The increase in non-marital childbearing

and its link to educational expansion

Christine Schnor & Marika Jalovaara

Turun yliopisto
University of Turku

Åbo Akademi
University

The increase in non-marital childbearing and its link to educational expansion

Christine Schnor & Marika Jalovaara

Abstract

The rise in non-marital childbearing has coincided with educational expansion, although non- marital childbirths are more common among the low-educated population. This article examines how changes in the education-specific rates of non-marital childbearing and in the educational distribution of parents contributed to increased non-marital childbearing among Finnish first-time parents over the 1970–2009 period. Using register data and a decomposition approach, we find that the increase in non-marital first-time births was driven mainly by the large population of secondary-educated women and men and by the growing group of lower tertiary-educated women. The lowest-educated population continued to have the highest proportion of non-marital first-time childbearing, but their overall contribution was small due to diminishing group size. The highest-educated population increased its contribution to non-marital childbearing but still has the lowest non-marital childbearing rates. We conclude that the medium-educated population makes important contributions to family changes and merits increased scholarly attention.

Keywords: non-marital childbearing; fertility; education; marriage; Finland

Introduction

One of the most remarkable changes in family dynamics in the Western world to arise in recent decades is the substantial increase in childbearing outside marriage (Sobotka and Toulemon 2008). The greatest part of this increase can be attributed to childbearing within cohabitation (Kiernan 2004). As part of this trend, non-marital childbirth has become socially acceptable and the social stigma attached to it has faded. On the micro level, many studies have linked non-marital childbearing to low educational attainment of the mother (Sobotka et al. 2008; Speder and Kamaras, 2008; Perelli-Harris et al. 2010; Perelli-Harris and Gerber 2011; Ni Brholchain and Beaujouan 2013) and of the father (e.g., Carlson et al. 2013). However, change over time at the macro level shows that the increase in non-marital childbearing coincides with an extended period of educational expansion, particularly among women (Van Bavel 2012). How increases in non-marital childbearing and educational expansion relate to the negative educational gradient in non-marital childbearing remains a question for research. It appears likely that the low-educated population segment has become too small to be the main driver of the tremendous increase in non-marital childbearing. Our research question therefore is to determine which educational population segment was behind the upward trend, if not the lowest educated. A recent study (Vitali et al. 2015) found that educational expansion – measured as the proportion of tertiary-educated women – drove the spatial diffusion of childbearing within cohabitation during the 1990s and 2000s in Norway. However, this finding does not lead to the general conclusion that the high-educated population drove the proliferation of non-marital childbearing because both tertiary and secondary education has expanded in many European populations, and the medium-educated segment is frequently now the largest. Cherlin (2011) posited that the growth of the medium-educated population segment has driven the increase in non-marital

2

childbearing, but there remains scant empirical evidence to support this proposition, particularly in contexts outside the US.

This study helps to solve this puzzle by investigating which educational groups of mothers and fathers have contributed to the increase in non-marital childbearing among Finnish first-time parents over the 1970–2009 period based on changes in the education-specific rates of non-marital childbearing, changes in the educational distribution of parents, or both. Following Cherlin (2011), we argue that if non-marital childbearing increased among the medium-educated segment as their group size also increased, it might explain the increase in non-marital childbearing, even as the negative association between education and the rate of non-marital childbearing persists.

Identifying which educational groups have been the main contributors to the increase in non-marital childbearing is highly relevant because it illuminates both changes in family life and the social and economic circumstances of non-married parents and their children. The poverty risk is shown to be twice as high for single-parent families than for two-parent families (Eurostat 2016a). Compared with marital births, non-marital births lead more often to single-parent families because a non-marital birth is either to a single parent or to cohabiting parents, who are more likely than married parents to separate (e.g., Kiernan 2001; Andersson 2002; Heuveline et al. 2003; Raley and Wildsmith 2004; Steele et al. 2006; Osborne et al. 2007; Kennedy and Thomson 2010; Schnor 2014). Low-educated parents frequently face economic hardship and are more likely to follow life paths that accumulate disadvantageous positions, e.g., compared with medium- and high-educated segments, low-educated parents have more children outside marriage, experience more separations and more often become single parents. Past research has emphasized the "diverging destinies" (McLanahan 2004) of children with low-educated parents relative to children with high-educated parents.

3

One consequence of the research focusing on "diverging destinies" is that studies have aimed to establish an "educational gradient" (Perelli-Harris et al. 2010) that contrasts the family life of low- and high-educated individuals and focuses on the relative differences between them (Furstenberg 2011). The medium-educated group has been considered an in-between category and has been persistently overlooked, although it frequently serves as the reference group in empirical studies evaluating the existence of an educational gradient (Cherlin 2011). Nonetheless, the theoretical literature has paid little attention to the medium-educated population segment; as a consequence, there are few arguments that address why the medium-educated population have non-marital childbearing likelihoods between those of low- and high-educated individuals. The fact that the medium-educated is the largest population segment in most Western populations is disregarded when analysing group differences. This study pays particular attention to the medium-educated group by considering not only between-group differences in non-marital childbearing but also the various contributions of the different educational group sizes to the overall trend in non-marital childbirth.

In this study, we focus on Finland, which showed an early and significant increase in non-marital childbearing and experienced an educational expansion similar to that in most other European countries. Finnish register data permit the analysis of trends in educational attainment for both women and men with regard to non-marital first-time childbearing from 1970 onwards. We decompose the increase in non-marital childbearing in a pairwise comparison of decades. As in most other countries, the proportion of births to single mothers has remained stable, which means that any increase in non-marital childbearing can be interpreted as an increase in births within cohabitation. Regarding education, we focus on the high proportion of the tertiary-

4

educated population and the diversity within this category by distinguishing between lower and higher tertiary education.

The link between education and childbearing

Traditionally, marriage and childbearing have been closely linked, with marriage considered a prerequisite for starting a family. According to the second demographic transition (SDT) concept, the dissociation between marriage and fertility began in the 1960s and 1970s alongside increasing economic prosperity and the expansion of secondary and tertiary education in the Western world (Lesthaeghe and Van de Kaa 1986; Van de Kaa 1987, 1997; Lesthaeghe 1995, 1998). High-educated individuals are assumed to hold more liberal attitudes and to thus be more open towards alternative lifestyles. Surkyn and Lesthaeghe (2004) posit that the high-educated have initiated new cultural developments consistent with the SDT, including new family behaviours such as cohabitation and non-marital childbearing. Vitali and colleagues (2015) distinguish between the notion of value changes within the SDT framework and structural changes as driving factors. Relying on Esping-Andersen (2009), they argue that the increase in women's education has led to women's empowerment, which strengthened their ability to break with social constraints (such as marriage before childbirth) and marginalized the function of marriage as an institution protecting women. Considering the high-educated population as forerunners, the authors assume that the expansion of tertiary education among women has led to direct and indirect effects on childbearing outside marriage; as forerunners espouse new lifestyles, the new behaviour spreads among the forerunners (direct effect) and among other population segments (indirect effect) as it is diffused by the forerunners.

However, although it is true that high-educated individuals espouse less traditional attitudes towards marriage and children (Zakharov 2008; Gubernskaya 2010), this

characteristic has not translated into the greater likelihood of these individuals having a child outside marriage – be it outside or within cohabitation – either in earlier or more recent periods. Non-marital childbearing is a common experience for the low-educated (both women and men) population, whereas the high-educated population frequently follow the normatively preferred path of marriage before childbearing (Sobotka 2008; Perelli-Harris et al. 2010; Saarela and Finnäs 2014). Non-residential union childbearing has consistently been associated with low educational levels of the mother (Kiernan 2001; Musick 2002; Perelli-Harris et al. 2010; Thomson et al. 2013). Non-union births have rarely been studied among men; one reason for this scarcity is that non-union fatherhood is likely under-reported in survey data and to some extent in register data (Thomson et al. 2013). Moreover, the increase in childbearing within cohabitation began in most cases in the lowest-educated strata (Sobotka 2008; Perelli-Harris et al. 2010). Sobotka (2008) argues that after its onset, the trend in non-marital childbearing was uniform and occurred among women of all educational levels. If so, then the low-, medium-, and high-educated population segments would have contributed to the increase in non-marital childbearing in proportion to their relative group sizes. However, studies report that the high-educated tend to stand apart in this trend, showing much lower increases in non-marital childbearing than the low- and tertiary-educated segments and even lower likelihoods of non-marital childbearing in more recent cohorts (Kennedy and Thomson 2010; Perelli-Harris et al. 2010; McLanahan and Jakobsen 2015).

Vitali and colleagues (2015) describe in detail how educational expansion relates to the diffusion of childbearing within cohabitation in Norway during the 1990s and 2000s. Because the proportion of first births to single mothers has remained stable, trends in non-marital childbearing and in childbearing within cohabitation are much the same.

The study shows that the expansion of female education (measured as the percentage of women with tertiary education) contributed to the spatial diffusion of childbearing to non-married couples in both direct and indirect ways. Nonetheless, childbearing within cohabitation has simultaneously been more common among those with lower educational levels, which suggests that educational differences remain even under conditions of educational expansion while the overall likelihood of non-marital childbearing has increased. One drawback of this study is that the observation window begins only in the 1990s, when more than one-half of all first births already occurred outside marriage – and not in the 1970s, when rates of non-marital childbearing began to rise.

The link between non-marital childbearing and low education levels has been explained by the lack of economic resources, the low opportunity costs of early childbearing, and a higher incidence of unplanned births among the low-educated population (McLanahan 2004; Perelli-Harris et al. 2010; Perelli-Harris and Gerber 2011). Lower-educated (partnered) women and men may face higher economic barriers to marriage;, they may not satisfy the prerequisite of economic independence, they may be waiting to accumulate the funds necessary for an expensive wedding, or they may desire a higher standard of living (e.g. housing) than they were previously willing to accept (Thornton et al. 1995; Kravdal 1999; Smock and Greenland 2010). For men, it has been argued that poor and uncertain economic prospects may undermine their ability to make a long-term commitment, such as marrying their partner before childbirth (Oppenheimer 2003; Trimarchi and Van Bavel 2016). Another reason for the link between non-marital childbearing and low levels of education is that higher-educated individuals tend to plan their life course trajectories more carefully and to postpone the transition to parenthood until they are older, in contrast to lower-educated individuals, who more often take

shorter routes to parenthood that either bypass (Ravanera and Rajulton 2004; Sobotka 2008; Sobotka and Toulemon, 2008) or precede marriage (Liefbroer and Corijn 1999). Liefbroer and Corijn (1999) argue that for high-educated women and men, childbearing interferes with career plans and comes with high opportunity costs, which may motivate the high-educated to postpone entry into parenthood more so than marriage. Because the low educated leave the educational system earlier and often have a flat earnings pattern during their childbearing years, they have fewer incentives to postpone childbearing. In addition, Finnish research shows that the low-educated population have lower rates of marriage because they are more likely to come from non-intact families (Erola et al. 2012).

Surprisingly little is known about the factors that drive the childbearing behaviour of the medium-educated population segment because research has focused mainly on theoretical arguments that explain the fertility of persons at the opposite ends of the educational spectrum, i.e., basic versus tertiary education levels (Furstenberg 2011). It remains unclear whether the same theoretical reasoning can be applied to the medium-educated group, assuming that they are "in between" in terms of their economic background and career planning, which is also reflected in their family-formation patterns. Immediate career-interruption costs and the costs of career progress may create socio-economic differentials, with the medium-educated population occupying an intermediate position with respect to forgone earnings (Cigno and Ermisch 1989; Blossfeld and Huinink 1991; Rendall et al. 2010). Regarding changes over time in the US context, Cherlin (2011) argues that the medium-educated population have traditionally had a conventional married lifestyle, but the loss of classic jobs that provide a steady income for the medium educated has changed the conditions for family life. Many women and men in this group still seek to marry, but the economic and

social climate makes marriage less attainable and cohabitation the best alternative, even when it comes to childbearing. Trends in earnings differentials underline the changes in the economic situation of the medium educated; for example, between the 1970s and the 2000s, the wage gap between the high and medium educated has increased more than that between the medium and low educated, although the patterns of change differed widely among OECD nations and changes were small in Nordic countries (Eriksson and Jäntti 1997; Atkinson 1999; Lemieux 2006; Cherlin 2011; Prix, 2013). Over the same period, however, trends in both overall and maternal employment diverged, with the medium-educated population working more often than the lower educated and at levels similar to those of the high-educated population (McLanahan and Jacobsen 2015).

Overall, it may be that the family life of the medium-educated population differs from those of population segments with more or less education (Cherlin 2011), also with respect to first childbearing within cohabitation. In a cross-national study, Perelli-Harris and associates (2010) focus on contrasts in childbearing behaviour between the low- and high-educated populations but include the medium educated population (defined as ISCED 3 or 4) in their analysis. Their findings show that the rates of a first birth within cohabitation for medium-educated women differed significantly from those for low- and high-educated women in certain countries (Austria, Germany, Norway), whereas in other countries these rates differed only from those of high-educated women (France, Russia, UK) or from those of low-educated women (Italy, Netherlands). McLanahan and Jacobsen (2015) define medium-educated mothers as those in the 2nd and 3rd quartiles of the education distribution and draw on US Census data to calculate trends in being an unmarried mother of a <1-year-old child during the 1960–2010 period. The proportion of unmarried mothers increased substantially but showed a persistent negative gradient, with the trajectory of the medium-educated mothers situated between

9

the less- and more-educated mothers. However, after 1990, the medium-educated group showed the fastest increase in non-marital childbearing, approaching the level of the less-educated group. Referring to Cherlin (2011), the authors explain this trend by arguing that middle-income families are losing ground relative to high-income families. Kennedy and Thomson (2010) find a similar trend in Sweden: during the 1970–1990 period, although the proportion of non-marital births increased for all educational levels, the largest increases occurred among women and men with medium education (defined as a secondary degree), which implies that by the 1990s, the patterns of the medium-educated population resembled those of the low-educated population. The authors considered their results in the context of the economic crisis of the 1990s, increasing globalization, and the expansion of secondary and tertiary education that was accompanied by increased socioeconomic inequality. In times of large-scale economic crises and the restructuring of labour markets, the medium-educated population may increasingly experience lost opportunities and uncertainties that previously were more common among the low-educated population, leading the medium educated to prefer cohabitation over marriage or to postpone marriage (Oppenheimer 1994; Lappegard et al. 2014; Klein 2015; Iriondo and Pérez-Amaral 2016).

Hypothesis

We suspect that the increase in non-marital childbearing that has been observed at the macro level was largely driven by the medium-educated population segment for several reasons.

First, there is a composition argument. The medium educated have comprised the largest group in post-WWII Europe (e.g., Rendall et al. 2010). This group has grown even larger because the expansion of tertiary education began with an increasing proportion of persons attaining medium educational levels. As the particular behaviour

of a large group contributes more to a trend than the behaviour of a small group, a group must have sufficient size to drive demographic behaviour. The low-educated population segment has significantly decreased in size; therefore, this population segment cannot be the driving force behind the increase in non-marital childbearing, even if they are the most likely group to have a child outside marriage.

Second, there is a behavioural argument. Although the high-educated group is growing, they are less likely than the medium-educated group to have a child outside marriage. Even if this likelihood has increased, the proportion is likely to be lower than the proportions of the other groups.

Third, it may be that as education expands, those with a secondary education gradually become the lower social strata and therefore begin to show characteristics typically observed in the basic (low-) educated group, particularly when faced with economic downturns, as argued by Kennedy and Thomson (2010).

Fourth, the recent increase in non-marital childbearing is mainly attributable to mothers living in non-marital cohabitation with the fathers of their children and not to single mothers. Unlike non-union childbearing, which is by far most common among the lowest educated (Kennedy and Thomson 2010; McLanahan and Jacobsen 2015), childbearing within cohabitation has likely become a common and accepted behaviour among the medium-educated population segment (Sobotka 2008).

In sum, we expect to find that the increase in non-marital childbearing is mainly attributable to parents with medium education, whereas the non-marital childbearing of the tertiary-educated population is of relatively minor importance. Notably, educational expansion has been weaker for men than for women. Therefore, we expect the medium-

educated population to play a greater role in the increase of non-marital childbearing among fathers than among mothers.

Finland

In Finland, as in other countries, marriage rates have decreased and non-marital childbearing has increased. In particular, the marriage rate in Finland decreased significantly from the early 1970s to the mid-1980s, after which it has remained more stable (Statistics Finland, vital statistics). With respect to the proportion of non-marital childbearing, the Nordic countries were European pioneers but many other European countries have recently reached and even exceeded Nordic levels of non-marital childbearing. Finland's proportion is the lowest among the Nordic countries, with 43 per cent of all births in 2014, whereas the proportion exceeds 50 per cent in many other countries (Eurostat 2016b). Non-marital childbearing – and in particular non-union childbearing – is concentrated among women at the lowest education levels (Jalovaara and Fasang 2015; Saarela and Finnäs 2014). Saarela and Finnäs (2014) studied the order of marriage and childbearing and showed that traditional family-formation behaviour, in terms of marriage before children, is much more common among the high-educated population. A limitation of this study is that it relied on yearly data from the population register, which limits the conclusions that can be drawn because the concrete ordering of events cannot be disentangled. Finnäs (1995) considered marriage and first-time childbearing as competing risk events among cohabiting women. The results showed that for women of different educational levels, the likelihood of having a child first was similar in older cohorts (women born over the 1938–1947 period) but diverged among more recent cohorts (those born during the 1948–1962 period). The likelihood that medium-educated women will have a child within cohabitation ranged between the likelihoods of low- and high-educated women (ibid.). To date, there is no research on

factors contributing to the increase in non-marital childbearing in Finland. A review of the policy context reveals that no relevant policy reform was implemented in the 1990s that might explain the sharp increase in non-marital childbearing. However, Finland underwent an exceptionally severe recession in the early 1990s, which drove a restructuring of its economy from industrial jobs to the high-skill sectors. During the crisis, the employment rates of all social strata fell, but the labour market position of the lowest educated was permanently affected and unlike the other groups, their employment rates have remained low (Asplund and Maliranta 2006; Härkönen et al. 2016). Furthermore, a continuous trend during the educational expansion has been 'credential inflation', or the decrease in earnings returns on education, which has affected the medium- as well as the high-educated population segments (Prix 2013). Earnings differentials by education are nevertheless notable. Earnings statistics reveal that the average earnings of basic and secondary-educated full-time employees were the same in 2013, whereas individuals with a lower tertiary degree (ISCED 5 and 6) earned almost one-fifth more, and the higher tertiary-educated population earned nearly another one-third more on top of that (Statistics Finland 2016). Concurrently, differences in unemployment rates were tremendous (lower as well as higher), at 16 per cent for the basic-educated population, 9 per cent for the secondary-educated population, and approximately 4–5 per cent for the tertiary-educated population (Statistics Finland, Labour force survey). The percentages of people employed were very close to European averages (EU-28), with 51 per cent for the basic-educated population, 70 per cent for the secondary-educated population, and 83 per cent for the tertiary-educated population (Eurostat 2016c).

Data

We used Finnish register data compiled at Statistics Finland from different register sources. Our data are an 11 per cent random sample of persons born between 1940 and 1995 who were recorded in Finland's population between 1970 and 2009. We excluded data on foreign-born individuals due to the lack of information on their educational histories prior to immigration. The analytical sample consists of 112,730 first-time mothers and 108,812 first-time fathers.

Regarding childbearing, we focus on the birth of (registered) biological children. The analysis is restricted to first-time parents because it reduces selectivity problems. Specifically, unmarried parents are more likely to separate before an eventual second child is born in this union and instead are more likely to have another child with a new partner; thus, union status at the time of higher order births reflect family complexities to a certain extent (Wu and Musick 2008; Manlove et al. 2012). We perform separate analyses for mothers and fathers. Men's childbearing is covered nearly as completely as the childbearing of women; less than two per cent of the women's children in our data have no father registered. We defined a non-marital first childbirth as the birth of a child to a woman or a man who was not married when her or his first child was born. The proportion of non-marital childbearing is calculated as the number of first births that take place outside marriage relative to the number of all first births. A proportion of parents marry soon after the birth of a child; thus, in supplementary analyses, we considered the marital status of the parent 12 months later. The proportion of non-marital first childbirths was calculated by dividing the number of non-marital first childbirths by the number of all first childbirths that year.

Education data are based on Statistics Finland's register of completed degrees. We have information on each educational degree at the precision of level, field and date (month

and year) of completion. In the present analyses, we use the highest education attained by a person's 35th birthday or by December 2010 at the latest. We decided against measuring education at the time the first child is born because many parents are finalizing their tertiary education and are nearing graduation at this time. Therefore, most of these parents would be classified as secondary instead of tertiary-educated population, which we believe would be misleading. Based on the International Standard Classification of Education (ISCED 2011), we distinguish the following four levels of education:

- *Basic education* ((ISCED 0–2) includes persons who spent approximately nine years or less in the educational system and for whom no data on post-comprehensive, non-compulsory education are registered.

- *Secondary education* (ISCED 3–4) lasts 11–12 years and includes the matriculation examination (i.e., the final examination at the end of general upper-secondary school that determines eligibility for higher education) and vocational qualifications obtained 1–3 years after basic education.

- *Lower tertiary education* (ISCED 5–6) combines two levels: Lowest-level tertiary education that requires approximately 2–3 years to complete (ISCED 5) and lowest degree-level tertiary education that requires approximately 3–4 years to complete after upper secondary education and includes polytechnic degrees and bachelor's degrees from universities (ISCED 6). Examples of lower tertiary education include degrees in technical engineering, business and administration, and nursing; with changes in the educational system, these degrees are increasingly polytechnic degrees (see also robustness tests).

- *Higher tertiary education* (ISCED 7–8) consists of education that requires approximately 5–6 years to complete after secondary education and leads to

master's-level degrees from university or equivalent (or higher) educational degrees.

We decided against the conventional collapsing of lower and higher tertiary levels into one category, which would be quite large, particularly among women; in the 2000s, more than one-half of first-time mothers were tertiary-educated population under this general metric. Moreover, using two tertiary levels allows us to distinguish between higher vocational training and higher university education, and these differences may be related to different family formation behaviour. To bring our approach in line with the 3-category approach, the results will be discussed separately for each group and for the tertiary-educated population as a whole.

Method

For the decomposition analysis, we rely on the proportions of first children born to married and unmarried parents stratified by the parent's level of education across the childbearing years over the 1970–2009 period (see data for mothers, Appendix Figures A1 and A2). We decompose the change in the overall rate into pairwise comparisons of successive decades (1970s to 1980s, 1980s to 1990s, and 1990s to 2000s) for each educational subgroup. For this purpose, we used a decomposition technique (Das Gupta 1993; Preston et al. 2001) that allows us to identify the extent to which a change in rate can be attributed to a) the change in the population composition and b) changes in subgroup-specific rates. To calculate the decomposition, we relied on the following formula,

$$NMC^{t1+1} - NMC^{t1} = \sum_i (C^{t1+1} * NMC^{t1+1}) - \sum_i (C^{t1} * NMC^{t1})$$

$$= \sum_i [(C^{t1+1} - C^{t1}) * (\frac{NMC^{t1+1} + NMC^{t1}}{2})] + \sum_i [(NMC^{t1+1} - NMC^{t1}) * (\frac{C^{t1+1} + C^{t1}}{2})]$$

in which the increase in non-marital childbearing is the difference in the proportion of

non-marital childbearing (*NMC*) in the period *t1+1* compared to the period *t1*; *C* is the

educational composition; and *i* is the educational subgroup. The total difference is

decomposed into two parts, namely, the composition effect and the rate effect (Das

Gupta 1993; Chevan and Sutherland 2009). The composition effect, $\sum_i[(C^{t1+1} - C^{t1}) *$

$(\frac{NMC^{t1+1}+NMC^{t1}}{2})]$, shows the contribution of changes in the educational composition

$(C^{t1+1} - C^{t1})$ to the general change in the overall rate. These changes are weighted by

the average rate of non-marital childbearing in the considered periods, *t1* and *t1+1*. The

rate effect, $\sum_i[(NMC^{t1+1} - NMC^{t1}) * (\frac{C^{t1+1}+C^{t1}}{2})]$, describes the contribution of

educational group-specific rate changes $(NMC^{t1+1} - NMC^{t1})$ to the overall rate

change. The group-specific rate changes are weighted by the average sizes of the

educational groups in the *t1* and *t1+1* periods

Results

Trends in non-marital childbearing and the mother's educational attainment

Before proceeding with the decomposition findings, we discuss the trends in non-

marital childbearing during the study period (1970–2009). Figure 1 shows the trend in

non-marital first childbearing, which is expressed as the proportion of non-marital births

relative to all first births that year for women and men. This figure shows that at the

beginning of the observation period, the great majority of first births were to married

parents, but by the end of this period, the proportion had decreased to less than one-half.

The proportion shows an almost linear increase from the early 1970s to the late 1990s; it

nearly doubled with each decade. Specifically, the proportion of children born to

unmarried mothers was 11 per cent in 1970, which increased to 23 per cent in 1980 and

to 40 per cent in 1990. In 2000, the proportion reached 54 per cent. Since then, the trend has levelled off and the proportion has remained rather constant. The development was almost identical for men and women; the slight differences between them in earlier decades may relate to an incomplete registration of unmarried fathers. In the following paragraphs, we focus first on the results for women. The results for men are displayed in the appendix and discussed thereafter.

Figure 2 shows the proportions of non-marital first-time childbearing by level of maternal education. The proportion increased in all educational categories, and the relative growth was remarkable in each category. Before the increase began to slow in the 2000s, the proportion of births outside marriage quadrupled (from 6 to 24 per cent) for mothers with higher tertiary education and increased 5-fold for the lower tertiary-educated population (from 8 to 39 per cent). The proportions of non-marital births for mothers with basic and secondary education were already at 22 and 17 per cent, respectively, in the 1970s but nonetheless tripled by the 1990s (to 68 and 55 per cent, respectively). In addition, with the smaller but still substantial increases in the 2000s, the negative association between the mother's educational level and the rate of non-marital childbearing has persisted. In the 2000s, a first child was born outside marriage to approximately three out of ten higher tertiary-educated women, approximately five out of ten lower tertiary-educated women, approximately seven out of ten secondary-educated women, and approximately eight out of ten basic-educated women.

Figure 3 displays changes in the educational distribution of mothers across decades. The proportion of mothers with only basic education decreased substantially, whereas the proportions of mothers with lower and higher tertiary education increased. Secondary-educated women constituted the largest category throughout the entire period, although the relative size of this category decreased in the 1990s and 2000s. These changes in
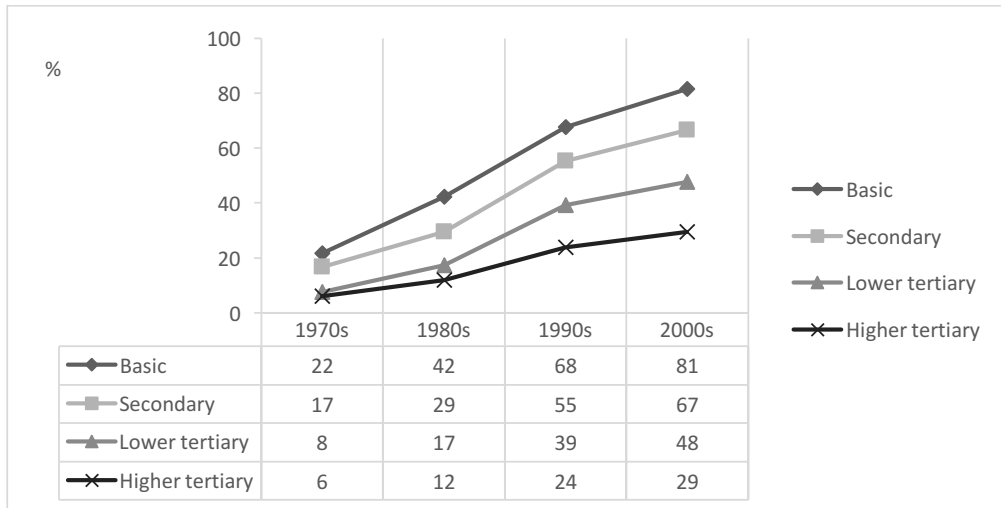
composition effectively demonstrate the general trend in educational expansion among women, which is likely to be reinforced among mothers by changes in educational differentials in the transition to motherhood. In particular, over the 1940–1974 cohorts in Nordic countries (including Finland), childlessness increased among lower-educated women, although it remained stable among tertiary-educated women. In the most recent birth cohorts, basic-educated women (as well as men) were most likely to remain childless (Jalovaara et al. 2017).

Figure 1 Percentage of all first births that were outside marriage over the 1970–2009 period for women and men, Finland.
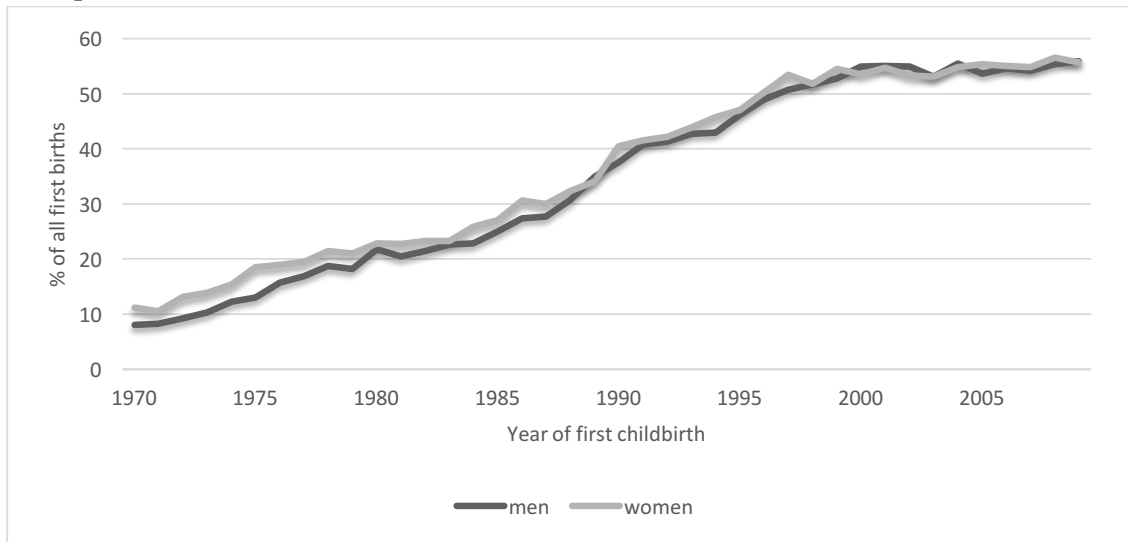

Source: Register data from Statistics Finland.

19

Figure 2 Non-marital first childbearing (per cent) by maternal educational attainment by decade, 1970s to 2000s, Finland, first-time mothers in 1970–2009.

	1970s	1980s	1990s	2000s
Basic	22	42	68	81
Secondary	17	29	55	67
Lower tertiary	8	17	39	48
Higher tertiary	6	12	24	29

Source: As for Figure 1.

Figure 3 Educational distribution among first-time mothers (per cent), by decade, 1970s to 2000s, Finland, first-time mothers in 1970–2009.

Source: As for Figure 1.

20
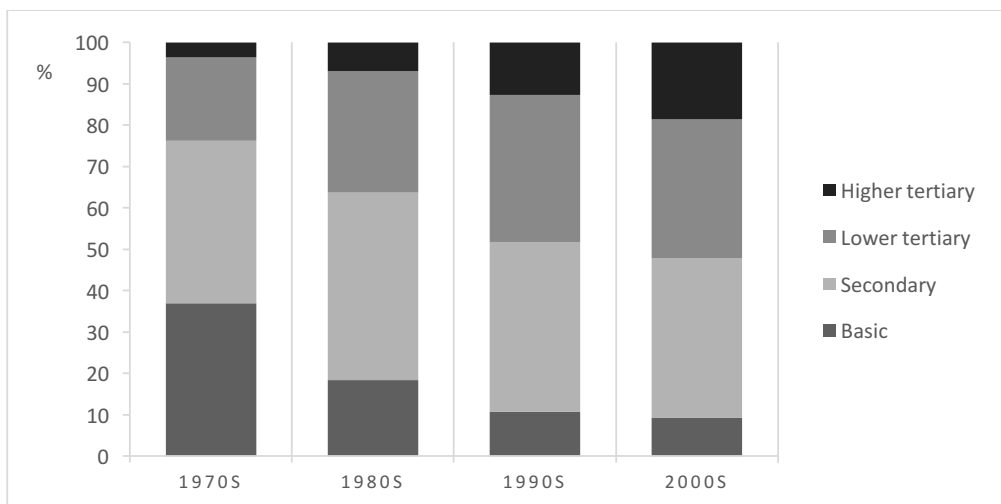
Table 1   Minimum, maximum, and mean proportion of non-marital first-time childbearing for mothers over the 1970–2009 period, by decade, Finland.

	1970s	1980s	1990s	2000s
Proportion in first and last year of the decade	[11, 21]	[23, 34]	[40, 54]	[54, 56]
Mean proportion (*NMC*)	16	27	47	55
Mean difference from preceding period		11	20	8
$(NMC^{t1+1} - NMC^{t1})$				

Source: As for Figure 1.

Table 2   Rate effect, composition effect and total effect of mother's educational level on the increase in non-marital childbearing, shown in percentage points, Finland, first-time mothers in 1970–2009.

Mother's education		1970s to 1980s	1980s to 1990s	1990s to 2000s
Basic	Rate effect	5.6	3.7	1.4
	Composition effect	-5.9	-4.2	-1.0
	Total	-0.3	-0.5	0.4
Secondary	Rate effect	5.4	11.2	4.5
	Composition effect	1.4	-1.8	-1.5
	Total	6.8	9.4	3.0
Lower tertiary	Rate effect	2.4	7.1	2.9
	Composition effect	1.2	1.7	-0.9
	Total	3.5	8.8	2.1
Higher tertiary	Rate effect	0.3	1.2	0.9
	Composition effect	0.3	1.0	1.5
	Total	0.6	2.2	2.4
Crude change in NMC		10.6	19.9	7.9

Source: As for Figure 1.

Results of the decomposition analysis

In the decomposition analysis, we consider changes in the proportion of non-marital first childbirths across decades. Table 1 shows the mean proportions of non-marital first childbearing for the decades of the 1970s, 1980s, 1990s, and 2000s and the differences between the three pairs of means. The increase in non-marital childbearing rates, expressed in percentage points, was clearly strongest between the 1980s and 1990s, when it increased by 20 percentage points.

Table 2 shows – for each educational category – the effect of changes in the rate of non-marital births (rate effect), the effect of changes in the size of the educational category (composition effect), and the sum of both effects (total effect). For instance, if we consider changes from the 1970s to the 1980s, the rate effect for basic-educated women was 5.6, which means that they contributed to the increase in non-marital childbearing with 5.6 percentage points, if their relative group size did not change. However, the group of basic-educated women was shrinking, with a negative composition effect of -5.9. Taking the rate and the composition effects together, the basic-educated population did not contribute to the increase in non-marital childbearing from the 1970s to the 1980s; by contrast, they slowed the overall increase with a negative total effect (-0.3). Considering the changes during the entire study period, basic-educated mothers did not contribute to the increase in non-marital childbearing from 1970 to 1990 and contributed little to the increase in the 2000s (0.4 percentage points of an overall increase of 8.0 percentage points).

Secondary-educated women made a large contribution to the overall increase in non-marital childbearing due to significant increases in the rate of non-marital childbearing. Although the group of secondary-educated women has decreased in size since the 1990s, it has remained the main contributor to the recent increase in non-marital

22

childbearing from the 1990s to the 2000s. Lower tertiary-educated women contributed to the overall increase with positive rate and composition effects from the 1970s to the 1990s. Non-marital childbearing increased substantially among lower tertiary-educated mothers, and the group grew in size. Although the size of this group decreased slightly over the most recent period (from the 1990s to 2000s), it continued to contribute to the increase in non-marital first-time births. The group of higher tertiary-educated women was the only group that increased in size throughout the four decades of the study period, thereby reinforcing any rate effect. However, increases in non-marital childbearing among these university-educated women were rather small and thus of minor importance to the overall increase in non-marital childbearing during the 1970s and 1980s. Since then, however, their contribution has become increasingly important due to their growing group size.

Overall, the increases in non-marital childbearing rates among secondary and lower tertiary-educated women made these groups the main drivers of the increase in non-marital childbearing, particularly the substantial increase that occurred between the 1980s and 1990s. During this period, secondary-educated women contributed 9.4 percentage points, lower tertiary-educated women contributed 8.8 percentage points, higher tertiary-educated women contributed 2.2 percentage points, and basic-educated women contributed -0.5 percentage points to the total increase of 20 percentage points. Combining the lower and higher tertiary groups makes it obvious that tertiary-educated women accounted for 55 per cent (= (8.8+2.2) percentage points / 20 percentage points) of the increase in non-marital childbearing between the 1980s and the 1990s and 56 per cent (= (2.1+2.4) percentage points / 8 percentage points) of the increase between the 1990s and 2000s.

Figure 4 summarizes the extent to which the crude changes in the non-marital childbearing rate in the 1970–2009 period are the result of compositional changes in mothers' education levels and the extent to which they are due to changes in non-marital childbearing behaviour within the educational categories. The results show that the upward trend in non-marital childbearing has been driven entirely by an increase in non-marital childbearing within the educational groups. The total composition effect of education is negative: the increase in non-marital childbearing, caused by changes in the education-specific rates was decreased by educational expansion.

Figure 4. Crude changes in non-marital childbearing, effects of changes in educational composition and effects of changes in education-specific rates, Finland, first-time mothers in 1970–2009.
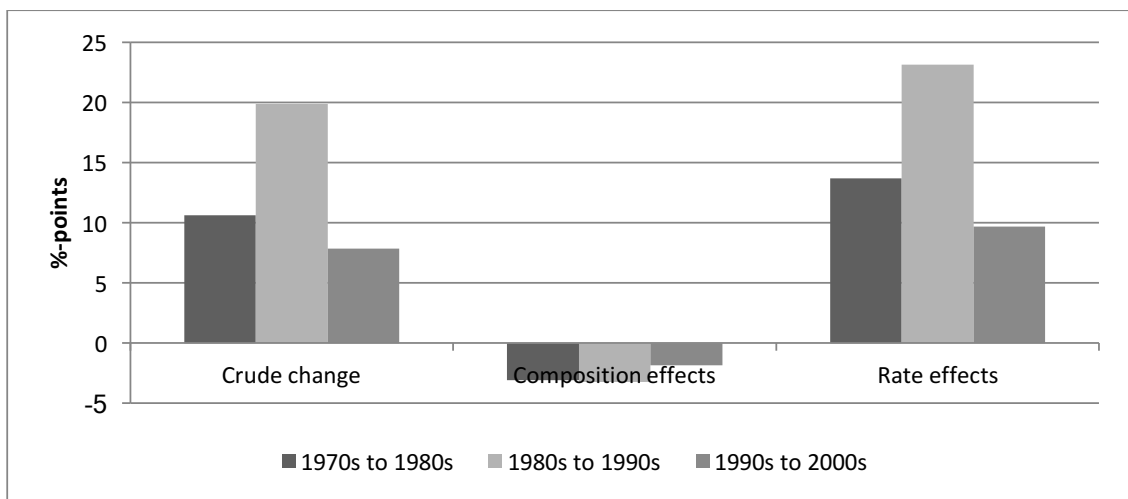
Source: As for Figure 1.

Results for men

Trends in non-marital childbearing and educational structure among first-time fathers are displayed in Figures A3 and A4 (Appendix). Figure A3 shows that – as with first-time mothers – the proportion of fathers who had their first child outside marriage increased in all educational categories, although the negative association between

24

father's educational level and the rate of non-marital childbearing was maintained. Figure A4 presents the changes in the educational composition of the fathers across decades. In contrast to the mothers, the group of secondary-educated fathers grew every decade and has constituted the largest category since the 1980s. The group of lower tertiary-educated fathers remained small. As with mothers, the group of basic-educated fathers decreased substantially, whereas the group of higher tertiary-educated fathers grew.

The changes in the proportions of non-marital first-time childbearing across decades from the 1970s to the 2000s are shown in Table A1, and the results of the decomposition analysis are shown in Table A2 (Appendix). Basic-educated fathers contributed modestly but positively to the overall increase from the 1970s to the 1990s, but in the most recent period, the decreasing size of this group cancelled out any rate effect. The main contributors were secondary-educated men, due to the large increases in the rate of non-marital fatherhood. Even when the contributions of the lower and higher tertiary-educated men are combined, the tertiary-educated population remained a less significant force in the increase in non-marital childbearing than the secondary-educated population. As demonstrated in Figure A5, the composition effects were very small.

Robustness tests: Marital status measured both at birth and 12 months post-birth and education measurement

Because a substantial proportion of parents marry soon after the birth of a child, we performed supplementary analyses in which we considered the marital status of the parent 12 months after the birth, coding non-marital births as marital if the parent was married at the time of the child's first birthday. Marriage dissolution during the first year post-birth is rare. Of the mothers married at the time of childbirth, less than one per

cent were not married at the child's first birthday. They were coded as marital births in all analyses. A comparison of the marital status at the time the first child is born and 12 months later in Table A3 (Appendix, Table A3) shows that 22 per cent of the mothers with a non-marital first childbirth in the 1970s married within the first year following childbirth and that this proportion was similar across mothers of different educational levels. In the 2000s, the percentage had dropped to 12 per cent. Educational differences emerged, with higher-educated mothers marrying more often than lower-educated mothers during the first year following childbirth (higher tertiary – 19 per cent; lower tertiary – 16 per cent; secondary – 10 per cent; and basic – 7 per cent). We conducted the decomposition analysis again using the measure of marital status at 12 months after first childbirth. The results remained unchanged.

There have been reforms in the Finnish educational system and therefore the content of the categories has changed somewhat over time. We decided to combine ISCED levels 5 and 6 in the category "Lower tertiary". However, ISCED level 5 has partially evolved to ISCED level 6 for various reasons, including because the educational system of polytechnics (vocational college) was developed in the 1990s. We distinguished these levels in additional analyses. The results (not shown) show that these groups were similar in their non-marital childbearing behaviour, which confirms our decision to group them together. The same is true when we put the general and vocational upper secondary education into one group; the results for the two distinct groups were very similar.

Conclusions

This study was motivated by the observation that the substantial increase in non-marital childbearing over recent decades coincides with educational expansion. This co-occurrence of two developments led us to question how these developments were

related and which educational group or groups contributed the bulk of the increase in having children outside marriage. A recent study (Vitali et al. 2015) showed that educational expansion (measured as the percentage of women with tertiary education) contributed to the spatial diffusion of childbearing to non-married couples in Norway during the 1990s and 2000s. However, childbearing within cohabitation has been more common among the lower-education population segments (Perelli-Harris et al. 2010). Previous studies have focused almost exclusively on the upper and lower ends of the educational distribution. We considered that a better understanding of the relation between trends in non-marital childbearing and educational expansion required an analysis of the entire distribution and its development. Using register data on Finnish first-time parents, we evaluated how changes in the education-specific rates of non-marital childbearing and in the educational distribution of parents contributed to the increase in non-marital childbearing among Finnish first-time parents over the 1970–2009 period. Theoretical considerations led us to expect that the increase would be mainly attributable to medium-educated mothers and fathers; because they formed a large and growing category in recent decades, they were able to drive demographic trends at the macro level, and their behaviour differed from that of the highest-educated population.

Our findings reveal that the overall increase in non-marital childbearing was indeed mainly driven by the medium-educated population. Secondary-educated mothers and fathers accounted for much of the increase based on increases in their non-marital childbearing rates. Lower tertiary-educated mothers were nearly as important in this regard. If lower and higher tertiary-educated women were taken together, as is the case in most studies, they would account for approximately one-half of the increase in non-marital childbearing. Educational expansion has been weaker among first-time fathers

than among first-time mothers. Secondary education is most common among fathers, and this educational group contributed the most to the increase in men's non-marital childbearing. In sum, our results show that increases in non-marital childbearing and average educational attainment can coincide with a consistent negative association between education and non-marital childbearing.

According to the theoretical underpinnings of SDT, the increase in non-marital childbearing begins among the high-educated and spreads from there to all other educational strata. However, prior empirical research shows that non-marital childbearing emerged among the low-educated population (Sobotka 2008; Perelli-Harris et al. 2010). Our results provide evidence that non-marital childbearing is becoming increasingly common in all social strata. The four-decade time window allowed us to focus on the period in which the rate of non-marital childbearing multiplied and educational distribution changed tremendously. Trends observed in the 2000s indicate that non-marital childbearing among (lower and higher) tertiary-educated people has gained significantly in quantitative importance and that this trend is likely to continue. The increase in secondary education seems to frequently be a transitory phase in educational expansion, at least among women. We paid attention to this development by distinguishing the lower and higher tertiary-educated population, which provided a more detailed view of the compositional changes implied by educational expansion. The lower tertiary-educated population are a growing category and differ from those with higher tertiary education; the lower tertiary are similar in profile to the secondary-educated population in that they also have vocationally oriented education. Given on-going educational expansion, it is likely increasingly useful to distinguish among different levels of the large and heterogeneous category of the tertiary-educated population.

Our study reveals that the medium-educated population are characterized by non-marital childbearing behaviour that falls between the behaviours of the lower- and higher-educated populations. Our findings do not suggest that the medium-educated population have become the "new low educated". When comparing the proportions of first children born outside marriage between basic- and secondary-educated parents, we do not observe a convergence; instead, the relative differences remain similar. It remains a task for future research to investigate whether and how medium-educated women and men differ from persons with other educational backgrounds across different dimensions. Obviously, the medium educated have quantitative importance, as exemplified in this study, and too little is known about whether and how the theoretical arguments that explain the differences in family formation behaviour between the lowest- and the highest-educated population segments can be applied to population segments with medium education or if a new theoretical understanding is required. In this study, we addressed the life course factors and economic dimensions of education, assuming that individuals with different educational backgrounds differ in terms of planning family formation in young adulthood and in terms of financial resources, security and prospects. For example, the higher educated enter parenthood at a higher age and are more likely to carefully plan family formation and its timing. On dimensions such as employment insecurities, the medium educated lie between the lowest and highest educated but fall increasingly closer to the highest educated; the low-educated population are most exposed to precarious financial situations created by unemployment and temporary employment. Over the past decades, the employment gap between the low-educated and higher- (i.e., medium and highly) educated groups has widened because the low educated are increasingly vulnerable to economic downturns

and changing macroeconomic conditions (e.g., Asplund and Maliranta 2006; Klein 2015).

We did not distinguish between non-union births and union births (which is possible with the data from 1987 onwards) because the aim was to describe the increase in non-marital childbearing since its onset in the 1970s. Research shows that the greatest part of the increase can be attributed to childbearing within cohabitation and our results would thus probably look very similar if the data were restricted to union births.

Should researchers and policy makers remain concerned about non-marital childbearing? The scientific and political discourse associates non-marital childbearing with precarious living situations, which manifests as a lack of financial resources and the presence of unstable family arrangements. The most precarious group, basic-educated women and men, has become a small minority, which might suggest that the discussion is of diminishing importance. However, the low educated persist as a population segment and their position is weakest because disadvantages such as weak labour market positions, non-union childbearing and union instability accumulate in this group. Moreover, knowledge about the living conditions of the medium- and higher-educated population in relation to non-marital childbearing is limited. It remains for future research to show whether and under what conditions contemporary non-marital childbearing is related to negative outcomes; for instance, one possible research issue is the extent to which the relatively stable cohabitations and greater economic resources of the medium- and higher-educated populations provide a buffer against the negative consequences of alternative family structures. Future studies should consider the level of education of both the father and the mother to evaluate whether non-married parents have a combined educational background that disadvantages their children relative to the children of married couples. Another open question is whether any negative

"outcomes" merely reflect negative selection into non-marital childbearing or if marriage has a protective effect. With regard to this and other tasks, we argue that family research and the narrative of 'diverging destinies' would benefit from a more sophisticated view of educational strata that accommodates contemporary realities in the societies under study.

Acknowledgements

References

Andersson, Gunnar. 2002. Children's experience of family disruption and family formation: Evidence from 16 FFS countries. *Demographic Research*, 7(7): 343–364.

Asplund, Rita and Mika Maliranta. 2006. Productivity growth: The role of human capital and technology. In Ojala, Jari, Jari Eloranta, and Jukka Jalava (Eds.), *The Road to Prosperity. An Economic History of Finland.* Jyväskylä: Suomalaisen Kirjallisuuden Seura. Pp. 263–284.

Atkinson, Anthony B. 1999. The distribution of income in the UK and OECD countries in the twentieth century. *Oxford Review of Economic Policy* 15(4): 56-75.

Blossfeld, Hans-Peter and Johannes Huinink. 1991. Human capital investments or norms of role transition? How women's schooling and career affect the process of family formation. *American Journal of Sociology* 97(1): 143–168.

Carlson, Marcia J., Alicia G. VanOrman, and Natasha V. Pilkauskas. 2013. Examining the antecedents of U.S. nonmarital fatherhood. *Demography* 50(4): 1421–47.

Cherlin, Andrew. (2011). Between poor and prosperous: Do the family patterns of the moderately educated deserve a closer look? In M. J. Carlson & P. England (Eds.), *Social class and changing families in an unequal America.* Stanford, California: Stanford University Press: 68-84.

Chevan, Albert and Michael Sutherland. 2009. Revisiting Das Gupta: Refinement and extension of standardization and decomposition. *Demography*, 46(3): 429–449.

Cigno, Alessandro and John Ermisch. 1989. A microeconomic analysis of the timing of births. *European Economic Review*, 33(4): 737–760.

Das Gupta, Prithwis. 1993. Standardization and decomposition of rates: A user's manual. US Department of Commerce, Economics and Statistics Administration, Bureau of the Census.

Erola, Jani, Juho Harkonen, and Jaap Dronkers. 2012. More Careful or Less Marriageable? Parental Divorce, Spouse Selection and Entry into Marriage. *Social Forces,* 90(4): 1323-1345.

Esping-Andersen, Gosta. 2009. *The incomplete revolution: Adapting to women's new roles*. Cambridge, MA: Polity Press

Eriksson, Tor and Markus Jäntti. 1997. The distribution of earnings in Finland 1971–1990. European Economic Review 41(9): 1763–1779.

Eurostat (2016b), Fertility Statistics: Births and fertility data. Available: http://ec.europa.eu/eurostat/statistics-explained/index.php/Fertility_statistics. Accessed (accessed: 25 January 2017).

Eurostat (2016c). Employment statistics. Available: http://ec.europa.eu/eurostat/statistics-explained/index.php/Employment_statistics (accessed: 25 January 2017).

Eurostat (2016a). Europe 2020 indicators – poverty and social exclusion. Available: http://ec.europa.eu/eurostat/statisticsexplained/index.php/Europe_2020_indicators_-_poverty_and_social_exclusion. (accessed: 25 January 2017)

Finnäs, Fjalar. 1995. Entry into consensual unions and marriages among Finnish women born between 1938 and 1967. *Population Studies*, *49*(1): 57–70.

Furstenberg, Frank F. Jr. 2011. The Recent Transformation of the American Family: Witnessing and Exploring Social Change. In M. J. Carlson & P. England (Eds.), Social class and changing families in an unequal America. Stanford, California: Stanford University Press: 192–220.

Gubernskaya, Zoya. 2010. Changing attitudes toward marriage and children in six countries. *Sociological Perspectives* 53(2): 179200.

Heuveline, Patrick, Jeffery M. Timberlake, and Frank F. Furstenberg. 2003. Shifting Childrearing to Single Mothers: Results from 17 Western Countries. *Population and Development Review*, 24(1): 47–71.

Härkönen Juho, Eevi Lappalainen, and Marika Jalovaara. 2016. Double disadvantage in a Nordic welfare state: A demographic analysis of the single mother employment gap in Finland, 1987–2011. *Stockholm Research Reports in Demography* 2016:11.

Iriondo, Iñaki and Teodosio T. Pérez-Amaral. 2016. The effect of educational mismatch on wages in Europe. *Journal of Policy Modeling*, 38(2): 304–323.

Jalovaara, Marika, Gunnar Andersson, Gerda Neyer, Johan Dahlberg, Lars Dommermuth, Peter Fallesen Peter, and Trude Lappegård . 2017. Education, gender and cohort fertility in the Nordic countries. Paper to be presented at PopDays 2017, Feberuary 8–10, Florence.

Jalovaara, Marika and Anette E. Fasang. 2015. Are there gender differences in family trajectories by education in Finland? *Demographic Research,* 33(44): 1241–1256.

Kennedy, Sheela and Elizabeth Thomson. 2010. Children's experiences of family disruption in Sweden: Differentials by parent education over three decades. *Demographic Research*, 23: 479–508.

Kiernan, Kathleen. 2001. European perspectives on nonmarital childbearing. In L.Wu & B. Wolfe (Eds.), Out of wedlock: causes and consequences of non-marital fertility (pp. 77–108). New York: Russell Sage Foundation.

Kiernan, Kathleen. 2004. Unmarried cohabitation and parenthood in Britain and Europe. *Law & Policy*, 26(1): 33–55.

Klein, Markua. 2015. The increasing unemployment gap between the low and high educated in West Germany. Structural or cyclical crowding-out? *Social Science Research*, 50: 110–125.

Kravdal, Øystein. 1999. Does marriage require a stronger economic underpinning than informal cohabitation? *Population Studies*, 53(1): 63–80.

Lappegård, Trude, Sebastian Klüsener, and Daniele Vignoli. 2014. Social norms, economic conditions and spatial variation of childbearing within cohabitation across Europe. Rostock: Max Planck Institute for Demographic Research (WP-2014-002).

Lemieux, Thomas. 2006. Postsecondary education and increasing wage inequality. *American Economic Review*, 96(2): 195–199.

Lesthaeghe, R. (1995). The second demographic transition in Western countries: An interpretation. *Gender and family change in industrialized countries*, 17–62.

Lesthaeghe, Ron. 1998. On theory development: applications to the study of family formation. *Population and Development Review* 24(1): 1–14.

Lesthaeghe, Ron and Dirk J. Van de Kaa. 1986. Twee demografische transities. *Bevolking: groei en krimp*: 9–24.

Liefbroer, Aart C. and Martine Corijn. 1999. Who, what, where, and when? Specifying the impact of educational attainment and labour force participation on family formation. *European Journal of Population*, 15(1): 45–75.

Manlove, Jennifer, Elizabeth Wildsmith , Erum Ikramullah, Suzanne Ryan, Emily Holcombe, Mindy Scott, and Kristen Peterson. 2012. Union transitions following the birth of a child to cohabiting parents. *Population Research and Policy Review*, 31(3): 361–386.

McLanahan, Sara and Wade Jacobsen. 2015. Diverging destinies revisited. Amato, Paul. R, Booth, Alan Booth, Susan M. McHale, Jennifer Van Hook (eds.): *Families in an era of increasing inequality: Diverging destinies*. Springer International Publishing: 3–23.

McLanahan, Sara. 2014. Diverging destinies: How children are faring under the second demographic transition. *Demography* 41(4): 607–627.

Musick, Kelly (2002). Planned and unplanned childbearing among unmarried women. *Journal of Marriage and Family*, 64(4): 915–929.

Ní Bhrolcháin, Máire and Éva Beaujouan. 2013. Education and cohabitation in Britain: a return to traditional patterns? *Population and Development Review*, 39: 441–58.

Oppenheimer, Valerie K. 1988. A Theory of Marriage Timing. *American Journal of Sociology*, 94: 563–591.

Oppenheimer, Valerie K. 2003. Cohabiting and marriage during young men's career-development process. *Demography* 40(1): 127–149.

Oppenheimer, Valerie Kincade. 1994. Women's rising employment and the future of the family in industrial societies. *Population and Development Review*: 293-342.

Osborne, Cynthia, Wendy D. Manning, and Pamela J. Smock. 2007. Married and cohabiting parents' relationship stability: A focus on race and ethnicity. *Journal of Marriage and Family,* 69: 1345–1366.

Perelli-Harris, Brienna and Theodore P. Gerber. 2011. Non-marital childbearing in Russia: second demographic transition or pattern of disadvantage*? Demography*, 48(1): 317–42.

Perelli-Harris, Brienna, Wendy Sigle-Rushton, Michaela Kreyenfeld, Trude Lappegård, Renske Keizer, and Caroline Berghammer. 2010. The educational gradient of childbearing within cohabitation in Europe. *Population and Development Review*, 36(4): 775–801.

Preston, Samuel, P., Patrick Heuveline, and Michel Guillot. 2001. *Demography: Measuring and modeling population processes*. Malden, MA: Blackwell Publishers.

Prix, Irene. 2013. More or different education? The joint impact of educational level and fields of study on earnings stratification in Finland, 1985–2005. *Acta Sociologica,* 56(3): 265–284.

Raley, Kelly and Elizabeth Wildsmith. 2004. Cohabitation and Children's Family Instability. *Journal of Marriage and the Family*, 66(1): 210–219.

Ravanera, Zenaida R., Fernando Rajulton, and Thomas K. Burch. 2004. Patterns of age variability in life course transitions. *The Canadian Journal of Sociology*, 29(4): 527–542.

Rendall, Michael, Encarnacion Aracil, Christos Bagavos, Christine Couet, Alessandra DeRose, Paola DiGiulio, Trude Lappegård, Isabelle Robert-Bobée, Marit Rønsen, Steve Smallwood, and Georgia Verropoulou. 2010. Increasingly heterogeneous ages at first birth by education in southern European and anglo-american family-policy regimes: a seven-country comparison by birth cohort. *Population Studies*, 64(3): 209–227.

Saarela, Jan and Fjalar Finnäs. 2014. Transitions within and from first unions: educational effects in an extended winnowing model. *Marriage & Family Review,* 50(1): 35–54.

Schnor, Christine. 2014. The Effect of Union Status at First Childbirth on Union Stability: Evidence from Eastern and Western Germany. *European Journal of Population*, 30(2): 129–160.

Smock, Pamela J. and Fiona R. Greenland. 2010. Diversity in pathways to parenthood: Patterns, implications, and emerging research directions. *Journal of Marriage and Family*, 72(3) : 576–593.

Sobotka, Tomáš. 2008. Overview chapter 6: The diverse faces of the second demographic transition in Europe. *Demographic Research*, 19(8): 171–224.

Sobotka, Tomáš, Anna Št'Astná, Kryštof Zeman, Dana Hamplová, and Vladimíra Kantorová. 2008. Czech Republic: a rapid transformation of fertility and family behaviour after the collapse of state socialism. *Demographic Research*, 19: 403–54.

Sobotka, Tomáš and Laurent Toulemon. 2008. Overview Chapter 4: changing family and partnership behaviour. *Demographic Research*, 19: 85–138.

Spéder, Zsolt and Ferenc Kamarás. 2008 "Hungary: Secular fertility decline with distinct period fluctuations." *Demographic Research* 19(18): 599–664.

Statistics Finland 2016. Structure of earnings statistics. Available: http://www.stat.fi/til/tjt/2013/03/tjt_2013_03_2015-04-02_tau_003_fi.html (accessed: 25 January 2017).

Steele, Fiona, Heather Joshi, Constantinos Kallis, and Goldstein, Harvey. 2006. Changing compatibility of cohabitation and childbearing between young British women born in 1958 and 1970. *Population Studies*, 60(2): 137–152.

Surkyn, Johan and Ron Lesthaeghe. 2004. Value orientations and the second demographic transition (SDT) in Northern, Western and Southern Europe: an update. *Demographic Research*, Special Collection 3: 45–86.

Thomson, Elizabeth, Maria Winkler-Dworak, and Sheela Kennedy. 2013. The standard family life course: An assessment of variability in life course pathways. In Negotiating the Life Course (pp. 35–52). Springer Netherlands.

Thornton, Arland, William G. Axinn, and Jay D. Teachman. 1995. The influence of school enrollment and accumulation on cohabitation and marriage in early adulthood. *American Sociological Review* 60(5): 762–774.

Trimarchi, Alessandra and Jan Van Bavel. 2016. Pathways to Marital and Non-Marital First Birth: the Role of Educational Assortative Mating. Working Paper presented at the 2016 Annual Meeting of PAA.

Van de Kaa, Dirk J. 1987. Europe's second demographic transition. *Population Bulletin*, 42 (1): 1–59.

Van de Kaa, Dirk J. (1997). Options and sequences: Europe's demographic patterns. *Journal of the Australian Population Association*, 14 (1), 1–30.

Van Bavel, Jan. 2012. The reversal of gender inequality in education, union formation and fertility in Europe. *Vienna Yearbook of Population Research 2012*, 1–40.

Vitali, Agnese, Arnstein Aassve, and Trude Lappegård. 2015. Diffusion of childbearing within cohabitation. *Demography*, 52(2): 355–377.

Wu, Lawrence L. and Kelly Musick. 2008. Stability of marital and cohabiting unions following a first birth. *Population Research and Policy Review*, 27(6): 713–727.

Zakharov, Sergei. 2008. Russian Federation: From the first to second demographic transition. *Demographic Research*, 19(24): 907–972.
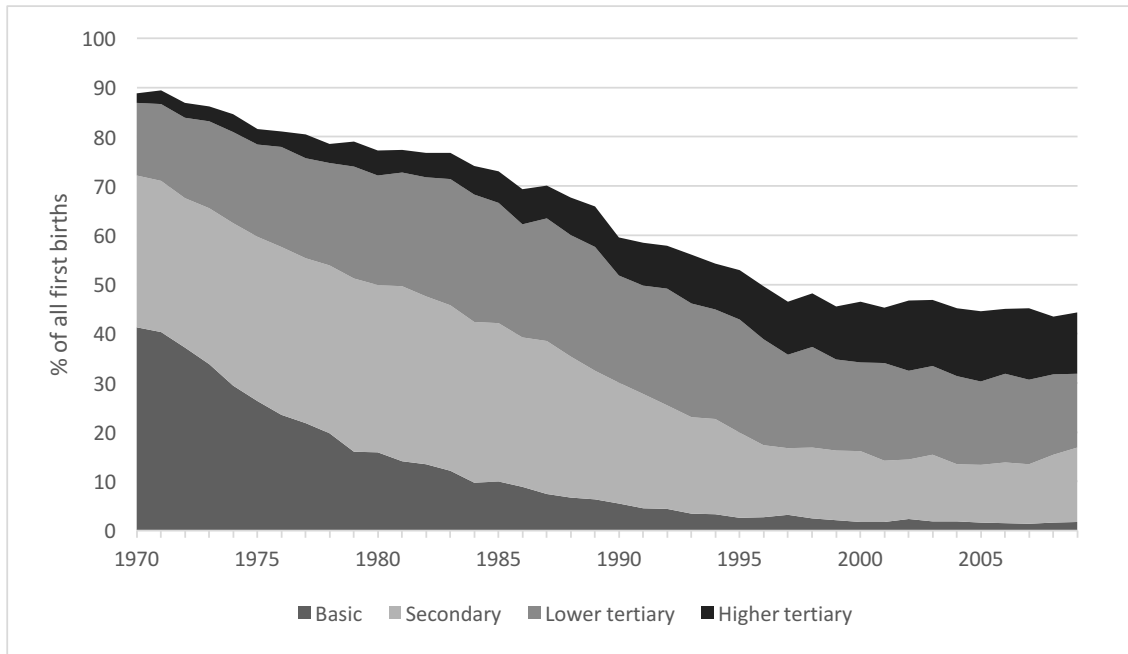
Appendix

Figures

Figure A1 The percentage of non-marital first births stratified by maternal educational attainment, 1970–2009, Finland, first-time mothers in 1970–2009.
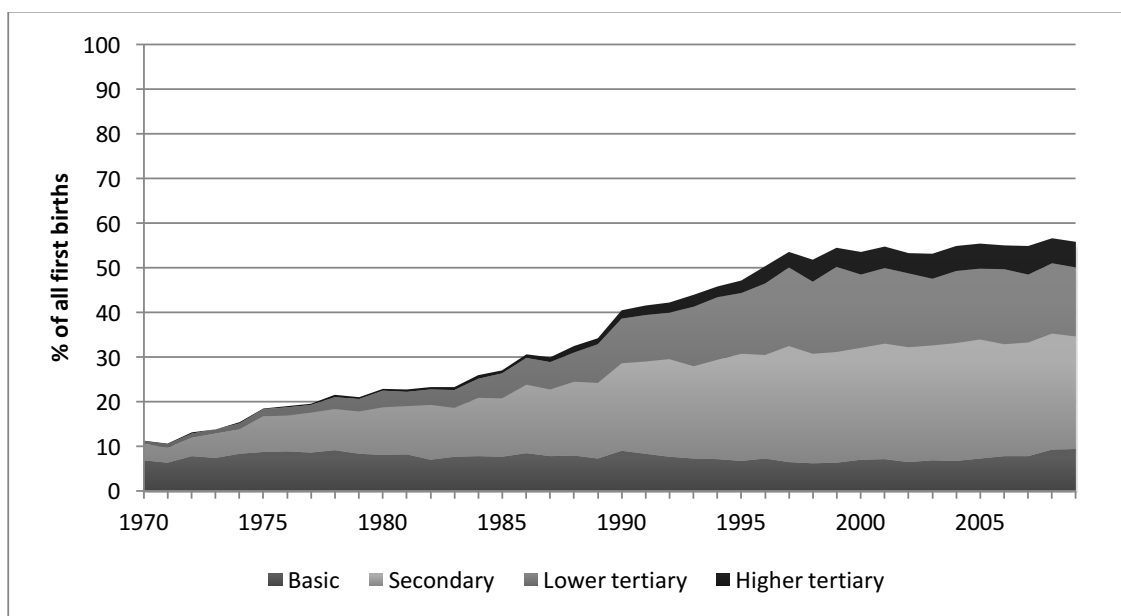
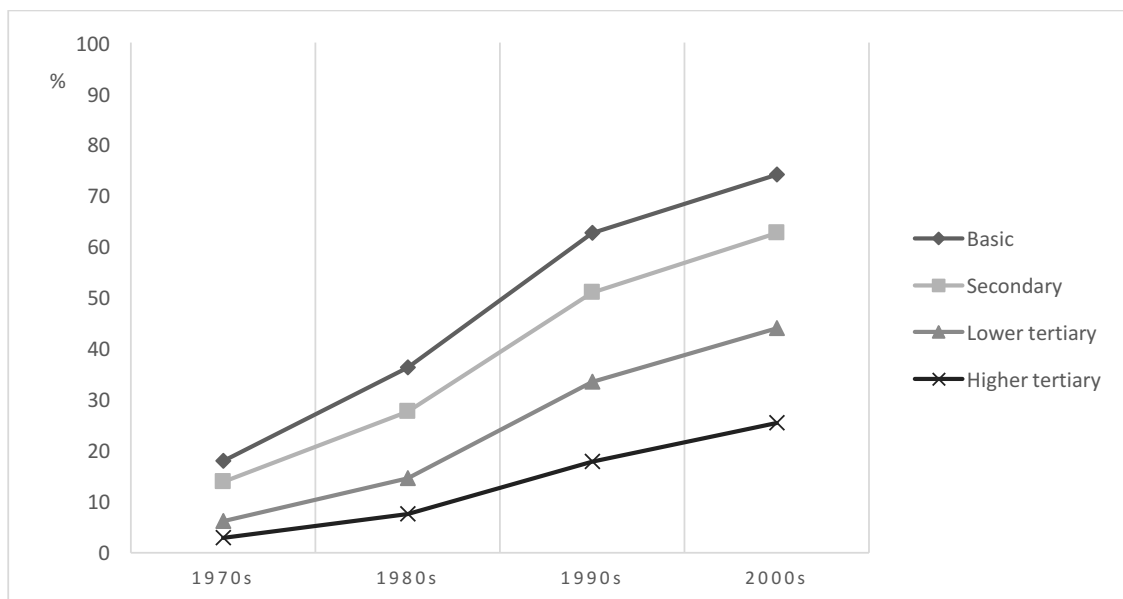*Source:* As for Figure 1.

Figure A2 The percentage of marital first births stratified by maternal educational attainment, 1970–2009, Finland, first-time mothers in 1970–2009.

Source: As for Figure 1.

Figure A3 Non-marital first childbearing (per cent) by father's level of education, by decade, 1970s to 2000s, Finland, first-time fathers in 1970–2009.

Source: As for Figure 1.

Figure A4 Educational distribution among first-time fathers (per cent), by decade, 1970s to 2000s, Finland, first-time fathers in 1970–2009.
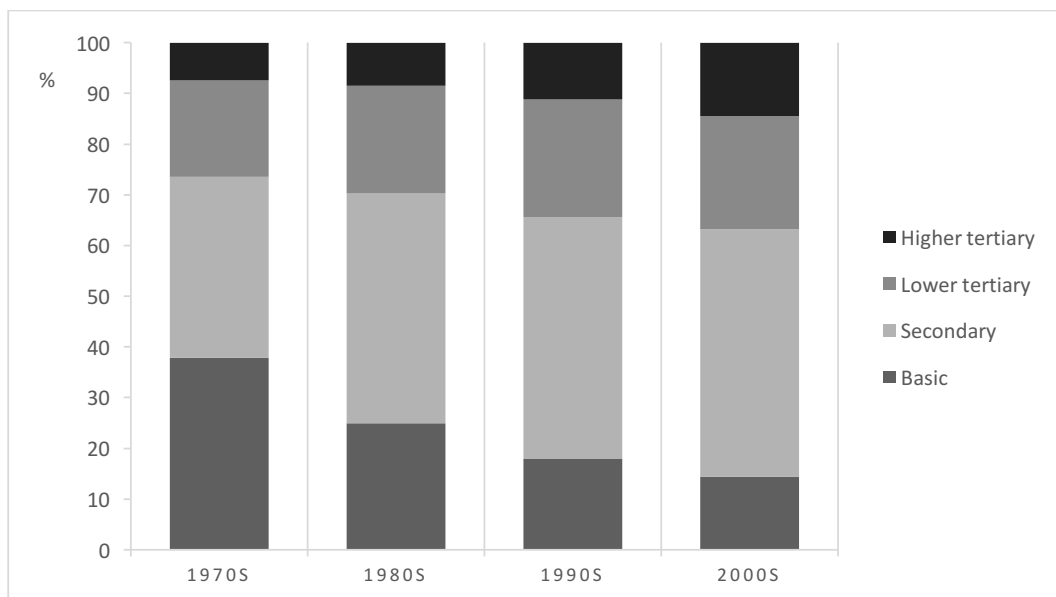
Source: As for Figure 1.

Figure A5   Crude changes in non-marital childbearing, effects of changes in educational composition and effects of changes in education-specific rates, Finland, first-time fathers in 1970–2009.

Source: As for Figure 1.

Tables

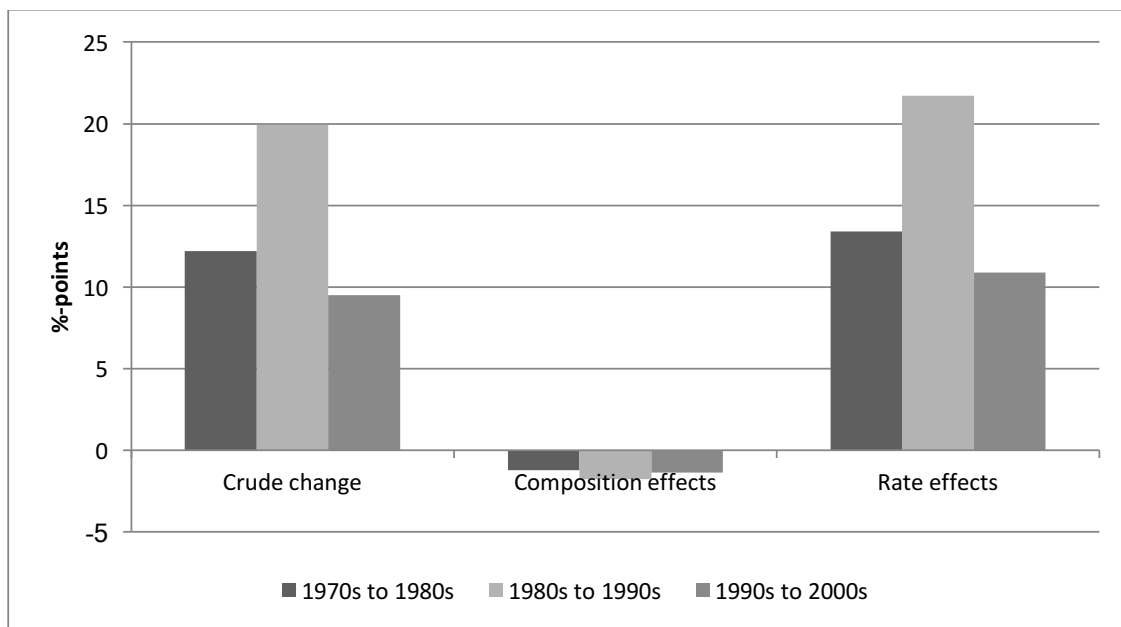**Table A1 Minimum, maximum, and mean proportion of non-marital first childbearing for fathers, 1970–2009, by decade, Finland.**

	1970s	1980s	1990s	2000s
Proportion in first and last year of the decade	[8, 18]	[22, 35]	[38, 53]	[55, 56]
Mean proportion (*NMC*)	13	25	45	55
Mean difference from preceding period $(NMC^{t1+1} - NMC^{t1})$		12	20	10

Source: As for Figure 1.

Table A2 Rate effect, composition effect and total effect of father's educational level on the increase in non-marital childbearing, shown in percentage points, Finland, first-time fathers in 1970–2009.

Father's education		1970s to 1980s	1980s to 1990s	1990s to 2000s
Basic	Rate effect	5.8	5.6	1.8
	Composition effect	-3.5	-3.5	-2.4
	Total	2.3	2.1	-0.6
Secondary	Rate effect	5.6	10.8	5.6
	Composition effect	2.0	0.9	0.7
	Total	7.6	11.7	6.3
Lower tertiary	Rate effect	1.7	4.2	2.4
	Composition effect	0.2	0.5	-0.3
	Total	1.9	4.7	2.1
Higher tertiary	Rate effect	0.4	1.0	1.0
	Composition effect	0.1	0.3	0.7
	Total	0.4	1.4	1.7
Crude change in NMC		12.2	19.9	9.5

Source: As for Figure 1.

Table A3   Percentage of non-marital births by decade and mother's educational attainment using two measures: Marital status at birth (A) and marital status at birth at child's first birthday (B), and the relative difference between the two percentages, Finland, first-time fathers in 1970–2009.

A) Percentage of non-marital first births; mother's marital status at birth

	1970s	1980s	1990s	2000s
Basic	22	42	68	81
Secondary	17	29	55	67
Lower tertiary	8	17	39	48
Higher tertiary	6	12	24	29
All	16	27	47	55

B) Percentage of non-marital first births; mother's marital status at birth checked for changes by the child's first birthday

	1970s	1980s	1990s	2000s
Basic	17	36	61	76
Secondary	13	24	48	60
Lower tertiary	6	14	33	40
Higher tertiary	5	10	19	24
All	13	22	40	48

The relative difference between A and B

	1970s	1980s	1990s	2000s
Basic	21	16	10	7
Secondary	23	19	12	10
Lower tertiary	22	19	17	16
Higher tertiary	26	15	20	19
All	22	18	14	12

In the 1970s, 22 per cent of all mothers who had their first child outside marriage had married by the child's first birthday. This percentage decreased to 12 per cent by the 2000s. In the 2000s, the educational differences in marrying during the firstborn child's first year were notable: one-fifth among the higher tertiary educated and 7 per cent among the lowest educated.

Source: As for Figure 1.