With or without you

Partnership context of first conceptions and births in Hungary

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Abstract

In this paper, we first study how the risk of a first conception within different union types (single, cohabitation, marriage) is influenced by education and family values in Hungary and how these influences changed after the societal transition in 1990 using discrete time competing risks analysis. Then, we examine how education and family values are related to the probability of marriage before the birth of the first child for a woman, who experience non-marital conception applying logistic regression. Furthermore, we investigate whether and how partnership and fertility experiences influence changes in family values over time. For the first two analyses, we use retrospective information collected in the second wave of the Hungarian Turning Points of the Life-Course survey. The third analysis is based on a change model comparing data from the second and third wave. We find that traditional and higher educated women are more likely to conceive within marriage while liberal and lower educated women are more likely to experience a cohabiting conception. More liberal women are more likely to conceive while being single compared to their married counterparts. The influence of education on the risk of a cohabiting conception differs before and after the transition; before the transition, education has a positive gradient. Increased education and more traditional values are associated with a greater propensity to marry before the birth. Women who experience a birth within cohabitation between the two waves become more liberal than those who stay married and do not experience a birth, even when controlling for family values before these events.

Introduction

In the last decades, the traditional sequence of family formation (first marriage, then living together, followed by having children) became less prevalent across Europe, and new steps emerged in the life course, including non-marital cohabitation and non-marital childbearing (Liefbroer, 1999; Liefbroer & Toulemon, 2010). This alternative family formation became more and more prevalent and the proportion of births within non-marital union has increased. This was mainly the result of the rising number of cohabiting births in most European countries (Perelli-Harris et al., 2010), except in the UK where the number of births to single mothers have increased (Kiernan, 2004).

The increasing proportion of extramarital births might have implications both on the micro and macro level. Cohabiting unions were found to be less stable than marriages; children born in a cohabiting union were more likely to see their parents break up than those born in a marriage (Kiernan, 2004; Liefbroer & Dourleijn, 2006). Thus, the rising proportion of out-of-wedlock births might mean that an increasing share of children experience parental breakup. This may have adverse consequences on children's school achievements, socioeconomic background and own future relationships (Bumpass & Lu, 2001). When comparing children born within marriage and those born in a cohabiting union that later on transferred into marriage, these differences did not disappear in France, Switzerland, the US, and Great Britain whereas in Sweden, Norway, Austria, and West Germany no significant differences were found (Kiernan, 2004).

On the societal level, the increasing share of extramarital births might affect the role of families and family formation processes on the long run as well as can lead to the reproduction of social inequalities (Perelli-Harris et al., 2010). There has been much scientific debate about how the increasing share of non-marital births can be explained and which societal groups are experiencing these new family behaviours. From the Second Demographic Transition theory (Lesthaege & van de Kaa, 1986) and the theory on Postmaterialism (Inglehart, 1977; 1990) it would follow that women with high education and more liberal values are the forerunners of these behaviours, so they are more likely to experience a non-marital birth. However, some recent studies claim that social groups on the lower end of the society (i.e. those with low education and fewer resources) are more likely to cohabit and to give birth out of wedlock (Perelli-Harris et al., 2010; Perelli-Harris & Gerber, 2011). If this is the case, then the new family formation processes might contribute to the reproduction of social inequalities. Therefore it is important to disentangle whether the

boundaries with respect to education and values, anticipated by the above mentioned theories, exist in women's family formation behaviour.

Previous studies examined the role of education in non-marital childbearing in the US (Thornton et al., 1995; Seltzer, 2004), Norway, Italy, Austria, France, the UK, the Netherlands, and West Germany (Perelli-Harris et al., 2010) and much less attention has been paid to Central and Eastern European countries, with the exception of Perelli-Harris (2008) for Bulgaria, Perelli-Harris and Gerber (2011) for Russia and Hoem et al. (2009) for Romania, Bulgaria, Russia, and Hungary.

This study focuses on Hungary. Before the 1980s, most cohabitation in Hungary was postmarital but after the mid-1980s, never-married cohabitation as well as non-marital childbearing has become more common (Carlson & Klinger, 1987; Spéder, 2005). In 1998, the share of out-of-wedlock births was 26.6% and by 2009 this proportion has increased to 40.8% (Eurostat, 2010). Hungarian cohabitors came from the lowest educational levels and had the highest average fertility rates, but the prevalence of cohabitation increased the most rapidly among the most educated (Carlson & Klinger, 1987; Spéder, 2005). Previous studies found that cohabiting people have slightly lower education compared to their married counterparts (Pongrácz & Spéder, 2004) and that the least educated are the most likely to have a child in a non-marital union (Spéder, 2004; Spéder, 2005).

Using notions from the Second Demographic Transition theory (Lesthaege & van de Kaa, 1986), the theory on Postmaterialism (Inglehart, 1977; 1990), and economic theories (Becker, 1981; Bernard, 1982; Oppenheimer, 1988), we aim to describe and explain the impact of education and family values on the risk of a first conception within different union types (being single, cohabitation, marriage) in Hungary. Furthermore, we are interested to see whether the relationship between education and non-marital childbearing as well as between family values and non-marital childbearing has changed over time. We focus on first conceptions because higher order conceptions are less likely to happen in a non-marital union as very often after the first conception the union type of unmarried parents changes.

We will contribute to the present literature in several ways. First, previous studies on Hungary interpreted cohabitation and non-marital childbearing in the framework of the Second Demographic Transition. However, it might be that in Hungary, non-marital childbearing characterises social groups on the lower end of the society and it is associated with economic disadvantage (Perelli-Harris et al., 2010; Perelli-Harris & Gerber, 2011). Furthermore, these studies were mainly descriptive (with the exception of Spéder, 2004 and Hoem et al., 2009). Those that went beyond description, either focused on union formation

rather than on childbearing within different union types (Hoem et al., 2009) or did not differentiate between single and cohabiting non-marital unions and between first and higher order births (Spéder, 2004). Thus, this analysis will be the first to apply event history analysis and examine the risk of a conception within different types of unions in Hungary, making a differentiation between cohabiting and single non-marital conceptions. Second, previous studies focused on the role of educational attainment solely when testing the predictions of the Second Demographic Transition theory, while the theory emphasises the role of values and ideational change. By including family values to the analysis, we aim to test this dimension of the Second Demographic Transition theory as well. Last, examining possible changes over time in the effect of education and family values on the risk of a first conception within different union types enables us to disentangle when and how did changes, occur.

Theory and Hypotheses

Several arguments have been offered in the literature to explain whether and how individual characteristics influence non-marital childbearing as well as to understand how these effects might have changed over time. The Second Demographic Transition theory (Lesthaege & van de Kaa, 1986), as well as Inglehart's theory on Postmaterialism (Inglehart, 1977; 1990) emphasise that cultural and ideational changes contributed to the changing family behaviour of individuals. They predict that people with higher education and more liberal values would be more likely to cohabit and bear a child outside marriage. Also, some economic arguments come to the same conclusion (Becker, 1981; Bernard, 1982). Contradictorily, others argue that these behaviours are the most common among groups on the lower end of the society with economic and social disadvantages (Perelli-Harris & Gerber, 2011). Although these arguments are somewhat interrelated, in order to get a structured view, we will discuss them separately. The section will be closed by a summary of the hypotheses.

Second Demographic Transition Theory

After the Second World War, Western European societies saw major social and economic changes. The establishment of modern welfare states and the economic growth induced an increasing demand for higher education and female labour force participation. Furthermore, it became more and more difficult for young people to establish an own household, or a career and to find employment or housing (Frejka, 2008). As a result, the quantum of fertility was

declining; marriage and childbearing were being postponed; new living arrangements were adopted; the proportion of married people was decreasing while the proportion of cohabiting couples was increasing, as did the proportion of births out of wedlock (Lesthaege & Moors, 2000; van de Kaa, 2002; Lesthaege & Neidert, 2006; Frejka, 2008). Lesthaege and van de Kaa (1986) named this process the Second Demographic Transition. Theorists of the Second Demographic Transition argue that these changes were not only demographic in their nature but they also implied changes in peoples' values. As a result of increasing living standards, weakened normative regulations, increasing gender equality and female autonomy, people discovered their needs for self-development and self-fulfilment. To sum up, this theory argues that new lifestyle choices, related to the rise of "higher order needs" Maslow (1954) and self-realisation led to changes in the family formation behaviour (Perelli-Harris & Gerber, 2011).

Although the Second Demographic Transition theory does not offer an explicit explanation for how ideational changes are related to the increasing proportion of women who bear a child outside marriage, it suggests that educational attainment can be used as an indicator of these changes (Surkyn & Lesthaege, 2004). It can be argued that more egalitarian women with more secular values and higher socioeconomic status would engage in new living arrangements to fulfil their needs of self-development and individualism (Lesthaege & Neidert, 2006; Perelli-Harris et al., 2010; Perelli-Harris & Gerber, 2011). In other words, these women are more likely to choose to cohabit with a partner without being married to him, to live alone, as well as to have a baby within such a union.

This theory has originally been formulated to understand the changes in family behaviour in the United States and in Western European societies, as countries belonging to the Soviet bloc had completely different experiences. Socialist governments were investing solely in heavy industry, ignoring consumer industry, housing and services. As a result, while there was baby boom in Western Europe, Central and Eastern European countries, and as such Hungary as well, experienced fertility decline (Frejka, 2008). In the 1970s and 1980s, due to the pro-natalist policies and the centrally planned social and economic system, fertility rates stabilised around replacement level in Central and Eastern European countries. Furthermore, early and universal marriage, low age at childbearing, high rates of first and second births as well as low rates of childlessness characterised these countries.

After the fall of the Soviet Union, these conditions were suddenly interrupted. With the implementation of the western market economy, job insecurity, unemployment, demand for highly educated people, as well as professional and leisure time opportunities have

emerged. Consequently, people started to adjust their behaviours according to these new circumstances (Frejka, 2008). These changes have raised the question, whether post-socialist countries will eventually follow the path of Second Demographic Transition, or other determinants are playing a role in the changing family behaviours in these countries. Around 1990, the most obvious explanation seemed to be that the economic crisis, following the fall of the communism, was responsible for the observed changes in the fertility and family behaviours (see Frejka, 2008). Some authors (Lesthaege & Moors, 2000; Lesthaege & Surkyn, 2002; Surkyn & Lesthaege, 2004; Sobotka, 2008; Lesthaege, 2010), however, argued that next to the unquestionable effects of the economic changes, features of the Second Demographic Transition played a role.

To explain how the Second Demographic Transition has progressed in Central and Eastern Europe, Lesthaege and Vanderhoeft (2001) used the theoretical framework of "Ready – Willing – Able" (RWA), introduced earlier by Coale (1973, see also Sobotka, 2008). Readiness refers to cost-benefit calculations; if the benefits of the new family behaviour outweigh the costs of it, the actor will decide to adapt to this form of behaviour. Willingness indicates the normative acceptability of the new family behaviour, while ability is the accessibility of new techniques that facilitate this behaviour. In the socialist era, societies became atomised, secularised and a general decline of social norms took place (W dimension) while new structural factors (e.g. economic uncertainty, expansion of education) have shifted the cost-benefit calculations in favour of less traditional family behaviours (R dimension). Additionally, the diffusion of contraceptives made it possible for women to delay childbearing (A dimension). These changes have taken place well before 1990, and basically prepared societies for adopting these new forms of behaviours. This explains why new forms of family behaviour could spread with such intensity after the fall of the wall.

Concerning the Hungarian context, we would like to draw the attention to one very important aspect of the role of educational attainment in social stratification during the socialist era. It was not educational attainment that played the most important role in social stratification (Róbert, 2000). After the Second World War, political capital was especially important; working class people and those working in the socialist administration were privileged by the regime. After the 1980s, the impact of the second economy in social stratification was crucial; after the regular working hours, working in the informal economic sector (e.g. in one's own garden) which was not controlled by the regime gave the opportunity for people to accumulate some wealth. As the aim of the communist ideology was to decrease social inequalities, differences between educational groups were reduced

(Ferge, 2002). We argue that this might also mean smaller differences between higher and lower educated women's family formation behaviour. After the transition, with the introduction of the market economy, the role of education in social stratification became more similar to that in Western Europe and in the United States; higher educated people possessed higher positions on the occupational ladder and in the social hierarchy as well. Therefore, we think that the arguments of the Second Demographic Transition theory for Western European countries and for the United States also hold for Hungary for after the transition. The increased consumption possibilities allowed higher educated women to develop higher order needs and in order to be able to fulfil them, they chose alternative ways of family formation. Thus, we anticipate that higher educated women are more likely to experience a non-marital conception compared to their lower educated counterparts. Consequently, lower educated women would be more likely to conceive within marriage than in cohabitation compared to higher educated women. We think that this would especially be the case after the transition, while we expect to see small or no differences between educational groups with respect to the likelihood of a non-marital conception in Hungary before the transition.

Postmaterialism

The reasoning of the Second Demographic Transition theory is related to Inglehart's (1977; 1990) theory on postmaterialism. The theory argues that the process of industrialisation and modernisation resulted in an intergenerational shift from modern to postmodern values (Inglehart & Baker, 2000). This argument relies on two basic hypotheses. First, the scarcity hypothesis claims that people place greater subjective value on things that are in relatively short supply. Second, the socialisation hypothesis argues that to a large extent, one's values are developed in the early adulthood and thus these values reflect the conditions that prevailed in those years (Inglehart, 1977; 1990). Hence, as relative economic stability has replaced economic scarcity, the basic, material needs that were necessary to survive could easily be met and thus individuals placed more emphasis on postmodern values (Inglehart, 2000). Under relatively secure conditions, traditional values decline as the increasing feelings of security diminishes the need for absolute norms. Consequently, younger and more secure people are expected to be more likely to approve of new forms of living arrangements, compared to older or less secure people (Inglehart, 1977; 1990).

Similarly to the Second Demographic Transition theory, Inglehart developed this theory based on the changes observed in the United States and in Western European countries, and later on he applied it to Central and Eastern European and non-European countries as well. He concluded that economic growth clearly affects values, however, the development of these values are path-dependent (Inglehart, 1990).

In Hungary, changes in values were reinforced by the socialist government. As a result of the regime's strategy, the Hungarian society became atomised and demobilised, people were reluctant to politics, and drew back to the privacy of family life (Beluszky, 2000). As labour unions were forbidden, solidarity and representation were absent; people were left alone by the regime. Until the mid-1960s, people's energy was used up for fulfilling basic needs. From this time on, there was a compromise between the Hungarian society and the regime: people give up their rights to participate in the political decision making in exchange for some freedom in everyday life. The regime closed its eyes to some activities; for example people were allowed to work in the so called second economy, which made it possible for them to accumulate some wealth. Consequently, the importance of consumption increased although there were limited consumption possibilities (Sobotka, 2008). Moreover, there was a general acceptance and imitation of "Western norms" and lifestyles assuming that these norms are linked to modern life and economic prosperity (Sobotka, 2008; Thornton & Philipov, 2009). As a result of these changes, traditional values deteriorated but the socialist regime could not fill this space with new values or norms (Beluszky, 2000). This phenomenon is called "negative modernisation" (Hankiss et al., 1982).

Consequently, after the fall of the wall, the society was left with weakened norms and institutions, and as such, people were opened to new behaviours (Beluszky, 2000). We think that this was especially true for those, who had more liberal values as they were more opened to new ideas. We argue that family values can be used as a proxy of this openness to changes and thus as an indicator of the changes in women's family behaviour. Therefore, women with less traditional family values are expected to be the ones who are likely to adopt the new behaviours implied by the cultural changes (Perelli-Harris et al., 2010). Hence, women with less traditional family values are expected to be more likely to conceive within a non-marital union compared to women with more traditional values. Consequently, women with more traditional family values are hypothesised to be more likely to experience a conception within marriage than their counterparts with less traditional family values. We think that this is especially the case for periods after the transition. Furthermore, we expect to see no effect of family values on the risk of the different types of conceptions for periods

before the fall of the communism, as it is argued that in this period in Hungary the choice of alternative family formation was not driven by personal preferences, as in Western European countries and in the United States, but more by structural factors (Sobotka, 2008).

Economic Theories

In line with the Second Demographic Transition theory is the argumentation of Becker (1981) on the role of education and earnings in people's marital decisions. He sees marriage as an exchange of gender specific labour between partners (Oppenheimer, 1997; Sweeney, 2002) who aim at maximising their utilities from marriage. Thus, they would only get married if they both were better off than if they had stayed single. He argues that the sexual division of labour became less beneficial for women as they became economically more independent ("economic independence hypothesis") as a result of their increased labour force participation and earnings. Hence, they have less to gain from marrying. This is especially true for higher educated women as they have higher earnings and are thus more independent than lower educated women. Thus, higher educated women are argued to be less likely to marry than their lower educated counterparts. Similarly, the marriage gradient hypothesis (Bernard, 1982) suggests that as it is normative for women to marry upwards (i.e. to marry someone with higher education) and for men to marry downwards, higher educated women and lower educated men would be less likely to find appropriate mates. Hence, they would also be less likely to marry.

Contradictorily, Oppenheimer (1997, 2000) argues that this approach does not take into account the effect of the time spent on schooling on the composition of the marriage market. She argues that women's increased labour force participation actually provides access to more attractive partners and it also increases women's desirability as potential partner. She sees marriage as a more symmetric, collaborative partnership ("economic inter-dependence hypothesis"), where both partners perform tasks on the labour market and in the household as well (Oppenheimer, 1994). Similarly, Thornton and colleagues (1995) argue that accumulation of school experience enlarges the possibilities for employment and, via higher earnings, it leads to a better financial ability to marry and to establish an own household. Hence, marriage does not mean dependency for women. This implies that higher educated women have a higher chance to marry. In line with this, some authors argue that a "new socioeconomic pattern of marriage" has emerged (Goldstein & Kenney, 2001). Men and women tend to look for partners with similar educational level, financial abilities and

values, leading to separate marriage markets. Marriages are, thus, associated with economic well-being and relationship stability, while non-marital relationships indicate disadvantage and instable relationships (Heard, 2011). To sum up, these arguments would lead to the expectation that higher educated women are more likely to marry compared to lower educated women.

These theories were applied to study the effect of education and economic resources on women's chances to get married. Although the decisions, incentives and calculations might completely differ in case of cohabiting relationships (Ravanera & Rajulton, 2005), previous studies used similar arguments to study cohabitation and non-marital childbearing. It has recently been argued that cohabitation and non-marital childbearing reflect structural differences and circumstances rather than ideational choices of fulfilling higher order needs (Perelli-Harris et al., 2010; Perelli-Harris & Gerber, 2011). In other words, women with lower socioeconomic status tend to establish families in these alternative settings. Additionally, other scholars see cohabitation and non-marital childbearing as a result of either economic necessity or an unstable relationship. Edin and Kefalas (2005) argue that women, who choose not to marry their partner, eventually do not see them as economically or socially suitable for marriage. These women might choose to have a baby in a non-marital setting so that it provides meaning in their lives. These arguments are in line with Oppenheimer's reasoning that higher educated women are more likely to marry. We argue that this also means that they are less likely to cohabit or to experience a cohabiting conception. However, from Becker's and Bernard's argument that higher educated women are less likely to marry, the opposite follows; that they are more likely to cohabit and also to experience a conception outside marriage.

It has been argued that the economic theories on marriage apply differently in different settings; Becker's and Bernard's theory work more in a society where the traditional breadwinner model is more dominant while Oppenheimer's theory applies in more gender-egalitarian settings (Blossfeld, 1995). In Hungary, during the socialism, women's labour market situation was different than in Western-European countries. A dual-earner model was not the result of gender-egalitarian or feminist movements, but was enforced by the regime. As the ideology was that women and men are equal, not only men but also women had to participate in the labour market even though not with the same value or intensity as men. Furthermore, women were expected to withdraw from the labour market when they got a child, and to enter it again fulltime once the child turned three years old (Fodor et al., 2002). This system is somewhat closer to the traditional breadwinner model than to a symmetric

model. First, because men's domestic work participation was not encouraged. Second, because the values and intensity of women's work was lower than that of men's leading to lower wages. Consequently, although all women were working, they could have benefits from marrying. Thus, we expect that before the fall of the wall, Becker's and Bernard's theory would apply; more educated women were less likely to marry and thus to experience a marital conception than less educated women. Hence, less educated women were less likely to experience a cohabiting birth than more educated women. After the transition, the system became somewhat more gender-egalitarian. Thus, we expect that after the transition, higher educated Hungarian women are more likely to experience a marital conception compared to their lower educated counterparts, who are expected to have a higher chance of experiencing a cohabiting conception.

To sum up, we derived the following hypotheses from the above outlined theoretical arguments. First, from the Second Demographic Transition theory it follows that higher educated women are more likely to experience a non-marital conception than their lower educated counterparts (H1). Hence, lower educated women are expected to be more likely to experience a marital conception. We expect this to be especially the case after the transition (H1a), while we anticipate little or no differences between lower and higher educated women's chances of a non-marital conception before the transition (H1b). Second, the arguments of the theory on Postmaterialism led to the hypothesis that more liberal women are more likely to experience a non-marital conception compared to more traditional women (H2). Again, we think that this effect should be stronger for periods after the transition (H2a), whereas we anticipate that before the transition, women both with traditional and liberal family values were equally likely to conceive outside a marital union (H2b). Third, economic theories on marriage led to the expectations that before the transition, Hungarian women with higher education were more likely to conceive within a non-marital union (H3a), while after the transition, higher educated women are expected to be more likely to experience a marital conception (H3b).

Previous research, conducted in several countries, found support both for the Second Demographic Transition Theory and for the economic theories. The diffusion of new family behaviours, including non-marital childbearing and cohabitation, was mainly interpreted as support for the Second Demographic Transition theory by its proponents studying the United States (Lesthaege & Neidert, 2006; Raley, 2001), Western Europe (Lesthaege & Moors, 2000; van de Kaa, 2002; Lesthaege & Surkyn, 2004; Lesthaege, 2010), and Central and Eastern European countries (Lesthaege & Moors, 2000; Lesthaege & Surkyn, 2002; van de Kaa, 2002;

Spéder, 2005; Hoem et al., 2009). However, studies in the United States (Thornton et al., 1995), UK (Ermisch & Francesconi, 2000; Hobcraft & Kiernan, 2001; Perelli-Harris et al., 2010), Russia (Perelli-Harris et al., 2010; Perelli-Harris & Gerber, 2011), Austria, Italy, France, the Netherlands, West Germany, and Norway (Perelli-Harris et al., 2010) have revealed that cohabitation and non-marital childbearing is associated with lower education and it is also associated with disadvantaged economic position. Similarly, higher education increases women's probability to get married in Sweden (Bernhardt, 2004). For Hungary, Spéder (2004) found that lower educated women have a higher chance to get a child out of wedlock. Additionally, Pongrácz and Spéder (2008) examined attitudes towards different forms of partnerships in several European countries. They found that while in Western Europe people mentioned ideational reasons for cohabitation, people in former communist countries primarily mentioned objective and material reasons. Finally, a Hungarian study, conducted among 1500 women who had a birth out of wedlock, found that more than 80% of those women who did not plan to marry indicated mainly individual, family related, financial or other obstacles (Pongrácz & S. Molnár, 2003) rather than ideational reasons.

Our hypotheses that relate traditional family values to the type of union at the time of conception have not been directly tested. Nonetheless, some studies indicate that it is indeed the case that more traditional values increase the risk of a marital conception. For Sweden, Bernhardt (2004) concluded that respondents with very strong family values and those who were religious thought that childbearing should take place within marriage. Pongrácz and Spéder (2008) found that less religious people do not favour marriage and that people with higher education tolerate unmarried unions more than their less educated counterparts.

Data

We used information from the Generations and Gender Programme (GGP) which is a collection of nationally representative Generations and Gender Surveys and it aims to improve our understanding of demographic and social developments and the factors that influence these developments (Vikat et al., 2007).

We made use of the first wave of the Hungarian Generations and Gender Survey (GGS) from 2004 (N = 13,540). The dataset has extensive retrospective monthly information on life course events, such as children's date of birth and the beginning and end of up to six previous co-resident partnerships (both cohabitations and marriages). The stratified,

multistage sample is representative of the population aged 18-75 at the time of the interview. The response rate in the survey was 67.9% (Kapitány, 2001). To correct for the non-random sampling, we weighted the dataset by a five-dimensional probabilistic weight (age, type of city, education, marital status, and gender), provided in the dataset.

We selected heterosexual women who were childless at the age of 15. These women were observed from age 15 until nine months before the interview to account for pregnancies at the time of the interview. Individuals were censored when they experience a first conception or, if this did not happen, at age 39. Although it is conventional to take the fertile ages 15-51 as the time frame of the observation, this age limit was chosen because of the extremely small number of conceptions that happened after this age. Additionally, some women's first child was not biological but either stepchild (n = 126) or an adopted child (n = 14). As we did not have information on the date when these children came to live in the respondent's household, we deleted these observations from the sample. Our sample consisted of 7,317 observations.

To test our expectations, we created a dataset where, instead of individuals, the units of analysis are person-months. This means that for each individual the number of rows in the dataset equals the number of months the individual was under risk of the event of a first conception. The total number of person-months was 767,590 which reduced to 761,980 after taking into account only those individuals who had valid answers on each variable included in the final models.

Measures

Dependent variable

The dependent variable, type of first conception in a given month, is measured with a categorical variable with categories: 0 – no conception, 1 – single conception, 2 – cohabiting conception, and 3 – married conception. The date of the conception was calculated by subtracting 9 months from the date of the birth of the first child. Although this computation assumes that all conceptions end with a live birth, studying conceptions instead of births gives us a more reliable picture of the actual partner status of the respondents. In this way we can avoid "shotgun marriages" and "shotgun cohabitations" to bias the union status of the respondents at the time of conception; it is common that couples immediately marry or start cohabiting once they realise that the woman is pregnant. The descriptive statistics of the variables used in the analyses are summarised in Table 1.

Independent variables

Education. As mentioned earlier, individuals' educational attainment was used as an indicator of their socioeconomic status. The respondents' highest reached educational level was classified into six categories (ISCED0 – pre-primary education, ISCED1 – primary level, ISCED2 – lower secondary level, ISCED3 – upper secondary level, ISCED4 – post-secondary non-tertiary, ISCED5 – first stage of tertiary, ISCED6 – second stage of tertiary) using the International Standard Classification of Education (ISCED 1997). These categories were then recoded into three categories: low (ISCED0 – ISCED2), medium (ISCED3 and ISCED4), and high (ISCED5 and ISCED6). Following Perelli-Harris et al. (2010), we created a time-varying variable indicating the highest reached education in a given month using information on the year and month of reaching the highest educational level at the time of the survey. From age 15 onwards, we assumed continuous education. Somewhat more than 92% of the respondents did not have a valid answer for the month of graduation. As most schools in Hungary end the school year in June and as this was the most frequent answer among the valid answers (71.23%), we imputed June for the missing values. In the analysis a dummy variable was entered for each category of education with medium education being the reference category.

Family values. Family values were measured using the following five items: To what extent do you agree or disagree with each of the following statements (answers were ranging from 1 = strongly disagree to 5 = strongly agree): *"Marriage is an outdated institution"; "It is all right for an unmarried couple to live together even if they have no interest in marriage"; "Marriage is a lifetime relationship and should never be ended"; "It is all right for a couple with an unhappy marriage to get a divorce even if they have children"; "A woman can have a child as a single parent even if she doesn't want to have a stable relationship with a man".* Results of exploratory factor analysis revealed that these items represent one underlying dimension; therefore we created the scale "liberal family values" by taking the average of the items. The resulting scale was reliable ($\alpha = .60$) and ranged from 1 to 5, with higher values indicating more liberal values and lower values indicating more traditional values. The proportion of missing values on the items ranged from 0.75% to 1.41%. Additional analyses showed that imputing the mean of each item before constructing the scale do not bias the

results, therefore we constructed the scale from the imputed items. Finally, to be able to see whether the effect of family values is non-linear, we created a categorical variable with three categories: 1 – low score (0 – 3.1943), 2 – medium score (3.1943 – 3.8), and 3 – high score (3.81 – 5) on the liberal family values index. In the analyses, the reference category was the second category, "medium score".

One important issue has to be addressed here. Although the changing impact of values over time on the type of first conception is a very important part of both the Second Demographic Transition theory and the theory on Postmaterialism, the dataset holds information on family values measured at the time of the survey. In other words, we do not have time-varying information about family values. This raises an important issue. It is likely that family values change over the life course; the experience of certain events may change people's values (Surkyn & Lesthaege, 2004). For example, those, who did cohabit, are more tolerant towards this type of behaviour than those who did not. As we do not have information about the changing values, it may be that women, who were older at the time of the survey, had very different values from what they had when they experienced the first conception. This implies that we need to be cautious when interpreting the results. For younger women, this might be less the case as they are closer in time to the experience of a first conception.

Control variables

Period. To control for the change in the risk of a first conception over time, we created a categorical variable for the years during which the respondent was under risk of conceiving. The categories were: 1941-1960, 1961-1970, 1971-1980, 1981-1990, 1991-2000, and 2001-2004. The first category "1941-1960" includes 20 years instead of 10 years to ensure that there are enough observations in each category. In the analysis, periods were entered as dummies with period "2001-2004" being the reference category.

Cohort. To see whether family values are different for the different birth cohorts, we constructed a variable with 4 categories: 1926-1940, 1941-1955, 1956-1970, and 1971-1985, with the youngest birth cohort, "1971-1985", being the reference category.

Age. The respondents' age was measured in years and it was calculated for each month. To see the possible non-linear effects of age, a categorical age variable was created for five year age groups. The categories were: 15-20, 21-25, 26-30, 31-35, and 36-39. In the analysis age

categories were entered as dummy variables, with the age group "26-30" being the reference category.

Method

To test our expectations, following the approach taken in Perelli-Harris et al. (2010) and Perelli-Harris and Gerber (2011), we created a person-months dataset, and conducted multinomial logistic regressions. This approach is analogous to discrete time survival analysis with multiple event types; creates unbiased coefficients and produces consistent estimates of the standard errors (Allison, 1982). The multinomial logistic regression estimates *m – 1* models, where *m* is the number of categories of the outcome variable. In our case *m = 4*, where no conception, single conception, cohabiting conception, and married conception are the possible outcomes. The basic form of the model is:

$$\lambda(m)_{it} = \frac{\exp(\beta_{jm} x_{ijt})}{\sum_m \exp(\beta_{jm} x_{ijt})}$$

Where $\lambda(m)_{it}$ denotes the hazard that individual *i* will experience event *m* in month *t*, x_{ijt} denotes the respondents' values on a set of *j* covariates at time *t*, and β_{jm} denotes the estimated parameters. These parameters are estimated separately for each possible type of event.

We report and interpret the results based on relative risk ratios. Relative risk ratios, which can be obtained by exponentiating the regression coefficients, express how the risk of the outcome in the comparison group relative to the risk of the outcome in the reference group changes with the variable in question. A relative risk ratio greater than 1 indicates that as the variable in question increases, the risk of the outcome in the comparison group also increases relative to the risk of the outcome in the reference group. That is, the comparison group is more likely than the reference group. Consequently, a relative risk ratio smaller than 1 shows that as the variable in question increases the risk of the outcome in the comparison group decreases compared to that of the reference group.

We estimated three sets of multinomial logistic regression models. First, to test our expectations, we estimated stepwise models to predict the risk of a single, cohabiting or marital first conception (Model 1a – Model 3a), with "no conception" being the baseline category. The first model (Model 1a) only included the control (variables period and age) and educational attainment. Then, family values (Model 2a) and interaction effects between period and education as well as between period and values were entered (Model 3a). Then, to

compare the effect of education and family values among cohabiting and married conceptions, we estimated the same models with taking "marital conception" as well as "cohabiting conception" as the baseline category. Second, we estimated the same sets of models exchanging "period" to "cohort" to see whether it is more appropriate to examine the changes over time from a cohort perspective (Model 1b – Model 3b). Third, we estimated the models with union type at first birth being the dependent variable to justify the relevance of focusing on union status at first conception instead of at the time of the first birth (Model 1c – Model 3c). In these models the independent variables refer to the characteristics at the time of first conception.

Descriptive Results

Table 2 shows the distribution of single, cohabiting, and married first conceptions with respect to educational level and time period. Among all educational categories, the proportion of single conceptions were generally increasing over time, although not continuously. By 2004, the proportion of single conceptions was 25.1% for highly educated, 31.3% for those with medium education, and 33.2% for low educated women. This suggests that higher educated women are the least likely to experience a single conception. In all periods, higher educated women were the least likely to conceive outside of marriage, followed by medium educated and by low educated women.

Not surprisingly, the proportion of marital conceptions has decreased over time in all educational categories; however, again, this trend was not without interruptions. In total, 61.5% of low educated women, 61.5% of medium educated women and 70.1% of highly educated women experienced a marital conception. If we examine the proportion of marital conceptions in each period, we see that higher educated women were more likely to experience a marital conception compared to medium educated women, who were also more likely to conceive within marriage than lower educated women.

In case of cohabiting conceptions, the picture is somewhat different. Among low and medium educated women, the proportion of cohabiting conceptions has been increasing almost continuously, but a real huge increase has started only after 1981 in both educational categories. Additionally, among the low educated women, this increase has been almost 11 percentage points higher than among those with medium education. Interestingly, among low educated women, this proportion has decreased after 2000, while it has further increased among those with medium education. For highly educated women, we see a completely

different trend. The proportion of cohabiting conceptions was considerably low throughout the years, followed by a huge increase after 2000. By 2004, the proportion of cohabiting conceptions was the highest among women with medium education (7.2%), the second highest among those with low education (5.3%) and it was the lowest among highly educated women (4.9%). Finally, it is interesting to see that the total proportions of different types of conceptions are rather similar among different educational groups.

Furthermore, the low proportions of cohabiting conceptions and the high proportions of single conceptions are striking. Probably, most single women do have a non-resident partnership at the time of conception, but they do not live together when the conception happens. Previous studies that looked at union formation after conception found that after a single conception most women marry very soon (Lesthaege & Moors, 2000; Perelli-Harris et al., 2010).

***** Table 2 about here *****

Additionally, we examined the distribution of single, cohabiting, and married first conceptions with respect to family values and period as an indication of whether the effect of values on the partnership context of a conception has changed over time (Table 3). By the time of the survey, 28.1% of traditional women, 31.8% of medium-liberal women and 34.8% of liberal women experienced a single conception. This trend is the same for cohabiting conceptions (2.9%, 5.7%, and 9.1%, respectively), while in case of marital conceptions, the trend is the opposite. Thus, it seems that women with more traditional values are more likely to conceive within marriage, while those with more liberal values are more likely to conceive in a non-marital relationship.

When examining changes over time, we see that overall, the proportion of single conceptions was generally increasing among all value categories while in case of marital conceptions, we observe an opposite, decreasing trend. In case of cohabiting conceptions a slight increase took place after 1981, followed by a sudden increase after 1990 for women in all value categories. Then, among women with medium-liberal and most liberal values, this proportion increased again during the following periods, while among traditional women we observe a slight decrease.

***** Table 3 about here *****

Last, to show how education and family values are related, we examined a pairwise correlation between these variables. Education and family values are positively related, however the correlation is rather weak but nonetheless highly significant (r = 0.061, p-2s < 0.000). This means that higher education is generally related to more liberal family values. At the same time, this weak relation supports our expectation that liberal family values cannot completely be explained by higher educational attainment and that it is important to include this dimension in the analyses.

Preliminary Results

Table 4 shows the results of the multinomial logistic regressions with "no conception" being the baseline category. The three parts of the table show the relative risk ratios for the stepwise models (Model 1a – Model 3a) of a single, a cohabiting, and a marital conception, compared to no conception.

***** Table 4 about here *****

Among low educated women, the risk of a single conception compared to no conception is approximately 27% smaller than among medium educated women, holding other variables in the model constant (Model 1a). The risk of a cohabiting conception compared to no conception is 38% smaller for higher educated women than for their counterparts with medium education. Finally, the risk of a married conception, compared to no conception, is 32% smaller for women with low education compared to women with medium education. Additionally, this risk is 21% higher for higher educated women than for their medium educated counterparts. The magnitude of these effects decreases slightly when family values are included in the model (Model 2a), but, nevertheless, their levels of significance do not change. This is in line with our expectation that the effect of family values on the risk of a conception cannot be completely explained by education. Family values do not seem to influence the risk of a single conception, whereas it has a significant effect on the risk of a cohabiting and marital conception. The risk of a cohabiting conception compared to no conception is higher for women with more liberal family values than for women with medium scores on the liberal family values scale. Additionally, the risk of a marital conception compared to no conception is lower for more liberal women than for their more traditional counterparts.

With respect to the effect of the control variables, we see that the risk of a single conception compared to no conception is higher for women between 21 and 25 years compared to their 26-30 year-old counterparts. However, this risk is lower for older women. The risk of a cohabiting conception, compared to no conception, is lower at age 15-20 and at age 36-40 than in the reference group (26-30 years). Furthermore, the risk of a married conception, compared to no conception, is higher at age 21-25 than at age 26-30, while it is significantly lower in all other age groups. When examining the effect of the time period when women were under risk of a conception, we see that the risk of a single conception was considerably higher between 1971 and 1990 than in 2001-2004. Even though the risk of a cohabiting conception has increased over time from 1941 until 1980, it was smaller compared to the risk of no conception. Consequently, the risk of a marital conception has been decreasing over time, but nonetheless it stayed much higher than the risk of no conception.

To compare whether the effects of education and family values differ between cohabiting and marital conceptions, we estimated the same models with changing the baseline category and comparing the risk of different outcomes to each other. Table 5 shows the estimated model with "marital conception" being the baseline category. The results indicate that the risk of a cohabiting conception compared to a marital conception is 49% lower among higher educated women than among their counterparts with medium education (Model 2a). However, there were no significant differences found between women with low and with medium educational level. Additionally, this risk is 63% higher among women with the most liberal family values than among women with medium scores on the liberal family values scale. Also, traditional women are less likely to conceive within cohabitation than within marriage compared to their medium-liberal counterparts. Thus, it seems that the more liberal a women is, the higher the risk of a cohabiting conception compared to that of a married conception. When comparing the risk of a single conception to that of a marital one we see a similar pattern; higher educated women are less likely than medium educated women to experience a single conception, while women with more liberal family values have a higher risk of conceiving while being single compared to women with medium-liberal family values.

***** Table 5 about here *****

When we compare the risk of a marital or a single conception to a cohabiting conception (Table 6) we see a similar pattern. Higher educated women have a higher risk of a

married conception compared to a cohabiting conception, whereas there are no educational differences between the risk of a cohabiting and a single conception (Model 2a). Additionally, traditional women have a higher chance of conceiving within marriage than their counterparts with medium-liberal values, and the most liberal women are more likely to experience a cohabiting conception than a marital conception. Finally, women liberal family values are less likely to experience a single conception than a cohabiting conception.

***** Table 6 about here *****

To see how the effect of education and family values on the risk of a first conception within certain union types changed over time, we estimated interaction effects between period and education as well as between period and family values for the above analysed models (Table 4 – Table 6, Model 3a). Whereas the interaction effects between education and period do not show any clear patterns, we can draw somewhat more conclusions based on the interaction effects between family values and period. When comparing the risk of a single conception to that of a marital conception (Table 5, Model 3a), we see that for the periods 1961-1980 and 1991-2000, the positive effect of liberal family values on the risk of a single conception is weaker than for the period between 2000 and 2004. This means that in these periods it was less likely than in 2000-2004 that a woman with liberal values would experience a single conception rather than a marital conception.

Table 2 – Table 5 in the Appendix show slightly modified versions of the previously estimated models; we exchanged the "period" variable to birth cohort to see whether a cohort perspective is maybe more relevant in examining the changing effects of education and family values on the risk of the different outcomes (Model 1b – Model 3b). The effect of education and family values is the same as in the previous models. The risk of both a single and a cohabiting conception was increasing over birth cohorts, but nonetheless it was smaller compared to the risk of a marital conception in all birth cohorts than in the youngest cohort (reference group) (Appendix, Table 5). Similarly, when comparing the risk of a single and a marital conception to that of a cohabiting conception, we see that the risk of these conceptions decreases over birth cohorts compared to the risk of a cohabiting conception, however both stay considerably larger than the risk of a cohabiting conception (Appendix, Table 4). Additionally, we tested interaction effects between birth cohorts and education as well as between birth cohorts and values to examine changes in these effects on the risk of the different outcomes over time. For our analysis, models comparing cohabiting conceptions

and marital conceptions would be especially interesting. However, we do not find any consistent patterns for neither the changing effect of education nor for that of family values.

Finally, to justify the importance of focusing on union status at first conception rather than at first birth, we estimated the same sets of models with union type at first birth being the dependent variable, while the independent variables referred to the characteristics of the individual up to the time of first conception (Appendix, Table 6 – Table 9). Apart from some effects becoming somewhat stronger or somewhat weaker, we do not see many differences when comparing these models with the previously estimated ones. We see the biggest differences when comparing the risk of a single birth to the risk of a cohabiting birth (Appendix, Table 8). The effects show that higher educated women and those with more traditional values have a higher risk of experiencing a single birth than a cohabiting birth compared to women with medium education and with medium scores on the family values scale. These effects were not significant in the models that compared the risk of a cohabiting and a single conception. This indicates that higher educated women do not necessarily marry after the conception; in this case their chance of staying single is higher than to start cohabiting. The fact that we found such differences when comparing the two models strengthens our argument that it is important to differentiate between conceptions and births when the actual union type is of interest.

Conclusion and Discussion

Most previous studies interpreted the diffusion of cohabitation and non-marital childbearing as part of the Second Demographic Transition; higher educated women adjust their family behaviours in order to be able to fulfil their "higher order" needs. This means that these women are less likely to marry and, thus, are also less likely to conceive within marriage than their lower educated counterparts. This argument is in line with Becker's theory on marriage. On the contrary, Oppenheimer and others argue that higher educated women are more attractive on the marriage market, thus they are more likely to marry than their lower educated counterparts. This leads to the expectation that these women have a higher chance of a marital conception than lower educated women. Additionally, some recent studies argue that rather the disadvantaged groups in the society are more likely to choose the new types of family formation. In the present article, we tested these contradictory expectations. Furthermore, by using notions from the theory on Postmaterialism, we emphasised the role of family values. Using the first wave of the Hungarian Generations and Gender Survey from

2004, we examined how educational attainment and family values influence the risk of a single, cohabiting, and married conception. Furthermore, we investigated whether and how these influences have changed over time.

Overall, we conclude that the theory on Postmaterialism and the Second Demographic Transition theory offer a rather good explanation for the risk of cohabiting and marital conceptions via the effect of family values. The result is in line with our hypothesis that the risk of a marital conception is higher among more traditional women, while the risk of a cohabiting conception is higher among women with more liberal family values (H2). Although previous studies did not directly investigate the effect of family values on the risk of a conception with respect to union type, Pongrácz and Spéder (2008) found that Hungarian people who are less religious do not favour marriage. Additionally, non-religious people were shown to have a higher chance to get a birth out of wedlock in Hungary (Spéder, 2004). If we interpret religiosity as an indicator of traditional family values, this result is in line with our findings. Additionally, the effect of family values on the risk of a non-marital conception did not change over time in the expected way. We found that in some periods before the transition (1961-1980) the positive effect of liberal family values on the risk of a single conception was weaker than in 2000-2004. The same weaker influence was found for the period 1991-2000, although it got somewhat stronger over time. This contradicts our hypotheses that this effect would be stronger for periods after the transition (H2a) and that there were no differences in the risk of a single conception among women with different family values before the transition (H2b). In case of cohabiting conceptions, we found no significant interaction effects. The descriptive results indicated that the proportion of cohabiting conceptions increased first among the most liberal women and then among those with medium-liberal values, as it is argued by the Postmaterialism and the Second Demographic Transition theory. Also, the multivariate findings reflect that as the new family behaviour was spreading towards the less liberal strata of the population, the effect of liberal family values on the risk of a single conception got weaker.

Furthermore, we found partial evidence for the economic theories arguing that higher educated women are more likely to conceive within a marital union than in a non-marital union. We showed that higher educated women have a higher risk of a marital conception than a cohabiting or a single conception. As we found no differences in the effect of education on the risk of a first conception for the periods before and after the transition, this finding only provides partial evidence for our hypotheses (H3b). This result is in line with previous studies examining Norway, Russia, and the United Kingdom (Perelli-Harris et

al, 2010). However, in these countries the effect of low education was also significant; low educated women had a higher risk than medium educated women to conceive within cohabitation. It seems that in Hungary, lower educated women do not have a higher risk to conceive in a non-marital union compared to women with medium education. This is somewhat surprising, as previous studies found that cohabitation and non-marital childbearing is associated with low education in Norway, Russia, the United Kingdom, the Netherlands, and Italy (Perelli-Harris et al, 2010). Also, Spéder (2004) showed that low education increases the risk of a non-marital birth. He, however, studied first and higher order births as well and did not make a differentiation between single and cohabiting non-marital births. Our results indicate that in Hungary the threshold lies between medium and high educated women rather than between low and medium educated women. This implies that the reproduction of inequalities via family formation behaviours does not characterise the lower educated strata of the population; rather higher educated women are reproducing these inequalities. This is in line with the argument that a new pattern of inequality is present: highly educated women marry highly educated men; marriage is considered to be a "luxury item" which signals relationship success and economic security (Heard, 2011). Furthermore, we found no support for the hypothesis that higher educated women have a higher risk of a non-marital conception compared to lower educated women (H3a and H1). Consequently, we did not find evidence for the hypotheses that referred to the changing effect of low education on the risk of a non-marital conception over time (H1a and H1b). This might have several implications with respect to the Second Demographic Transition in Hungary. From the descriptive results we saw that traces of the Second Demographic Transition could be discovered: cohabiting conceptions were becoming more common while marital conceptions were rarer. The theory argues that higher educated women would be the first who start to adjust their family behaviours, but we do not see this pattern when looking at the interaction effects. This might, on the one hand, indicate that the changes happened more or less simultaneously among the different educational groups. On the other hand, it is also possible that the Second Demographic Transition was already on its way in Hungary in the early periods and that is why we do not observe these changes. Finally, it can also be the case that the idea of the Second Demographic Transition is less applicable for the Hungarian case.

Moreover, we found differences with respect to family values between the risk of a cohabiting and a single conception; more liberal women are more likely to conceive within cohabitation than when being single. Interestingly, the risk of a cohabiting conception compared to a single conception was not influenced by education. This indicates that there

are no educational differences between the risk of a single and a cohabiting first conception in Hungary. It may be that education simply does not capture the real differences between people who experience a cohabiting conception and those who conceive while being single. Alternatively, the low proportion of cohabiting conceptions and the high proportion of single conceptions might be responsible for this finding. As mentioned earlier, it might be that most single women had a non-resident partnership at the time of conception but, for example, due to economic obstacles (e.g. common housing) they cannot afford moving together. Previous studies that looked at union formation after conception found that after a single conception most women marry very soon (Lesthaege & Moors, 2000; Perelli-Harris et al, 2010). Thus, it might be that the real differences do not lie between women who experience the first conception within cohabitation and those who are single or married but the border might be whether someone has a partnership when the conception happens. The dataset did not allow us to make this differentiation, as information was only available on the starting and ending date of co-resident partnerships but not on non-resident relationships.

Finally, some limitations of our study have to be mentioned. First, although dating back the births with nine months allowed us to account for "shotgun marriages" and "shotgun cohabitations", with this calculation we assumed that all conceptions ended with live births. This assumption might lead to an underestimation of the risk of a conception. Second, retrospective data might suffer from possible recall errors and misreporting. It can be expected that it is especially true in case of remembering the starting and ending date of several cohabiting relationships and less so in case of marriages or childbirths. Conceptions to single women would, in this way, be overestimated relative to conceptions to cohabiting women. Third, although family values showed a straightforward pattern, we need to be cautious when drawing conclusions. First, because the items used to measure family values were not the same as the ones that are usually used to measure postmaterialist values. Second, because this variable was measured at the time of the survey and not over the life course. Some studies argue that values change as a result of experiencing certain events. For example, women who previously had a cohabiting experience are likely to be more tolerant towards cohabitation than those who have not cohabited before (Lesthaege & Moors, 2000; Surkyn & Lesthaege, 2004). In order to disentangle whether values affect behaviour or whether the opposite applies, panel data would be needed (Lesthaege, 2010). Future research could investigate this issue as soon as following waves of the survey become available.

Nonetheless, our study is the first that investigates the effects of education and family values on the risk of a first conception in Hungary, differentiating between single,

cohabiting, and married conceptions and applying event history models. We encourage future research to study the effect of family values using the upcoming waves of the GGS survey, as well as to try to differentiate between conceptions that happen within a relationship as compared to those without a relationship.

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Table 1. Descriptive Statistics (N = 761,980).

	M	*SD*	Range
Type of conception	.017	.214	0-3
Independent variables			
Educational attainment			
Low	.611	.488	0-1
Medium	.331	.470	0-1
High	.059	.236	0-1
Family values			
Low	.289	.453	0-1
Medium	.347	.476	0-1
High	.364	.481	0-1
Control variables			
Age			
15-20 years	.605	.489	0-1
21-25 years	.234	.424	0-1
26-30 years	.091	.287	0-1
31-35 years	.048	.213	0-1
36-39 years	.022	.147	0-1
Period			
1941-1960	.020	.398	0-1
1961-1970	.181	.385	0-1
1971-1980	.187	.390	0-1
1981-1990	.166	.372	0-1
1991-2000	.206	.405	0-1
2001-2004	.062	.240	0-1
Cohort			
1926-1940	.218	.413	0-1
1941-1955	.290	.454	0-1
1956-1970	.246	.431	0-1
1971-1985	.246	.430	0-1

Note: M – mean, SD – standard deviation

Table 2. Proportion of Conceptions by Period, Educational Level, and Union Status at Conception (N = 761,980).

	Low			Medium			High		
	S	C	M	S	C	M	S	C	M
1941-1960	25.7	.7	73.6	22.5	.5	77.0	18.2	0	81.8
1961-1970	25.8	1.8	72.4	21.4	.6	78.0	18.4	0	81.6
1971-1980	40.4	3.3	56.3	29.4	1.5	69.1	22.3	2.1	75.5
1981-1990	47.6	11.6	40.8	33.1	7.9	59.0	19.0	2.7	78.2
1991-2000	42.0	30.7	27.3	37.6	16.3	46.1	29.2	6.2	64.6
2001-2004	58.3	25.0	16.7	47.1	22.5	30.4	44.8	17.2	37.9
Total	33.2	5.3	61.5	31.3	7.2	61.5	25.1	4.8	70.1

Note: S – single conception, C – cohabiting conception, M – marital conception

Table 3. Proportion of Conceptions by Period, Liberal Family Values, and Union Status at Conception (N=761,980).

	Low			Medium			High		
	S	C	M	S	C	M	S	C	M
1941-1960	24.0	.2	75.8	24.1	1.5	74.3	29.1	.5	70.5
1961-1970	22.3	0	77.7	24.9	.8	74.3	25.1	3.1	71.9
1971-1980	30.2	1.9	67.9	34.5	2.3	63.2	36.4	3.0	60.6
1981-1990	34.7	5.5	59.8	32.3	7.7	59.9	38.9	10.3	50.8
1991-2000	36.8	13.5	49.7	40.3	15.7	44.0	36.0	24.5	39.4
2001-2004	40.4	11.5	48.1	44.6	18.9	36.5	53.2	29.8	17.0
Total	28.1	2.9	69.0	31.8	5.7	62.5	34.8	9.1	56.1

Note: S – single conception, C – cohabiting conception, M – marital conception

Table 4. Multinomial Logistic Regression Analysis, Relative Risk Ratios, Base Outcome: No Conception (N = 761,980).

	Model 1a			Model 2a			Model 3a		
	S	C	M	S	C	M	S	C	M
Independent variables									
Educational attainment									
Low	0.729 ***	0.821	0.678 ***	0.729 ***	0.818	0.677 ***	0.462 *	0.479	0.301 *
Medium (ref.)	ref	ref	ref	ref	ref	ref	ref	ref	ref
High	0.917	0.596 *	1.214 **	0.919	0.621 *	1.214 **	1.176	0.925	1.305
Family values									
Low				0.979	0.713	1.067	1.040	0.681	1.448
Medium (ref.)				ref	ref	ref	ref	ref	ref
High				1.062	1.470 **	0.903 *	1.390	1.762	0.547 *
Control variables									
Age									
15-20 years	1.013	0.680 *	0.433 ***	1.012	0.695	0.435 ***	1.032	0.701	0.443 ***
21-25 years	1.410 ***	0.822	1.514 ***	1.411 ***	0.839	1.515 ***	1.422 ***	0.853	1.516 ***
26-30 years (ref.)	ref	ref	ref	ref	ref	ref	ref	ref	ref
31-35 years	0.435 ***	0.565	0.360 ***	0.436 ***	0.568	0.359 ***	0.440 ***	0.572	0.359 ***
36-39 years	0.320 ***	0.057 **	0.197 ***	0.321 ***	0.058 **	0.196 ***	0.325 ***	0.060 **	0.195 ***
Period									
1941-1960	0.999	0.053 ***	7.491 ***	1.016	0.062 ***	7.239 ***	0.931	0.100 *	5.320 ***
1961-1970	1.014	0.112 ***	7.090 ***	1.020	0.119 ***	7.001 ***	1.024	0.032 ***	5.490 ***
1971-1980	1.678 ***	0.242 ***	6.594 ***	1.682 ***	0.247 ***	6.564 ***	1.738 *	0.179 **	5.719 ***
1981-1990	1.482 **	0.714	4.980 ***	1.480 **	0.711	4.984 ***	1.602 *	0.889	5.089 ***
1991-2000	0.928	0.976	2.104 ***	0.927	0.974	2.107 ***	1.358	1.060	2.181 ***
2001-2005 (ref.)	ref	ref	ref	ref	ref	ref	ref	ref	ref
Interaction effects									
Period*Education									
1941-1960*low							1.905	2.556	2.932 *
1961-1970*low							1.875	5.661	2.737 *
1971-1980*low							1.886	3.033	2.246
1981-1990*low							1.469	1.461	1.451
1991-2000*low							1.008	1.667	1.199
1941-1960*high							1.014	5.516	0.967
1961-1970*high							0.861	0.000 ***	0.731
1971-1980*high							0.649	1.666	0.686
1981-1990*high							0.734	0.476	1.135
1991-2000*high							0.702	0.403	0.927
Period*Values									
1941-1960*low							1.031	0.277	0.734
1961-1970*low							0.946	0.225	0.744
1971-1980*low							0.839	1.225	0.727
1981-1990*low							1.014	1.027	0.638
1991-2000*low							0.850	1.241	0.742
1941-1960*high							0.737	0.150 ***	1.493
1961-1970*high							0.729	2.141	1.720
1971-1980*high							0.785	0.773	1.894 *
1981-1990*high							0.850	0.746	1.565
1991-2000*high							0.609	0.831	1.554

Note: No – no conception, S – single conception, C – cohabiting conception, M – marital conception
*Note: *p < .05. **p < .01. ***p < .001*

Table 5. Multinomial Logistic Regression Analysis, Relative Risk Ratios, Base Outcome: Marital Conception (N = 761,980).

	Model 1a			Model 2a			Model 3a		
	No	S	C	No	S	C	No	S	C
Independent variables									
Educational attainment									
Low	1.476 ***	1.076	1.212	1.478 ***	1.078	1.209	3.321 *	1.534	1.590
Medium (ref.)	ref	ref	ref	ref	ref	ref	ref	ref	ref
High	0.823 **	0.755 *	0.491 **	0.824 **	0.757 *	0.511 **	0.766	0.901	0.709
Family values									
Low				0.937	0.917	0.668 *	0.691	0.718	0.470
Medium (ref.)				ref	ref	ref	ref	ref	ref
High				1.107 *	1.176 *	1.628 ***	1.830 *	2.543 *	3.224 **
Control variables									
Age									
15-20 years	2.312 ***	2.342 ***	1.571 *	2.300 ***	2.327 ***	1.598 *	2.258 ***	2.331 ***	1.583 *
21-25 years	0.661 ***	0.932	0.543 **	0.660 ***	0.931	0.554 **	0.660 ***	0.938	0.562 **
26-30 years (ref.)	ref	ref	ref	ref	ref	ref	ref ***	ref	ref
31-35 years	2.780 ***	1.210	1.570	2.789 ***	1.215	1.585	2.789 ***	1.228	1.594
36-39 years	5.065 ***	1.619	0.290	5.102 ***	1.636	0.298	5.131 ***	1.670	0.309
Period									
1941-1960	0.133 ***	0.133 ***	0.007 ***	0.138 ***	0.140 ***	0.009 ***	0.188 ***	0.175 ***	0.019 ***
1961-1970	0.141 ***	0.143 ***	0.016 ***	0.143 ***	0.146 ***	0.017 ***	0.182 ***	0.187 ***	0.006 ***
1971-1980	0.152 ***	0.255 ***	0.037 ***	0.152 ***	0.256 ***	0.038 ***	0.175 ***	0.304 ***	0.031 ***
1981-1990	0.201 ***	0.297 ***	0.143 ***	0.201 ***	0.297 ***	0.143 ***	0.196 ***	0.315 ***	0.175 ***
1991-2000	0.475 ***	0.441 ***	0.464 ***	0.475 ***	0.440 ***	0.462 ***	0.458 ***	0.623	0.486
2001-2005 (ref.)	ref	ref	ref	ref	ref	ref	ref	ref	ref
Interaction effects									
Period*Education									
1941-1960*low							0.341 *	0.650	0.872
1961-1970*low							0.365 *	0.685	2.068
1971-1980*low							0.445	0.840	1.351
1981-1990*low							0.689	1.012	1.007
1991-2000*low							0.834	0.841	1.391
1941-1960*high							1.034	1.049	5.705
1961-1970*high							1.368	1.177	0.000 ***
1971-1980*high							1.459	0.947	2.431
1981-1990*high							0.881	0.647	0.419
1991-2000*high							1.079	0.758	0.434
Period*Values									
1941-1960*low							1.363	1.405	0.378
1961-1970*low							1.345	1.273	0.303
1971-1980*low							1.376	1.154	1.685
1981-1990*low							1.567	1.588	1.610
1991-2000*low							1.347	1.145	1.671
1941-1960*high							0.670	0.494	0.101
1961-1970*high							0.581	0.424 *	1.244
1971-1980*high							0.528 *	0.414 *	0.408
1981-1990*high							0.639	0.543	0.477
1991-2000*high							0.644	0.392 *	0.535

Note: No – no conception, S – single conception, C – cohabiting conception, M – marital conception
Note: *p < .05. **p < .01. ***p < .001

Table 6. Multinomial Logistic Regression Analysis, Relative Risk Ratios, Base Outcome: Cohabiting Conception (N = 761,980).

	Model 1a			Model 2a			Model 3a		
	No	S	M	No	S	M	No	S	M
Independent variables									
Educational attainment									
Low	1.218	0.888	0.825	1.222	0.891	0.827	2.089	0.965	0.629
Medium (ref.)	ref	ref	ref	ref	ref	ref	ref	ref	ref
High	1.677 *	1.538	2.037 **	1.611 *	1.481	1.956 **	1.082	1.272	1.411
Family values									
Low				1.404	1.373	1.497 *	1.469	1.527	2.126
Medium (ref.)				ref	ref	ref	ref	ref	ref
High				0.680 **	0.722 *	0.614 ***	0.567	0.789	0.310 **
Control variables									
Age									
15-20 years	1.471 *	1.490	0.637 *	1.439	1.456	0.626 *	1.426	1.472	0.632 *
21-25 years	1.216	1.715 **	1.841 **	1.192	1.682 *	1.807 **	1.173	1.668 *	1.778 **
26-30 years (ref.)	ref	ref	ref	ref	ref	ref	ref ***	ref	ref
31-35 years	1.771	0.771	0.637	1.760	0.767	0.631	1.749	0.770	0.627
36-39 years	17.473 **	5.587	3.450	17.121 **	5.491	3.356	16.624 **	5.411	3.240
Period									
1941-1960	18.705 ***	18.688 ***	140.118 ***	16.088 ***	16.339 ***	116.457 ***	10.038 *	9.351	53.407 ***
1961-1970	8.913 ***	9.034 ***	63.191 ***	8.390 ***	8.557 ***	58.734 ***	30.933 ***	31.680 ***	169.826 ***
1971-1980	4.132 ***	6.934 ***	27.245 ***	4.051 ***	6.812 ***	26.592 ***	5.572 **	9.685 ***	31.866 ***
1981-1990	1.402	2.076 **	6.980 ***	1.407	2.082 **	7.011 ***	1.124	1.801	5.722 ***
1991-2000	1.024	0.950	2.156 ***	1.027	0.953	2.164 ***	0.943	1.281	2.057
2001-2005 (ref.)	ref	ref	ref	ref	ref	ref	ref	ref	ref
Interaction effects									
Period*Education									
1941-1960*low							0.391	0.745	1.147
1961-1970*low							0.177	0.331	0.484
1971-1980*low							0.330	0.622	0.740
1981-1990*low							0.684	1.005	0.993
1991-2000*low							0.600	0.604	0.719
1941-1960*high							0.181	0.184	0.175
1961-1970*high							.	.	.
1971-1980*high							0.600	0.389	0.411
1981-1990*high							2.102	1.542	2.385
1991-2000*high							2.484	1.745	2.303
Period*Values									
1941-1960*low							3.608	3.721	2.648
1961-1970*low							4.445	4.207	3.306
1971-1980*low							0.816	0.685	0.594
1981-1990*low							0.974	0.987	0.621
1991-2000*low							0.806	0.685	0.598
1941-1960*high							6.661	4.909	9.943
1961-1970*high							0.467	0.341	0.804
1971-1980*high							1.294	1.015	2.451
1981-1990*high							1.340	1.139	2.097
1991-2000*high							1.204	0.733	1.870

Note: No – no conception, S – single conception, C – cohabiting conception, M – marital conception
Note: *p < .05. **p < .01. ***p < .001
Note: . indicates that the effects could not be estimated

Appendix. Table 1. Multinomial Logistic Regression Analysis, Relative Risk Ratios, Base Outcome: Single Conception (N = 761,980).

	Model 1a			Model 2a			Model 3a		
	No	C	M	No	C	M	No	C	M
Independent variables									
Educational attainment									
Low	1.372 ***	1.127	0.930	1.372 ***	1.122	0.928	2.165 *	1.036	0.652
Medium (ref.)	ref	ref	ref	ref	ref	ref	ref	ref	ref
High	1.090	0.650	1.324 *	1.088	0.675	1.321 *	0.851	0.786	1.110
Family values									
Low				1.022	0.728	1.090	0.962	0.655	1.392
Medium (ref.)				ref	ref	ref	ref	ref	ref
High				0.941	1.384 *	0.850 *	0.719	1.268	0.393 *
Control variables									
Age									
15-20 years	0.987	0.671	0.427 ***	0.988	0.687	0.430 ***	0.969	0.679	0.429 ***
21-25 years	0.709 ***	0.583 **	1.073	0.709 ***	0.595 *	1.074	0.703 ***	0.600 *	1.066
26-30 years (ref.)	ref	ref	ref	ref	ref	ref	ref	ref	ref
31-35 years	2.297 ***	1.297	0.826	2.295 ***	1.304	0.823	2.271 ***	1.298	0.814
36-39 years	3.128 ***	0.179	0.618	3.118 ***	0.182	0.611	3.072 ***	0.185	0.599
Period									
1941-1960	1.001	0.054 ***	7.498 ***	0.985	0.061 ***	7.127 ***	1.074	0.107	5.712 ***
1961-1970	0.987	0.111 ***	6.995 ***	0.980	0.117 ***	6.864 ***	0.976	0.032 ***	5.361 ***
1971-1980	0.596 ***	0.144 ***	3.929 ***	0.595 ***	0.147 ***	3.904 ***	0.575 *	0.103 ***	3.290 ***
1981-1990	0.675 **	0.482 **	3.361 ***	0.676 **	0.480 **	3.367 ***	0.624 *	0.555	3.178 ***
1991-2000	1.078	1.052	2.268 ***	1.078	1.050	2.272 ***	0.736	0.781	1.606
2001-2005 (ref.)	ref	ref	ref	ref	ref	ref	ref	ref	ref
Interaction effects									
Period*Education									
1941-1960*low							0.525	1.342	1.539
1961-1970*low							0.533	3.019	1.460
1971-1980*low							0.530	1.609	1.191
1981-1990*low							0.681	0.995	0.988
1991-2000*low							0.992	1.654	1.190
1941-1960*high							0.986	5.441	0.954
1961-1970*high							1.162	0.000 ***	0.849
1971-1980*high							1.541	2.568	1.056
1981-1990*high							1.363	0.648	1.546
1991-2000*high							1.424	0.573	1.320
Period*Values									
1941-1960*low							0.970	0.269	0.712
1961-1970*low							1.057	0.238	0.786
1971-1980*low							1.192	1.460	0.867
1981-1990*low							0.987	1.013	0.630
1991-2000*low							1.177	1.460	0.874
1941-1960*high							1.357	0.204	2.025
1961-1970*high							1.372	2.936	2.360 *
1971-1980*high							1.274	0.985	2.414 *
1981-1990*high							1.177	0.878	1.841
1991-2000*high							1.641	1.364	2.551 *

Note: No – no conception, S – single conception, C – cohabiting conception, M – marital conception
Note: *p < .05. **p < .01. ***p < .001

Appendix. Table 2. Multinomial Logistic Regression Analysis, Replacing Period with Cohorts, Relative Risk Ratios, Base Outcome: No Conception (N = 761,980).

	Model 1b			Model 2b			Model 3b		
	S	C	M	S	C	M	S	C	M
Independent variables									
Educational attainment									
Low	0.736 ***	0.797	0.688 ***	0.736 ***	0.790	0.686 ***	0.485 ***	0.737	0.289 ***
Medium (ref.)	ref	ref	ref	ref	ref	ref	ref	ref	ref
High	0.905	0.570 *	1.181 **	0.907	0.597 *	1.179 **	0.990	0.499 *	1.024
Family values									
Low				0.977	0.706	1.067	0.905	0.804	1.122
Medium (ref.)				ref	ref	ref	ref	ref	ref
High				1.052	1.444 **	0.905 *	1.151	1.398	0.735 *
Control variables									
Age									
15-20 years	1.019	0.465 ***	0.549 ***	1.022	0.482 ***	0.547 ***	1.032	0.480 ***	0.557 ***
21-25 years	1.433 ***	0.676 *	1.734 ***	1.435 ***	0.695	1.729 ***	1.420 ***	0.689 *	1.715 ***
26-30 years (ref.)	ref	ref	ref	ref	ref	ref	ref	ref	ref
31-35 years	0.433 ***	0.783	0.319 ***	0.433 ***	0.775	0.320 ***	0.449 ***	0.778	0.323 ***
36-39 years	0.332 ***	0.108 *	0.163 ***	0.332 ***	0.107 *	0.164 ***	0.346 ***	0.107 *	0.168 ***
Cohort									
1926-1940	1.142	0.054 ***	5.311 ***	1.158	0.063 ***	5.148 ***	0.749	0.075 *	3.403 ***
1941-1955	1.424 ***	0.174 ***	4.685 ***	1.430 ***	0.182 ***	4.647 ***	1.197	0.125 ***	3.256 ***
1956-1970	1.968 ***	0.753	3.547 ***	1.966 ***	0.747 *	3.556 ***	1.813 ***	0.687	2.993 ***
1971-1985 (ref.)	ref	ref	ref	ref	ref	ref	ref	ref	ref
Interaction effects									
Cohort*Education									
1926-1940*low							2.328 ***	2.521	3.005 ***
1941-1955*low							1.612 **	1.308	2.668 ***
1956-1970*low							1.541 **	1.086	1.811 **
1926-1940*high							1.008	8.338	1.293
1941-1955*high							0.972	2.708	1.034
1956-1970*high							0.798	1.154	1.212
Cohort*Values									
1926-1940*low							1.081	0.235	0.923
1941-1955*low							1.110	0.463	0.971
1956-1970*low							1.052	0.984	0.894
1926-1940*high							0.831	0.000 ***	1.148
1941-1955*high							0.954	1.617	1.363 *
1956-1970*high							0.860	1.083	1.224

Note: No – no conception, S – single conception, C – cohabiting conception, M – marital conception
Note: *p < .05. **p < .01. ***p < .001

Appendix. Table 3. Multinomial Logistic Regression Analysis, Replacing Period with Cohorts, Relative Risk Ratios, Base Outcome: Single Conception (N = 761,980).

	Model 1b			Model 2b			Model 3b		
	No	C	M	No	C	M	No	C	M
Independent variables									
Educational attainment									
Low	1.358 ***	1.082	0.934	1.358 ***	1.073	0.932	2.063 ***	1.521	0.597 *
Medium (ref.)	ref	ref	ref	ref	ref	ref	ref	ref	ref
High	1.105	0.630	1.306 *	1.102	0.658	1.299 *	1.010	0.504	1.034
Family values									
Low				1.023	0.722	1.092	1.106	0.889	1.241
Medium (ref.)				ref	ref	ref	ref	ref	ref
High				0.951	1.373 *	0.861 *	0.869	1.215	0.638 *
Control variables									
Age									
15-20 years	0.981	0.456 ***	0.539 ***	0.979	0.472 ***	0.536 ***	0.969	0.465 ***	0.539 ***
21-25 years	0.698 ***	0.472 ***	1.211	0.697 ***	0.484 **	1.205	0.704 ***	0.486 **	1.208
26-30 years (ref.)	ref	ref	ref	ref	ref	ref	ref	ref	ref
31-35 years	2.309 ***	1.807	0.737	2.312 ***	1.793	0.740	2.228 ***	1.734	0.720
36-39 years	3.011 ***	0.325	0.491	3.015 ***	0.322	0.493	2.890 ***	0.309	0.485
Cohort									
1926-1940	0.876	0.047 ***	4.652 ***	0.863	0.054 ***	4.444 ***	1.335	0.100 *	4.542 ***
1941-1955	0.702 ***	0.122 ***	3.290 ***	0.699 ***	0.127 ***	3.250 ***	0.836	0.105 ***	2.721 ***
1956-1970	0.508 ***	0.383 ***	1.802 ***	0.509 ***	0.380 ***	1.809 ***	0.552 ***	0.379 **	1.651 **
1971-1985 (ref.)	ref	ref	ref	ref	ref	ref	ref	ref	ref
Interaction effects									
Cohort*Education									
1926-1940*low							0.429 ***	1.083	1.290
1941-1955*low							0.620 **	0.811	1.655 *
1956-1970*low							0.649 **	0.705	1.175
1926-1940*high							0.992	8.269	1.282
1941-1955*high							1.029	2.786	1.064
1956-1970*high							1.253	1.446	1.518
Cohort*Values									
1926-1940*low							0.925	0.218	0.854
1941-1955*low							0.901	0.417	0.875
1956-1970*low							0.951	0.935	0.850
1926-1940*high							1.203	0.000 ***	1.382
1941-1955*high							1.048	1.694	1.428
1956-1970*high							1.163	1.258	1.423

Note: No – no conception, S – single conception, C – cohabiting conception, M – marital conception
Note: *p < .05. **p < .01. ***p < .001

Appendix. Table 4. Multinomial Logistic Regression Analysis, Replacing Period with Cohorts, Relative Risk Ratios, Base Outcome: Cohabiting Conception (N = 761,980).

	Model 1b			Model 2b			Model 3b		
	No	S	M	No	S	M	No	S	M
Independent variables									
Educational attainment									
Low	1.255	0.925	0.864	1.266	0.932	0.869	1.356	0.657	0.392 ***
Medium (ref.)	ref	ref	ref	ref	ref	ref	ref	ref	ref
High	1.754 *	1.587	2.072 **	1.676 *	1.521	1.976 **	2.004 *	1.985	2.052 *
Family values									
Low				1.417	1.385	1.512 *	1.243	1.125	1.395
Medium (ref.)				ref	ref	ref	ref	ref	ref
High				0.693 **	0.729 *	0.627 **	0.715	0.823	0.525 **
Control variables									
Age									
15-20 years	2.151 ***	2.193 ***	1.181	2.074 ***	2.119 ***	1.135	2.083 ***	2.150 ***	1.160
21-25 years	1.480 *	2.121 ***	2.568 ***	1.438	2.064 **	2.487 ***	1.450 *	2.059 **	2.488 ***
26-30 years (ref.)	ref	ref	ref	ref	ref	ref	ref	ref	ref
31-35 years	1.278	0.553	0.408 *	1.290	0.558	0.413 *	1.285	0.577	0.415 *
36-39 years	9.261 *	3.076	1.511	9.360 *	3.104	1.532	9.363 *	3.240	1.571
Cohort									
1926-1940	18.490 ***	21.110 ***	98.193 ***	15.845 ***	18.355 ***	81.576 ***	13.401 *	10.039 *	45.598 ***
1941-1955	5.750 ***	8.187 ***	26.939 ***	5.490 ***	7.849 ***	25.512 ***	7.998 ***	9.569 ***	26.036 ***
1956-1970	1.328 *	2.614 ***	4.712 ***	1.339 **	2.631 ***	4.759 ***	1.456	2.640 **	4.358 ***
1971-1985 (ref.)	ref	ref	ref	ref	ref	ref	ref	ref	ref
Interaction effects									
Cohort*Education									
1926-1940*low							0.397	0.923	1.192
1941-1955*low							0.765	1.233	2.041
1956-1970*low							0.921	1.419	1.668
1926-1940*high							0.120	0.121	0.155
1941-1955*high							0.369	0.359	0.382
1956-1970*high							0.867	0.692	1.050
Cohort*Values									
1926-1940*low							4.247	4.592	3.922
1941-1955*low							2.161	2.397	2.098
1956-1970*low							1.017	1.069	0.909
1926-1940*high							.	.	.
1941-1955*high							0.619	0.590	0.843
1956-1970*high							0.924	0.795	1.130

Note: No – no conception, S – single conception, C – cohabiting conception, M – marital conception
Note: *p < .05. **p < .01. ***p < .001
Note: . indicates that the effects could not be estimated

Appendix. Table 5. Multinomial Logistic Regression Analysis, Replacing Period with Cohorts, Relative Risk Ratios, Base Outcome: Marital Conception (N = 761,980).

	Model 1b			Model 2b			Model 3b		
	No	S	C	No	S	C	No	S	C
Independent variables									
Educational attainment									
Low	1.454 ***	1.071	1.158	1.457 ***	1.073	1.151	3.457 ***	1.675 *	2.549 ***
Medium (ref.)	ref	ref	ref	ref	ref	ref	ref	ref	ref
High	0.846 **	0.766 *	0.483 **	0.848 **	0.770 *	0.506 **	0.976	0.967	0.487 *
Family values									
Low				0.937	0.916	0.661 *	0.891	0.806	0.717
Medium (ref.)				ref	ref	ref	ref	ref	ref
High				1.105 *	1.162 *	1.595 **	1.361 *	1.567 *	1.904 **
Control variables									
Age									
15-20 years	1.821 ***	1.856 ***	0.847	1.827 ***	1.866 ***	0.881	1.797 ***	1.854 ***	0.862
21-25 years	0.577 ***	0.826	0.389 ***	0.578 ***	0.830	0.402 ***	0.583 ***	0.828	0.402 ***
26-30 years (ref.)	ref	ref	ref	ref	ref	ref	ref	ref	ref
31-35 years	3.133 ***	1.357	2.452 *	3.124 ***	1.351	2.423 *	3.095 ***	1.389	2.409 *
36-39 years	6.130 ***	2.036	0.662	6.111 ***	2.027	0.653	5.961 ***	2.063	0.637
Cohort									
1926-1940	0.188 ***	0.215 ***	0.010 ***	0.194 ***	0.225 ***	0.012 ***	0.294 ***	0.220 ***	0.022 ***
1941-1955	0.213 ***	0.304 ***	0.037 ***	0.215 ***	0.308 ***	0.039 ***	0.307 ***	0.368 ***	0.038 ***
1956-1970	0.282 ***	0.555 ***	0.212 ***	0.281 ***	0.553 ***	0.210 ***	0.334 ***	0.606 **	0.229 ***
1971-1985 (ref.)	ref	ref	ref	ref	ref	ref	ref	ref	ref
Interaction effects									
Cohort*Education									
1926-1940*low							0.333 ***	0.775	0.839
1941-1955*low							0.375 ***	0.604 *	0.490
1956-1970*low							0.552 **	0.851	0.600
1926-1940*high							0.773	0.780	6.448
1941-1955*high							0.967	0.940	2.618
1956-1970*high							0.825	0.659	0.952
Cohort*Values									
1926-1940*low							1.083	1.171	0.255
1941-1955*low							1.030	1.143	0.477
1956-1970*low							1.118	1.177	1.100
1926-1940*high							0.871	0.724	0.000 ***
1941-1955*high							0.734 *	0.700	1.186
1956-1970*high							0.817	0.703	0.885

Note: No – no conception, S – single conception, C – cohabiting conception, M – marital conception
Note: *p < .05. **p < .01. ***p < .001

Appendix. Table 6. Multinomial Logistic Regression Analysis, Dependent Variable: Risk of a First Birth, Relative Risk Ratios, Base Outcome: No Birth (N = 758,371).

	Model 1c			Model 2c			Model 3c		
	S	C	M	S	C	M	S	C	M
Independent variables									
Educational attainment									
Low	0.810 *	0.749	0.686 ***	0.809 *	0.746	0.686 ***	0.456	0.436	0.460 *
Medium (ref.)	ref	ref	ref	ref	ref	ref	ref	ref	ref
High	1.007	0.501 *	1.122 *	1.006	0.533 *	1.120 *	1.516	0.373 *	1.198
Family values									
Low				1.092	0.560 *	1.030	0.717	0.905	1.514
Medium (ref.)				ref	ref	ref	ref	ref	ref
High				1.135	1.964 ***	0.915 *	1.249	2.788 **	0.642
Control variables									
Age									
15-20 years	0.467 ***	0.767	0.612 ***	0.468 ***	0.799	0.614 ***	0.475 ***	0.825	0.623 ***
21-25 years	0.939	0.707	1.637 ***	0.940	0.733	1.637 ***	0.958	0.742	1.635 ***
26-30 years (ref.)	ref	ref	ref	ref	ref	ref	ref	ref	ref
31-35 years	0.453 ***	0.663	0.358 ***	0.453 ***	0.668	0.357 ***	0.458 ***	0.680	0.358 ***
36-39 years	0.510 *	0.000 ***	0.239 ***	0.509 *	0.000 ***	0.237 ***	0.522 *	0.000 ***	0.237 ***
Period									
1941-1960	0.494 ***	0.041 ***	5.675 ***	0.495 ***	0.053 ***	5.545 ***	0.747	0.101	4.229 ***
1961-1970	0.664 **	0.089 ***	5.373 ***	0.664 **	0.098 ***	5.327 ***	0.615	0.056 **	4.531 ***
1971-1980	1.040	0.213 ***	5.671 ***	1.041	0.219 ***	5.653 ***	0.760	0.180 **	5.436 ***
1981-1990	0.992	0.456 **	4.572 ***	0.990	0.452 **	4.577 ***	0.864	0.611	4.909 ***
1991-2000	0.818	0.844	2.003 ***	0.818	0.839	2.005 ***	1.075	0.909	2.332 ***
2001-2005 (ref.)	ref	ref	ref	ref	ref	ref	ref	ref	ref
Interaction effects									
Period*Education									
1941-1960*low							1.315	1.691	1.958 *
1961-1970*low							2.246	4.067	1.748
1971-1980*low							2.231	3.175	1.544
1981-1990*low							1.845	1.916	1.078
1991-2000*low							1.364	1.537	0.916
1941-1960*high							0.990	14.147	1.032
1961-1970*high							0.684	0.000 ***	0.817
1971-1980*high							0.637	5.609	0.704
1981-1990*high							0.557	1.236	1.105
1991-2000*high							0.509 *	1.351	0.882
Period*Values									
1941-1960*low							1.296	0.379	0.710
1961-1970*low							1.411	0.174	0.705
1971-1980*low							1.945	0.754	0.621
1981-1990*low							1.938	0.291	0.604 *
1991-2000*low							1.241	0.750	0.685
1941-1960*high							0.534	0.167	1.372
1961-1970*high							0.777	0.889	1.513
1971-1980*high							1.238	0.528	1.545
1981-1990*high							1.087	0.531	1.419
1991-2000*high							0.689	0.787	1.216

Note: No – no birth, S – single birth, C – cohabiting birth, M – marital birth
Note: *p < .05. **p < .01. ***p < .001

Appendix. Table 7. Multinomial Logistic Regression Analysis, Dependent Variable: Risk of a First Birth, Relative Risk Ratios, Base Outcome: Single Birth (N = 758,371).

	Model 1c			Model 2c			Model 3c		
	No	C	M	No	C	M	No	C	M
Independent variables									
Educational attainment									
Low	1.235 *	0.924	0.847	1.237 *	0.922	0.848	2.194	0.957	1.009
Medium (ref.)	ref	ref	ref	ref	ref	ref	ref	ref	ref
High	0.994	0.497 *	1.114	0.994	0.529 *	1.113	0.660	0.246 *	0.790
Family values									
Low				0.915	0.513 *	0.943	1.395	1.262	2.111
Medium (ref.)				ref	ref	ref	ref	ref	ref
High				0.881	1.730 **	0.806 *	0.801	2.232	0.514
Control variables									
Age									
15-20 years	2.143 ***	1.644 *	1.311 *	2.138 ***	1.708 *	1.312 *	2.105 ***	1.737 *	1.311 *
21-25 years	1.065	0.753	1.743 ***	1.064	0.780	1.742 ***	1.043	0.774	1.706 ***
26-30 years (ref.)	ref	ref	ref	ref	ref	ref	ref	ref	ref
31-35 years	2.206 ***	1.463	0.789	2.207 ***	1.474	0.789	2.186 ***	1.485	0.782
36-39 years	1.962 *	0.000	0.468 *	1.963 *	0.000 ***	0.466 *	1.917 *	0.000 ***	0.454 *
Period									
1941-1960	2.022 ***	0.084 ***	11.477 ***	2.021 ***	0.106 ***	11.205 ***	1.339	0.135	5.663 ***
1961-1970	1.505 **	0.134 ***	8.086 ***	1.505 **	0.147 ***	8.019 ***	1.626	0.091 **	7.370 ***
1971-1980	0.962	0.205 ***	5.454 ***	0.961	0.210 ***	5.431 ***	1.316	0.236 *	7.153 ***
1981-1990	1.008	0.460 **	4.608 ***	1.010	0.457 **	4.623 ***	1.158	0.707	5.685 ***
1991-2000	1.222	1.032	2.449 ***	1.223	1.026	2.452 ***	0.930	0.845	2.169 *
2001-2005 (ref.)	ref	ref	ref	ref	ref	ref	ref	ref	ref
Interaction effects									
Period*Education									
1941-1960*low							0.760	1.286	1.489
1961-1970*low							0.445	1.811	0.778
1971-1980*low							0.448	1.423	0.692
1981-1990*low							0.542	1.039	0.584
1991-2000*low							0.733	1.127	0.672
1941-1960*high							1.010	14.296	1.043
1961-1970*high							1.462	0.000 ***	1.195
1971-1980*high							1.569	8.799	1.104
1981-1990*high							1.796	2.219	1.985
1991-2000*high							1.966 *	2.655	1.733
Period*Values									
1941-1960*low							0.772	0.292	0.548
1961-1970*low							0.709	0.123	0.500
1971-1980*low							0.514	0.388	0.319 *
1981-1990*low							0.516	0.150	0.312 *
1991-2000*low							0.806	0.604	0.552
1941-1960*high							1.871	0.312	2.567
1961-1970*high							1.288	1.145	1.947
1971-1980*high							0.808	0.427	1.248
1981-1990*high							0.920	0.488	1.305
1991-2000*high							1.451	1.142	1.764

Note: No – no birth, S – single birth, C – cohabiting birth, M – marital birth
*Note: *p < .05. **p < .01. ***p < .001*

Appendix. Table 8. Multinomial Logistic Regression Analysis, Dependent Variable: Risk of a First Birth, Relative Risk Ratios, Base Outcome: Cohabiting Birth (N = 758,371).

	Model 1c			Model 2c			Model 3c		
	No	S	M	No	S	M	No	S	M
Independent variables									
Educational attainment									
Low	1.336	1.082	0.917	1.341	1.084	0.920	2.292	1.045	1.054
Medium (ref.)	ref	ref	ref	ref	ref	ref	ref	ref	ref
High	1.997 *	2.010 *	2.240 **	1.878 *	1.890 *	2.104 *	2.682 *	4.065 *	3.212 *
Family values									
Low				1.785 *	1.950 *	1.839 *	1.105	0.792	1.673
Medium (ref.)				ref	ref	ref	ref	ref	ref
High				0.509 ***	0.578 **	0.466 ***	0.359 **	0.448	0.230 **
Control variables									
Age									
15-20 years	1.303	0.608 *	0.797	1.252	0.585 *	0.768	1.212	0.576 *	0.755
21-25 years	1.414	1.328	2.314 ***	1.364	1.282	2.233 ***	1.348	1.292	2.205 ***
26-30 years (ref.)	ref	ref	ref	ref	ref	ref	ref	ref	ref
31-35 years	1.508	0.684	0.540	1.497	0.678	0.535	1.472	0.673	0.526
36-39 years	.	.	.	.	.	.	.	.	.
Period									
1941-1960	24.190 ***	11.961 ***	137.285 ***	19.018 ***	9.411 ***	105.452 ***	9.923	7.410	41.963 **
1961-1970	11.221 ***	7.456 ***	60.292 ***	10.231 ***	6.797 ***	54.503 ***	17.937 **	11.028 **	81.279 ***
1971-1980	4.693 ***	4.879 ***	26.611 ***	4.564 ***	4.751 ***	25.801 ***	5.571 **	4.234 *	30.286 ***
1981-1990	2.191 **	2.174 **	10.017 ***	2.212 **	2.190 **	10.126 ***	1.638	1.414	8.040 ***
1991-2000	1.185	0.969	2.374 ***	1.192	0.974	2.390 ***	1.100	1.183	2.565 *
2001-2005 (ref.)	ref	ref	ref	ref	ref	ref	ref	ref	ref
Interaction effects									
Period*Education									
1941-1960*low							0.591	0.778	1.158
1961-1970*low							0.246	0.552	0.430
1971-1980*low							0.315	0.703	0.486
1981-1990*low							0.522	0.963	0.562
1991-2000*low							0.651	0.888	0.596
1941-1960*high							0.071	0.070	0.073
1961-1970*high							.	.	.
1971-1980*high							0.178	0.114 *	0.126 *
1981-1990*high							0.809	0.451	0.894
1991-2000*high							0.740	0.377	0.653
Period*Values									
1941-1960*low							2.639	3.419	1.873
1961-1970*low							5.758	8.124	4.061
1971-1980*low							1.325	2.579	0.822
1981-1990*low							3.437	6.660	2.077
1991-2000*low							1.334	1.655	0.913
1941-1960*high							6.003	3.208	8.236
1961-1970*high							1.125	0.874	1.701
1971-1980*high							1.893	2.344	2.925
1981-1990*high							1.883	2.048	2.672
1991-2000*high							1.271	0.876	1.545

Note: No – no birth, S – single birth, C – cohabiting birth, M – marital birth
Note: *p < .05. **p < .01. ***p < .001
Note: . indicates that the effects could not be estimated

Appendix. Table 9. Multinomial Logistic Regression Analysis, Dependent Variable: Risk of a First Birth, Relative Risk Ratios, Base Outcome: Marital Birth (N = 758,371).

	Model 1c			*Model 2c*			*Model 3c*		
	No	S	C	No	S	C	No	S	C
Independent variables									
Educational attainment									
Low	1.457 ***	1.180	1.091	1.458 ***	1.179	1.087	2.173 *	0.991	0.948
Medium (ref.)	ref	ref	ref	ref	ref	ref	ref	ref	ref
High	0.891 *	0.897	0.446 **	0.893 *	0.898	0.475 *	0.835	1.266	0.311 *
Family values									
Low				0.971	1.060	0.544 *	0.660	0.474	0.598
Medium (ref.)				ref	ref	ref	ref	ref	ref
High				1.093 *	1.241 *	2.146 ***	1.558	1.947	4.346 **
Control variables									
Age									
15-20 years	1.634 ***	0.763 *	1.254	1.629 ***	0.762 *	1.302	1.606 ***	0.763 *	1.325
21-25 years	0.611 ***	0.574 ***	0.432 ***	0.611 ***	0.574 ***	0.448 ***	0.612 ***	0.586 ***	0.454 ***
26-30 years (ref.)	ref	ref	ref	ref	ref	ref	ref	ref	ref
31-35 years	2.794 ***	1.267	1.853	2.799 ***	1.268	1.869	2.796 ***	1.279	1.900
36-39 years	4.193 ***	2.137 *	0.000 ***	4.212 ***	2.145 *	0.000 ***	4.221 ***	2.202 *	0.000 ***
Period									
1941-1960	0.176 ***	0.087 ***	0.007 ***	0.180 ***	0.089 ***	0.009 ***	0.236 ***	0.177 ***	0.024 **
1961-1970	0.186 ***	0.124 ***	0.017 ***	0.188 ***	0.125 ***	0.018 ***	0.221 ***	0.136 ***	0.012 ***
1971-1980	0.176 ***	0.183 ***	0.038 ***	0.177 ***	0.184 ***	0.039 ***	0.184 ***	0.140 ***	0.033 ***
1981-1990	0.219 ***	0.217 ***	0.100 ***	0.218 ***	0.216 ***	0.099 ***	0.204 ***	0.176 ***	0.124 ***
1991-2000	0.499 ***	0.408 ***	0.421 ***	0.499 ***	0.408 ***	0.418 ***	0.429 ***	0.461 *	0.390 *
2001-2005 (ref.)	ref	ref	ref	ref	ref	ref	ref	ref	ref
Interaction effects									
Period*Education									
1941-1960*low							0.511 *	0.672	0.863
1961-1970*low							0.572	1.285	2.327
1971-1980*low							0.648	1.445	2.057
1981-1990*low							0.928	1.712	1.778
1991-2000*low							1.091	1.489	1.677
1941-1960*high							0.969	0.959	13.710
1961-1970*high							1.224	0.837	0.000 ***
1971-1980*high							1.421	0.906	7.968 *
1981-1990*high							0.905	0.504	1.118
1991-2000*high							1.134	0.577	1.532
Period*Values									
1941-1960*low							1.409	1.825	0.534
1961-1970*low							1.418	2.000	0.246
1971-1980*low							1.612	3.135 *	1.216
1981-1990*low							1.655 *	3.206 *	0.481
1991-2000*low							1.460	1.813	1.095
1941-1960*high							0.729	0.390	0.121
1961-1970*high							0.661	0.513	0.588
1971-1980*high							0.647	0.801	0.342
1981-1990*high							0.705	0.767	0.374
1991-2000*high							0.822	0.567	0.647

Note: No – no birth, S – single birth, C – cohabiting birth, M – marital birth
*Note: *p < .05. **p < .01. ***p < .001*