characteristics of parental home.

	Model IV Cohabitation			Model IV Marriage		
	b	**(SE)**	**exp(b)**	**b**	**(SE)**	**exp(b)**
Baseline(woman's age):						
15	-6.14	(0.44) ***		-6.56	(0.52) ***	
slopes:						
15-18	1.02	(0.15) ***		1.59	(0.18) ***	
18-20	-0.07	(0.11)		0.36	(0.07) ***	
20-22	0.00	(0.11)		0.02	(0.07)	
22-25	0.12	(0.09)		-0.12	(0.06) *	
25-35	-0.20	(0.07) ***		-0.17	(0.06) ***	
Educational degree obtained:						
Out of education:						
no degree	0.11	(0.12)	1.11	-0.04	(0.08)	0.96
secondary degree = reference	0.00		1.00	0.00		1.00
university degree	0.19	(0.32)	1.20	0.37	(0.21) *	1.45
In education:						
no degree	-0.72	(0.20) ***	0.49	-1.09	(0.15) ***	0.34
after secondary degree	-0.92	(0.26) ***	0.40	-0.97	(0.17) ***	0.38
Current (in)activity on labour market:						
Employed:						
full-time = reference	0.00		1.00	0.00		1.00
part-time and short employments	0.23	(0.20)	1.26	0.16	(0.16)	1.17
Not employed:						
no experience	0.51	(0.18) ***	1.66	0.04	(0.13)	1.04
some experience	0.74	(0.23) ***	2.10	1.13	(0.13) ***	3.09
Calendar time:						
1970-1979=reference	0.00		1.00	0.00		1.00
1980-1989	0.03	(0.14)	1.03	-0.05	(0.08)	0.95
1990-1993	0.58	(0.16) ***	1.79	-0.37	(0.11) ***	0.69
1994-1997	0.48	(0.15) ***	1.61	-1.02	(0.13) ***	0.36

(continuing)

Table 6.4. (continued)

	Model IV Cohabitation			Model IV Marriage		
	b	**(SE)**	**exp(b)**	**b**	**(SE)**	**exp(b)**
Size of family of origin:						
No sibling	-0.16	(0.18)	0.86	-0.18	(0.15)	0.83
One sibling = reference	0.00		1.00	0.00		1.00
Two and more siblings	0.16	(0.11)	1.17	0.16	(0.07) **	1.18
Childhood spent:						
not in town = reference	0.00		1.00	0.00		1.00
in town (>10 000)	0.29	(0.10) ***	1.33	-0.06	(0.07)	0.94
Leaving parental home:						
yes	0.10	(0.12)	1.11	-0.97	(0.12) ***	0.38
no=reference	0.00		1.00	0.00		1.00
Divorce of parents until age 18:						
yes	0.61	(0.13) ***	1.84	0.14	(0.12)	1.15
no=reference	0.00		1.00	0.00		1.00
Log-likelihood of model	-6312.3					
Observations	1707					
First unions	1333					
By cohabitation	418					
By direct marriage				915		

Notes: (1) Method: event history model (generalized Gompertz); dependent variable: transition to first union measured since age 15. (2) Significance: * at 10%; ** at 5%; *** at 1%. Asymptotic standard errors (SE) are in parentheses. (3) Source: FFS Czech Republic 1997. (4) Occupational status is not included in this model.

6.4.2 Impact of women's education: Different for marriage and cohabitation?

Women with different levels of education enter their first partnership at different stages of life. There are two aspects to the possible influence of education on union formation in general: First, being enrolled in education, second, educational attainment.

First, we present the educational differences in timing of first union across the generations (Figure 6.5). There was an increase in educational difference in the youngest cohort 1970-74 compared to previous ones.

Figure 6.5 Transition to first union by women's education attainment, selected generations.
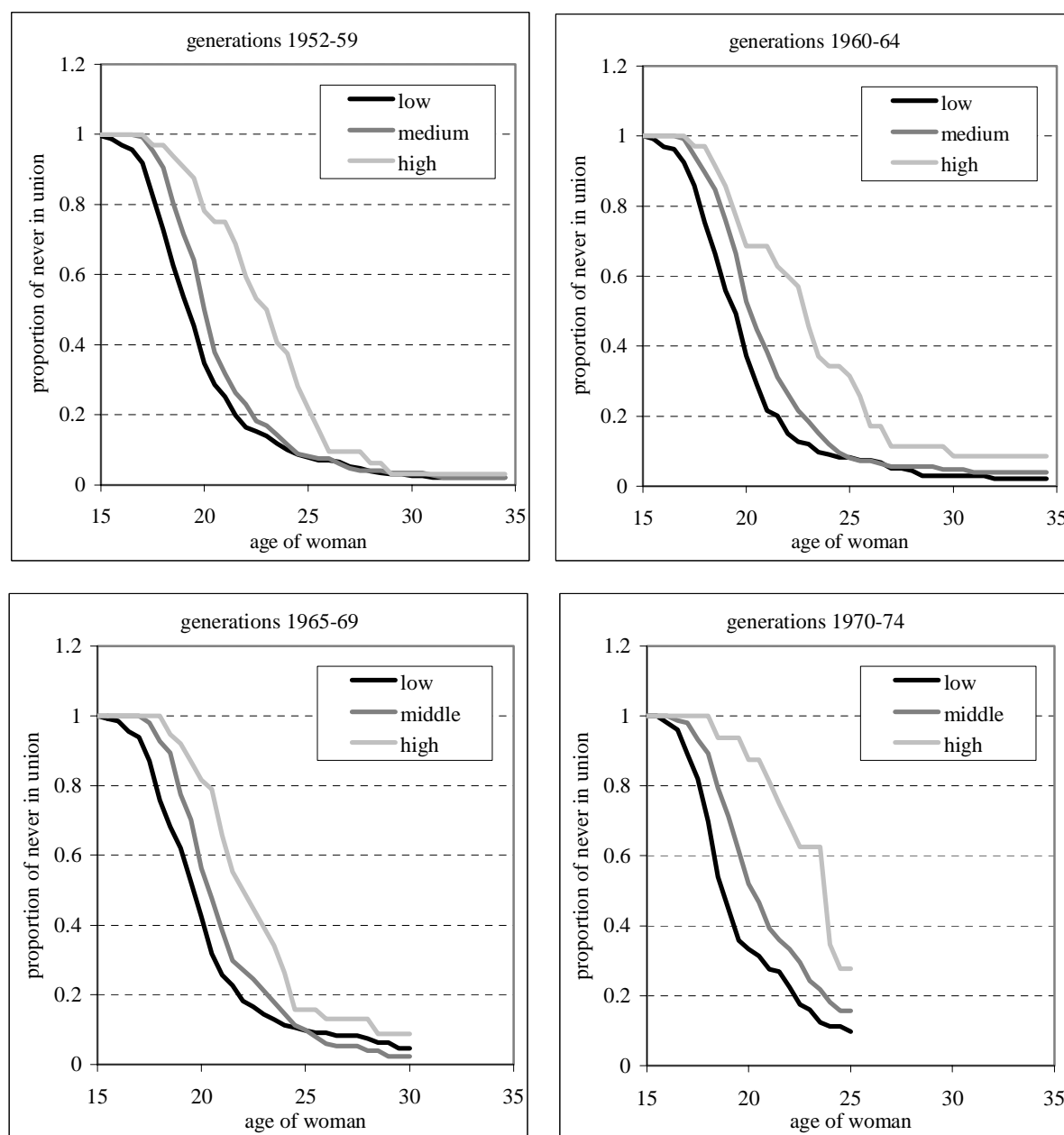
Notes: (1) Method: Kaplan-Meier survival plots; dependent variable: transition to first union measured since age 15. (2) Final educational attainment is measured at the date of interview. Women in education at the date of interview are excluded. Levels of education attained: low (no degree obtained), medium (upper-secondary with *maturita*), high (university degree obtained). (3) Number of cases in the analysis for generation 1952-59: 411 women, generation 1960-64: 294 women, generation 1965-69: 321 women, and generation 1970-74: 322 women. (4) Source: FFS Czech Republic 1997.

However, such survival analyses do not allow us to distinguish between the effect of the prolongation of educational participation and the effect of further postponement of first union formation after the end of studies. Furthermore, one cannot distinguish the different effects of women's education on the intensity of the transition to cohabitation vs. direct marriage. Next, we want to assess the effect of female education on union formation while controlling for the other relevant characteristics. Thus, we estimate the multivariate hazard model including women's age, education and employment characteristics and women's past life experiences (Table 6.4). Such a model is most appropriate for testing the hypotheses on the effects of female education formulated in section 6.2.2.

In accordance with expectations, women participating in education had lower cohabitation risks (relative risks 0.49 or 0.40) and direct marriage risks (relative risks 0.34 or 0.38, Table 6.4). Thus, there was no difference between entry into first partnership by cohabitation or marriage – both risks were significantly lower than among women with education that was already finished.

When women's education is analyzed *net* of the participation in education, one might distinguish between different lengths of the studies and the effect of education attainment. The question is whether the educational differences in the timing of entry into first union were caused only by different lengths of schooling or whether there were other mechanisms – for instance, education differences in the preferences for certain types of partnership. Once women with university degrees finished their studies, they had a 45% higher risk of the transition to direct marriage and also a 20% higher risk of the transition to cohabitation (though not significant) compared to women with an upper-secondary education (see Table 6.4).

The further question of interest is whether the increase in numbers of cohabiting unions among young adults in the 1990s was more pronounced in certain educational groups. Therefore, in the next model we include the interaction of educational variables with calendar time (Table 6.5). In general, the change between these two periods is clear and significant; women with an upper-secondary education living in the 1990s had a 75% higher probability of forming a cohabitation and a 46% (relative risk 0.54 in Table 6.5) lower probability of directly entering marriage than women in the same situation but who were entering their first partnerships in the 1970s-80s.

Table 6.5. Relative risks of first union formation: Effect of women's education in comparison between the two periods (part of Model II in Table B3 in Appendix B).

	Cohabitation		Marriage	
	exp(b)	**exp(b)**	**exp(b)**	**exp(b)**
1970-1989:				
Educational degree obtained:				
Out of education:				
no degree	1.01		1.04	
secondary degree = reference	**1.00**		**1.00**	
university degree	1.08		1.28	
In education:				
no degree	0.46 ***		0.31 ***	
after secondary degree	0.42 **		0.37 ***	
1990-1997:				
Educational degree obtained:				
Out of education:		reference=1990s		reference=1990s
no degree	2.14 ***	1.23	0.56 ***	1.05
secondary degree	1.75 ***	**1.00**	0.54 ***	**1.00**
university degree	2.20 **	1.26	0.81	1.51
In education:				
no degree	0.51 **	0.30 ***	0.27 ***	0.50 ***
after secondary degree	0.53 *	0.30 ***	0.15 ***	0.27 ***

Notes: (1) Method: event history model (generalized Gompertz); dependent variable: transition to first union measured since age 15. (2) Significance: * at 10%; ** at 5%; *** at 1%. (3) Source: FFS Czech Republic 1997.

Women's education played no role in the decision to form the first union as cohabitation in the 1970s-80s. As well, the increase of cohabitation in the 1990s is observed across all education groups. Only women with a medium level of education enter into cohabiting unions relatively less compared to other women. Similarly, in the case of direct marriages the decline in the 1990s was observed across all education groups, however women with university degrees had in both periods higher transitions to direct marriage than other women had (by 28% in the 1970s-80s or by 50% in the 1990s, Table 6.5).

This confirms the formulated hypothesis of a *'catch-up' effect*, when after finishing their university studies, and after the delay of union formation caused by their participation in education, women are at high risk of union formation. In Czech society of the 1970s-80s there was a strong societal norm on the ideal age at which a woman should enter marriage.

Since women with higher education levels leave the education system later, they were in the age of high nuptiality immediately after the end of their studies. With the increase in the age at first marriage in the 1990s the 'pressure of the ideal age' weakened.

By contrast, the results do not confirm the hypothesis that the differences in the timing of first union formation would reflect only the *different length of educational enrollment*. Similarly, there is no support for the view that high *women's economic independence* reduces women's gains from marriage and thus high levels of education attainment would lead to a lower marriage rate.

As discussed above (section 6.2.2), the motivations for cohabitation might differ a lot among young women with different educational backgrounds. On the one hand, women with lower education – thus with worse and more uncertain situations on the labor market – are more often involved in cohabiting unions because cohabitation represents shorter-term commitments and less investment compared to marriage. Therefore, the differences in economic aspects of cohabiting and marital unions are more important for them. On the other hand, among better-educated women the motivations for cohabitation might be connected to value orientations – such as the preference for autonomy and independence – or to a more thoughtful start to the partnership career first by cohabitation, which is only later possibly transformed to marriage. However, from our results we cannot assure any of these explanations (the results are in the expected direction; however, they are not significant).

Our results do not show that women with university education tend to start their first partnership by cohabitation more than other women did – neither in the time of low prevalence of cohabitation among young adults in the period before 1990 nor in the 1990s. In the Czech context, the first phase of the increase in cohabitation among young adults did not start especially among better-educated women, which would later be followed by other women. Thus, the arguments that supposed that a greater value of independence and autonomy among higher educated young adults would lead to later marriage and a more common start of partnership careers by cohabitation were not supported by these findings.

Nevertheless, the issue of pre-union pregnancies might be important for an interpretation of education differences in union formation. Findings in Chapter 5 documented that women with lower education levels were more prone to pregnancies outside any union, which then usually lead to direct marriages. The role of pre-union pregnancy on first union formation and its interaction with women's education is discussed in section 6.4.4.

6.4.3 Women's employment career and formation of first union

To look at the impact of women's employment characteristics on union formation, we have to take into account two specific labor market contexts – that of a centrally planned economy and of the economic transition. In the analysis we model the interaction between calendar time and women's employment, thus we estimate the effect of women's employment status on the timing and type of union formation in each period separately (Table 6.6).

As was expected, the effects of women's employment on marriage were similar to those influencing the entry into motherhood. In the 1970s-80s, women's employment status had only a limited effect on marriage formation. This is with the exception of women who already had some years of work experience as they had a full four times higher probability of getting married. This is, incidentally, in accordance with the findings from Chapter 5 on entry into motherhood.

By contrast, in the 1990s an uncertainty in employment (no work and no experience) lowered the risk of marriage by 36% (Table 6.6 as 1-0.64) compared to women in full-time employment. We conclude that there was a growing importance of a stable position on the labor market before the entry into marital union.

As discussed (section 6.2.3), economic well-being has a weaker association with cohabitation in general than with marriage. Cohabitation was in both periods formed to a greater extent by women in unstable positions on the labor market. As was suggested, an increasing prevalence of cohabitation among these women may represent one type of response to the increasing uncertainties at an earlier adult age. Whether a couple moved together into cohabitation or not was more dependent on the partner's characteristics, possibilities for living arrangements and the availability of housing. Unfortunately, the Fertility and Family Survey does not provide any information on the housing situation of individual women. However, there is evidence from other data sources on the scarcity of affordable housing for young adults in the 1990s (see concluding part of this chapter).

Table 6.6. Relative risks of first union formation: Effect of a woman's employment status in comparison of two periods (part of Model III in Table B4 in Appendix B).

	Cohabitation		Marriage	
	exp(b)	**exp(b)**	**exp(b)**	**exp(b)**
1970-1989:				
Current (in)activity on labour market:				
Employed:				
full-time = reference	**1.00**		**1.00**	
part-time and short employments	0.22 ***		1.60	
Not employed:				
in school	0.49 ***		0.33 ***	
no experience	1.60 **		1.12	
some experience	1.76		4.12 ***	
1990-1997:				
Current (in)activity on labour market:				
Employed:		reference=1990s		reference=1990s
full-time = reference	1.75 ***	**1.00**	0.56 ***	**1.00**
part-time and short employments	7.65 ***	4.53 ***	0.54	0.60
Not employed:				
in school	0.56 **	0.32 ***	0.21 ***	0.37 ***
no experience	2.86 ***	1.63 *	0.36 ***	0.64 *
some experience	3.72 ***	2.14 ***	0.87	1.57

Notes: (1) Method: event history model (generalized Gompertz); dependent variable: transition to first union measured since age 15. (2) Significance: * at 10%; ** at 5%; *** at 1%. (3) Source: FFS Czech Republic 1997.

6.4.4 Effect of pregnancy and birth of first child

Although practically all first births have taken place in marriage in the 1970s and 1980s (nonmarital childbearing was less than 10%), preunion pregnancies were very common (more than 50% of brides were pregnant at the time of the wedding).

To the multivariate hazard model of the transition to first union (Table 6.4) including women's age, women's education and employment characteristics and her past life experiences, we add the effect of pregnancy and the birth of a first child (Table 6.7).

The first question is what effects did anticipated motherhood have on the transition to first union? In this step of the analysis we distinguish between the effect of pregnancy and first childbirth and the effect of women's age. Similarly as in Chapter 5 – in the investigation of the effect of the end of studies on first childbirth – we introduce another 'time clock' (in

this case the time passed since the start of pregnancy) together with the age of the woman. If there are multiple splines in the model (one by the age of woman and a second by the time passed since the start of pregnancy), they combine additively to form the overall risk of first birth in the log-hazard. We consider only the pregnancies that lead to first childbirth and the start of pregnancy is assigned to 9 months before the month of birth. At the approximate date of conception, the 'time clock' for the pregnancy effect is started. The mathematical representation can be written as follows:

$$\ln \mu_i(t) = y(t) + c(t\text{-}p_i) + \sum_{j} \beta_j x_{ij}(t)$$

where $c(t\text{-}p_i)$ is a time dependent linear spline term which enters the model only if the woman experiences pregnancy outside of the union and p_i indicates the start of pregnancy relative to the age of woman. In result, the spline for the pregnancy effect is characterized by an immediate effect (constant) and a later development with possible changing effects at the beginning of the third and sixth months of pregnancy, at childbirth and at the child's age of 3 months (Table 6.7).

In order to interpret the coefficients, it is easier to visualize them in a graph. After exponentiation of the results one receives a multiplicative effect of pregnancy with respect to the hazard risks of first union formation among women who are not pregnant (in Figure 6.7 represented by a horizontal line at value 1). As expected, pregnancy greatly increases the rates of union formation both by cohabitation and direct marriage. However, the fact that a woman not living in any union is pregnant had different effects on the entry into cohabitation or direct marriage. Moreover, the duration of pregnancy played different roles in the formation of union by direct marriage or cohabitation. In the case of cohabitation, the stimulant effect of pregnancy was in general smaller with a peak in the later stage of pregnancy (last trimester of pregnancy). The pregnancy effect on the entry into marriage was very high in the second trimester when pregnant women had a 1.4 times higher *monthly* risk of getting married than non-pregnant women who were otherwise in the same situation (after controlling for age, past life experiences, employment situation and calendar time). These results make substantive sense given that it takes time for a pregnancy to be recognized and that women are unlikely to celebrate a wedding in the late stages of pregnancy. To sum up, in all months of pregnancy, the effect was stronger for marriages. This was caused by the fact that pregnant women not living in any union usually entered marriage directly since marriage was still considered the more appropriate place for childbearing than cohabitation.

Figure 6.6 Transition to first union by cohabitation and direct marriage controlling for the effect of pregnancy on first union formation.
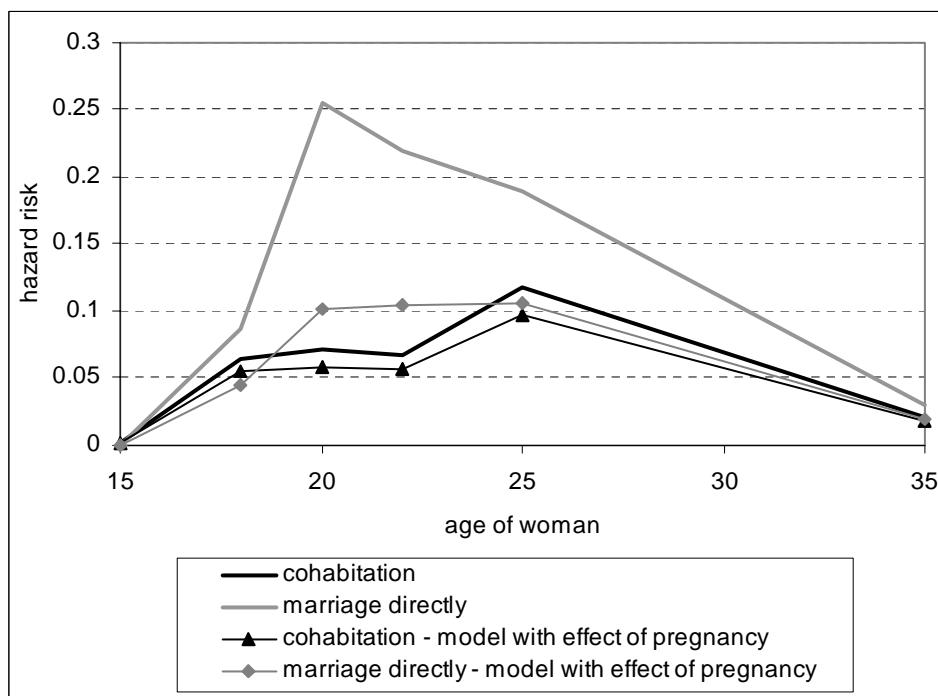
Notes: (1) Method: event history model (generalized Gompertz); dependent variable: transition to first union measured since age 15. (2) Graphs on the basis of hazard risk by woman's age in Table 6.4 and Table 6.7 (3) Source: FFS Czech Republic 1997.

Figure 6.7 Effect of first-child pregnancy and birth of first child on risks of union formation.
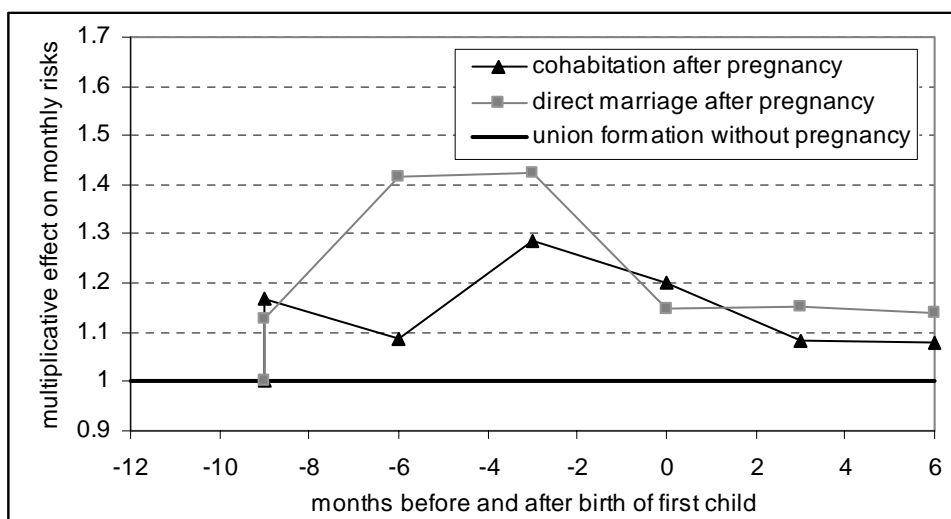
Notes: (1) In graph are presented multiplicative effects on monthly risks of union formation. It means for example that woman in 3rd to 6th month of pregnancy has by 40% higher transition to first union than woman who is not pregnant (controlled for age of woman). (2) Method: event history model (generalized Gompertz); dependent variable: transition to first union measured since age 15. (3) Source: FFS Czech Republic 1997.

Table 6.7. Relative risks of first union formation, the Czech Republic 1970-1997. Model VII with effect of pregnancy and birth of first child, education, calendar time and characteristics of parental home.

	Model VII Cohabitation			Model VII Marriage		
	b	**(SE)**	**exp(b)**	**b**	**(SE)**	**exp(b)**
Baseline(woman's age):						
constant:						
15	-6.06	(0.44) ***		-6.57	(0.54) ***	
slopes:						
15-18	0.98	(0.15) ***		1.43	(0.19) ***	
18-20	-0.08	(0.11)		0.25	(0.08) ***	
20-22	-0.01	(0.11)		0.08	(0.06)	
22-25	0.14	(0.09)		-0.06	(0.06)	
25-35	-0.19	(0.07) ***		-0.14	(0.06) **	
Effect of birth of first child and pregnancy:						
constant:						
Start of pregnancy	1.81	(0.32) ***		1.29	(0.21) ***	
slopes:						
Pregnancy 0-3 months	-3.36	(2.12)		11.06	(1.05) ***	
Pregnancy 3-6 months	7.02	(2.24) ***		1.00	(0.85)	
Pregnancy 6-9 months	-3.59	(2.57)		-10.22	(2.09) ***	
Birth of first child -3 months	-4.78	(2.49) *		0.31	(2.34)	
First child older than 3 months	-0.12	(0.11)		-0.46	(0.20) **	
Educational degree obtained:						
Out of education:						
no degree	0.03	(0.12)	1.03	-0.21	(0.08) **	0.81
secondary degree = reference	0.00		1.00	0.00		1.00
university degree	0.22	(0.32)	1.24	0.56	(0.22) **	1.75
In education:						
no degree	-0.70	(0.20) ***	0.50	-0.95	(0.18) ***	0.39
after secondary degree	-0.87	(0.26) ***	0.42	-0.78	(0.19) ***	0.46
Current (in)activity on labour market:						
Employed:						
full-time = reference	0.00		1.00	0.00		1.00
part-time and short employments	0.23	(0.20)	1.26	0.08	(0.16)	1.08
Not employed:						
no experience	0.46	(0.19) **	1.58	-0.25	(0.13) **	0.78
some experience	0.30	(0.25)	1.34	0.26	(0.14) *	1.30

(continuing)

Table 6.7 (continued)

	b	(SE)		exp(b)	b	(SE)		exp(b)
Calendar time:								
1970-1979=reference	0.00			1.00	0.00			1.00
1980-1989	0.02	(0.14)		1.02	-0.10	(0.08)		0.90
1990-1993	0.63	(0.16)	***	1.89	-0.19	(0.11)	***	0.82
1994-1997	0.52	(0.15)	***	1.68	-0.81	(0.13)	***	0.45
Siblings:								
No sibling	-0.20	(0.18)		0.82	-0.11	(0.14)		0.90
One sibling = reference	0.00			1.00	0.00			1.00
Two and more siblings	0.04	(0.11)		1.04	-0.10	(0.07)	**	0.91
Childhood spent:								
not in town = reference	0.00			1.00	0.00			1.00
in town (>10 000)	0.29	(0.10)	***	1.33	0.01	(0.07)		1.01
Leaving parental home:								
yes	0.09	(0.12)		1.09	-0.91	(0.11)	***	0.40
no=reference	0.00			1.00	0.00			1.00
Divorce of parents until age 18:								
yes	0.54	(0.13)	***	1.71	-0.20	(0.10)		0.82
no=reference	0.00			1.00	0.00			1.00
Log-likelihood of model	-5214.1							
Observations	1707							
First unions	1333							
By cohabitation	418							
By direct marriage					915			

Notes: (1) Method: event history model (generalized Gompertz); dependent variable: transition to first union measured since age 15. (2) Significance: * at 10%; ** at 5%; *** at 1%. Asymptotic standard errors (SE) are in parentheses. (3) Source: FFS Czech Republic 1997.

In addition, one should expect that pregnancies outside of unions do not occur to the same extent among women with different individual characteristics. Thus, the question is which group of women experience relatively more pregnancies outside of unions followed by union formation. Multivariate hazard models allow investigation of such questions as well. This means one has to compare the results of two models – one without the covariate describing the pregnancy effect (Table 6.4) and a second with the inclusion of such a covariate (Table 6.7). Since anticipated parenthood has a strong effect on the marriage risk, the differences were expected especially on the part of marital risks. When the pregnancy covariate was not included, women with low education levels did not have significantly

different transitions to marriage. Conversely, when one controls for the effect of pre-union pregnancy, women with lower education have a 20% lower risk of transition to marriage. Thus, pregnancies outside of unions were a strong 'push factor' for direct marriage especially among lower educated women.

An opposite effect was observed for university educated women (in the first model they have a 45%, and in the second model a 75% higher transition to direct marriage than women with a middle level of education). Therefore, highly educated women were more prone to direct marriages even without the 'push-factor' of anticipated motherhood and were more likely to follow the sequence of events: *marriage – pregnancy – first childbirth* (a similar finding was also presented in Chapter 5). Highly educated women are thought to have better control over their reproduction, to start their sexual lives at later ages, and to use contraceptives more often in comparison to other women. Furthermore, it seems that Czech university graduates behaved more in accordance with society norms regarding the sequence of events and the expectation that a child should be conceived and born into marriage. It could be that they were more tolerant in their opinions toward different ways of family formation, but in their own life they did not necessarily follow less traditional ways of family formation.

In the same way, calendar time is another covariate with a substantially different effect on direct marriage formation in the two models (Table 6.4 and Table 6.7). It follows that the decline in the risk of pre-union pregnancy, which was a strong 'push-factor' toward direct marriages, was an important factor in the declining risks of direct marriage in the period from 1990-97.

6.4.5 Early life course experiences influencing first union formation

The results of the multivariate hazard model support the expectations regarding women's early life experiences (formulated in section 6.2.5). Czech women brought up in larger families had a somewhat higher transition to direct marriage than those brought up in a small family (by 18%, Table 6.8). Living in a big town increased the risk of cohabitation by 33% in comparison with women living in small towns or villages. This is in accordance with the expectation that young people living in big cities were the ones introducing cohabitation as the type of preferred first union in Czech society. The place of residence at childhood had no impact on intensity of the entry into marriage. Similarly, the experience of

parental divorce strongly influenced the transition to cohabitation and women having such an experience from their childhood had an 84% higher risk of cohabitation than other women with the same characteristics (in education, employment, historical period, etc.) otherwise. They did not refrain from union formation; however, they had a higher preference for unmarried cohabitation with less binding ties.

Women living independently for certain time before the formation of first union did not have a significantly higher transition to cohabitation, but they had a 62% (relative risk 0.38 in Table 6.8) *lower* risk to marry than women living in the parental home. Thus women who were inclined to leave the parental home to live independently were a select group of women who also had a lower transition to marriage without previous cohabitation.

Table 6.8. Transition to first union: Effect of size of family of origin, place of residence, divorce of parents and leaving the parental home (part of Model IV, see Appendix B).

	Model IV Cohabitation			Model IV Marriage		
	b	**(SE)**	**exp(b)**	**b**	**(SE)**	**exp(b)**
Size of family of origin:						
No sibling	-0.16	(0.18)	0.86	-0.18	(0.15)	0.83
One sibling = reference	0.00		1.00	0.00		1.00
Two and more siblings	0.16	(0.11)	1.17	0.16	(0.07) **	1.18
Childhood spent:						
not in town = reference	0.00		1.00	0.00		1.00
in town (>10 000)	0.29	(0.10) ***	1.33	-0.06	(0.07)	0.94
Leaving parental home:						
yes	0.10	(0.12)	1.11	-0.97	(0.12) ***	0.38
no=reference	0.00		1.00	0.00		1.00
Divorce of parents until age 18:						
yes	0.61	(0.13) ***	1.84	0.14	(0.12)	1.15
no=reference	0.00		1.00	0.00		1.00

Notes: (1) Complete results of Model IV are presented in Table 6.4; Model IV also includes also a woman's age together with a woman's educational and employment characteristics and calendar time. (2) Method: event history model (generalized Gompertz); dependent variable: transition to first union measured since age 15. (3) Significance: * at 10%; ** at 5%; *** at 1%. Asymptotic standard errors (SE) are in parentheses. (4) Source: FFS Czech Republic 1997.

6.4.6 Cohabitation as first union: Only a premarital stage?

The rising popularity of unmarried cohabitation as a type of first union formation does not mean that marriage is obsolete. Although not all young adults living in first unions started by cohabitation eventually marry, the majority still do. In this section, the subsequent development of cohabiting first unions is investigated. How many cohabitating unions subsequently ended in marriage or in dissolution? In total, 83% of first cohabiting unions ended in marriage and in 17% were dissolved (Table 6.9). Especially at early stages, most cohabiting unions ended by transformation to marital union (in the first half-year of cohabitation, fully 91% of all unions ended this way). Cohabiting unions lasting longer than two years had the same probability of subsequently ending in marriage as in dissolution. In the 1990s the proportion of cohabiting unions ending in marriage declined compared to the previous period (from 88% to 77%).

Table 6.9. Transformation of cohabitation to marriage or dissolution of cohabitation: Table of frequencies according to different characteristics.

	Cohabitation censored in 1997	Subsequent marriage	Dissolution of cohabiting union	Percentage of marriages
All cohabiting unions				
All	55	305	61	83%
Duration of cohabiting union				
0-0.5 years	6	99	10	91%
0.5-2 years	22	145	21	87%
2 years and longer	27	31	30	51%
Calendar time at start of union				
1970-1989	4	192	27	88%
1990-1997	51	112	34	77%
Pregnancy				
At start of union	7	45	8	85%
While in union	5	116	11	91%
No pregnancy	43	144	42	77%
Women's education				
Lower	29	158	35	82%
Middle	22	121	21	85%
Upper	4	26	5	84%

Note: (1) Sample size for analysis 421 cohabiting unions. (2) Own calculations. Source: FFS Czech Republic 1997.

Duration of cohabiting union and effect of calendar time

Similar to previous steps of the analysis, the model with competing hazard risks is estimated. The outcomes are either subsequent marriage or dissolution of a cohabiting union. The observation period starts at the time of moving together into cohabitation. There are 421 cohabiting unions in total which are the first unions of over 1,700 women included in the survey. How long did cohabitation last before being transformed into marriage or ending by dissolution? An average duration of cohabiting unions transformed to marriage was 1.4 years and 73% of all unions in the sample ended in marriage. Unions that ended by dissolution of the couple lasted a longer time on average – nearly two years, representing 14.5% of all cohabiting first unions. At the date of the survey in November, 1997, 12.5% of all cohabiting first unions were censored.

Most cohabiting unions thus ended in subsequent marriage and especially in the first year of cohabitation the risk of marriage was very high (Figure 6.8). Cohabitation did not start out as being a permanent form of partnership. However, as we expected, cohabiting unions in the 1990s had a 35% lower risk of transition to subsequent marriage than cohabiting unions in the same situation in the 1970s and 1980s (relative risks 0.64 for period 1990-93 or 0.65 for period 1994-97, Table 6.10).

Figure 6.8 Transformation of cohabitation to marriage or dissolution of cohabitation.
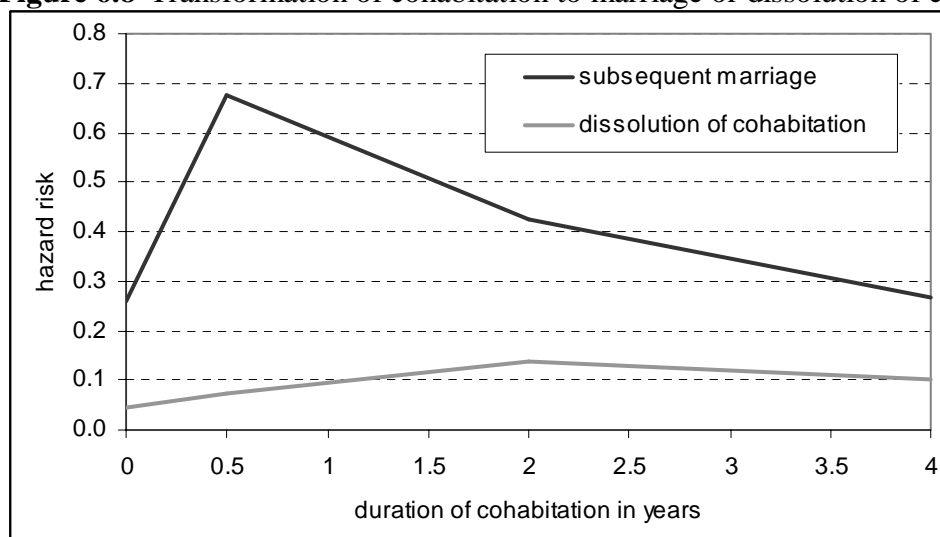
Notes: (1) Method: event history model (generalized Gompertz); dependent variable: marriage or dissolution from start of cohabitation. (2) FFS Czech Republic 1997.

Table 6.10. Transformation of cohabitation to marriage or dissolution of cohabitation: Effects of the woman's age at start of cohabiting union, past life experiences, calendar time and pregnancy.

	Model IX Marriage			Model IX Dissolution		
	b	**(SE)**	**exp(b)**	**b**	**(SE)**	**exp(b)**
Baseline(duration of cohabitation):						
start of cohabitation	-0.70	(0.36) *		-2.55	(0.92) ***	
slopes:						
0 to 0.5 year	1.97	(0.67) ***		1.04	(1.84)	
0.5 to 2 years	-0.21	(0.14)		0.54	(0.31) *	
more than 2 years	-0.22	(0.09) ***		-0.11	(0.13)	
Age of woman at start of cohabitation:						
below 18	-0.25	(0.20)	0.78	-0.40	(0.43)	0.67
18-20=reference	0.00		1.00	0.00		1.00
20-22	0.06	(0.17)	1.06	0.16	(0.39)	1.17
more than 22	0.00	(0.17)	1.00	-0.28	(0.42)	0.76
Educational degree obtained:						
no degree	-0.17	(0.15)	0.85	0.07	(0.35)	1.07
secondary degree = reference	0.00		1.00	0.00		1.00
university degree	-0.21	(0.23)	0.81	-0.32	(0.58)	0.72
Childhood spent:						
not in town = reference	0.00		1.00	0.00		1.00
in town (>10 000)	-0.21	(0.10)	0.81	0.12	(0.34)	1.13
Leaving parental home:						
yes	-0.50	(0.15) ***	0.61	-1.00	(0.33) ***	0.37
no=reference	0.00		1.00	0.00		1.00
Divorce of parents until age 18:						
yes	-0.35	(0.17) **	0.70	0.21	(0.37)	1.23
no=reference	0.00		1.00	0.00		1.00
Year of start of cohabitation:						
1970-1980=reference	0.00		1.00	0.00		1.00
1980-1990	0.02	(0.18)	1.02	0.42	(0.51)	1.53
1990-1993	-0.44	(0.21) **	0.64	0.42	(0.51)	1.52
1993-1997	-0.43	(0.21) **	0.65	0.64	(0.50)	1.89

(continuing)

Table 6.10 (continued)

	b	(SE)	exp(b)	b	(SE)	exp(b)
Effect of pregnancy:						
at start of cohabitation						
yes	0.34	(0.18) *	1.40	-0.40	(0.49)	0.67
no=reference	0.00		1.00	0.00		1.00
in cohabitation						1.00
yes	0.32	(0.16) **	1.38	-0.95	(0.40) **	0.39
no=reference	0.00		1.00	0.00		
Log-likelihood of model	-1363.4					
Observations	421		100%			
Censored cases in 1997	55		13%			
End by marriage	305		72%			
End by dissolution				61		14%

Notes: (1) Method: event history model (generalized Gompertz); dependent variable: transition from cohabiting union to subsequent marriage or dissolution of cohabiting union (2) Significance: * at 10%; ** at 5%; *** at 1%. Asymptotic standard errors (SE) are in parentheses. (3) Source: FFS Czech Republic 1997.

Anticipated parenthood lead to a higher risk of marriage (by 40%, relative risk 1.40 or 1.38 in Table 6.10) and a lower risk of union dissolution (by 60%, relative risk 0.39 in Table 6.10). Similar to the effect of pregnancy on direct marriage (section 6.4.4), there was a strong tendency to transform partnership to marital union before the birth of a first child.

The effects for women's age and education were not significant, possibly due to a low number of cohabiting unions in the sample. Cohabitation of young women (below age 18) seems to be less prone to transferring into marriage. Highly educated women stayed in the cohabiting phase of a union longer than other women did. These two findings are only suggestions to be investigated with a larger dataset. Some of the past life experiences had an impact on the decision to get married in cohabiting couples. As hypothesized, women who had experienced parental divorce stayed in the cohabiting phase of the partnership longer and were less prone to get married compared to other women (by 30%, Table 6.10). Similarly, having the experience of living outside the parental home already before the formation of the first union meant that women also stayed longer in the cohabiting phase of the union and both marital and dissolution risks were lower (by 40% in the case of marriage and by 63% for union dissolution, Table 6.10).

6.5 Discussion and concluding remarks

In Chapter 6, we investigated the formation of first union in a life-course perspective. Two questions were related to quantity issues of this phenomenon:

- In the 1970s and 1980s, at the time of prevailing patterns of universal and early nuptiality, what was the position of cohabitation as a *first* union of young adults?

Cohabitation was not common among young adults and only one-fourth of first unions started by cohabitation. These cohabiting unions were more often than not transformed after only a short time into marriage.

- In the 1990s, did cohabitation compensate for the decline in first marriages? Was there a general postponement of first union formation?

The results demonstrate that there was a general delay of first union formation in the 1990s, however not to such an extent as in the delay of entry into motherhood (studied in Chapter 5). Cohabiting first unions compensated to a large extent for the decline in direct marriages. Therefore, the shift to cohabitation as the initial step of first partnership played an important role in the observed delay of first marriage and motherhood in the 1990s.

Furthermore, the multivariate analysis of women's life histories helped to gain insights into the selection process of starting *first* unions by cohabitation or direct marriage:

- How did women's past life experiences (parental divorce, number of siblings and childhood spent in town or a village), the experiences in other life domains (employment career and education) or anticipated parenthood influence the selection process into cohabitation or direct marriage?

Women's individual characteristics represent different effects on first union formation by cohabitation or by direct marriage. The results do not show that women with *higher education* levels would tend to start their first partnership by cohabitation more often than other women would – neither in the time of low prevalence of cohabitation among young adults in the period before 1990 nor in the 1990s. Therefore, in the Czech context the rise in cohabitation among young adults did not start especially among better-educated women, only to be followed later by other women. Thus, the arguments that a greater value placed on independence and autonomy among higher educated young adults would lead to later marriage and more common starts to a partnership career by cohabitation were not supported by these findings for the period of 1990-1997. Therefore, this finding is in contrast

to the expectation that highly educated women are the first to adopt the new demographic behavior at this stage of demographic changes – especially when it concerns the sequence of events in family formation or the type of first union.

The *economic position of women* had in general a weaker association with cohabitation than with marriage. Cohabitation was in both periods formed to a greater extent by women in an unstable position on the labor market. As suggested, the increasing prevalence of cohabitation among these women may represent one type of response to the increasing uncertainties at an earlier adult age. Marriage formation was actually similar to another long-term decision – entry into motherhood. Women in unstable situations on the labor market (no work and no experience) had a lower transition to direct marriage.

Pregnancy greatly increased the rates of union formation both by cohabitation or direct marriage. The effect was stronger for marriages in all months of pregnancy. In the case of cohabitation, the stimulant effect of pregnancy was in general smaller with a peak at later stages of pregnancy (the last trimester of the pregnancy). The pregnancy effect on the entry into marriage was very high in the second trimester (3rd to 6th month of pregnancy). Pregnancies outside of unions were strong 'push factors' into direct marriage, especially among lower educated women. Highly educated women were more prone to direct marriages even without the 'push-factor' of anticipated motherhood and were more apt to follow the sequence of events: *marriage – pregnancy – first childbirth* (note that a similar finding was presented in Chapter 5 in the discussion of the effect of union formation on the transition to motherhood).

The impact of past life course experiences varied with the type of union. While there was a strong impact on one type of union formation, there was an opposite effect – or none at all – on the second one. For example, young people living in big cities were those who introduced cohabitation as a type of first union in Czech society. *The place of residence at childhood* had no impact on the intensity of entry into marriage. Women who had the experience of *parental divorce* did not refrain from union formation; however, they had a higher preference of unmarried cohabitation representing less binding ties and the possibility of easier union disruption[5]. Women *living independently* for a certain time before the formation of first union had a lower risk to marry than women living in the parental home.

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[5] Interestingly, our findings on early life experiences of women are supported by findings of Hamplová and Pikálková (2002): those who originated from divorced families or were from big towns tended to live outside marital unions.

But there was no impact on cohabitation. Women brought up in *larger families* had a somewhat higher transition to direct marriage than those brought up in a small family. It has become clear that past life course experiences are of primary importance for the early transitions in partnership careers.

If one is interested in the analysis of marriage, it is important to know what the further development of cohabiting first unions was – whether they were later transformed into a marital union or if they stayed as a long-term form of partnership, or lead to its disruption. Therefore, another question of interest is:

- How long did cohabiting first unions last before they dissolved or converged into marriage?

Most cohabiting unions ended in subsequent marriage and especially in the first year of cohabitation the risk of marriage was very high. Thus, cohabitation did not start out as a permanent form of partnership. In the 1990s, together with the increase in the prevalence of cohabitation among young adults, there was a trend toward prolongation of its duration. Anticipated parenthood was of high importance for entry into subsequent marriage. Women who had experienced parental divorce or lived outside the parental home already before their first union formation stayed in the cohabiting phase of their partnership longer and were less prone to get married than other women.

Our results documented a strong tendency to universal and early marital union formation in the 1970s-80. Concerning value orientations, Czech people strongly stressed the importance of family in their lives, with a high importance placed on marriages – preferably begun at young ages. As we have seen, the dynamics of fertility careers were of paramount importance for marriage formation. At the time characterized by low ussage of contraceptives, first-child conception outside of a union was very common. Marriages were the more socially accepted form of first partnership for young adults, especially when the female partner was pregnant. Therefore, society had internalized standards about early age marriage and the proper sequence of events – before the birth of a child, a woman should get married.

For the 1990s, we suggested (Chapter 4) that besides the institutional changes in the educational system (prolongation of the years spent in education) or the position of young adults on the labor market, the changes in value orientation of young adults contributed to the postponement of union formation and the growing proportion of first unions started by

cohabitation. The relation of *value transformation* and *change in demographic behavior* is at the core of the second demographic transition thesis.

First, we compare the attitudes of women towards cohabitation and marriage between two cohorts – one born 1953-57 and the second born 1973-77 (data from the Fertility and Family Survey 1997, Table 6.11). Cohabitation was seen as an alternative equal to marriage in many aspects by about half of the female respondents and the intergenerational difference is not clearly distinctive[6].

Table 6.11. Considering marriage and cohabitation, how do you evaluate the possibility of achieving the following by living together instead of being married?

Birth cohorts	1973-77	1953-57
Age group at interview	**20-24**	**40-44**
A stable relationship		
Favorable	58.1%	54.7%
Neither	31.6%	28.5%
Unfavorable	10.3%	16.7%
Having a child		
Favorable	51.4%	52.7%
Neither	27.7%	23.2%
Unfavorable	20.9%	24.2%
Social acceptance		
Favorable	54.2%	49.3%
Neither	30.9%	32.2%
Unfavorable	14.9%	18.5%

Data: Fertility and Family Survey, 1997 (Female sample only) (own calculations).

In the following, we look at the differences in the meaning of cohabitation and marriage. Similar to the discussion in Chapter 5, we use the survey "Young generation 1997" (Mladá generace 1997)[7]. There was a profound change in social norms that defined the 'appropriate' time for marriage and childbearing, mainly as a response to other life course

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[6] One has to bear in mind that these opinions are expressed at the interview date, thus inter-cohort and inter-age differences are not distinguishable.

[7] There were other surveys conducted in the 1990s investigating the issue of family and the changes in family life. However, most of them are on smaller sample sizes, including more generations and partnership situations (single, married, divorced, widowed), or some of them were conducted only among married women and men. The Reproductive and Health Survey 1993 (including women aged 15-44, 4497 respondents, Czech Statistical Office in the scope of international project) is more reflective of the situation before the far-reaching changes in demographic behavior – thus, two-thirds of women stated that marriage is the most important thing and only a small number of women were able to imagine a happy life without a *legal* and long-term partnership. In survey Populační klima 1996 (1,705 respondents, aged 20 to 60, Institute of Work and Social Affairs) three-quarters of women highlighted a marriage with a life-long partner as their ideal (reviewed in Kučera 2000:22-23).

changes such as prolonged enrollment in education, importance of employment consolidation or partnership consolidation. What age did young *single* adults consider as the ideal one for entry into marriage in the year 1997? Most respondents (one-third) named the ideal age of marriage for women to be age 25;, the average ideal age for women was 23.5 years and for men 26.5 years (in 1998, the average age at first marriage was in the real population 23.6 years for women and 26.3 years for men with an increase in subsequent years)[8] (Fialová et al. 2000:62-63).

One of the main interests of the survey "Young generation 1997" was to find what the preferred type of partnership in the lives of young *single* adults aged 18 to 30 was[9]. Cohabitation as a permanent form of union is distinguished from cohabitation that is followed with subsequent marriage. In the latter case, cohabitation is regarded as an important stage in getting to know each other in everyday life situations and living together - as a trial period before marriage. Results in Table 6.12 show that 90% of young *single* adults aged 18 to 30 want to live in marriage. Thus, it seems that even in the generation of 18 to 30 year-olds, one cannot expect that unmarried cohabitation is going to be an alternative to marriage[10] (Fialová et al 2000: 68). Nearly 70% of young single adults preferred the variant of trial cohabitation and subsequent marriage. However, in the survey only every fifth woman and man having a partner actually lived in a cohabiting union; thus, cohabitation as a form of union before marriage is not so widely spread as young adults would wish. According to the results of this survey, it is not possible to say that the choice of an *ideal* form of partnership would be related to age, education or employment characteristics. Furthermore, "*there is no evidence that students of universities would be more open to this 'modern' approach to partnership and they would more easily refrain from the traditional values*" (Fialová et al 2000: 69). The same conclusion resulted also from the analysis of women's life experiences in the presented analysis - highly educated women were not more

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[8] There is another survey – Rodina 1996 (Family 1996, Sociological department of Academy of Sciences, 1496 respondents living in marriage) – with the question on ideal age at marriage. In 1996, the respondents located the ideal age at marriage to age 22,6 years for women and 26,1 years for men (Kučera 2000).

[9] It is important to point out the fact that the survey was conducted among single adults aged 18 to 30. In this age group part of young adults is already married (approximately one third of men and over 40%% of women in 1997). Those, who are not yet married, are thus selected and highly heterogeneous group of whole population aged 18 to 30 (by education, opinions on marriage etc.)

[10] In the survey Rodina 1996 (see note 8), more than half of already married respondents aged 18-29 years stated that unmarried cohabitation is not 'the right form of union' and 45%% mentioned also their parents' disapproval with unmarried cohabitation.

prone than others to start their first partnership by cohabitation either in the 1970s-80s or in the 1990s.

Table 6.12. Opinions of young adults regarding preferred type of partnership. Question: "Which of the following possibilities do you consider as the best one for your life?" (in%)

	Total	**Men**	**Women**
Without stable partner	2.2	3.8	0.6
Unmarried cohabitation	9.0	10.8	7.3
Trial cohabitation – marriage	68.2	66.5	69.9
Marriage	20.6	18.9	22.2
Total	100.0	100.0	100.0

Source: Young Generation 1997 (632 single men and 662 single women aged 18-30) (in Fialová et al. 2000).

Young women and men living in unmarried cohabitation did plan on a future legalization of their current shared living arrangements by getting married. They mostly based their reasons for getting married on their female partner's pregnancy, or on having reached a certain (financial and quality of partnership) level for their future family[11].

The survey confirmed the importance of a new couple having separate housing in the view of young adults. While young adults without a partner or with a non-cohabiting partner lived 80% of the time in their parents' household, only 20% of those with a cohabiting partner were in the same situation. Therefore, the common type of housing among unmarried cohabiting couples was to own or rent a flat/house and nearly half of all unmarried cohabiting couples had their housing issue resolved for the time being (Fialová et al 2000). However, for half of young adults with a partner, the main factor impeding getting married was their housing situation – in 27% of cases. The financial situation was the second most important fact, named by 22% of cases (Fialová et al. 2000:129). Thus, the lack of financially affordable flats on the housing market seems to be responsible not only for the absence of more widespread young couples' common cohabitation or household sharing, but also for the delay of marriage formation[12].

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[11]   Fialová et al. (2000:132) name two reasons why young unmarried couples have not yet entered marriage (besides financial and housing problems) – first, they are not sure whether their partner is the right one and second, until children are born, they often consider marriage as unnecessary or restrictive. However, if they would expect the birth of a child, 83% of respondents would get married.

[12]   By contrast, another survey documented that two-thirds of newlywed couples lived in unmarried cohabitation before marriage and that in most cases their housing situation did not have an impact on the timing of their marriage – in 63% of cases there was no reported impact of housing and only in 7% of cases did it play a decisive role (Kostelecký and Vojtěchovská 1997; the survey "Snoubenci 1997" -

One has to keep in mind that the results of opinion survey and the results coming from the analysis of life course experiences of young adults are different and that not all wishes about the 'ideal' form of partnership are realized. Nevertheless according to both analyses, most young adults prefer marital unions, even if some of them would like to live for a certain time before marriage with their partner in unmarried cohabitation before actually realizing this event. In the Czech context, cohabitation as a long-term alternative did not occur widely. However, cohabitation became a highly acceptable and widespread form of the *first step in a partnership career* of young adults. Three issues were highlighted in connection with the increase of cohabitation among young adults. First, young adults nowadays have better control over their reproduction due to the diffusion of modern contraceptives. Thus, the 'push-factor' of anticipated parenthood on entry into marriage has diminished. Second, the nature of young adults' lives has changed (examples of changes include prolongation of studies, higher self-responsibility, more options and choices and more uncertain features in their lives – such as in employment, housing, their position in society, etc.). These new realities are reflected in the choice of a less binding and less demanding (in terms of finance and time) form of partnership – namely, cohabitation. Third, the survey "Young Generation 1997" documented the willingness of young adults to live in unmarried cohabitation before marriage formation.

Newlywed Couples 1997 - was conducted among newly married couples that agreed to fill out the questionnaire).

CHAPTER 7

Interrelated processes:

First union formation and first childbirth

7.1 Introduction

Entering parenthood and forming a first union are closely linked events both in terms of their timing over the life course and in terms of the intentions and life plans of individuals involved in these events. Individual decisions about marriage, cohabitation and the birth of a child are interrelated. As Blossfeld and Mills (2001) formulated it: *"If a union is viewed as the appropriate setting for bearing children, individuals wanting to have a child may speed-up their union formation, considering this event as part of the family building strategy. If marital union is viewed as a more appropriate setting than cohabitation, then this effect is stronger in the case of the transition to marriage. On the other hand, a pregnancy may precipitate marriage formation for couples that already had plans in that direction"*.

In Chapter 7 we investigate two hypotheses formulated in the European context of recent changes in family formation patterns. First, as cohabitation loses its marginal status in recent times, and as the social acceptance of cohabitation increases, Mulder and Manting (1994) suggest that *"there may be less pressure to marry in order to have children, while a partnership context may still be viewed as necessary"*. Second, some authors (e.g. Van de Kaa 1997, Corijn and Klijzing 2001) claim that union formation and first birth have increasingly become disconnected with each other.

As a first step, we look at the sequence of family formation events. Then, we link together our findings from Chapter 5 and Chapter 6. As a last step, we look into the possible effect of unobserved characteristics which we do not include in the event history models.

7.2 Sequence of family formation events

The importance of studying the sequencing of events in the transition to adulthood has been put forward by, among others, Marini (1984), Rindfuss et al. (1987) and the formal consideration of the topic of sequencing is given by Billari (2001).

Prevalent family models in Czech society prescribe that having children is only expected within a stable (cohabiting or married) relationship. Consequently, forming a union becomes part of the strategy leading to procreation. In what sequence do young adults realize the steps in family formation? Fertility and Family Survey 1997 offers the possibility of investigating the sequence of family formation events in the lives of individual women. Scheme 1 concentrates on the sequence of first union formation and entry into motherhood. The events are reported by month and year (if conception or birth of the first child is reported in the same month as union formation then the event connected to the first child is considered to be the first). Pregnancies followed by abortion are not taken into account.

Among 1,707 women in the survey, 1,348 experienced at least one of these transition – entry into motherhood or first union formation - and 1252 women experienced both transitions before the date of interview. The first event was in 41 % pregnancy leading to first birth, in 26 % cohabitation and in 33 % direct marriage.

Only very few women did not enter a first union before the birth of the first child (8% of first births)[1]. Single motherhood as a type of decision at the start of the family formation process is rare. In contrast, the most common setting for the birth of a first child is a first marriage – 83% of first births[2]. In cohabiting first unions childbearing has generally been rare. Less than 5% of first children were born into cohabiting unions[3]. A first childbirth is

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[1] Having a child prior to a first partnership is a minor practice in many countries including countries with high levels of non-marital childbearing. For example, the overall proportion of women who had a child prior to any union was only 7% in Sweden and 9% in France. The lowest level is only 4-5% in Switzerland and Italy. The extent of pre-union childbirth is somewhat higher in Norway with 12% and in Austria with 20% (Kiernan 1999 on the basis of the Fertility and Family Survey data). But Austria is a special case which has a long history of marriage following from a first birth (see Prinz 1995). Thus, the Czech situation with 8% of first births before any union is not exceptional in the European context. (Kiernan 1999).

[2] In international comparison a similar extent of first birth in first marriage has been observed in Italy and Spain (around 90%) or Switzerland (77%) and Great Britain (75%). It is around 50% in Austria and France (but only 35% in the case of young French women aged 25-29 at the date of interview). And it is below 30% in Sweden (Kiernan 1999 on the basis of the Fertility and Family Survey data). However one might suppose that important changes have taken place in recent years (see Table 5.10. for period 1990-1997 in comparison with the 1970s and 1980s).

[3] In international comparison the same extent of first births in cohabiting first unions is observed in Italy and Spain (3% of first births) and Switzerland (7%) among women aged at interview 20 to 45 years. It is

closely connected to the first union of a woman. Less than 4% of first children are born after the first partnership has ended[4].

Scheme 1 Sequence of events of first union formation and birth of first child.

```
┌─────────────────────────────┐
│  Fertility and Family Survey │
│         1707 women           │
└─────────────────────────────┘

┌─────────────────────────────┐
│ 1384 women experiencing at   │
│      least one transition    │
│            100%              │
└─────────────────────────────┘
```

Start by pregnancy:

```
              ┌─────────────────┐
              │   Pregnancy     │
              │   568 women     │
              │      41%        │
              └─────────────────┘
```

Direct marriage 479 women **34.5%**	Cohabitation 63 women **4.6%**	First birth 23 women **1.7%**	No union 3 women **0.2%**
First birth 478 women (1 woman pregnant at April 1997) 34.5%	First birth Marriage 18 women 1.3%	Cohabitation 7 women 0.5%	
	Marriage First birth 32 women 2.3%	Cohabitation Marriage 16 women 1.2%	
	First birth No marriage 13 women 0.9%		

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over 20% in Austria and over 50% in Sweden. In other countries, intergenerational changes are substantial - for example among young women in France (25-29 years old at interview) the proportion of first births in cohabitation rose to over 45% in comparison with 22% among older women (35-39 years old at the interview) (Kiernan 1999 on the basis of the Fertility and Family Survey data).

[4] A similar relationship is observed in Italy and Spain (1% of first births) or Norway and Austria (5%) among women aged 20 to 45 years at the time of the interview. Over 10% of first children in Sweden and Switzerland are born after the first union ended (Kiernan 1999 on the basis of the Fertility and Family Survey data).

Start by formation of first union:

First union
816 women
59%

Cohabitation
363 women
26.2%

Direct
marriage
453 women
32.7%

Pregnancy
172 women
12.4%

No
pregnancy,
no marriage
66 women
4.8%

Marriage
135 women
9.8%

Pregnancy
403 women
29.1%

No
pregnancy
50 women
3.6%

Marriage
First birth
118 women
(1 woman pregnant
at April 1997)
8.5%

Pregnancy
First birth
110 women
(2 woman
pregnant at
April 1997)
8.1%

First birth
399 women
(4 women
pregnant in
April 1997)
29.1%

First birth
Marriage
19 women
1.4%

No
pregnancy
23 women
1.7%

First birth
No marriage
34 women
2.5%

Resulting states:

In cohabiting union with one child
54 women
3.9%

In married union with one child
1198 women
86.6%

Note: (1) Own calculation, Fertility and Family Survey 1997.

Single motherhood is generally a topic with controversial views in opinions surveys. For example, on the one hand, an sizeable proportion of respondents stated that it is acceptable for a single mother to give birth to and educate a child (57% of respondents in the survey agreed with this statement Rodina 1996 – Family 1996, 1,496 respondents). On the other hand, most respondents (68% of women and 71% of men) in the survey thought that couples that would like to have a child should get married. A similar finding also comes from the analysis of the opinion part of the Czech Fertility and Family Survey 1997. A woman has the right to decide freely about single motherhood (80% of females and 70% of males agreed), but most respondents (90% of females and 95% of males) thought that a condition for happy childhood is a complete family with both mother and father.

To conclude, the sequencing norm of events: *union formation (mostly by direct marriage) – birth of first child* is very strong. If a woman has already experienced both events – union formation and entry into motherhood – the most common resulting form of family is thus a married union with a child (in 96% of the cases, with only 4% in cohabiting unions with a child (Scheme 1)). Sequencing norms may help to explain why a pre-union pregnancy (leading to a first childbirth) is usually followed by union formation before the birth of the child. In the Czech society, there was a strong sequencing norm regarding *marriage - birth of child*, but quite a weak norm regarding the sequence of *union formation – conception of first child.* The possible dimensions of background characteristics (calendar time, women's education, early life experiences) that are thought to have an impact on the partnership context of first birth are reviewed in the next section.

7.3 Review of our previous results

In this section WEreview the findings on the mutual relationship between first union formation and first childbirth from the analyses done in Chapter 5 and Chapter 6. In studying these issues, the model employed in Chapter 5 for the study of entry into motherhood took into account the impact of the duration since first union formation. And when studying union formation in Chapter 6, the model included the time since conception of the first child[5]. It is substantively important to depict the *shape* of each of these time effects.

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[5] For example, Blossfeld and Mills (2001) used a different approach to study the interrelationship of these two processes. They stress that there is a time ordering between causes and effects. The cause must precede the effect. As an implication there must be a temporal interval between the change in the variable representing a cause, and the change in the variable representing a corresponding effect. In other words, in their causal approach there can never be simultaneity of cause and its effect. In our analysis in Chapters 5 and 6 we have also studied the occurrence of events – union formation and entry into motherhood – in the

In the analysis, we paid attention to the effects of several socio-economic (woman's education and employment) and background (past life course experiences) variables on the timing of first birth and first union formation. The effects of some of these covariates may well differ for each of the processes studied. In addition, their effects may operate through a related process. For instance, a given variable may have an impact on the union formation process, which in turn will influence the probability of giving birth to the first child.

There are some normative sequences of events that are common for both processes. For instance, both – first union formation and first childbirth - should take place after school completion. Young women with plans for advanced education may delay forming any type of union, and are particularly unlikely to become pregnant while still studying. And having a consolidated position in the labor market is often seen as a precondition of family formation. However, in the Czech context the sequence *finishing of school education – conception of first child* was less strong and similarly, the position on the labor market was less important in the 1970s and 1980s compared to the period of the 1990s (see Chapter 5 for discussion).

7.3.1. Impact of union formation on entry into motherhood

In Chapter 5 we concluded that in the 1970s and 1980s family formation behavior was characterized by a concentration of *both* events - formation of union and conception of first child - into a short period of woman's life. When the female partner was not yet pregnant at the formation of her first union, she was 'at high risk' of first-birth conception directly afterwards (see Table 5.12 and for graphical presentation Figures 5.7 and 5.8 in Chapter 5). The results regarding the effects of partnership in interaction with an educational gradient shows *no* educational differences for the 1970s and 1980s. This means that all women irrespective of their education after formation of union had a high transition rate to first-birth conception. In the 1990s first children were conceived in already formed unions more often than in the previous reproductive regime. This means that there were more women following the sequence of the life events: *formation of union – conception – birth of first child*. Furthermore, there were educational differences in relation of first partnership and first birth in the 1990s: among women *not* living in partnership, having *no* educational degree tends to raise the probability of becoming a mother in comparison with women having some educational degree (upper-secondary and higher). Women with *lower*

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same period (in units of months), as a possible joint decision. Thus, one should not interpret the results in a strictly causal way – as one process being the cause of the other process.

educations were still maintaining the previous pattern of the high prevalence of *out-of-union* conceptions of the first child which was related to relatively low usage of contraceptives among these women in the 1990s. Moreover, there were some educational differences in the case of women already living in unions. In both types of union – cohabitation and marriage – those unions in which the female partner had a *higher* level of education tended to have *lower* transition rates to first-child conception. The results provide evidence that women with higher education formed 'not-child-related' partnerships more often and stayed in the 'childless' phase of partnership longer (see Chapter 5 for discussion).

As concerns the difference or similarity of cohabitation and marriage, marriage had significantly higher effects in both periods. Cohabitation and marriage had distinct features in the process of entry into motherhood, with cohabitation being less oriented towards childbearing. The existence of the immediate effect of union formation on first-child conception suggests that couples nearing marriage (or respectively, planning cohabitation) were less vigilant about preventing pregnancy because of their approaching nuptials (or respective plans to move in together). These two events – first union and first birth – then happened in a very close time interval (in our analysis, in the same month).

7.3.2. Impact of pregnancy/birth of first child on first union formation

In Chapter 6 the issue was studied from a different perspective - as an impact of pregnancy/birth of first child on first union formation while distinguishig between the start of union by cohabitation and by direct marriage (see Table 6.7 and for graphical presentation Figures 6.6 and 6.7 in Chapter 6). The effect of pregnancy/birth of first child is highly time-dependent and involves some time lags (e.g. time until detection of conception, time needed for wedding preparation or time needed for moving in together. The effect is stronger for marriages than for cohabitation in all months of pregnancy except for the time around the birth of the child). It is caused by the fact that single persons expecting the birth of their child get married directly since marriage is still considered a more appropriate place for childbearing. Moreover, there was a strong tendency to transform a cohabiting partnership to a marital union before the birth of a first child (see section 6.4.6).

An essential finding for the explanation of the decline in direct marriage through the period 1990-1997 is the overall decline in the risk of pre-union pregnancy that was a frequent 'push-factor' of direct marriages in the previous period (section 6.4.4). Pregnancy outside of unions was frequently a 'push-factor' for direct marriage especially among *lower*

educated women. This was *less* frequent for highly educated women. Highly educated women were more prone to direct marriages even without the 'push-factor' of anticipated motherhood and followed more closely the (normative) sequence of events: *marriage – pregnancy – first childbirth*. It is documented that highly educated women had better control over their reproduction, started their sexual life in later ages and more often used contraceptives in comparison with other women in both periods (see Chapter 5, section 5.2.6).

7.4 Interrelationship of family formation events

In the next section, first union formation and first childbirth are investigated as parts of one process – family formation. It is expected that those young women who are most likely to have a first birth are also most likely to form a union. This is for reasons one can observe – age of woman, participation in education, position in employment career, effects of past life experiences, etc. – but also for reasons one cannot measure. In the literature (e.g. Baizan, Aasve and Billari 2001, 2002) these unmeasured factors included *norms in society* and *value orientations* of individuals, in particular the attitudes and behavior of parents or peer groups, individual attitudes toward balancing work and family, individual attitudes towards gender roles, behavioral intentions and plans, or the individual's network norms and pressures concerning the timing of household formation.

Some authors (e.g. Marini 1985) emphasized the role of *norms on the sequence* of events and one might suppose that there are differences among members of a population in the strength and the compliance to the norms concerning the sequencing of union formation and childbirth.

Some authors argued that *value orientations* contribute significantly to explaining family formation (e.g. Lesthaeghe and Surkyn 2002). In the case of the Czech Republic, this argument was mainly used for explaining the changes in family formation process in the 1990s by Rabušic (2001). Refering to values, he compared value orientations between early and late 1990s and put them into connection with the change in reproductive behavior. However, these results are not convincing in the sense that the change in the value orientation is the main factor of alteration of reproductive behavior of young adults. It is difficult to test this hypothesis directly in the Czech context because there is no survey with parallel retrospective questions on the life course of individuals and his/her value orientation.

In most surveys, the respondents are asked about their opinions at certain points of time (at the date of interview). Similarly in the Fertility and Family Survey, the target population (women aged 15 to 49) is asked about their value orientations and opinions at the time of the survey, but in the analysis of the life course events they would be connected to early steps of their family formation. It is documented that opinions are changing with age and time due to personal experiences obtained, changing situation in society, etc. Thus one cannot expect that the opinions at the date of interview are attributable to different periods in the life course of individuals and to be used as explaining variables. Therefore, we did not use direct analysis of the influence of value orientations and opinions on the family formation process.

To conclude, it has not been possible so far, given a lack of appropriate panel data, to properly assess the impact of norms or value orientations on family formation behavior of young adults in the context of Czech society. For these reasons, in the event history analyses of individual data, such unobserved characteristics might have potentially affected and biased the results (Baizan, Aasve and Billari 2001). There is a possibility to account for these unmeasured factors by using certain statistical methods. The common unmeasured factors are essentially captured by the correlation between the heterogeneity components of each process. Our modelling strategy is based on the simultaneous hazard equation approach developed by Lillard (1993). Mathematical representation of the model is as follow:

entry into cohabitation: $\ln \mu_{1i}(t) = y_1(t) + \sum_j \beta_{1j} x_{ij}(t) + c(t-p_i) + u$

direct marriage formation: $\ln \mu_{2i}(t) = y_2(t) + \sum_j \beta_{2j} x_{ij}(t) + c(t-p_i) + u$

entry into motherhood: $\ln \mu_i(t) = y(t) + \sum_j \beta_j x_{ij}(t) + a_1(t-c_i) + a_2(t-cm_i) + a_3(t-m_i) + v$

where x_{ij} are covariates common for all processes but with different parameters β, β_1 and β_2 resulting from the model estimation. On the other hand, some of the covariates are specific for each event. For example, the effect of union formation on first-child conception where $a_1(t-c_i)$ enters the model only if a woman is living in cohabitation, $a_2(t-cm_i)$ enters the model only if a woman experiences marriage after cohabitation, and $a_3(t-m_i)$ enters the model only if a woman is living in a marriage not preceded by cohabitation. Or, the effect of pre-union pregnancy on union formation, where $c(t-p_i)$ is a time dependent linear spline term which enters the model only if a woman experiences pregnancy outside of a union. $y(t,)$ $y_1(t)$ and

$y_2(t)$ are baseline hazard functions by age and t is time passed from the 15th birthday. The baseline hazard is a piece-wise linear spline in the log-hazards (generalized Gompertz).

The random variables u and v capture unobserved heterogeneity, and are assumed to have a joint bivariate normal distribution with a term capturing the correlation between the unobserved heterogeneity terms of the processes (see Brien et al. 1999, Lillard and Panis 2003 or Baizan, Aasve and Billari 2001 for further discussion on this method).

We suppose that processes of first birth and first union formation share some common unmeasured factors. As expected, there is a *positive and significant correlation* between these heterogeneity components, with a value of 0.93 (Table 7.1 and Table C1 in Appendix C). This suggests that both events are part of the same process. Changes in first birth and first union formation are part of the same process of family formation and are partially determined by joint factors – by observed characteristics studied in Chapter 5 and Chapter 6 (women's education and employment characteristics, early life course experiences or historical time) but also by (in our models) *unobserved characteristics*.

Although it is not possible to elucidate the exact nature of the variables underlying the heterogeneity components, the unmeasured heterogeneity factors reflect the heterogeneous composition of each population with respect to values and norms (especially norms regarding the sequence and timing of family formation transitions) (Baizan et al. 2001, 2002). The statistical methods developed by Lillard and his colleagues (e.g. Lillard 1993, Lillard et al. 1995) enables us to control for this unobserved heterogeneity in the results for covariates included in our models (see Appendix C). There is no substantial change in the effects of covariates, thus our conclusions regarding influence of women's education, employment or early life experiences on family formation might stay unchanged.

Table 7.1. Heterogeneity components in processes of first birth and first union formation

Unobserved components in process:	
First union formation	0.81 ***
First birth	1.42 ***
Their correlation	0.93

Note: Complete results are in Table C1, Appendix C.

7.5 Concluding remarks

In this section, we included in the hazard models unobserved heterogeneity components controlling for the possible presence of constant common factors – unmeasured in this retrospective survey – influencing the timing of first birth and first union formation, and the mutual impact of such events. However, future studies should also aim at measuring what is presently unmeasured (e.g. values and norms in different stages of the life course), and include direct modelling of these factors with the use of panel studies containing questions that would enable researchers to depict these factors.

When contrasting the previous results of Chapter 5 and Chapter 6, we conclude that there are two characteristics that had a significant impact on the relationship between pregnancy/birth of first child and first union formation – *women's education* and *calendar time*. Women wanted to avoid an 'out-of-union' birth and, in particular in the 1970s and 1980s, they also wanted to avoid an 'out-of-wedlock' birth. Furthermore, it seems that educated Czech women behave more in accordance with the society norms regarding the sequence of events and the expectation that a child should be conceived and born in marriage.

We investigated two hypotheses: first, on partnerhip context of childbirth and second, timing and sequence of family formation events. To conclude, union formation and first birth have increasingly become disconnected from each other among Czech women. And even if there may be less pressure to marry in order to have children, the partnership context is still viewed as necessary.

CHAPTER 8

Summary and conclusions

8.1 Introduction

In the Czech Republic, important changes have occurred in the life courses of women in the 1990s. This has been reflected in demographic terms in the decline of marriage and fertility intensities, the rise of non-marital births and the higher prevalence of cohabitation. These demographic developments are in sharp contrast to the situation in the previous two decades.

The *goal* of this study was to gain insight into the transitions to first union and to first childbirth, giving explicit attention to the role of women's education and employment. Two historical periods were compared: the state socialism of the 1970s-80s and the social and economic transformation in the 1990s. The study of union formation and entry into motherhood was carried out with a multivariate event history analysis. We used individual data from the Czech Fertility and Family Survey 1997 providing information on partnership, fertility, educational and employment history over the life course of 1,735 women born between 1952 and 1982.

In our analysis we found strong support for the use of an individual level approach in demographic studies. This approach revealed some facts which might have remained hidden in classic demographic analysis, and proved some assumptions for which it is impossible to find empirical evidence at the macro-level data. Moreover, looking into other domains of a woman's life – such as education and employment or past life experiences – proved to be enriching for finding the explanation for family formation behavior. This should provide encouragement for further research into individual life courses in Central and Eastern

European countries in order to provide insights into unprecedented demographic changes since the fall of Communism.

The study's primary analytic focus was on the following questions: *What shifts occurred in family formation comparing young women entering adulthood in the 1990s with those in the 1970s and 1980s? Which groups of women 'transmit' shifts in family formation – thus, who are the 'trendsetters' and who are the 'laggers'?* A second major question was specific to the context of the Czech Republic: *How did institutional settings in the education system, labor market and society in general influence family formation under state-socialism of the 1970s and 1980s and in the transition to a market economy in the 1990s?*

This chapter provides a summary of the research and draws conclusions.

8.2 Summary of empirical findings

8.2.1 First union formation

In the 1970s and 1980s, women entered first unions at very young ages (nearly 50% of women did so before the age of 20) and only every fourth first union started with non-married cohabitation. Unmarried cohabitations lasted for a very short time and mostly ended in marriage. In the 1990s, there was a general delay of first union formation. The emergence of non-married cohabitation among young adults did not fully substitute for the decline in first marriage intensities. Moreover, if young adults moved into cohabitation in the 1990s, they stayed in this form of union for a longer time and more often this cohabitation ended by disruption compared to cohabiting unions in the previous period. This means that both phases – not living in any union and living in unmarried cohabitation – were prolonged. This is definitely the explanation for delayed first marriage. A question for future research is to examine whether these postponed marriages are going to be realized – after the period of cohabitation, with other partners or whether they do not become realized at all.

When studying the process of first union formation, distinguishing between cohabitation and marriage is of utmost importance. Some determinants influence entry into cohabitation in ways dissimilar to entry into marriage.

Who were cohabiters among young women? Women who had an experience of parental divorce and who grew up in big towns were more likely to start their first union by cohabitation than other women in both periods. In the 1990s, women who did not have a

steady position in the labor market (without employment or in precarious employment) were more inclined to form cohabiting unions compared to women in full-time employment. Education as a determinant seems to have a U-shape influence: on the one hand, women with a low level of education and on the other hand, women who had completed university education had higher transitions to cohabiting in the first union than women with a completed secondary education did (however, these results were not significant).

Who were the women who married directly? Women who had two or more siblings and who did not leave the parental home before their first union formation were more prone to marry directly. Women in (full-time) employment were under higher risks of marriage than others. Women who obtained university education had higher risks of direct marriage than women with lower education levels.

How can these results be interpreted? The impact of *past life course experiences* varied with the type of union. While there was a strong impact on one type of union formation, there was an opposite or no effect on a second type. It became clear that *past life course experiences* were of primary importance for the early transitions in partnership career.

Women's education as a determinant of first union formation was a crucial factor in theoretical reasoning. Women who had completed university education had higher transitions to both direct marriage and cohabitation (however, for cohabitation this result was not significant). We interpret this finding as a *catch-up effect*; thus, once women finished university studies they were in an age which was considered ideal for family formation. In this sense, the results did *not* show that it is the women with *higher* education who tend to start their first partnership by cohabitation. Such a pattern has been observed neither in the time of low prevalence of cohabitation among young adults in the period before 1990 nor in the 1990s. This means that in the Czech context the increase in cohabitation among young adults did not start especially among better-educated women.

Cohabitation in the 1990s was formed to a greater extent by women in an unstable position on the labor market (no work and/or no experience) and rather by women with low levels of education. As was suggested, the increasing prevalence of cohabitation among these women may represent one type of response to the *increasing uncertainties at an early adult age*. In contrast, marriage formation was similar to another long-term decision – entry into motherhood; thus, women in unstable situations on the labor market had a lower transition to direct marriage.

8.2.2 Entry into motherhood

In the 1970s and 1980s, first birth was an early and universal step in the life of young women and there was little differentiation by women's individual characteristics such as education, employment or occupation. Women had a swift transition to first birth immediately after the completion of education, and this was in particular true for university graduates. Concerning the characteristics of family of origin, women who had more than two siblings and who grew up in small settlements had higher risks of first birth than other women in both periods.

In the 1990s, one observes an unprecedented decline in first birth risks in young age groups. *Who were the women refraining from early age childbearing in the 1990s?* Women with higher education (having at least upper-secondary certificate – *maturita*) had lower risks of first birth compared to women with lower education. The period between end of education and family formation was prolonged. In particular, university educated women had low first-birth risks immediately after the end of their studies. Women who had not yet formed their position on the labor market (no work and/or no experience) were less likely to give birth to a first child compared to full-time employed women; however, this finding was valid only for women with higher education.

How can these results be interpreted? In the interpretation of our results, we stress the importance of the institutional environment (political settings, institutions of the labor market, the education system and public policies) in fertility behavior. In the Czech society of the 1970s and 80s, the labor market provided little room for upward and downward mobility (because of obligatory overall employment, no unemployment, rigid rules for career advancement and wage grids based mainly on age). In this situation, the timing of work interruptions related to maternity leaves did not have any major influence on future women's employment and earnings, since both of them were institutionally regulated. At the same time, population policy facilitated the reconciliation of childrearing with women's employment. Furthermore, these policies motivated young couples to marry and enter parenthood early. This combination of, on the one hand, a lack of incentives and weak constraints on the labor market and, on the other hand, incentives provided by population policies, led to universal and early entry into motherhood with little impact of education differentiation.

For the period 1990-1997 we formulated two contrasting hypotheses explaining the decline in first-birth risks and greater education differentiation in the timing of entry into

motherhood compared to the previous period. In the first hypothesis, we made the supposition that the *increased evaluation of education* and greater education differentiation of labor market opportunities and constraints brought about increasing opportunities for highly educated women. Following from this, highly educated women should have lower first-birth risks. The second hypothesis perceived *economic hardship* associated with economic transition as the most important factor exerting an influence on first-birth risks' reduction. Accordingly, a woman with a low educational status should have a lower risk of entry into motherhood.

The empirical analysis lent no support to the second hypothesis. On the contrary, the study supported the theoretical assumptions that changes in opportunity structures and institutional settings induced changes in fertility behavior among young women. The transition to a market economy was characterized by profound and swift changes in the framework conditions of the labor market – such as entry and exit patterns, earnings, and the value of education or job experience. Women with higher education made use of the new employment opportunities and career prospects. Their education received greater importance in terms of prestige or income than in the state socialist era. Women seemed to postpone family formation to a time after the *consolidation of employment* – this meant acquiring some job experience, making the most of the education attained and creating improved conditions for prospective maternity leave with the right to a period of job protection.

Since changes in the timing of first birth depend to a large extent on one's individual ability to control conception, the quick *spread of contraceptive use* in the 1990s was of major importance. Not surprisingly, the use of modern contraceptive methods did not expand at the same pace across different education groups; contraceptive use among Czech women appeared to increase with the education level.

Against the backdrop of our results, the intriguing question arises of whether low first-birth risks in the 1990s are related to (i) a postponement of entry into motherhood, or to (ii) an increase of childlessness among Czech women. However, this question must remain unanswered at this point. One may assess the importance of both effects on the decline of fertility in the 1990s when the cohorts of women born in the 1970s reached the age limit of childbearing. Meanwhile, an interesting finding of our analysis is that women with a higher education seemed to postpone entry into motherhood or to refrain altogether from childbearing more so than women with a lower education.

8.2.3 Interrelated processes: First union formation and first childbirth

In the 1970s-80s, family formation was characterized by a concentration of both events – union formation and birth of the first child - into a short period of women's life. The most common sequence (related to 43% of first children) was: *conception – formation of first union (in most cases by marriage) – birth of first child*. In the 1990s it was *not* only a shift of both events to later stages of a women's life course, but also a separation in the timing of both events. In the period 1990-97, the sequence *conception – formation of first union – birth of first child* was related to 27% of first children. The most common sequence became *formation of first union – conception – birth of first child* representing 59% of children; over 20% of first children were conceived in cohabitation and 7% of them were born to cohabiting parents. The proportion of first children born outside any union was around 10% in both periods. The change of the partnership context of first birth was very quick; in particular, cohabitation emerged newly as a setting for conception and birth of a first child. An important finding is that the increase in the proportion of first children born outside of marriage was fully explained by an increasing proportion of first children born to unmarried cohabitants.

What was the effect of first union formation on first-child conception? When the female partner was not pregnant at the formation of her first union, she was at high risk of first-birth conception directly afterwards (no difference by her education). Women living in marriage had significantly higher risks of first-child conception than women in cohabiting unions. The impact of union formation on first birth risks was stronger in the 1970s-80s compared to in the 1990s. However, there were important *educational differences*. Women with higher education levels lived longer in unions without having children, especially in the 1990s. At the other end of the spectrum, women with low education levels were under high risk of first-child conception immediately after union formation. Furthermore, for women *not living in any union* having a low level of education significantly increased the risk of first-child conception compared to a higher level of education.

What was the effect of arrival of a first child on first union formation? The fact of being pregnant greatly increased the probability of union formation. During the whole duration of pregnancy and also after the birth of the child, the risks were higher for the transition to marriage compared to the transition to cohabitation. In the case of cohabitation the stimulant effect of pregnancy was in general smaller with a peak at a later stage of pregnancy (last trimester of pregnancy). The pregnancy effect on the entry into marriage was

very high in the second trimester (3rd to 6th month of pregnancy). Pregnancies outside of unions were strong 'push factors' for direct marriage especially among lower educated women. Highly educated women were more prone to making a transition to direct marriages even without such a 'push-factor' of anticipated motherhood. Furthermore, anticipated parenthood in a cohabiting union was of high importance for the transition to marriage.

How can these results be interpreted? There were two characteristics that had a significant impact on the relationship between pregnancy/birth of the first child and first union formation – i.e. *women's education* and *calendar time*. The results provide evidence that women with higher education stayed longer in a 'childless' phase of partnership than lower educated women. Highly educated women rather followed this sequence of events: *(cohabitation –) marriage – conception – first childbirth.*

The first explanation is related to the education differences in contraceptive use. Highly educated women more often used modern contraceptive methods already at the start of their sexual lives. Similarly, the fact that low educated women had high risks of first-child conception out of unions reflects the lower contraceptive use among these women compared to women with higher education. Therefore, they had less control over the timing of first childbirth.

Secondly, it seems that highly educated women followed *societal norms* regarding the sequence of events more closely than did non-highly educated women. More first children of these women were born in unions – especially in marriage, and at the time of the first child conception, more women were already living in unions compared to women with lower education. These results do *not* support the expectations that university educated women were those introducing the new patterns in family formation behavior as concerns the emergence of cohabitation as a place for childbearing and breaking up the norm that a child should be born in a marital union.

8.3 Synthesis with theoretical concepts

8.3.1 Economics of family

Our first objective was to discuss the *neoclassical economic framework*. In the view of this theory (Becker 1993) it was expected that high economic independence reduces women's gains from marriage. Thus a high level of women's education attainment and the participation in labor market activities should lead to a lower marriage rate. This line of

theoretical reasoning was *not* supported by our findings. We found that women who finished university education had a particularly high transition to marriage and moreover women in full-time employment had higher risks of marriage than non-employed women. These findings suggest that in this aspect, the neoclassical economic reasoning is outdated. It seems that, in the context of high labor force participation of women and with the existence of dual-earner families, women's education and earning potential are as important as the characteristics of her male partner concerning marriage formation.

Regarding the timing of first birth, economic theory predicted that in the 1990s the costs of children increased. Thus, this would be the reason for a postponement or avoidance altogether of the birth of a first child. The 'career-planning hypothesis' (Gustafsson 2001) discusses as components that must be included in the costs of children: (i) the opportunity costs of time spent with children instead of being in the labor market, (ii) the depreciation of the value of education and experience while caring for a child, and (iii) the net direct child costs. The intriguing question is whether there was an increase in the net direct costs or indirect (opportunity) costs of children that had an impact on the decline of first birth risks. Since we found that a high education in particular had a strongly decreasing impact on first birth risks, we conclude that it was the increase in indirect (opportunity) costs which were highly important for childbearing decisions. These indirect opportunity costs include an increase in the value of education on the labor market, increasing career opportunities and decreasing possibilities to reconcile women's employment with childrearing in the 1990s.

Furthermore, the contextual framework for which these explanations have been developed is different from the conditions of state-socialism and perhaps from the transition to a market economy in the Czech Republic. Firstly, the theoretical concept assumes that career interruption is penalized and, moreover, that it is dependent on the stage of career at which the work interruption due to childbirth is taken. Secondly, the economic returns of education are held to be the result of market mechanisms. However, these assumptions need to be questioned when looking at overall employment, definite work contracts and wage grids in a centrally planned economy. Thirdly, the theory assumes an incompatibility between childrearing and women's employment. Nevertheless, the population policy of the state under socialism aimed at alleviating women's childcare responsibilities by supporting public childcare. Thus, these contextual characteristics had to be included in the discussion based on the economic theories.

The economic approach offers something to the discussion of our question only in terms of changes in *opportunity and constraint structure*. This means that the differences in patterns of family formation can only be explained in terms of different opportunities and constraints that individuals faced comparing these two historical periods. We argue that the change in family formation behavior is a rational response to increased economic uncertainty in early adulthood, increased returns to education, change in the institutions of labor market and similar factors. The approach can not contribute to the discussion on value transformations, since the neoclassical economic framework assumes that there are fixed preferences. Furthermore, the transmission of behavior across a population, the changes in social norms about the 'ideal' age at family life transitions and the influence of social networks on behavior are also not included in the discussion.

8.3.2 Second demographic transition

Our second objective was to review the 'second demographic transition' thesis. Van de Kaa (1994) distinguished between three broad types of factors, namely: changes in the economic and social structure of a society, cultural changes (value transformation) and technological innovations ('contraceptive revolution'). This complex structure gave rise to a continual shift in *individual preferences* (towards individuality, freedom and independence), in *constraints* (towards less normative control, and less dependence on institutions such as the state, the church and the family) and in *opportunities* (paid employment for women, increased education and labor market opportunities). The core of the 'second demographic transition' concept lies in the connection of *demographic shifts* and *value transformations*, namely growing individualization, a decrease in normative control and a shift in individual preferences.

We expected the emergence of several patterns of family formation behavior to be the manifestations of the second demographic transition, namely:

1. a postponement of entry into motherhood,
2. an emergence of cohabitation as a first union,
3. an emergence of cohabitation as a partnership context for the birth of a first child,
4. a prolongation of the duration of cohabiting first unions,
5. a prolongation of a childless phase after the formation of first union,
6. and, in general, a diversification of family formation processes.

As we have seen in the empirical analysis, all these patterns gained in importance during the 1990s compared to in the previous period. These are crucial findings supporting the second demographic transition view; however, further investigations of the patterns of family formation behavior across different groups in the population led to a less unambiguous picture.

The notion of the second demographic transition as a gradual, ongoing process makes it, in theory, possible to identify the *'leaders'* and the *'laggers'*. It was expected that mainly highly educated women would be in the forefront of the changes in reproductive behavior in the 1990s. *Did our results confirm these expectations*? First, concerning the postponement of entry into motherhood and the prolongation of the childless phase of union, we found highly educated women at the forefront. Second, the education level did *not* have any clear and significant influence on the transition to cohabitation. Third, contrary to our expectation, highly educated women had significantly *lower* risks of conception of a first child in cohabitation. This means that the new family formation behavior was not transmitted only from highly educated women to other groups of women. The trendsetters were not for all manifestations of the second demographic transition the same group of women. To conclude, the transmission of new forms of demographic behavior is a complex process, and the social interaction effects on behavior changes deserve the attention of future research.

These results have several important consequences for theoretical explanations. The change of reproductive behavior in the 1990s cannot be explained simply as an adaptation to reproductive behavior in other parts of Europe, where the second demographic transition has already taken place. In particular, the increasing prevalence of cohabitation of young adults has other dimensions than the *value transformation* argument. We found that women with unstable positions in the labor market (not employed and/or no experience) had higher transitions to cohabitation than women in full-time employment. We interpreted this to mean that cohabitation represents one type of response to the *increasing uncertainties at an earlier adult age*. While marriage is a long-term binding decision, cohabitation represents an alternative for those living in a partnership but lacking some of the expected prerequisites for marriage (i.e. financial independence, occupational stability, a resolved housing situation). Thus, both aspects – *value transformations* and *increasing uncertainties* – interact. We have not directly investigated the relationship between women's value orientation and the patterns of their family life transitions due to lack of appropriate data. Future research should aim to address this issue.

The core of the 'second demographic transition' concept lies in the connection of *demographic shifts* and *value transformations* accompanied by *gradual* changes in economic and social structure of societies and technological innovations. In some of the second demographic transition theorizing the discussion of economic change has a more important place. For instance, Lesthaeghe and van de Kaa (1986) considered that the economic recession of 1975-1985 in Western Europe enhanced the tempo shifts in fertility and nuptiality (as noted in Surkyn and Lesthaeghe 2002:1). Furthermore, the discussion on the role of the state is restricted to a *gradual* decrease in dependence of individuals on institutions i.e., the state. However, the fall of the communist regime – which had exercised very strong control over many aspects of individuals' lives – and the subsequent profound political, economic and social transformations were of a different nature compared to the *gradual* political, economic and social changes in other parts of Europe.

8.3.3 The life course in a changing society

The third main objective was to make a connection between certain institutional conditions on the macrolevel of the society and specific life course patterns. The main assumption is that the officially regulated stages, transitions and events of the public life course influence the sequences of positions and roles in the private spheres of life (Buchmann 1989). Thus, we combined individual level dynamic analysis with institutional explanations. The institutional sectors most important for understanding the family formation of young adults were those which pertain to the educational system, the labor and housing markets and the public policies related to the family (presented in Chapter 3). The Czech population offers a unique experience to investigate a population under two different institutional settings – first, the state under socialism with centrally planned economy and second, the transition to democracy and a market economy.

Throughout the study, many different aspects of *state* action were considered in the explanations of family formation patterns. Concerning the family life transitions of young adults the following state actions were of main interest:

1. Controlling and expanding education;
2. Regulating the labor market;
3. Legislating family transitions;
4. Family and population policies;
5. Reproductive health policies;

6. Social and health insurance legislation;

7. State as an employer.

The consequences of different institutional configurations and different political economies in the two periods studied are seen in major changes in the temporal and social organization of the lives of women. We suggest that an important part of the changes in family formation patterns was the product of institutional developments following the collapse of the communist regime. To conclude, we found that the state and economy were strong determining factors in individual lives. We argue that the political, economic and cultural context of young women's lives made the outcome of – in a European context – the general process of modernization (the 'second demographic transition' in demographic theories) very specific.

8.4 Policy implications of research

This section deals with policy and broader implications of the research and asks what these results mean for the Czech society and for policy makers, in particular, viewing the results in a European context.

First, in the summary of our findings, the intriguing question arose of whether low first-birth risks in the 1990s are related to (i) a postponement of entry into motherhood, or to (ii) an increase of childlessness among Czech women. For future demographic development is important how big part of women is going to have children. Furthermore, we found that women with a higher education seemed to postpone entry into motherhood or to refrain altogether from childbearing more so than women with a lower education. Highly educated women in particular consider the issue of work-family reconciliation in the new conditions existing in transition economies. As concerns the policy implications of our results, one might question the development of family policies in the 1990s. It then became difficult to reconcile employment and childrearing especially for mothers with children below age 3. Public childcare for children below this age was very limited and the system of parental leave was inflexible (in terms of combining parental leave with part-time work or employment at home). The prevalent type of family with children below age 3 was mainly that the man was the breadwinner (being in full-time employment) and the woman was temporarily a housewife and stay-at-home mom who was financially dependent on the male partner. Such prospects play an important role in childbearing decisions of young women, especially those with a higher education. Therefore, family policies in the Czech Republic

need to take a new direction. They should address: the issues of public childcare for children below the age of 3, the parental leave system and work time flexibility.

Viewing the Czech situation in a European context, two findings are striking. First, the EU summit in Barcelona passed a recommendation that by 2010 member states should provide childcare for at least 33% of children under the age of 3 and to at least 90% of children between age 3 and mandatory school age (European Council 2002, cited in Neyer 2003). The Czech Republic has already been fulfilling this level of childcare provision for 3 to 6 year-olds for decades . However, the mere 1% childcare provision for children under the age of 3 (see Chapter 3) poses a fundamental question about direction of family policies. Second, the Czech maternity and parental leave system is the most generous of all EU member states in its length. However, what is missing is its flexibility with women's employment. Thus, it increases the gender inequalities on the labor market. Furthermore, even if men are legally equal to women in being allowed to take parental leave, it has never been promoted by other measures.

Second, we found that young women in unstable situations in the labor market (unemployed or part-time job) postpone family-life transitions. As discussed, such long-term decisions as marriage or the birth of a child require a certain degree of stability and future prospects. Therefore, all policy measurements – and not only family policies – supporting the position of young adults in society might lead to higher fertility. Such measurements include e.g. labor policy promoting stable patterns of employment of young adults, housing policy creating easier access to housing for young adults, education grants and loans for university studies, etc. However, social policy in the 1990s took a different direction while ensuring public support for the transition. The social safety net focused especially on low general unemployment, stable employment of older workers, well-being of pensioners and regulations on the housing market. The results were clear: relatively high unemployment of young adults, precarious employment at the start of a working career, limited possibilities to enter a regulated segment of the housing market, diminishing state support for families with children and university students being dependent on their parents. As concerns intergenerational equity towards public policies, the generation of parents who married and had children at the time of important family policies in the 1970s are going to stand again in the center of public policy at the onset of their pensions. In the European context, McDonald (2000:10) similarly points out that older generations that have benefited from the past system are often in the forefront of policy changes that make childbearing more difficult for the younger generation. Cutbacks in the public provision of major services, or increases in

charges for these services, affect those with dependents to a greater extent than those without dependents.

Third, the findings on the interrelation of union formation and childbearing have important policy relevance. They suggest that any policy that encourages union formation (such as facilitating access to housing or tax relief for couples) might have a positive impact on fertility. Furthermore, with the rising proportion of cohabiting unions among young adults and the rising proportion of first children born in cohabiting unions, there should be no difference with respect to the form of partnership in any relevant social policies and laws.

Fourth, on several examples we documented the heterogeneity of the population concerning the determinants of family life transitions. Therefore, there is also heterogeneity of the population in its needs for social policy. While certain policy measures might be important in decisions of some social groups, they are of low importance for others. Thus, the system of family policies should be well-balanced.

Policy makers should keep in mind that *"the real demographic problem in continental Europe is not ageing but low fertility and low activity"* (Esping-Andersen 1996:97). In the crux of this problem stands the reconciliation of family and work. In Czech gender studies (e.g. Křížková 2002:149), the conflict between work and family is viewed as a gender stereotype deeply rooted in social conditions and settings which is considered a main characteristic as well as problem in the lives of contemporary Czech women. As concerns the relation of gender equity and fertility, McDonald (2000) showed that if women are provided with opportunities nearly equivalent to those of men in education and market employment, but these opportunities are severely curtailed by having children, then, on average, women will have less children which might leave fertility at a precariously low level in the long-term. In the future, this might well be the case in the Czech Republic. Women are educated to the same standard as men and are educated for employment in the paid labor force just like men. Overall, a relatively high degree of gender equity applies in the institutions of education and market employment and this offered considerable opportunities to women to pursue education and work ambitions. Despite equal employment opportunity legislation, there is a considerable level of discrimination against women in employment selection with respect to their family situation and family plans. Furthermore, as McDonald (2000:5) points out, ages 25-34 years have become the main age range for career advancement for young people while at the same time it is the main reproductive age for women. In this view, the delay of childbearing and the formation of long-term relationships means that young women spend longer periods of time in full-time, paid employment without the concern of caring for children (or a partner).

La constitution des familles dans une société en mutation :

Les transitions vers la vie en couple et la maternité
en République tchèque, 1970-1997

Résumé en français

En République tchèque, dans les années 1990, les histoires de vie des femmes ont connu des changements importants. En termes démographiques, ces transformations concernent principalement une très forte baisse des taux de nuptialité et de fécondité, l'augmentation de la proportion des naissances hors mariage et de la fréquence de la cohabitation. Ces développements font contraste avec la situation démographique des deux décennies précédentes.

L'objectif principal de la thèse était de répondre aux questions suivantes : *Quels changements ont eu lieu dans la constitution des familles en comparant les jeunes femmes entrant aux âges adultes dans les années 1990 à celles des années 1970 et 1980 ? Quelles femmes ont adopté les premières le nouveau comportement de constitution des familles ?* Et à une autre question spécifique au contexte de la République tchèque : *Comment le cadre institutionnel du système d'éducation, le marché de travail et la société en général ont-ils influencé les comportements des jeunes femmes dans la vie privée, d'une part, pendant la période socialiste des années 1970 et 1980 et, d'autre part, pendant la transition systémique vers une économie de marché durant les années 1990 ?*

Pour tenter de répondre à ces questions, nous avons utilisé des données biographiques familiales, professionnelles et scolaires collectées durant une enquête nationale (The Czech Fertility and Family Survey 1997) comprenant les biographies de vie de 1 735 femmes nées entre 1952 et 1982. Nous avons étudié le passage vers la naissance du premier enfant et celui vers la vie en couple (cohabitation ou mariage), en prêtant une attention toute particulière aux rôles de l'éducation et de l'activité professionnelle des femmes. Nous avons utilisé les méthodes de l'analyse des

biographies, particulièrement les modèles des risques proportionnels prenant en compte l'hétérogénéité non-observée et la corrélation entre les processus étudiés. Notre travail vient corroborer la nécessité de l'analyse au niveau individuel dans les études démographiques concernant les modes de la constitution des familles en Europe centrale après la chute de communisme. Grâce à ce type d'analyse, nous avons pu découvrir des faits qui seraient passés inaperçus avec une analyse démographique classique. Par ailleurs, nous avons vérifié les hypothèses selon lesquelles on ne pourrait pas trouver une évidence empirique au niveau des données agrégées.

La première partie de la thèse porte l'attention sur le développement démographique de 1970 à 2000, en se fondant principalement sur des données agrégées (Chapitre 2). Le Chapitre 3 passe en revue le développement du système éducatif et le fonctionnement du marché du travail, en se focalisant particulièrement sur la position des femmes et les mesures de la politique familiale et démographique durant cette période. Un chapitre théorique (Chapitre 4) pose la question de savoir comment on peut étudier les transitions de vie familiale dans la perspective de la biographie ou histoire de vie. La conclusion en est que l'approche d'une analyse quantitative des biographies convient le mieux aux buts de notre étude et des concepts théoriques utilisés.

Les trois chapitres suivants présentent les analyses empiriques et une discussion des résultats. L'analyse de la transition vers la naissance du premier enfant (Chapitre 5) est particulièrement centrée autour du bouleversement de la fécondité, qui était jeune et universelle jusqu'aux années 1970 et 1980. Durant les années 1990, de manière générale, les femmes ont retardé la naissance du premier enfant (ou l'ont évité complètement), en particulier les femmes éduquées et les femmes dans une situation non-favorable sur le marché du travail (sans travail et/ou sans expérience). La transition vers une première vie en couple des jeunes femmes est étudiée dans le cadre de l'analyse des risques compétitifs attirant une attention spéciale sur les différences entre cohabitation et mariage direct (Chapitre 6). Alors que, dans les années 1970 et 1980, seulement un quart des unions commençait par une cohabitation, dans les années 1990-97, une moitié des premières unions commençait déjà ainsi. Toutefois, les caractéristiques individuelles des femmes qui choisissent ces deux modes de vie en couple peuvent être très différentes. Les deux processus - transition vers la maternité et transition vers la vie en couple - sont étroitement liés. Il est important de tenir compte de leur endogénéité, et nous avons choisi d'inclure la corrélation des composants de l'hétérogénéité non-observées (Chapitre 7).

En conclusion, on constate que ces deux processus - la transition vers la maternité et la transition vers la vie en couple – sont devenus plus séparés durant les années 1990. Le Chapitre 8 présente un résumé des résultats, leur synthèse avec les concepts théoriques et leurs conséquences possibles pour la politique familiale et sociale de la République tchèque.

Cette étude a apporté des connaissances sur les changements profonds de comportement concernant la constitution des familles. Dans la synthèse de nos résultats incluant les concepts théoriques, nous avons attiré attention sur le problème selon trois angles d'attaque.

Notre *premier objectif* était discuter le cadre néo-classique. Selon cette théorie (Becker 1993), on suppose que, pour les femmes, l'indépendance économique élevée diminue les gains du mariage. Ainsi, le niveau élevé d'éducation et une participation au marché du travail réduit la probabilité du mariage. Notre analyse n'a pas prouvé cette supposition. Les femmes les plus éduqués ont les risques de mariage les plus élevés. De plus, les femmes employées à temps plein ont des risques de mariage plus forts que les femmes non-employées. Cela signifie que l'éducation des femmes et les gains économiques sont aussi importants que ceux de leur conjoint. En ce qui concerne la naissance du premier enfant, les coûts de l'enfant (direct et indirect) ont augmenté très fortement avec la transition systémique. Pour cette raison, les femmes peuvent retarder la naissance du premier enfant ou l'éviter complètement. Etant donné le fait que ce sont particulièrement les femmes éduquées qui ont des risques faibles d'avoir un premier enfant durant les années 1990, nous avons conclu que c'est principalement l'augmentation des coûts indirects de l'enfant qui est importante pour ce qui concerne la décision d'avoir des enfants. Dans le contexte tchèque, cela concerne principalement une augmentation de l'évaluation du capital humain sur le marché du travail, une hausse des chances de faire carrière ou une diminution de la possibilité de concilier des responsabilités familiales et un travail.

Le *second objectif* était d'illustrer la thèse d'une 'seconde transition démographique' issue des travaux de Lesthaeghe et van de Kaa. L'essentiel de ce concept est l'existence de liens entre les changements de comportement familial et les transformations des valeurs et attitudes. Nous avons assisté à une apparition de nouveaux modes de comportements qui sont des manifestations de la 'seconde transition démographique', c'est-à-dire le report de la maternité, l'apparition de la cohabitation des

jeunes adultes, l'augmentation des naissances d'enfants de cohabitants, un allongement de la cohabitation, une prolongation de la période de vie en couple sans enfant et, en général, une diversification des modes de constitution des familles. Les analyses empiriques ont documenté le fait que ces comportements ont été plus manifestes dans les années 1990 en comparaison des années précédentes. En outre, nous avons étudié quelles groupes de femmes étaient au premier rang des changements de comportement. Résultat intéressant, ce n'était pas toujours le même groupe de femmes. En particulier, la hausse de la fréquence de la cohabitation parmi les jeunes adultes pendant les années 1990 avait un aspect différent par rapport aux transformations des valeurs et attitudes. Les femmes touchées par la situation défavorable du marché du travail (sans travail et/ou sans expérience) avaient des risques plus élevés d'entrer en première union par cohabitation par comparaison avec les femmes employées. Ainsi, la cohabitation peut aussi représenter une réponse à l'augmentation des incertitudes dans la vie des jeunes adultes. Le concept de 'seconde transition démographique' suppose que les transformations des valeurs et attitudes sont accompagnées par des changements *graduels* des structures économiques et sociales et des innovations technologiques. De plus, la discussion concernant le rôle de l'Etat est limitée à un affaiblissement *graduel* de la dépendance des individus vis-à-vis des institutions étatiques. Cependant, la chute du communisme - qui avait autrefois exercé un contrôle fort sur de nombreux aspects de la vie privée – et par la suite, les bouleversantes transformations politiques, économiques et sociales sont d'une nature différente.

Le *troisième objectif* était d'établir des relations entre les conditions institutionnelles au niveau de la société et les modes spécifiques de vie des individus. L'hypothèse principale était que les étapes, transitions et évènements officiellement régularisés dans la vie publique influencent les séquences de positions et rôles dans la vie privée (Buchmann 1989). Ainsi, nous avons associé une analyse dynamique au niveau individuel avec des explications institutionnelles. La société tchèque représente une occasion unique d'étudier une population dans deux circonstances très différentes – l'une étant un Etat socialiste avec une économie dirigée et l'autre un état en transition vers la démocratie et une économie du marché. Tout au long de notre étude, plusieurs aspects de l'action de l'Etat ont été considérés dans les explications des modes de constitutions des familles, en particulier : le contrôle et le développement du système éducatif, la régulation du marché du travail, la législation concernant les transitions familiales, les mesures de la

politique familiale et démographique, les mesures de la politique de santé reproductive, la législation concernant les aides et la sécurité sociale, particulièrement l'assurance maladie, et l'Etat comme employeur. On peut suggérer, qu'une partie importante des changements de modes de constitution des familles sont un produit des développements institutionnels suivant le chute de communisme. En conclusion, les circonstances politiques, économiques et sociales des vies des jeunes adultes tchèques sont à l'origine du processus de modernisation si particulier (la 'seconde transition démographique' pour parler en termes démographiques).

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Appendix A

To Chapter 5

Table A1 Relative risks of the first birth, the Czech Republic 1970-1989 and 1990-1997. Model 0 with no covariates.

	Model 0 Period 1970-1989				Model 0 Period 1990-1997			
			values				values	
	b	(SE)	at nodes[a]	exp(v)[b]		b	(SE)	at nodes[a]	exp(v)[b]
Baseline:					Baseline:			
(woman's age)					(woman's age)			
constant:					constant:			
15	-5.57	(0.32) ***	-5.57	0.00	15	-6.04	(0.69) ***	-6.04	0.00
slopes:					slopes:			
15-18	1.09	(0.13) ***	-2.31	0.10	15-18	1.23	(0.26) ***	-2.33	0.10
18-19	0.71	(0.15) ***	-1.59	0.20	18-20	0.22	(0.12) *	-1.90	0.15
19-22	0.08	(0.04) *	-1.35	0.26	20-25	0.04	(0.04)	-1.71	0.18
22-25	-0.07	(0.05)	-1.55	0.21	25-28	-0.04	(0.10)	-1.84	0.16
25-35	-0.09	(0.04) **	-2.41	0.09	28-35	-0.16	(0.09) *	-2.97	0.05
Log-likelihood of model	-5655.6							
Observations	1709							
Observations in period	1361				806			
First births in period	887				333			

Notes: (1) Method: event history model (generalized Gompertz); dependent variable: transition to first child measured since age 15. (2) Significance: * at 10%; ** at 5%; *** at 1%. Asymptotic standard errors (SE) are in parentheses. (3) Source: FFS Czech Republic 1997.

[a] Values of log-hazard risks for y axis in graph at nodes representing age of woman 15, 18, 19, 22, 25, 35 for period 1970-1989 and 15, 18, 20, 25, 28, 35 for period 1990-1997

[b] Exponentials of values of log-hazard risk at nodes.

Table A2   Relative risks of the first birth, the Czech Republic 1970-1989 and 1990-1997. Model I with education.

	Model I Period 1970-1989				Model I Period 1990-1997		
	b	**(SE)**	**exp(b)**		**b**	**(SE)**	**exp(b)**
Baseline(woman's age):							
constant:							
15	-4.91	(0.33) ***		15	-5.03	(0.80) ***	
slopes:							
15-18	0.97	(0.13) ***		15-18	0.94	(0.28) ***	
18-19	0.46	(0.16) ***		18-20	0.14	(0.13)	
19-22	0.07	(0.05)		20-25	0.03	(0.04)	
22-25	-0.11	(0.06) **		25-28	-0.08	(0.10)	
25-35	-0.09	(0.04) **		28-35	-0.16	(0.09) *	
Educational degree obtained:							
Out of education:							
no degree	0.17	(0.08) **	1.18		0.31	(0.12) **	1.37
secondary degree = reference	0.00		1.00		0.00		1.00
university degree	0.19	(0.22)	1.21		0.05	(0.27)	1.05
In education:							
no degree	-0.64	(0.14) ***	0.53		-0.69	(0.30) **	0.50
after secondary degree	-0.97	(0.18) ***	0.38		-1.30	(0.33) ***	0.27
Log-likelihood of model	-5586.1						
Observations	1709						
Observations in period	1361				806		
First births in period	887				333		

Notes: (1) Method: event history model (generalized Gompertz); dependent variable: transition to first child measured since age 15. (2) Significance: * at 10%; ** at 5%; *** at 1%. Asymptotic standard errors (SE) are in parentheses. (3) Source: FFS Czech Republic 1997.

Table A3   Relative risks of the first birth, the Czech Republic 1970-1989 and 1990-1997. Model II with calendar time, education and labor market situation.

	Model II Period 1970-1989				**Model II** Period 1990-1997		
	b	**(SE)**	**exp(b)**		**b**	**(SE)**	**exp(b)**
Baseline(woman's age):							
constant:							
15	-4.96	(0.35) ***		15	-4.80	(0.81) ***	
slopes:							
15-18	0.98	(0.13) ***		15-18	0.92	(0.29) ***	
18-19	0.44	(0.16) ***		18-20	0.12	(0.14)	
19-22	0.06	(0.05)		20-25	0.04	(0.04)	
22-25	-0.12	(0.06) **		25-28	-0.09	(0.10)	
25-35	-0.10	(0.04) **		28-35	-0.16	(0.09) *	
Period:							
1970-1979 = reference	0.00		1.00	1990-1993	0.00		1.00
1980-1989	0.01	(0.07)	1.01	1994-1997	-0.41	(0.12) ***	0.66
Educational degree obtained:							
Out of education:							
no degree	0.16	(0.11)	1.17		0.39	(0.16) **	1.48
secondary degree = reference	0.00		1.00		0.00		1.00
university degree	0.18	(0.23)	1.20		0.01	(0.31)	1.01
In education:							
no degree	-0.60	(0.16) ***	0.55		-0.68	(0.32) **	0.50
after secondary degree	-0.92	(0.20) ***	0.40		-1.25	(0.34) ***	0.29
Current (in)activity on labour market:							
Employed:							
full-time = reference	0.00		1.00		0.00		1.00
part-time and short employments	0.02	(0.17)	1.02		0.25	(0.20)	1.28
Not employed:							
no experience	-0.11	(0.16)	0.90		-1.01	(0.40) **	0.36
some experience	1.18	(0.13) ***	3.25		0.26	(0.23)	1.29
Cumulated occupational status:							
Highly qualified positions	0.16	(0.22)	1.17		0.08	(0.33)	1.08
Qualified position	0.09	(0.13)	1.10		0.13	(0.18)	1.14
Unqualified position = reference	0.00		1.00		0.00		1.00
Skilled worker	-0.05	(0.12)	0.95		0.10	(0.18)	1.10
Un(semi-)skilled worker	0.12	(0.10)	1.12		-0.21	(0.19)	0.81
Log-likelihood of model	-5552.5						
Observations	1709						
Observations in period	1361				806		
First births in period	887				333		

Notes: (1) Method: event history model (generalized Gompertz); dependent variable: transition to first child measured since age 15. (2) Significance: * at 10%; ** at 5%; *** at 1%. Asymptotic standard errors (SE) are in parentheses. (3) Source: FFS Czech Republic 1997.

Table A4 Relative risks of the first birth, the Czech Republic 1970-1989 and 1990-1997. Model III with partnership status, education, labor market situation and characteristics of parental home.

	Model III Period 1970-1989			Model III Period 1990-1997		
	b	**(SE)**	**exp(b)**	**b**	**(SE)**	**exp(b)**
Baseline(woman's age):						
15	-5.16	(0.35) ***		15	-5.23	(0.82) ***
slopes:						
15-18	0.97	(0.13) ***		15-18	0.91	(0.29) ***
18-19	0.36	(0.16) **		18-20	-0.05	(0.14)
19-22	-0.08	(0.05) *		20-25	-0.07	(0.04) *
22-25	-0.16	(0.06) ***		25-28	-0.07	(0.10)
25-35	-0.12	(0.04) ***		28-35	-0.17	(0.10) *
Partnership status:						
not living in partnership	0.00		1.00	0.00		1.00
cohabitation	1.04	(0.11) ***	2.84	1.40	(0.15) ***	4.04
marriage	1.46	(0.08) ***	4.29	1.76	(0.14) ***	5.79
Educational degree obtained:						
Out of education:						
no degree	0.08	(0.10)	1.08	0.52	(0.15) ***	1.69
secondary degree = reference	0.00		1.00	0.00		1.00
university degree	0.21	(0.25)	1.23	-0.03	(0.28)	0.97
In education:						
no degree	-0.45	(0.15) ***	0.64	-0.34	(0.32)	0.71
after secondary degree	-0.64	(0.20) ***	0.53	-0.70	(0.36) **	0.50
Current (in)activity on labour market:						
Employed:						
full-time = reference			1.00			1.00
part-time and short employments	-0.06	(0.18)	0.94	0.19	(0.18)	1.21
Not employed:	0.00			0.00		
no experience	-0.02	(0.16)	0.98	-0.96	(0.41) **	0.38
some experience	0.77	(0.14) ***	2.16	0.16	(0.26)	1.17
Cumulated occupational status:						
Highly qualified positions	0.40	(0.22) *	1.50	0.14	(0.36)	1.15
Qualified position	0.09	(0.11)	1.10	0.18	(0.16)	1.20
Unqualified position = reference	0.00		1.00	0.00		1.00
Skilled worker	0.00	(0.12)	1.00	0.19	(0.17)	1.21
Un(semi-)skilled worker	0.17	(0.10) *	1.18	-0.09	(0.18)	0.91

(continuing)

Table A4 (continued)

	b	(SE)	exp(b)	b	(SE)	exp(b)
Characteristics of parental home:						
No sibling	-0.31	(0.15) **	0.73	-0.05	(0.23)	0.95
One sibling = reference	0.00		1.00	0.00		1.00
Two and more siblings	0.22	(0.07) ***	1.25	0.17	(0.12)	1.18
Childhood spent:						
not in town = reference	0.00		1.00	0.00		1.00
in town (>10 000)	0.00	(0.07)	1.00	-0.24	(0.12) **	0.79
Log-likelihood of model	-5306.6					
Observations	1709					
Observations in period	1361			806		
First births in period	887			333		

Notes: (1) Method: event history model (generalized Gompertz); dependent variable: transition to first child measured since age 15. (2) Significance: * at 10%; ** at 5%; *** at 1%. Asymptotic standard errors (SE) are in parentheses. (3) Source: FFS Czech Republic 1997.

Table A5 Relative risks of the first birth, the Czech Republic 1970-1989 and 1990-1997. Model IV with partnership status, education, labor market situation, characteristics of parental home and unobserved heterogeneity components.

	Model IV Period 1970-1989				Model IV Period 1990-1997		
	b	**(SE)**	**exp(b)**		**b**	**(SE)**	**exp(b)**
Baseline(woman's age):							
15	-6.40	(0.45) ***		15	-6.08	(0.95) ***	
slopes:							
15-18	1.09	(0.14) ***		15-18	0.94	(0.31) ***	
18-19	0.69	(0.18) ***		18-20	0.14	(0.17)	
19-22	0.18	(0.07) ***		20-25	0.03	(0.06)	
22-25	-0.01	(0.07)		25-28	0.07	(0.12)	
25-35	-0.01	(0.05)		28-35	-0.18	(0.11)	
Partnership status:							
not living in partnership	0.00		1.00		0.00		1.00
cohabitation	1.30	(0.15) ***	3.68		1.67	(0.21) ***	5.31
marriage	1.91	(0.13) ***	6.76		2.18	(0.22) ***	8.82
Educational degree obtained:							
Out of education:							
no degree	0.27	(0.15) *	1.31		0.72	(0.23) ***	2.06
secondary degree = reference	0.00		1.00		0.00		1.00
university degree	-0.01	(0.34)	0.99		-0.38	(0.44)	0.68
In education:							
no degree	-0.28	(0.20)	0.76		-0.14	(0.37)	0.87
after secondary degree	-0.84	(0.26) ***	0.43		-0.78	(0.39) **	0.46
Current (in)activity on labour market:							
Employed:							
full-time = reference	0.00		1.00		0.00		1.00
part-time and short employments	-0.01	(0.25)	0.99		0.16		1.17
Not employed:							
no experience	0.04	(0.20)	1.04		-1.04	(0.46) **	0.35
some experience	1.11	(0.20) ***	3.05		0.13	(0.31)	1.13
Cumulated occupational status:							
Highly qualified positions	0.27	(0.29)	1.31		0.02	(0.48)	1.02
Qualified position	0.05	(0.16)	1.05		0.29	(0.23)	1.34
Unqualified position = reference	0.00		1.00		0.00		1.00
Skilled worker	0.04	(0.19)	1.04		0.32	(0.25)	1.38
Un(semi-)skilled worker	0.35	(0.16) **	1.43		0.05	(0.25)	1.05

(continuing)

Table A5   (continued)

	b	(SE)	exp(b)	b	(SE)	exp(b)
Characteristics of parental home:						
No sibling	-0.52	(0.22) **	0.59	-0.12	(0.31)	0.89
One sibling = reference	0.00		1.00	0.00		1.00
Two and more siblings	0.39	(0.12) ***	1.48	0.32	(0.17) *	1.38
Childhood spent:						
not in town = reference	0.00		1.00	0.00		1.00
in town (>10 000)	-0.03	(0.11)	0.97	-0.27	(0.16) *	0.76
Unobserved heterogeneity characteristics:						
Delta 1	1.27	(0.13) ***				
Delta 2				1.08	(0.24) ***	
Correlation delta1*delta2				0.68	(0.23) ***	
Log-likelihood of model	-5274.9					
Observations	1709					
Observations in period	1361			806		
First births in period	887			333		

Notes: (1) Method: event history model (generalized Gompertz); dependent variable: transition to first child measured since age 15. (2) Significance: * at 10%; ** at 5%; *** at 1%. Asymptotic standard errors (SE) are in parentheses. (3) Source: FFS Czech Republic 1997.

Table A6   Relative risks of the first birth, the Czech Republic 1970-1989 and 1990-1997. Model V with time elapsed since the end of schooling.

	Model V Period 1970-1989				Model V Period 1990-1997		
	b	(SE)	exp(b)		b	(SE)	exp(b)
Baseline(woman's age):							
15	-5.58	(0.32) ***		15	-5.78	(0.70) ***	
slopes:							
15-18	0.95	(0.13) ***		15-18	0.68	(0.29) **	
18-19	0.38	(0.15) **		18-20	0.01	(0.14)	
19-22	0.04	(0.05)		20-25	-0.12	(0.08)	
22-25	-0.06	(0.07)		25-28	-0.17	(0.12)	
25-35	-0.03	(0.06)		28-35	-0.24	(0.11) **	
Time elapsed since end of schooling:							
No degree obtained:							
Constant	0.93	(0.17) ***	2.54		1.97	(0.43) ***	7.19
Slopes							
0-2	0.14	(0.10)			0.02	(0.21)	
2+	-0.08	(0.04) **			0.08	(0.06)	
Secondary degree obtained:							
Constant	0.50	(0.21) **	1.65		1.16	(0.56) **	3.18
Slopes							
0-2	0.22	(0.13) *			0.02	(0.30)	
2+	0.00	(0.05)			0.21	(0.10) **	
University degree obtained:							
Constant	1.22	(0.42) ***	3.39		-0.84	(1.92)	0.43
Slopes							
0-4	-0.17	(0.20)			0.66	(0.52)	
4+	0.04	(0.23)			0.19	(0.09) **	
Log-likelihood of model	-5274.9						
Observations	1709						
Observations in period	1361				806		
First births in period	887				333		

Notes: (1) Method: event history model (generalized Gompertz); dependent variable: transition to first child measured since age 15. (2) Significance: * at 10%; ** at 5%; *** at 1%. Asymptotic standard errors (SE) are in parentheses. (3) Source: FFS Czech Republic 1997.

Table A7 Relative risks of the first birth, the Czech Republic 1970-1989 and 1990-1997. Model VI with time elapsed since the end of schooling, with partnership status, labor market situation and characteristics of parental home.

	Model VI Period 1970-1989				Model VI Period 1990-1997		
	b	**(SE)**	**exp(b)**		**b**	**(SE)**	**exp(b)**
Baseline(woman's age):							
15	-5.70	(0.34) ***		15	-5.48	(0.72) ***	
slopes:							
15-18	0.94	(0.13) ***		15-18	0.62	(0.30) **	
18-19	0.30	(0.15) **		18-20	-0.02	(0.16)	
19-22	-0.04	(0.05)		20-25	-0.07	(0.09)	
22-25	-0.08	(0.07)		25-28	-0.02	(0.13)	
25-35	-0.01	(0.06)		28-35	-0.09	(0.13)	
Time elapsed since end of schooling:							
No degree obtained:							
Constant	0.76	(0.18) ***	2.13		1.93	(0.45) ***	6.86
Slopes							
0-2	0.04	(0.10)			-0.11	(0.22)	
2+	-0.13	(0.04) ***			-0.05	(0.07)	
Secondary degree obtained:							
Constant	0.46	(0.22) **	1.59		1.33	(0.57) **	3.79
Slopes							
0-2	0.03	(0.13)			-0.17	(0.31)	
2+	-0.04	(0.06)			0.05	(0.10)	
University degree obtained:							
Constant	0.78	(0.40) *	2.19		-0.83	(2.30)	0.44
Slopes							
0-4	-0.19	(0.19)			0.48	(0.63)	
4+	0.02	(0.26)			0.06	(0.11)	
Partnership status:							
not living in partnership	0.00		1.00		0.00		1.00
cohabitation	1.01	(0.11) ***	2.75		1.35	(0.16) ***	3.88
marriage	1.45	(0.08) ***	4.24		1.69	(0.14) ***	5.42

(continuing)

Table A7   (continued)

	b	(SE)	exp(b)		b	(SE)	exp(b)
Current (in)activity on labour market:							
Employed:							
full-time = reference	0.00		1.00		0.00		1.00
part-time and short employments	-0.06	(0.18)	0.94		0.14	(0.18)	1.15
Not employed:							
no experience	0.01	(0.16)	1.01		-1.03	(0.42) **	0.36
some experience	0.84	(0.15) ***	2.31		0.14	(0.25)	1.15
Cumulated occupational status:							
Highly qualified positions	0.31	(0.22)	1.37		-0.08	(0.34)	0.92
Qualified position	0.08	(0.10)	1.08		0.03	(0.15)	1.04
Unqualified position = reference	0.00		1.00		0.00		1.00
Skilled worker	-0.07	(0.12)	0.93		0.29	(0.17) *	1.34
Un(semi-)skilled worker	0.21	(0.11) *	1.23		-0.02	(0.18)	0.98
Period:							
1979-1979 = reference			1.00	1990-1993			1.00
1980-1989	0.10	(0.07)	1.10	1994-1997	-0.31	(0.15) **	0.74
Characteristics of parental home:							
No sibling	-0.32	(0.15) **	0.72		-0.05	(0.24)	1.00
One sibling = reference	0.00		1.00		0.00		1.00
Two and more siblings	0.23	(0.07) ***	1.26		0.19	(0.12)	1.21
Childhood spent:							
not in town = reference	0.00		1.00		0.00		1.00
in town (>10 000)	-0.01	(0.07)	0.99		-0.18	(0.12)	0.83
Log-likelihood of model	-5277.2						
Observations	1709						
Observations in period	1361				806		
First births in period	887				333		

Notes: (1) Method: event history model (generalized Gompertz); dependent variable: transition to first child measured since age 15. (2) Significance: * at 10%; ** at 5%; *** at 1%. Asymptotic standard errors (SE) are in parentheses. (3) Source: FFS Czech Republic 1997.

Table A8 Relative risks of the first birth, the Czech Republic 1970-1989 and 1990-1997. Model VII with the time elapsed since start of the first union.

	Model VII Period 1970-1989				Model VII Period 1990-1997		
	b	**(SE)**	**exp(b)**		**b**	**(SE)**	**exp(b)**
Baseline(woman's age):							
15	-5.52	(0.32) ***		15	-6.53	(0.85) ***	
slopes:							
15-18	1.04	(0.13) ***		15-18	1.17	(0.32) ***	
18-19	0.51	(0.15) ***		18-20	-0.06	(0.15)	
19-22	-0.04	(0.05)		20-25	-0.05	(0.05)	
22-25	-0.11	(0.05) **		25-28	-0.05	(0.07)	
25-35	-0.06	(0.05)		28-35	-0.06	(0.02) ***	
Start by cohabitation:							
constant	1.47	(0.30) ***	4.34		2.40	(0.38) ***	11.04
slope 0-0.5 year	-0.49	(0.73)			-0.41	(0.94)	
slope 0.5+ year	-0.22	(0.10) **			-0.18	(0.12)	
Start by direct marriage:							
constant	1.80	(0.19) ***	6.05		2.76	(0.37) ***	15.88
slope 0-0.5 year	-0.23	(0.46)			-0.44	(0.88)	
slope 0.5+ year	-0.16	(0.05) ***			-0.08	(0.07)	
Marriage after cohabitation:							
constant	0.75	(0.22) ***	2.12		0.44	(0.29)	1.56
slope	0.01	-0.07			0.16	(0.16)	
Log-likelihood of model	-5331						
Observations	1709						
Observations in period	1361				806		
First births in period	887				333		

Notes: (1) Method: event history model (generalized Gompertz); dependent variable: transition to first child measured since age 15. (2) Significance: * at 10%; ** at 5%; *** at 1%. Asymptotic standard errors (SE) are in parentheses. (3) Source: FFS Czech Republic 1997.

Table A9   Relative risks of the first birth, the Czech Republic 1970-1989 and 1990-1997. Model VIII with the time elapsed since start of the first union, calendar time, education, labor market situation and characteristics of parental home.

	Model VIII Period 1970-1989			Model VIII Period 1990-1997			
	b	**(SE)**	**exp(b)**		**b**	**(SE)**	**exp(b)**
Baseline(woman's age):							
15	-5.26	(0.36) ***		15	-6.18	(0.92) ***	
slopes:							
15-18	0.97	(0.13) ***		15-18	1.03	(0.33) ***	
18-19	0.32	(0.16) **		18-20	-0.15	(0.16)	
19-22	-0.04	(0.05)		20-25	-0.02	(0.05)	
22-25	-0.14	(0.06) **		25-28	-0.06	(0.07)	
25-35	-0.07	(0.05)		28-35	-0.07	(0.02) ***	
Start by cohabitation:							
constant	1.31	(0.14) ***	3.70		2.21	(0.20) ***	9.15
slope	-0.22	(0.09) **			-0.21	(0.10) **	
Start by marriage:							
constant	1.67	(0.10) ***	5.31		2.55	(0.19) ***	12.77
slope	-0.17	(0.04) ***			-0.11	(0.06) *	
Marriage after cohabitation:							
constant	0.68	(0.21) ***	1.98		0.51	(0.28) *	1.66
slope	0.03	(0.13)			0.17	(0.15)	
Period:							
reference = 1970-1979	0.00		1.00	1990-1993	0.00		1.00
1980-1989	0.09	(0.08)	1.09	1994-1997	0.12	(0.13)	1.12
Educational degree obtained:							
Out of education:							
no degree	0.11	(0.11)	1.11		0.47	(0.16) ***	1.60
secondary degree = reference	0.00		1.00		0.00		1.00
university degree	0.11	(0.26)	1.12		0.01	(0.33)	1.01
In education:							
no degree	-0.39	(0.16) **	0.68		-0.20	(0.31)	0.82
after secondary degree	-0.62	(0.20) ***	0.54		-0.64	(0.37) *	0.53

(continuing)

Table A9 (continued)

	b	(SE)	exp(b)		b	(SE)	exp(b)
Current (in)activity on labour market:							
Employed:							
full-time = reference	0.00		1.00		0.00		1.00
part-time and short employments	-0.07	(0.18)	0.94		0.25	(0.19)	1.29
Not employed:							
no experience	0.01	(0.16)	1.01		-0.87	(0.43) **	0.42
some experience	0.75	(0.16) ***	2.12		0.21	(0.26)	1.24
Cumulated occupational status:							
Highly qualified positions	0.32	(0.22)	1.38		0.10	(0.38)	1.11
Qualified position	0.10	(0.12)	1.11		0.19	(0.17)	1.21
Unqualified position	0.00		1.00		0.00		1.00
Skilled worker	0.02	(0.13)	1.02		0.11	(0.20)	1.12
Un(semi-)skilled worker	0.20	(0.11) *	1.22		-0.13	(0.20)	0.88
Characteristics of parental home:							
No sibling	-0.32	(0.16) **	0.72		-0.09	(0.26)	0.77
One sibling = reference	0.00		1.00		0.00		1.00
Two and more siblings	0.22	(0.08) ***	1.25		0.19	(0.13)	0.88
Childhood spent:							
not in town = reference	0.00		1.00		0.00		1.00
in town (>10 000)	-0.01	(0.07)	0.99		-0.18	(0.13)	0.84
Log-likelihood of model	-5261.6						
Observations	1709						
Observations in period	1361				806		
First births in period	887				333		

Notes: (1) Method: event history model (generalized Gompertz); dependent variable: transition to first child measured since age 15. (2) Significance: * at 10%; ** at 5%; *** at 1%. Asymptotic standard errors (SE) are in parentheses. (3) Source: FFS Czech Republic 1997.

Table A10   Relative risks of the first birth, the Czech Republic 1970-1989 and 1990-1997. Model IX with interaction between education and partnership status.

	Model IX Period 1970-1989				Model IX Period 1990-1997		
	b	**(SE)**	**exp(b)**		**b**	**(SE)**	**exp(b)**
Baseline(woman's age):							
15	-4.80	(0.34) ***		15	-5.01	(0.79) ***	
slopes:							
15-18	0.92	(0.13) ***		15-18	0.83	(0.28) *	
18-19	0.30	(0.15) *		18-20	-0.03	(0.13)	
19-22	-0.09	(0.05) *		20-25	-0.08	(0.04) *	
22-25	-0.13	(0.05) **		25-28	-0.05	(0.10)	
25-35	-0.12	(0.04) ***		28-35	-0.18	(0.10) *	
Partnership status:							
not living in partnership							
lower education	0.14	(0.12)	1.15		0.41	(0.21) **	1.51
higher education=reference	0.00		1.00		0.00		1.00
in education	-0.69	(0.14) ***	0.50		-0.59	(0.28) **	0.55
cohabitation							
lower education	1.26	(0.15) ***	3.51		1.87	(0.20) ***	6.51
higher education	0.93	(0.20) ***	2.54		1.25	(0.26) ***	3.49
in education	0.40	(0.34)	1.49		0.60	(0.72)	1.83
marriage							
lower education	1.54	(0.11) ***	4.67		2.22	(0.21) ***	9.21
higher education	1.51	(0.12) ***	4.51		1.78	(0.20) ***	5.93
in education	1.42	(0.29) ***	4.15		1.31	(0.67) *	3.71
Log-likelihood of model	-5338.9						
Observations	1709						
Observations in period	1361				806		
First births in period	887				333		

Notes: (1) Method: event history model (generalized Gompertz); dependent variable: transition to first child measured since age 15. (2) Lower education: no educational degree; higher education: having at least complete secondary degree. (3) Significance: * at 10%; ** at 5%; *** at 1%. Asymptotic standard errors (SE) are in parentheses. (4) Source: FFS Czech Republic 1997.

Table A11   Relative risks of the first birth, the Czech Republic 1970-1989 and 1990-1997. Model X with interaction between education and labor market situation.

	Model X Period 1970-1989				Model X Period 1990-1997		
	b	**(SE)**	**exp(b)**		**b**	**(SE)**	**exp(b)**
Baseline(woman's age):							
15	-4.75	(0.34) ***		15	-4.41	(0.76) ***	
slopes:							
15-18	0.96	(0.13) ***		15-18	0.82	(0.28) ***	
18-19	0.37	(0.15) **		18-20	0.04	(0.13)	
19-22	0.06	(0.04)		20-25	0.04	(0.04)	
22-25	-0.10	(0.05) *		25-28	-0.08	(0.10)	
25-35	-0.10	(0.04) **		28-35	-0.17	(0.09) *	
Lower education:							
Employed:							
full-time	0.09	(0.09)	1.09		0.12	(0.13)	1.12
part-time and short employments	0.25	(0.23)	1.28		0.85	(0.29) ***	2.35
Not employed:							
no experience	0.03	(0.19)	1.04		-0.52	(0.45)	0.60
some experience	1.13	(0.14) ***	3.08		0.56	(0.27) **	1.76
Higher education:							
Employed:							
full-time = reference	0.00		1.00		0.00		1.00
part-time and short employments	-0.08	(0.24)	0.92		-0.19	(0.28)	0.83
Not employed:							
no experience	-0.34	(0.29)	0.71		-1.73	(0.75) **	0.18
some experience	1.57	(0.38) ***	4.79		-0.14	(0.43)	0.87
In education	-0.81	(0.12) ***	0.45		-1.14	(0.23) ***	0.32
Log-likelihood of model	-5558.3						
Observations	1709						
Observations in period	1361				806		
First births in period	887				333		

Notes: (1) Method: event history model (generalized Gompertz); dependent variable: transition to first child measured since age 15. (2) Lower education: no educational degree; higher education: having at least complete secondary degree. (3) Significance: * at 10%; ** at 5%; *** at 1%. Asymptotic standard errors (SE) are in parentheses. (4) Source: FFS Czech Republic 1997.

Appendix B

To Chapter 6

Table B1   Relative risks of first union formation, the Czech Republic 1970-1997.
              Models with no covariates.

	Model with competing risks Cohabitation		Marriage		Model with one common baseline	
	b	**(SE)**	**b**	**(SE)**	**b**	**(SE)**
Baseline(woman's age):						
constant:						
15	-6.48	(0.38) ***	-8.14	(0.49) ***	-7.15	(0.30) ***
slopes:						
15-18	1.24	(0.14) ***	1.90	(0.18) ***	1.51	(0.11) ***
18-20	0.06	(0.09)	0.54	(0.07) ***	0.40	(0.05) ***
20-22	-0.03	(0.11)	-0.08	(0.07)	-0.06	(0.06)
22-25	0.18	(0.09) **	-0.05	(0.06)	0.02	(0.05)
25-35	-0.17	(0.07) **	-0.18	(0.06) ***	-0.18	(0.04) ***
Log-likelihood of model	-6555.4				-6680.8	
Observations	1707					
First unions	1333					
By cohabitation	418					
By direct marriage			915			

Notes: (1) Method: event history model (generalized Gompertz); dependent variable: transition to first union measured since age 15. (2) Significance: * at 10%; ** at 5%; *** at 1%. Asymptotic standard errors (SE) are in parentheses. (3) Source: FFS Czech Republic 1997. (4) Model with competing hazard risks of cohabitation and direct marriage has two baselines by age of woman (presented in first two columns). The results of this model are compared with model having only one spline for entry into first union common for cohabitation and direct marriage (presented in the last column). Model with competing hazard risks is giving significantly better results (tested with chi-square statistics).

Table B2   Relative risks of first union formation, the Czech Republic 1970-1997. Model I with education.

	Model I Cohabitation			Model I Marriage		
	b	**(SE)**	**exp(b)**	**b**	**(SE)**	**exp(b)**
Baseline(woman's age):						
constant:						
15	-5.35	(0.40) ***		-6.77	(0.50) ***	
slopes:						
15-18	1.01	(0.14) ***		1.58	(0.18) ***	
18-20	-0.14	(0.10) ***		0.37	(0.07)	
20-22	0.02	(0.11)		-0.03	(0.07)	
22-25	0.12	(0.09) **		-0.12	(0.06)	
25-35	-0.18	(0.07) **		-0.19	(0.06) *	
Educational degree obtained:						
Out of education:						
no degree	0.05	(0.12)	1.05	0.08	(0.08)	1.09
secondary degree = reference	0.00		1.00	0.00		1.00
university degree	0.14	(0.32)	1.16	0.31	(0.21)	1.37
In education:						
no degree	-0.97	(0.19) ***	0.38	-1.03	(0.15) ***	0.36
after secondary degree	-1.01	(0.26) ***	0.36	-1.08	(0.16) ***	0.34
Log-likelihood of model	-6457.1					
Observations	1707					
First unions	1333					
By cohabitation	418					
By direct marriage				915		

Notes: (1) Method: event history model (generalized Gompertz); dependent variable: transition to first union measured since age 15. (2) Significance: * at 10%; ** at 5%; *** at 1%. Asymptotic standard errors (SE) are in parentheses. (3) Source: FFS Czech Republic 1997.

Table B3 Relative risks of first union formation, the Czech Republic 1970-1997. Model II with interaction of calendar time and education.

	Model II Cohabitation			Model II Marriage		
	b	**(SE)**	**exp(b)**	**b**	**(SE)**	**exp(b)**
Baseline(woman's age):						
constant:						
15	-5.51	(0.42) ***		-6.63	(0.51) ***	
slopes:						
15-18	0.99	-0.147 ***		1.59	(0.18) ***	
18-20	-0.13	(0.10)		0.35	(0.07) ***	
20-22	-0.01	(0.11)		-0.01	(0.07)	
22-25	0.11	(0.09)		-0.12	(0.06) *	
25-35	-0.20	(0.07) ***		-0.16	(0.06) ***	
1970-1989:						
Educational degree obtained:						
Out of education:						
no degree	0.01	(0.16)	1.01	0.04	(0.08)	1.04
secondary degree = reference	0.00		1.00	0.00		1.00
university degree	0.08	(0.52)	1.08	0.24	(0.26)	1.28
In education:						
no degree	-0.78	(0.22) ***	0.46	-1.17	(0.16) ***	0.31
after secondary degree	-0.86	(0.34) **	0.42	-1.00	(0.19) ***	0.37
1990-1997:						
Educational degree obtained:						
Out of education:						
no degree	0.76	(0.17) ***	2.14	-0.57	(0.13) ***	0.56
secondary degree	0.56	(0.18) ***	1.75	-0.62	(0.13) ***	0.54
university degree	0.79	(0.39) **	2.20	-0.21	(0.33)	0.81
In education:						
no degree	-0.67	(0.30) **	0.51	-1.31	(0.29) ***	0.27
after secondary degree	-0.64	(0.38) *	0.53	-1.92	(0.34) ***	0.15
Log-likelihood of model	-6407.9					
Observations	1707					
First unions	1333					
By cohabitation	418					
By direct marriage				915		

Notes: (1) Method: event history model (generalized Gompertz); dependent variable: transition to first union measured since age 15. (2) Significance: * at 10%; ** at 5%; *** at 1%. Asymptotic standard errors (SE) are in parentheses. (3) Source: FFS Czech Republic 1997. (4) Model II with interaction of education and calendar time is not significantly better than model with educational degree and calendar time as separate covariates (measured with chi-square test) – results of this model are not presented.

Table B4 Relative risks of first union formation, the Czech Republic 1970-1997. Model III with interaction of calendar time and employment status.

	Model III Cohabitation			Model III Marriage		
	b	**(SE)**	**exp(b)**	**b**	**(SE)**	**exp(b)**
Baseline(woman's age):						
constant:						
15	-5.62	(0.40) ***		-6.61	(0.50) ***	
slopes:						
15-18	1.00	(0.15) ***		1.58	(0.18) ***	
18-20	-0.11	(0.10)		0.35	(0.07) ***	
20-22	-0.01	(0.11)		-0.02	(0.07)	
22-25	0.12	(0.09)		-0.11	(0.06) *	
25-35	-0.20	(0.07) ***		-0.18	(0.06) ***	
1970-1989:						
Current (in)activity on labour market:						
Employed:						
full-time = reference	0.00		1.00	0.00		1.00
part-time and short employments	-1.52	(0.20) ***	0.22	0.47	(0.38)	1.60
Not employed:						
in school	-0.72	(0.17) ***	0.49	-1.10	(0.12) ***	0.33
no experience	0.47	(0.22) **	1.60	0.11	(0.14)	1.12
some experience	0.57	(0.50)	1.76	1.42	(0.14) ***	4.12
1990-1997:						
Current (in)activity on labour market:						
Employed:						
full-time = reference	0.56	(0.13) ***	1.75	-0.58	(0.10) ***	0.56
part-time and short employments	2.03	(0.55) ***	7.65	-0.62	(0.41)	0.54
Not employed:						
in school	-0.58	(0.23) **	0.56	-1.58	(0.22) ***	0.21
no experience	1.05	(0.26) ***	2.86	-1.03	(0.37) ***	0.36
some experience	1.31	(0.24) ***	3.72	-0.13	(0.26)	0.87
Log-likelihood of model	-6380.5					
Observations	1707					
First unions	1333					
By cohabitation	418					
By direct marriage				915		

Notes: (1) Method: event history model (generalized Gompertz); dependent variable: transition to first union measured since age 15. (2) Significance: * at 10%; ** at 5%; *** at 1%. Asymptotic standard errors (SE) are in parentheses. (3) Source: FFS Czech Republic 1997. (4) Model III with interaction of employment status and calendar time **is significantly better** than model with employment status and calendar time as separate covariates (measured with chi-square test) – results of this model are not presented.

Table B5   Relative risks of first union formation, the Czech Republic 1970-1997. Model IV with education, labor market situation, calendar time and characteristics of parental home.

	Model IV Cohabitation			Model IV Marriage		
	b	**(SE)**	**exp(b)**	**b**	**(SE)**	**exp(b)**
Baseline(woman's age):						
15	-6.14	(0.44) ***		-6.56	(0.52) ***	
slopes:						
15-18	1.02	(0.15) ***		1.59	(0.18) ***	
18-20	-0.07	(0.11)		0.36	(0.07) ***	
20-22	0.00	(0.11)		0.02	(0.07)	
22-25	0.12	(0.09)		-0.12	(0.06) *	
25-35	-0.20	(0.07) ***		-0.17	(0.06) ***	
Educational degree obtained:						
Out of education:						
no degree	0.11	(0.12)	1.11	-0.04	(0.08)	0.96
secondary degree = reference	0.00		1.00	0.00		1.00
university degree	0.19	(0.32)	1.20	0.37	(0.21) *	1.45
In education:						
no degree	-0.72	(0.20) ***	0.49	-1.09	(0.15) ***	0.34
after secondary degree	-0.92	(0.26) ***	0.40	-0.97	(0.17) ***	0.38
Current (in)activity on labour market:						
Employed:						
full-time = reference	0.00		1.00	0.00		1.00
part-time and short employments	0.23	(0.20)	1.26	0.16	(0.16)	1.17
Not employed:						
no experience	0.51	(0.18) ***	1.66	0.04	(0.13)	1.04
some experience	0.74	(0.23) ***	2.10	1.13	(0.13) ***	3.09

(continuing)

Table B5 (continued)

	b	(SE)	exp(b)	b	(SE)	exp(b)
Calendar time:						
1970-1979=reference	0.00		1.00	0.00		1.00
1980-1989	0.03	(0.14)	1.03	-0.05	(0.08)	0.95
1990-1993	0.58	(0.16) ***	1.79	-0.37	(0.11) ***	0.69
1994-1997	0.48	(0.15) ***	1.61	-1.02	(0.13) ***	0.36
Characteristics of parental home:						
No sibling	-0.16	(0.18)	0.86	-0.18	(0.15)	0.83
One sibling = reference	0.00		1.00	0.00		1.00
Two and more siblings	0.16	(0.11)	1.17	0.16	(0.07) **	1.18
Childhood spent:						
not in town = reference	0.00		1.00	0.00		1.00
in town (>10 000)	0.29	(0.10) ***	1.33	-0.06	(0.07)	0.94
Leaving parental home:						
yes	0.10	(0.12)	1.11	-0.97	(0.12) ***	0.38
no=reference	0.00		1.00	0.00		1.00
Divorce of parents until age 18:						
yes	0.61	(0.13) ***	1.84	0.14	(0.12)	1.15
no=reference	0.00		1.00	0.00		1.00
Log-likelihood of model	-6312.3					
Observations	1707					
First unions	1333					
By cohabitation	418					
By direct marriage				915		

Notes: (1) Method: event history model (generalized Gompertz); dependent variable: transition to first union measured since age 15. (2) Significance: * at 10%; ** at 5%; *** at 1%. Asymptotic standard errors (SE) are in parentheses. (3) Source: FFS Czech Republic 1997. (4) Occupational status is not included in the model of first union formation.

Table B6 Relative risks of first union formation, the Czech Republic 1970-1997. Model V with education, labor market situation, calendar time, characteristics of parental home and unobserved heterogeneity components.

	Model V Cohabitation			Model V Marriage		
	b	**(SE)**	**exp(b)**	**b**	**(SE)**	**exp(b)**
Baseline(woman's age):						
15	-6.36	(0.63) ***		-6.99	(0.57) ***	
slopes:						
15-18	1.04	(0.15) ***		1.61	(0.18) ***	
18-20	-0.04	(0.12)		0.52	(0.11) ***	
20-22	0.02	(0.12)		0.22	(0.11) **	
22-25	0.15	(0.10)		0.00	(0.08)	
25-35	-0.19	(0.08) **		-0.11	(0.06) *	
Educational degree obtained:						
Out of education:						
no degree	0.14	(0.14)	1.15	0.06	(0.11)	1.06
secondary degree = reference	0.00		1.00	0.00		1.00
university degree	0.12	(0.36)	1.13	0.13	(0.28)	1.14
In education:						
no degree	-0.70	(0.20) ***	0.50	-1.07	(0.17) ***	0.34
after secondary degree	-0.94	(0.28) ***	0.39	-1.19	(0.22) ***	0.30
Current (in)activity on labour market:						
Employed:						
full-time = reference	0.00		1.00	0.00		1.00
part-time and short employments	0.24	(0.22)	1.28	0.16	(0.16)	1.17
Not employed:						
no experience	0.51	(0.18) ***	1.66	0.03	(0.13)	1.03
some experience	0.76	(0.23) ***	2.14	1.32	(0.16) ***	3.75
Calendar time:						
1970-1979=reference	0.00		1.00	0.00		1.00
1980-1989	0.03	(0.15)	1.03	-0.06	(0.10)	0.94
1990-1993	0.60	(0.17) ***	1.82	-0.39	(0.13) ***	0.68
1994-1997	0.51	(0.18) ***	1.66	-1.19	(0.17) ***	0.30

(continuing)

Table B6 (continued)

	b	(SE)	exp(b)	b	(SE)	exp(b)
Characteristics of parental home:						
No sibling	-0.14	(0.18)	0.87	-0.27	(0.19)	0.76
One sibling = reference	0.00		1.00	0.00		1.00
Two and more siblings	0.17	(0.11)	1.19	0.22	(0.10) **	1.25
Childhood spent:						
not in town = reference	0.00		1.00	0.00		1.00
in town (>10 000)	0.31	(0.10) ***	1.37	-0.09	(0.09)	0.91
Leaving parental home:						
yes	0.10	(0.12)	1.10	-1.27	(0.19) ***	0.28
no=reference	0.00		1.00	0.00		1.00
Divorce of parents until age 18:						
yes	0.65	(0.13) ***	1.92	0.12	(0.15)	1.13
no=reference	0.00		1.00	0.00		1.00
Unobserved heterogeneity characteristics:						
Delta 1	0.5235	(0.58)				
Delta 2				0.864	(0.22) ***	
Log-likelihood of model	-6307.3					
Observations	1707					
First unions	1333					
By cohabitation	418					
By direct marriage				915		

Notes: (1) Method: event history model (generalized Gompertz); dependent variable: transition to first union measured since age 15. (2) Significance: * at 10%; ** at 5%; *** at 1%. Asymptotic standard errors (SE) are in parentheses. (3) Source: FFS Czech Republic 1997. (4) I compared this model to the model with only one unobserved heterogeneity component (0.81***) for both transitions - to cohabitation and to direct marriage (this model is not presented here). It follows that model with two unobserved heterogeneity characteristics is not significantly better (measured with chi-square statistics test). Therefore the same type of women's characteristics, which are not observed in the models, influences both transitions. It means that women, who are at higher risk to cohabit, are also at higher risk of getting married directly.

Table B7   Relative risks of first union formation, the Czech Republic 1970-1997. Model VI with effect of pregnancy and birth of first child.

	Model VI Cohabitation			Model VI Marriage		
	b	**(SE)**	**exp(b)**	**b**	**(SE)**	**exp(b)**
Baseline(woman's age):						
constant:						
15	-6.44	(0.38) ***		-7.98	(0.51) ***	
slopes:						
15-18	1.18	(0.15) ***		1.63	(0.18) ***	
18-20	0.03	(0.09)		0.41	(0.07) ***	
20-22	-0.02	(0.11)		0.01	(0.06)	
22-25	0.18	(0.09) **		0.01	(0.05)	
25-35	-0.17	(0.07) **		-0.17	(0.05) ***	
Effect of birth of first child and pregnancy:						
constant:						
Start of pregnancy	1.85	(0.31) ***		1.45	(0.21) ***	
slopes:						
Pregnancy 0-3 months	-3.40	(2.08)		10.90	(1.02) ***	
Pregnancy 3-6 months	8.06	(2.21) ***		0.24	(0.83)	
Pregnancy 6-9 months	-3.35	(2.54)		-10.27	(2.02) ***	
Birth of first child -3 months	-4.92	(2.45) **		0.09	(2.29)	
First child older than 3 months	-0.13	(0.11)		-0.51	(0.20) **	
Log-likelihood of model	-6380.5					
Observations	1707					
First unions	1333					
By cohabitation	418					
By direct marriage				915		

Notes: (1) Method: event history model (generalized Gompertz); dependent variable: transition to first union measured since age 15. (2) Significance: * at 10%; ** at 5%; *** at 1%. Asymptotic standard errors (SE) are in parentheses. (3) Source: FFS Czech Republic 1997.

Table B8   Relative risks of first union formation, the Czech Republic 1970-1997. Model VII with effect of pregnancy and birth of first child, education, calendar time and characteristics of parental home.

	Model VII Cohabitation			Model VII Marriage		
	b	**(SE)**	**exp(b)**	**b**	**(SE)**	**exp(b)**
Baseline(woman's age):						
constant:						
15	-6.06	(0.44) ***		-6.57	(0.54) ***	
slopes:						
15-18	0.98	(0.15) ***		1.43	(0.19) ***	
18-20	-0.08	(0.11)		0.25	(0.08) ***	
20-22	-0.01	(0.11)		0.08	(0.06)	
22-25	0.14	(0.09)		-0.06	(0.06)	
25-35	-0.19	(0.07) ***		-0.14	(0.06) **	
Effect of birth of first child and pregnancy:						
constant:						
Start of pregnancy	1.81	(0.32) ***		1.29	(0.21) ***	
slopes:						
Pregnancy 0-3 months	-3.36	(2.12)		11.06	(1.05) ***	
Pregnancy 3-6 months	7.02	(2.24) ***		1.00	(0.85)	
Pregnancy 6-9 months	-3.59	(2.57)		-10.22	(2.09) ***	
Birth of first child -3 months	-4.78	(2.49) *		0.31	(2.34)	
First child older than 3 months	-0.12	(0.11)		-0.46	(0.20) **	
Educational degree obtained:						
Out of education:						
no degree	0.03	(0.12)	1.03	-0.21	(0.08) **	0.81
secondary degree = reference	0.00		1.00	0.00		1.00
university degree	0.22	(0.32)	1.24	0.56	(0.22) **	1.75
In education:						
no degree	-0.70	(0.20) ***	0.50	-0.95	(0.18) ***	0.39
after secondary degree	-0.87	(0.26) ***	0.42	-0.78	(0.19) ***	0.46
Current (in)activity on labour market:						
Employed:						
full-time = reference	0.00		1.00	0.00		1.00
part-time and short employments	0.23	(0.20)	1.26	0.08	(0.16)	1.08
Not employed:						
no experience	0.46	(0.19) **	1.58	-0.25	(0.13) **	0.78
some experience	0.30	(0.25)	1.34	0.26	(0.14) *	1.30

(continuing)

Table B8 (continued)

	b	(SE)		exp(b)	b	(SE)		exp(b)
Calendar time:								
1970-1979=reference	0.00			1.00	0.00			1.00
1980-1989	0.02	(0.14)		1.02	-0.10	(0.08)		0.90
1990-1993	0.63	(0.16)	***	1.89	-0.19	(0.11)	***	0.82
1994-1997	0.52	(0.15)	***	1.68	-0.81	(0.13)	***	0.45
Siblings:								
No sibling	-0.20	(0.18)		0.82	-0.11	(0.14)		0.90
One sibling = reference	0.00			1.00	0.00			1.00
Two and more siblings	0.04	(0.11)		1.04	-0.10	(0.07)	**	0.91
Childhood spent:								
not in town = reference	0.00			1.00	0.00			1.00
in town (>10 000)	0.29	(0.10)	***	1.33	0.01	(0.07)		1.01
Leaving parental home:								
yes	0.09	(0.12)		1.09	-0.91	(0.11)	***	0.40
no=reference	0.00			1.00	0.00			1.00
Divorce of parents until age 18:								
yes	0.54	(0.13)	***	1.71	-0.20	(0.10)		0.82
no=reference	0.00			1.00	0.00			1.00
Log-likelihood of model	-5214.1							
Observations	1707							
First unions	1333							
By cohabitation	418							
By direct marriage					915			

Notes: (1) Method: event history model (generalized Gompertz); dependent variable: transition to first union measured since age 15. (2) Significance: * at 10%; ** at 5%; *** at 1%. Asymptotic standard errors (SE) are in parentheses. (3) Source: FFS Czech Republic 1997.

Table B9   Transformation of cohabitation to marriage or dissolution of cohabitation, the Czech Republic 1970-1997. Model VIII without covariates.

	Model VIII Marriage			Model VIII Dissolution		
	b	**(SE)**	**exp(b)**	**b**	**(SE)**	**exp(b)**
Baseline(duration of cohabitation):						
start of cohabitation	-1.35	(0.25) ***		-3.12	(0.63) ***	
slopes:						
0 to 0.5 year	1.92	(0.62) ***		0.96	(1.58)	
0.5 to 2 years	-0.31	(0.12) **		0.43	(0.28)	
more than 2 years	-0.23	(0.07) ***		-0.15	(0.11)	
Log-likelihood of model	-1401.8					
Observations	421		100%			
Censored cases in 1997	55		13%			
End by marriage	305		72%			
End by dissolution				61		14%

Notes: (1) Method: event history model (generalized Gompertz); dependent variable: transition from start of cohabitation to subsequent marriage or to dissolution. (2) Significance: * at 10%; ** at 5%; *** at 1%. Asymptotic standard errors (SE) are in parentheses. (3) Source: FFS Czech Republic 1997.

Table B10 Transformation of cohabitation to marriage or dissolution of cohabitation, the Czech Republic 1970-1997. Model IX with age of woman, characteristics of parental home, calendar time and effect of pregnancy.

	Model IX Marriage			Model IX Dissolution		
	b	**(SE)**	**exp(b)**	**b**	**(SE)**	**exp(b)**
Baseline(duration of cohabitation):						
start of cohabitation	-0.70	(0.36) *		-2.55	(0.92) ***	
slopes:						
0 to 0.5 year	1.97	(0.67) ***		1.04	(1.84)	
0.5 to 2 years	-0.21	(0.14)		0.54	(0.31) *	
more than 2 years	-0.22	(0.09) ***		-0.11	(0.13)	
Age of woman at start of cohabitation:						
below 18	-0.25	(0.20)	0.78	-0.40	(0.43)	0.67
18-20=reference	0.00		1.00	0.00		1.00
20-22	0.06	(0.17)	1.06	0.16	(0.39)	1.17
more than 22	0.00	(0.17)	1.00	-0.28	(0.42)	0.76
Educational degree obtained:						
no degree	-0.17	(0.15)	0.85	0.07	(0.35)	1.07
secondary degree = reference	0.00		1.00	0.00		1.00
university degree	-0.21	(0.23)	0.81	-0.32	(0.58)	0.72
Childhood spent:						
not in town = reference	0.00		1.00	0.00		1.00
in town (>10 000)	-0.21	(0.10)	0.81	0.12	(0.34)	1.13
Leaving parental home:						
yes	-0.50	(0.15) ***	0.61	-1.00	(0.33) ***	0.37
no=reference	0.00		1.00	0.00		1.00
Divorce of parents until age 18:						
yes	-0.35	(0.17) **	0.70	0.21	(0.37)	1.23
no=reference	0.00		1.00	0.00		1.00
Year of start of cohabitation:						
1970-1980=reference	0.00		1.00	0.00		1.00
1980-1990	0.02	(0.18)	1.02	0.42	(0.51)	1.53
1990-1993	-0.44	(0.21) **	0.64	0.42	(0.51)	1.52
1993-1997	-0.43	(0.21) **	0.65	0.64	(0.50)	1.89

(continuing)

Table B10 (continued)

		b	(SE)	exp(b)	b	(SE)	exp(b)
Effect of pregnancy:							
at start of cohabitation							
	yes	0.34	(0.18) *	1.40	-0.40	(0.49)	0.67
	no=reference	0.00		1.00	0.00		1.00
in cohabitation							1.00
	yes	0.32	(0.16) **	1.38	-0.95	(0.40) **	0.39
	no=reference	0.00		1.00	0.00		
Log-likelihood of model		-1363.4					
Observations		421		100%			
Censored cases in 1997		55		13%			
End by marriage		305		72%			
End by dissolution					61		14%

Notes: (1) Method: event history model (generalized Gompertz); dependent variable: transition from start of cohabitation to subsequent marriage or to dissolution. (2) Significance: * at 10%; ** at 5%; *** at 1%. Asymptotic standard errors (SE) are in parentheses. (3) Source: FFS Czech Republic 1997.

Appendix C

To Chapter 7

Table C1 Interrelated processes of first union formation and first birth, the Czech Republic 1970-1997. Model with correlation of unobserved characteristics of both processes.

	Model I Cohabitation			Model I Marriage			Model I First birth		
	b	**(SE)**	**exp(b)**	**b**	**(SE)**	**exp(b)**	**b**	**(SE)**	**exp(b)**
Baseline(woman's age):									
15	-6.64	(0.44) ***		-6.94	(0.52) ***		-6.51	(0.41) ***	
slopes:									
15-18	1.05	(0.15) ***		1.61	(0.18) ***		1.22	(0.12) ***	
18-20	0.01	(0.11)		0.50	(0.07) ***		0.57	(0.08) ***	
20-22	0.04	(0.11)		0.20	(0.07) **		0.36	(0.08) ***	
22-25	0.18	(0.09)		-0.01	(0.06)		0.18	(0.05) ***	
25-35	-0.18	(0.07) ***		-0.12	(0.06) **		0.06	(0.02) ***	
Educational degree obtained:									
Out of education:									
no degree	0.17	(0.12)	1.19	0.05	(0.08)	1.06	0.46	(0.11) ***	1.58
secondary degree = ref.	0.00		1.00	0.00		1.00	0.00		1.00
university degree	0.04	(0.32)	1.04	0.15	(0.21) *	1.17	-0.43	(0.24) *	0.65
In education:									
no degree	-0.69	(0.20) ***	0.50	-1.07	(0.15) ***	0.34	-0.50	(0.15) ***	0.61
after secondary degree	-0.98	(0.26) ***	0.38	-1.17	(0.17) ***	0.31	-1.38	(0.20) ***	0.25
Current (in)activity on labour market:									
Employed:									
full-time = reference	0.00		1.00	0.00		1.00	0.00		1.00
part-time and short	0.26	(0.20)	1.29	0.16	(0.16)	1.17	0.21	(0.18)	1.23
Not employed:									
no experience	0.51	(0.18) ***	1.66	0.03	(0.13)	1.03	-0.37	(0.18) **	0.69
some experience	0.78	(0.23) ***	2.17	1.31	(0.13) ***	3.72	1.09	(0.16) ***	2.99
Calendar time:									
1970-1979=reference	0.00		1.00	0.00		1.00	0.00		1.00
1980-1989	0.02	(0.14)	1.03	-0.06	(0.08)	0.95	0.05	(0.11)	1.05
1990-1993	0.62	(0.16) ***	1.86	-0.39	(0.11) ***	0.68	-0.78	(0.17) ***	0.46
1994-1997	0.55	(0.15) ***	1.74	-1.18	(0.13) ***	0.31	-1.21	(0.17) ***	0.30

(to be continued)

Table C1 (continuing)

	Model I Cohabitation			Model I Marriage			Model I First birth		
	b	**(SE)**	**exp(b)**	**b**	**(SE)**	**exp(b)**	**b**	**(SE)**	**exp(b)**
Size of family of origin:									
No sibling	-0.14	(0.18)	0.87	-0.27	(0.15)	0.77	-0.41	(0.15) ***	0.66
One sibling = reference	0.00		1.00	0.00		1.00	0.00		1.00
Two and more siblings	0.19	(0.11)	1.21	0.22	(0.07) **	1.24	0.42	(0.07) ***	1.53
Childhood spent:									
not in town = reference	0.00		1.00	0.00		1.00	0.00		1.00
in town (>10 000)	0.34	(0.10) ***	1.41	-0.09	(0.07)	0.92	-0.06	(0.07)	0.94
Leaving parental home:									
yes	0.09	(0.12)	1.10	-1.24	(0.12) ***	0.29			
no=reference	0.00		1.00	0.00		1.00			
Divorce of parents until age 18:									
yes	0.70	(0.13) ***	2.02	0.12	(0.12)	1.13			
no=reference	0.00		1.00	0.00		1.00			
Unobserved characteristics:									
union formation		0.81 ***							
first birth								1.42 ***	
Correlation of unobserved components		**0.93**							
Log-likelihood of model	-11863								
Observations	1707						1709		
First unions	1333								
By cohabitation	418								
By direct marriage				915					
By direct marriage							1220		

Notes: (1) Method: event history model (generalized Gompertz). (2) Significance: * at 10%; ** at 5%; *** at 1%. Asymptotic standard errors (SE) are in parentheses. (3) Source: FFS Czech Republic 1997.

Appendix D

Technical appendix

Data preparation

The data preparation for our analysis was performed in SAS and TDA (for general principles of data preparation for aML syntax see Lillard and Panis 2003:89-125). For each event studied – first birth, first union formation, and marriage after cohabitation – we have separate data file.

In following we present the file encoding data structure in aML format for analysis of first union formation (marcoh.r2a):

```
ascii data file = U:\documents\ffs\sas\cohmar.raw;
/* to study first union formation */
output data file = cohmar.dat (replace=yes);

  level 1 var = ;
  data structure = 1; /*cohabitation*/

  level 2 var = censor2 lowerc upperc
                startage   /* exact age at start of spell - 15 years */
                startime   /*calendar time at age 15*/
                endeduc    /*end of education*/
                endlev     /*end of education at endlev*/
                frstcon
                frstbrth   /*first-child birth - date */
                pregnan    /*pregnant at union formation*/
                v101 v103 v104 v105 v106 v109 /*other variables*/
                leave
                v102yy;

  level 3 var =    /* level of time-varying covariates */
                timemark      /* time passed from age 15 years */
                level         /* whether vocational degree obtained
                              1= no degree
                              2= vocational degree
                              3= university degree */
                school         /* whether woman currently at school*/
                work
                occup
                time
                reason
                period;


data structure = 2; /*direct marriage*/

  level 2 var = censor1 lowerm upperm
                startage   /* exact age at start of spell - 15 years*/
                startime   /*calendar time at age 15*/
                endeduc    /*end of education*/
                endlev     /*end of education at endlev*/
                frstcon    /*first-child conception - date */
                frstbrth   /*first-child conception - date */
                pregnan    /*pregnant at union formation*/
                v101 v103 v104 v105 v106 v109 /*other variables*/
                leave
                v102yy;
```

```
level 3 var =    /* level of time-varying covariates */
                 timemark       /* time passed from age 15 years */
                 level          /* whether vocational degree obtained
                          1= no degree
                          2= vocational degree
                          3= university degree */
                 school   /* whether woman currently at school*/
                 work
                 occup
                 time
                 reason
                 period;
```

In following we present an example of the data file for the analysis of first union formation (cohmar.raw). First, there are 3 individual observations (with identification numbers 2002, 2006, 2007) for the analysis of direct marriage. Second, there are the same 3 individuals but in data structure for the analysis of unmarried cohabitation:

```
20002  2 4 1 5.46 5.46 15 91.79 2.67 1 99999 99999 0 3 1 1 2 0 1 99999 76.79
    1.21 1 1 0 0 0 -5 3
    2.67 1 1 0 0 0 -5 4
    2.84 1 0 0 0 0 -5 4
    5.46 1 0 1 3 1 -5 4
20006  2 4 0 3.83 4 15 86.04 2.42 1 89.71 90.46 1 2 1 1 2 0 1 99999 71.04
    2.42 1 1 0 0 0 -5 2
    2.5 1 0 0 0 0 -5 2
    3.67 1 0 1 4 2 -5 2
    4 1 0 1 4 2 -5 2
20007  2 5 1 10.92 10.92 15 75.79 5.67 1 89.13 89.88 0 2 1 3 2 0 2 88.79 60.79
    4.21 1 1 0 0 0 -5 1
    4.67 1 1 0 0 0 -5 2
    5.67 2 1 0 0 0 -5 2
    5.84 2 0 0 0 0 -5 2
    10.92 2 0 1 2 2 -5 2
...

20002  1 4 1 5.46 5.46 15 91.79 2.67 1 99999 99999 0 3 1 1 2 0 1 99999 76.79
    1.21 1 1 0 0 0 -5 3
    2.67 1 1 0 0 0 -5 4
    2.84 1 0 0 0 0 -5 4
    5.46 1 0 1 3 1 -5 4
20006  1 4 1 3.92 3.92 15 86.04 2.42 1 89.71 90.46 1 2 1 1 2 0 1 99999 71.04
    2.42 1 1 0 0 0 -5 2
    2.5 1 0 0 0 0 -5 2
    3.67 1 0 1 4 2 -5 2
    3.92 1 0 1 4 2 -5 2
20007  1 5 0 10.83 11 15 75.79 5.67 1 89.13 89.88 0 2 1 3 2 0 2 88.79 60.79
    4.21 1 1 0 0 0 -5 1
    4.67 1 1 0 0 0 -5 2
    5.67 2 1 0 0 0 -5 2
    5.84 2 0 0 0 0 -5 2
    11 2 0 1 2 2 -5 2
...
```

Model specification

In this section we present the model specification in aML syntax (.aml) for the analysis of first union formation as competing risks analysis (see Chapter 6). Unobserved heterogeneity components are included in the model specification.

```
/* first union formation: cohabitation and marriage as competing risks*/

option normweight = ;
option starting value format=yes;
option check 99999=no;

dsn = cohmar;

define spline cohab; nodes = 3 5 7 10      ; intercept=yes;
/*spline for cohabitation, starts at 15 years of age*/

define spline marriage; nodes = 3 5 7 10      ; intercept=yes;
/*spline for direct marriage,starts at 15 years of age*/

define regressor set EDU1; /*education for cohabitation*/
var = (school==0)*(level==1)
      /*(school==0)*(level==2)*/
      (school==0)*(level==3)
      (school==1)*(level==1)
      (school==1)*(level==2 or level==3)
      ;
define regressor set EDU2; /*education for marriage*/
var = (school==0)*(level==1)
      /*(school==0)*(level==2)*/
      (school==0)*(level==3)
      (school==1)*(level==1)
      (school==1)*(level==2 or level==3)
      ;

define regressor set WORK1;
var = /*(work==1)*(time==2)*(school==0) */
((work==1)*(time==1)*(school==0))or((work==0)*(school==0)*(reason==1))
      (work==0)*(occup==0)*(school==0)*(reason!=1)
      (school==1)
      (work==0)*(occup!=0)*(school==0)*(reason!=1);

define regressor set WORK2;
var = /*(work==1)*(time==2)*(school==0) */
((work==1)*(time==1)*(school==0))or((work==0)*(school==0)*(reason==1))
      (work==0)*(occup==0)*(school==0)*(reason!=1)
      (school==1)
      (work==0)*(occup!=0)*(school==0)*(reason!=1);

define regressor set PERIOD1;
var = /*(period==1)*/ (period==2)  (period==3) (period==4);

define regressor set PERIOD2;
var = /*(period==1)*/ (period==2)  (period==3) (period==4);

define regressor set PARENT1;
var = (v101==1) /*(v101==2)*/ (v101>2)
      /*(v103<3)*/ (v103>2)
      (leave<(startime+lowerc)) /*(leave=>(startime+lowerc)) */
```

```
        ((v105==1) and (v106<18)) /*((v105^=1) or (v106=>18))*/
        ;
define regressor set PARENT2;
var = (v101==1) /*(v101==2)*/ (v101>2)
        /*(v103<3)*/ (v103>2)
        (leave<(startime+lowerm)) /*(leave=>(startime+lowerm)) */
        ((v105==1) and (v106<18)) /*((v105^=1) or (v106=>18))*/
        ;

define normal distribution; /*heterogeneity component for cohabitation*/
dim=1;
number of integration points=4;
name=u;

define normal distribution; /*heterogeneity component for marriage*/
dim=1;
number of integration points=4;
name=v;

hazard model; /*model specification for cohabitation*/
data structure=1;
censor=censor2; duration=lowerc upperc; timemarks=timemark;
model = durspline(origin=0, ref=cohab)
        +  regset EDU1 + regset WORK1
        + /*regset OCCUP1+*/ regset PERIOD1 + regset PARENT1
        + intres(draw=1,ref=u)  ;

hazard model; /*model specification for marriage*/
data structure=2;
censor=censor1; duration=lowerm upperm; timemarks=timemark;
model = durspline(origin=0, ref=marriage)
        +  regset EDU2 + regset WORK2
        + /*regset OCCUP2+ */regset PERIOD2 + regset PARENT2
        + intres(draw=2,ref=v)  ;


starting values;
…;
```