Education, Work and Parenthood:
The Experience of Young Men and Women in Post-War Sweden

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Abstract
This paper analyses the determinants of young men's and women's entry into parenthood, applying hazard regressions to data made up by annual aggregate time series as well as longitudinal micro-data from the 1992/93 *Swedish Family Survey*. We study the impact of education, labour market attachment and macro-economic change, as well as civil status and family of upbringing, on becoming a parent for both men and women in Sweden since the mid-1960s. Our results show a general tendency over time to delay the transition to parenthood among both men and women. When it comes to the determinants of conception leading to first birth, there are clear gender differences both when it comes to individual characteristics and aggregate-level factors. Education and labour market attachment are key factors determining the transition to parenthood for both men and women, even though the effects, in several respects, differ between the sexes.

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Introduction

The sharp decline in total fertility, and the all-time-low fertility rates all over Europe in the last decades, has caused serious concern both among demographers and politicians, and raised several questions about the determinants of fertility dynamics. One of the main explanations for this decline in total fertility is the increasing age at childbearing (e.g. Bongaarts and Feeney 1998; Bongaarts 1999; Lesthaeghe and Willems 1999; Kohler et al. 2002). In order to understand the development of period fertility and the postponement of childbearing it is crucial to study the determinants of the decision to become a parent and have a first child (i.e. age at first birth). Research on the determinants of becoming a parent suggests several factors that make late childbearing a rational response to socio-economic change. These factors include increased incentives to invest in higher education and labour market experience, chances of establishing a career as well as a lasting relationship with a partner, and the role of economic uncertainty that may be particularly acute in early adulthood (e.g. Kohler et al. 2002). The major part of research has focused on women, their socio-economic standing and the way this is likely to affect their fertility decisions (see, e.g., Goldscheider and Kaufman 1996; Bledsoe et al. 2000 for a discussion and review). Men are usually seen as exogenous factors (Macunovich 1996) or part of a couple (Thomson 1983; Morgan 1985; Sorenson 1989; Toulemon and Lapierre-Adamcyk 2000). In a few cases, the focus has been on men only (Tölke and Diewald 2003; Powell and Beck 2004).

With the increasing significance of gender in the study of fertility and socio-economic change both men and women should be included in the analysis as actors in their own right (cf. Michael and Tuma 1985; Joshi 1998). This is in line with the process of individualisation that is an important aspect of the so called 'second demographic transition' (Van de Kaa 1987, p.5). A couple is not an unproblematic single entity, but consists of two individuals with personal preferences and opinions, planning their life from the point of view of their own personal utility and well-being.

In this paper, we study the determinants of young men's and women's entry into parenthood in post-war Sweden.[1] We look at the experience of three birth cohorts (1949, 1959 and 1964) included in the 1992/93 *Swedish Family Survey,* focusing especially on the impact of labour market attachment, education, and macro-economic change on the entry into parenthood. In the analysis longitudinal individual level data on family background, labour force participation, and education is combined with aggregate macro-economic indicators.

Background and theoretical considerations

There is an extensive and growing literature that addresses the causes of delayed childbearing. The major part of this literature deals with women only and why they are delaying childbearing longer now than in the past. Demographers have stressed the importance of other demographic behaviours that have accompanied the postponement of fertility, and especially first births, such as later age at marriage, greater frequency of cohabitation, and easy and socially accepted access to reliable contraceptive techniques and abortion, which allows women to time their pregnancies more precisely. The relationship between union formation and fertility is strong and complex. Since union formation, especially marriage, and childbearing are related processes there is a vivid debate on what risk groups to focus on (Kravdal 1994), whether union formation is determining first childbirth or the other way around (Michael and Tuma 1985; Blossfeld and Huinink 1991), or, due to this simultaneity, whether marital status should be included at all in the model (Rindfuss et al. 1988). In a study on modern Sweden, both marriages and consensual unions should be taken into account as the latter has become increasingly common since the late 1960s and has become an accepted frame for childbearing and childrearing.

Economists have stressed the importance of women's economic standing and the change in women's economic roles relative to that of men (for a review, see Gustafsson 2001). For example, both Walker (1995) and Ward and Butz (1980) stress the increase in female labour force participation as they argue that modern deferment of childbirth to a high degree is due to higher labour force participation and wages for women. As women have gained a stronger foothold in the labour market and with the establishment of the dual breadwinner family, childbearing has been postponed due to increasing opportunity costs. On the other hand, Easterlin (1980, but see also Macunovich 1998, p.100) and Oppenheimer (1994, 2003) have both stressed the fact that poor employment opportunities and increasing marginalisation of young men have influenced the timing of births, both directly through increased difficulties in achieving stable labour market attachment and income, and indirectly through women's relatively stronger economic position and earnings potential. There is also economic research that stresses the role of aggregate economic conditions, business cyclical variation and the change in economic incentives for people of childbearing ages, for example through social policy and the design of the welfare state (e.g. Stanfors 2003).

Among sociological explanations we find those who lend support to Van de Kaa's (1987) hypothesis of the 'second demographic transition' and its implication for delayed childbearing and increasing individualization among young women and men. This

line of thought stresses the importance of ideational change and the fact that normative changes have occurred at a societal level together with modernisation, which have altered women's roles and expanded both the arena for women's actions beyond the home and increased women's choices when it comes to life course events (Lesthaeghe 1983; Leete 1999). It is noteworthy that there have, in most societies, also been changes that have altered men's roles (Folbre 1983; Hood 1993; Coltrane 1996) and the perceptions of different aspects of masculinity, such as fatherhood (Connell 1995; Bergman and Hobson 2002). Today, motherhood is more of a choice than an obligation and it is socially accepted to mother/father a child in alternative ways and within other family structures than the heterosexual marriage (cf. Marsiglio 1995, 1998).

Much of the literature on delayed childbearing and childlessness has stressed the increased involvement of women in education and the increased opportunities for women to pursue a career as the most important explanations (see, e.g., Blossfeld 1995). Numerous studies have shown that educational enrolment has a negative effect on fertility and so has educational attainment, and thus women with higher education postpone first births longer and have fewer children than less educated women (e.g. Rindfuss and St. John 1983; Happel et al. 1984; Marini 1984; Rindfuss et al. 1988; Blossfeld and Huinink 1991; Blackburn et al. 1993; Kravdal 1994; Andersson 2000; Gustafsson and Wetzels 2000). Studies on the contemporary situation in the United States as well as in a number of European countries show that women with higher education are more likely to remain childless than women with lower educational attainment (e.g. Bloom and Trussell 1984; Spain and Bianchi 1996).

In economic theories of fertility low education is associated with higher fertility at younger ages because less educated women specialize early in home production and the rearing of a family (Willis 1973; Becker 1991; see also Happel et al. 1984). Higher education is associated with low fertility at increasingly older ages, as these women are more career-oriented, have better job prospects and thus specialize in market work. It may also be an issue of self-selection, i.e. that women who invest in higher education have little family orientation and do not want children, or that attitudes toward childbearing and family formation change while in education (cf. Simon 1983, p.23).

Educational attainment or enrolment has usually been seen as incompatible with reproduction for women, which is indicated by the negative effects of early childbearing on educational attainment found in some studies (e.g. Trussel 1976; Moore and Waite 1977; Card and Wise 1978; Hofferth and Moore 1979; Marini 1984). Other studies show no, or only a very limited, effect of early childbearing on educational attainment (e.g. Rindfuss and St. John

1983; Upchurch and McCarthy 1990), which has spurred some debate over how to interpret results in different studies, and which theoretical models and statistical methods to use (see Hofferth 1984; Rindfuss et al. 1984; Anderson 1993; Upchurch et al. 1993). Educational attainment seems to be less of a problem for men as there actually seems to be a positive association between education and fertility, probably working through higher income and relative attractiveness in the marriage market for more educated men (Gray 1997). Whereas women with higher education have somewhat lower fertility and are more likely to stay childless than are other women (see, e.g., Blackburn et al. 1993), men with higher education have higher fertility and are less likely to stay childless than are less educated men. Nevertheless, educational enrolment may pose the same problem for young men as for young women and thus education, as a current activity, may be seen as incompatible with reproduction, irrespective of gender, and decrease the probability of becoming a parent. Education is a time-intensive investment and it affects the ability to live an 'adult' independent life and have a family of one's own. Moreover, in Sweden, although not so dependent on their parents, students are highly dependent on government student loans and thus indebted. Higher education is also challenging and demanding. Thus, finishing higher education and starting a career may be a prerequisite for childbearing (cf. Blossfeld and Huinink 1991; Kravdal 1994; Statistics Sweden 1998). Only if it is much easier for men than for women to combine educational enrolment with being a parent, the effect of enrolment on men's fertility will be small (cf. London 1992).

Well-educated women also seem to respond strongly and postpone fertility the most when economic conditions worsen (Rindfuss et al. 1988). The delay in first births in Sweden in the 1990s, for instance, was to a high degree, caused by a combination of unfavourable economic conditions with increased unemployment and economic insecurity, and an increase in the share of women in education (Statistics Sweden 1998; Andersson 2000).

Labour force participation, especially for women, is another factor that often has been associated with low fertility and delayed childbearing (see, e.g., Bernhardt 1993). It is hypothesized that the general trend toward later childbearing is most pronounced among the better-educated and most career-oriented women, because they see childbearing as a costly interruption in their careers. This hypothesis is based on theoretically anticipated relationships between education and fertility as well as the interrelationship of career orientation and labour force participation and fertility (Becker 1960, 1985, 1991; Goldin 1995). There is a direct cost of a child, but the major cost of having children is the opportunity cost of the mother's time.

As long as fathers are not expected to give up too much of their working time for child care, male labour force participation will not conflict to the same extent as female labour force participation, and the higher earnings of working men can even be expected to have a positive effect on fertility (e.g. Butz and Ward 1979). With an increase in women's investment in education and labour force participation, added to increasing female relative wages, the cost of children increases and thus economically rational individuals are induced to have fewer children.

The link between female labour force participation and fertility, however, is to a large extent dependent on the degree of compatibility of work and family for women, which differs a great deal between countries (e.g. Bernhardt 1993; Rindfuss and Brewster 1996; Brewster and Rindfuss 2000). Since the early 1970s Swedish fathers have increasingly come to undertake a larger share of the caring for children, although mothers still take the largest responsibility for home and children. Swedish women have, more than men, changed their productive as well as reproductive behaviour and, with increasing involvement in the labour market, postponed childbearing and reduced the intervals between births. They have also responded to changing economic conditions and public policy initiatives (Hoem 1990; Sundström and Stafford 1992; Walker 1995; Hoem and Hoem 1996). In the late 1960s, the Swedish government adopted a policy with the aim of giving women and men equal standings in economic and social life by emphasising equality in the labour market as well as in the household. Since then, efforts have been made to create equality between men and women through direct political measures, institutional change and universal public sector programs. Examples of direct political measures are the legislation to make marriage an equal partnership and the abolition of joint income tax for spouses. The expansion of highly subsidized childcare of good quality was an important institutional change. With universal public sector programs, all gender differences in public aid and benefits were removed. The parental leave scheme of 1974 had benefits allotted in proportion to foregone earnings. Thus, in line with the rest of the social insurance system, there were strong incentives for both men and women to work before the birth of the first child. The introduction of an extensive institutional framework and a comprehensive family policy made it increasingly possible for women to combine work and family (Sundström and Stafford 1992; Hoem 1993). This, in turn, has changed the impact of female labour force participation and female relative wages on childbearing from being a hindrance to almost becoming a prerequisite (Stanfors 2003, see also Andersson 2000). Similar developments have also taken place in other developed countries, although some disagreement remains concerning how large this change has been

and it did occur (Brewster and Rindfuss 2000; Ahn and Mira 2002; Rindfuss et al. 2003; Billari and Kohler 2004; Engelhardt et al. 2004; Kögel 2004).

Macro-level studies of fertility variations suggest the importance of changing macro-economic conditions both when it comes to the determinants of overall fertility levels (e.g. Butz and Ward, 1979; Devaney 1983) and the timing of first births (Rindfuss et al. 1988; Santow and Bracher 2001). Aggregate determinants operating at the macro-level may well promote the deferment of first births as the fertility behaviour of individuals may not only be conditioned on his, or her, own life situation and background, but also on the perceived economic well-being in society as a whole. For example, unemployment may promote delayed childbearing for young individuals in general, even though only a small proportion actually is unemployed, by serving as an indicator of harsh economic conditions and creating a sense of economic insecurity (see, e.g., Murphy 1992).

A positive association between income and fertility has also been observed over the business cycle. As good times imply increasing wages and a sense of economic and social security, fertility increases. Good times also stimulate welfare state expansion and new policy concerns, and thus affect fertility and family aspirations, mainly through reduced costs of children thanks to growth in transfer payments (cf. Becker and Barro 1988). Stagnation and depression, on the other hand, imply a sense of insecurity with stagnant wages and a potential threat of unemployment and reduced generosity and smaller benefits. Due to insecurity and increased costs of children, fertility decreases due to a deferment of births, but family aspirations may stay the same (cf. Easterlin 1975; Rindfuss et al. 1988).

Data and method

In the empirical analysis we use the *Swedish Family Survey*, a retrospective survey made by Statistics Sweden in 1992/93, including a large number of questions related to demographic and social aspects of household and family behaviour. 6,406 persons were first sampled and 4,983 persons participated and were successfully interviewed (see Statistics Sweden 1996). We use the three birth cohorts in the sample which include both men and women (1949, 1959 and 1964). This sample consists of a total of 3,664 individuals, 1,663 males and 2,001 females.

Figures 1 and 2 show the Kaplan-Meier estimates (see, e.g., Therneau and Grambsch 2000, pp. 13–17) of the proportion childless by age and cohort for males and females separately, and in Table 1 the proportions childless at different ages are displayed. The first thing to note is the delayed age at first birth in later cohorts. This pattern of delayed

childbearing is much the same for males and females. The difference between the 1959 and 1964 cohorts is not so great, although it seems as if the 1959 cohort started childbearing somewhat earlier than the 1964 cohort. The median ages at first births in the 1949 cohort was 27.0 years for males and 24.1 for females, while the corresponding figures for the 1959 cohort was 29.8 for males and 26.8 for females. Thus, median ages at first birth increased by 2.8 years for males and 2.7 years for females between these two cohorts.

- Figure 1 here
- Figure 2 here
- Table 1 here

We study the transition to parenthood by focusing on the time to conception leading to a first birth, which is defined as the time of birth minus nine months. The reason for using conception rather than birth is that this is closer in time to the actual decision to have a child, and thus the values of the covariates will better reflect the conditions governing the decision. For example, the labour force participation of particularly women is likely to decline in many cases before the actual birth of the child, which will affect the estimated effects of this variable on the transition to parenthood.

The *Swedish Family Survey* contains individual-specific information on the family of origin and indicators of social and economic background of the respondents. The survey also provides information on civil status and number of children of the interviewees and dates of childbirths and transitions from one civil status to another. On a month-to-month basis, the education and employment history of the respondents are documented from the year they turned 17. We therefore limit the multivariate analysis to individuals childless at 17 and follow them until age 28, the age of the respondents in the youngest cohort at the time of the interview. Thus, we use the same age window for all three cohorts. Due to delayed childbearing in later cohorts the proportions childless at 28 differs substantially between the cohorts, as shown in table 1. In the oldest cohort 43 per cent of the men and 27 per cent of the women were still childless at 28, while the corresponding figures in the youngest cohort are 61 per cent and 40 per cent for males and females, respectively.

We estimate the impact of three different types of covariates on the risk of conception leading to a first birth: time-invariant (e.g. cohort), time varying (e.g. civil status) and aggregate, or external, covariates (aggregate economic performance). We use the Cox proportional hazards model to estimate the effects of these covariates. The Cox model, in

contrast to other proportional hazards models, does not require any specification of the baseline hazard, which implies that there is no need to make any assumptions concerning the shape of this underlying hazard function (see, e.g., Therneau and Grambsch 2000). The model can be written as:

$$ln\ h_i(a) = ln\ h_0(a) + \beta \mathbf{x}_i + \gamma z(t)$$

where $h_i(a)$ is the individual hazard of conception that leads to childbirth for the first time for the i^{th} individual as a function of age, $h_0(a)$ is the baseline hazard, β is the vector of parameters for the individual covariates $\mathbf{x}_i$, and γ is the parameter for the external covariate z(t), where t is calendar time. The estimations were made using the 'eha' package in R, specifically designed to estimate this kind of combined time-series and individual survival model (R Development Core Team 2004). Since we deal with first births only, and since the individuals were randomly selected, there is no problem of multiple events for the same individual or unobserved relationships between the individuals in the sample (for example family relationships), and therefore there is no need to use a frailty model (see, e.g., Therneau and Grambsch 2000, ch. 9).

Education (time varying) indicates the highest educational degree attained and is divided into four different categories: basic (secondary school or less, and one year post-secondary vocational training), high school, university, and other (post-high school vocational training and foreign education that cannot be included in the other categories).

Civil status (time varying) is divided into never married/cohabiting, currently married, currently cohabiting, and previously married or cohabiting. Thus, it enables us not only to study the impact of being legally married on the propensity to conceive a first birth, which has been done in numerous other studies, but also to see if there are differences between married and cohabiting individuals, which is of considerable importance given the great importance of non-marital cohabitation, especially before the first birth.

Cohort (1949, 1959 and 1964) is a crucial variable in looking at the potential changes over time in the timing of first births and the impact of other determinants on the risk of conception. *Current activity* is time varying and shows what kind of professional activity the individual is engaged in. It is divided into non-university education, university education, full-time employment in the private sector, full-time employment in the public sector, part-time employment, other activity (military service, house work, unemployed, etc) and no reported activity during the time of consideration. *Previous work experience* is also time

varying and indicates whether the individual have worked previously (full-time or part-time), and refers to the latest work experience.

Business cycles are measured by the transformed (natural logarithm) deviations from linear trend in vacancies for Sweden as a whole between 1965 and 1993 as displayed in Figure 3 (see Stanfors 2003, ch. 3 for a detailed discussion on different business cycle indicators). The reason for making this kind of transformation is that the number of vacancies in Sweden declined steadily between 1965 and 1983, and thereafter increased for much of the 1980s, and then declined rapidly in the early 1990s. As is clear from figure 3, the transformation is not fully successful. Although the long-term trend is eliminated, the variance in the series is not constant over time, but increases substantially in the final third of the period, due to the very dramatic business cycles during the boom of the 1980s followed by the severe crisis of the early 1990s. It is entered as an external covariate, as described above, and is thus identical to all individuals in the sample at specific points in calendar time.

- Figure 3 here

We also control for a number of factors describing the context of upbringing for the individuals in the sample. They are all time-invariant and indicate the conditions in childhood (before age 16) as reported in the interviews. *Place of upbringing* is divided into four categories: rural (population less than 500), small town (population 500-10 000), medium town (population 10 000-150 000), and big city (population 150 000 and more). *Family context* indicates whether or not the child had experienced a divorce or the loss of a parent before age 16. It also indicates if the divorce happened before age 13, or between ages 13 and 16. *Father's occupation* is divided into blue-collar worker, white-collar worker, self-employed with less than 10 employees, self-employed with 10 or more employees, farmer or other occupation. *Mother's occupation* is divided into work at home (housewife), blue-collar worker, white-collar worker, and other occupation. Finally the *number of siblings* and *family religiousness* is also controlled for in the model.

Empirical findings

Table 2 displays the Cox regression estimates (relative risks) of the likelihood of conception leading to a first birth for young men and women. The effects of cohort are statistically significant for both men and women, and clearly show the trend toward delayed childbearing already mentioned. Men generally seem to have postponed their first birth more than women.

Men also show more of a difference between the two youngest cohorts, while for women most of the difference is between the cohort of 1949 on the one hand, and the two younger cohorts on the other.

- Table 2 here

The fact that both men and women have postponed their entry into parenthood leads us to look at the effects of the other variables and see if they differ between young men and women. Civil status renders statistically significant effects for both men and women and we see that being, or even having been, in a relationship has a strong direct effect on conception and increases the likelihood of experiencing a conception at a younger age than never having been married or cohabiting. Generally, the coefficients of civil status are stronger for males than for females. The results show an extremely large positive effect of both marriage and cohabitation on the risk of conception. Married men are about 12 times more likely to experience a conception leading to a first birth than are never married men, and cohabiting men are 6 times more likely than never married men. For women the corresponding effects are similar (7.3 and 4.5, respectively) and married as well as cohabiting women seem to have their first child earlier than women who never have been married or cohabiting. It is interesting to note that even having been married or cohabiting previously makes people experience conception and first birth at a younger age, which was also observed by Santow and Bracher (2001).

Turning to the effect of place of upbringing, men raised in small towns seem to father children earlier than men raised in rural areas whereas women growing up in big cities postpone childbearing compared to other women. This is in line with the expectation that rural women are more traditional and more family oriented and urban women are more independent and take longer time to establish a career as well as a family. Part of the difference between rural and big city women probably emanates from different education and career opportunities together with differences when it comes to the transition to adulthood. In a previous study, using the same data, we showed that rural women leave the parental home at earlier ages than urban women, probably due to difficulties finding a job or going to school at a close enough distance for them to remain at home (Dribe and Stanfors 2005). Thus, the fact that rural women make the transition to adulthood earlier than urban women may partially explain why they also become mothers earlier than urban women.

The family situation during the formative years of childhood and adolescence, before age 16, seems to affect both men and women, but not in the same way. Experiencing a divorce increases the likelihood of having a first birth, for both men and women, compared to those who grow up with both their parents, which has also been found in other countries (see Kiernan 1992). However, it seems to matter when the divorce happens since women are affected if the divorce happens when a teenager (between 13 and 16) and men are affected if it happens at a younger age. Men who experience the death of a parent also become fathers at an earlier age. It may be that the experience of a divorce as a teenager contributes to an earlier transition to adulthood, an early entry into the labour market and thus earlier family formation. A broken home might increase the opportunities for earlier independence and transitions to adulthood. The experience of divorce or parental death may also have emotional and psychological effects that make young adults more inclined to start a family earlier. Either they try to compensate and get the family they never had or lost or, in a more dystopian way, they do not care too much about failing and bailing out on family members since they have already had that experience themselves. The fact that parental death has a similar effect as divorce may be seen as support to the former rather than the latter interpretation, at least for men.

The number of siblings has a positive effect on the propensity to start a family of one's own. Women and men with more siblings have their first child earlier than those who grew up as an only child (cf. Michael and Tuma 1985). The effects are generally stronger for women than for men. It is understandable that a crowded home can lead to earlier nest-leaving and independent household formation but having one or more siblings can also be of importance in that it becomes natural and desirable to have a larger family and one way of achieving this is to start childbearing earlier.

Women raised in actively religious homes are more likely to postpone their first birth than non-religious women, while there is no similar effect for men. Women with a religious background can be expected to have a more traditional outlook on life and be more prone to adopt a traditional female role with greater home attachment and less work orientation. But as they are more likely to equal family formation with marriage rather than cohabitation, they may have a slower start and postpone their first birth indirectly through the mechanism of union formation.

Much previous research has stressed the role of parental income or parental social status as a determinant of an individual's family orientation, which implies that father's and mother's occupation, by serving as proxies, may be important for the timing of different

life course events such as becoming a parent. In the case before us, the effects seem to be less influential and less consistent. For men, there is no effect at all of father's occupation, while women whose fathers were farmers start childbearing later than other women, net of other factors. There is no effect of mother's employment for women, whereas men whose mothers were blue-collar workers start childbearing somewhat earlier than those with a full-time home-making mother. Even though the coefficient is not statistically significant, having a mother employed as a white-collar worker delays the transition to parenthood. Thus, it seems as if not only labour force participation *per se* matter but also the kind of occupation. One explanation could be that white-collar mothers provide their sons with different attitudes and values, which in turn affect their childbearing behaviour.

When we look at the effects of education and employment, we see that the expectation of a negative effect of educational attainment is confirmed but only for women. Women with more education are postponing family formation and are older than women with only basic education when they conceive their first child. For men, educational attainment has no effect on the timing of first birth. On the other hand, if we look at the effects of educational enrolment, we see strong effects for both men and women. Women in the labour force show more than two times higher risks of conceiving a first birth compared to women in basic education, and the difference is even larger if compared with women enrolled in a university program. The effect is somewhat weaker for men although the same pattern of postponement is evident for men in higher education. The sector of employment (private or public) does not affect the likelihood of becoming a parent, neither for men nor for women. For women part-time employment increases the risk of conceiving a first birth even further, while no such effect is visible for men. It should, however, be noted that part-time work is a rather marginal phenomenon prior to first birth for both sexes. Most childless part-timers work part-time because they only have a temporary job, looking for other more permanent employment, or they combine work with other activities such as education.

Thus, for both men and women, being a university student reduces the risk of conceiving a first birth whereas being employed increases the risk. For men, previous work experience also increases the risk of conceiving a first birth and men with experience of full-time work have their first child earlier than those with no previous work experience. The positive effect of current (and previous) employment probably operates through the higher incomes associated with being employed and through the important association with the welfare system since it, as was previously discussed, has become increasingly important to have some kind of labour market experience before making use of welfare benefits such as

parental leave. This is to a large extent due to the design of social and parental leave benefits that are income-based, currently established at 80 per cent of the gross pay for most people. The income-based benefits are much more generous than the flat rate benefit that is given to people with insufficient work experience.

Education, as well as employment and other activities, strongly affect an individual's socio-economic standing but so does general economic conditions as shown by the positive effect of vacancies for both males and females – an increase in vacancies makes, as expected, young men and women conceive their first birth at younger ages. In addition to the pure income effect of an economic boom, general economic conditions most likely affect an individual's outlook on life and the perceived opportunities to start a family.

In order to delve deeper into the mechanisms behind the delayed fertility in recent decades we have estimated a series of interaction models. Table 3 reports the effects of current activity, previous work experience and educational attainment in the different cohorts. Enrolment in higher education imposes the strongest negative effect for women born in 1949, while, for men, the strongest effect is found in later cohorts. For women born in 1959, there is no difference between enrolment in basic education and university education on the likelihood of conception leading to a first birth. Thus, it seems as if being a university student gets less compatible with family formation and first births over time for men, but more compatible for women. This probably has to do with the fact that breadwinner qualities still play a decisive role in family formation and that income security and stability are important for all individuals but relatively more important for men than for women. Even after the establishment of the two-earner household in the early 1970s, men more than women take on a role of family provider.

- Table 3 here

The strong effect of labour force participation identified previously gets somewhat weaker over time for men, especially between cohorts 1949 and 1959, while it gets stronger over time for women. Regarding the interaction effects between cohort and current activity, there is no difference between private and public employment for men. For women, the effect is somewhat weaker for public employment in the cohort of 1949, but then it gets stronger for later cohorts. Over time, public sector employment for women becomes increasingly connected to higher chances of childbearing both relative to being in education (which is true for all kinds of non-educational activity) and in relation to other forms of

employment (i. e. full-time private employment and part-time work). This is line with the presupposed higher compatibility between public sector work and family.

Among women previous work experience is connected to later first births in the 1949 cohort, but to earlier first births in the later cohorts. The effects are similar for part-time and full-time work. For men, there are no similar changes over time in the effects of previous full-time work experience - it is related to earlier first births in all cohorts.

For men, there is not much of an effect of educational attainment in any of the cohorts. There is a weak tendency towards lower risks of conception leading to first births for those with higher education, but the effects are not statistically significant. For women, the effect of a university degree disappears between the 1949 and 1959 cohorts, but then returns in the 1964 cohort. The negative effect of having a high school degree disappears between the cohorts 1959 and 1964, which reflects changes in the educational system and educational expansion rendering an increasingly large share of the population with a high school degree as their lowest educational attainment.

The interaction between cohort and the business cycle indicator (see Table 4) shows that the strongest effect is found among women and men born in 1949, the effect being somewhat stronger for women than for men. Business cyclical variations render weaker effects for the later cohorts, but it should be noted that vacancies fluctuate much more violently in the later part of the period (see figure 3), which implies that the effect on the risk of conception of business cycle peaks and troughs in the 1980s and early 1990s need not be smaller than in the 1960s.

- Table 4 here

Interacting current activity with vacancies, we find the strongest effect for males enrolled in higher education, while for women the strongest effect is found among those engaged in non-university education. Thus, those who are not in the labour force at the time of conception seem to be affected the most by business cycles, which seems to indicate that business cycles are important in their own right and not mainly as a proxy for individual unemployment. Business cycles reflect the degree of confidence in the future course of the economy, and peaks testify that times are good and people become parents and start families even though they do not have work. In less prosperous times, however, they tend to defer childbearing, especially if they are outside the labour market, but it is quite clear from Table 4 that bad times also affects those who have a job. The sector of employment does not seem to

matter for the importance of business cycle fluctuations on the timing of first births, and, generally speaking, the same is true for educational attainment and previous work experience.

Concluding discussion

Our results clearly show a general tendency over time to delay the transition to parenthood among both men and women. It has become increasingly uncommon to have a first birth before age 28 and, correspondingly, there is an increasingly larger share of childless individuals at that age. Men have generally postponed their first birth more than women and also continued the postponement in all three cohorts under study while for women most of the difference is between the cohort of 1949, on the one hand, and the two younger cohorts on the other. When it comes to the determinants of conception leading to first birth, there are clear gender differences both when it comes to individual characteristics and aggregate-level factors.

As expected, education and labour market attachment are key factors determining the transition to parenthood for both men and women, although there are also differences in the effects according to gender. Educational attainment delays the entry into parenthood only for women. This indicates a conflict between higher education and childbearing, which is often a result of asymmetric changes in gender roles. Educational enrolment, on the other hand, affects women and men in a similar, delaying, way, and becomes increasingly incompatible with childbearing for men over time. Enrolment in higher education imposes the strongest negative effect for women born in 1949 whereas the strongest effect for men is found for later cohorts. This is in accordance with the observed temporal pattern of delayed first births and reflects the different experiences and socio-economic standings of different cohorts during their late teens and twenties. The cohort of 1949 experienced favourable economic conditions during most of the time under which they are observed in this study. The two younger cohorts, on the other hand, mostly experienced recession or slow economic growth. Both young men and women responded to their experience of harsh economic times by enrolling in education as one way of improving their chances in the labour market and delaying family formation. For those who were employed, the situation was more secure although not fully secure. This is supported by the fact that, for the cohorts studied, labour force participation is highly conducive to childbearing for both men and women, irrespective of sector. There is also a strong positive association between aggregate economic conditions and the transition to parenthood for both young men and women in post-war Sweden.

It is obvious that breadwinner qualities play a decisive role in the decision to become a parent. In Sweden, income security and stability are important prerequisites to start childbearing for all individuals. Nevertheless, men still seem to play the role of primary provider. Several of the differentials we observe between men and women are rooted in the gender-specific division of labour. Even though women have increased their participation in education and wage labour, men have not to the same extent increased their participation in traditional female activities such as caring and childrearing. During the period under study, the Swedish government adopted a policy with the aim of giving women and men an equal standing in economic and social life by emphasizing equality in the labour market as well as in the household. Economic incentives changed and it became more important and rewarding to work and establish a career before starting a family, irrespective of gender. However, both economic incentives and social norms encouraged women to change their behaviour and take on male pursuits much more than they supported men to engage in traditionally female activities. It is therefore interesting to note that women, to a higher degree than men, have changed their childbearing behaviour in response to changes in the economy and the labour market.

Current employment leads to faster transition to parenthood and the effect of employment is stronger for women than for men. Surprisingly, the effect of employment is generated regardless of sector. Previous work experience is also important and generates similar effects for men and women. As expected, full-time employment is the kind of work experience that increases the propensity to have a first birth the most.

The effect of aggregate economic conditions is similar for men and women. Women are even affected somewhat more than men. Good economic times and a positive outlook on future opportunities lead to earlier first births. This is probably a consequence of the modern two-earner family that was established in the early 1970s, and encompasses all the cohorts under study here.

Among the family-related factors that determine the transition to parenthood, own civil status, i.e. being in a stable relationship, proves much more important than factors related to the family of upbringing. Being married or cohabiting is a common prerequisite for stability and a responsible parenthood. Overall, as expected, the transition to parenthood is faster among those who are in a relationship than among those who are not, and it seems to be somewhat more important for men than for women.

Social status and family background render effects that show both similarities and differences according to gender. In general, social background indicators have weak

effects but nevertheless affect the transition to adulthood/parenthood. The loss of a parent or the experience of a divorce makes a man's transition to parenthood faster. For women, the experience of a divorce as a teenager makes the transition to parenthood happen faster. It seems as if young men and women try to compensate for difficulties experienced when young, but nevertheless still have faith in family and intimate relationships as they try to complete their own family through an earlier start. The positive effect of siblings on the propensity to start one's own family also shows persistent family orientation among young men and women as they seem to adopt the family orientation of their parents.

Despite the increasingly strong economic role of women and the establishment of the two-earner family men still have more of a family provider role to fulfil. For example, education as a current activity becomes increasingly difficult to combine with a family for men over time. Moreover, having previous work experience and being full-time employed both increases the chance of becoming a parent. For both men and women, labour force participation as the onset of a career and a stable income, and as a way to become entitled to social security benefits, increases in importance over time.

The results presented in this paper clearly show the importance of including both men and women in the analysis of fertility decision-making. Over time, changing economic and social circumstances have fundamentally changed the context of young people's entry into parenthood, and these changes have, in several respects, differently affected men and women. At the same time, the trend toward gender equality in labour force participation, wages, and, to a lesser extent, in childrearing and house work, has increased the uniformity in the pattern, and the important determinants, of entry into parenthood for men and women.

Endnote

[1] Britta Hoem (Statistics Sweden 1995) undertook a study of the likelihood of having a first birth before age 25, making use of the *Swedish Family Survey*. Although this study includes both men and women, it is very different from the present study when it comes to design, sample, statistical method and theoretical foundation.

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Table 1. Proportion childless at different ages (per cent).

	Males			Females		
Age	1949	1959	1964	1949	1959	1964
20	95	98	99	81	89	93
22	87	92	95	67	79	84
24	73	84	86	50	66	70
26	58	72	75	37	55	55
28	43	62	61	27	42	40

Note: Kaplan-Meier estimates of proportion childless.
Source: The Swedish Family Survey.

Table 2. Cox regression estimates (relative risks, RR) of conception leading to a first birth.

	Males			Females		
	Mean	RR	Wald p	Mean	RR	Wald p
Education						
Basic education	0.479	1.000	(ref. cat.)	0.466	1.000	(ref.cat.)
High school	0.394	0.935	0.413	0.361	0.824	0.007
University	0.049	0.946	0.702	0.065	0.744	0.012
Other	0.078	0.985	0.897	0.108	1.025	0.781
Civil status						
Never married	0.782	1.000	(ref.cat.)	0.685	1.000	(ref.cat.)
Currently married	0.030	12.282	0.000	0.061	7.336	0.000
Currently cohabiting	0.115	6.015	0.000	0.168	4.487	0.000
Previously marr/coh.	0.074	1.899	0.000	0.086	1.405	0.007
Cohort						
1949	0.357	1.000	(ref.cat.)	0.289	1.000	(ref.cat.)
1959	0.242	0.675	0.000	0.358	0.788	0.001
1964	0.401	0.540	0.000	0.353	0.732	0.000
Place of upbringing						
Rural	0.225	1.000	(ref.cat.)	0.187	1.000	(ref.cat.)
Small town	0.244	1.184	0.111	0.263	0.953	0.568
Medium town	0.346	0.992	0.937	0.365	0.904	0.225
Big city	0.185	0.965	0.774	0.185	0.785	0.014
Family context						
Both parents	0.850	1.000	(ref.cat.)	0.828	1.000	(ref.cat.)
Divorce <13	0.081	1.308	0.052	0.092	1.086	0.462
Divorce >13	0.019	1.193	0.491	0.021	1.675	0.003
One parent dead	0.024	1.450	0.094	0.029	0.960	0.816
Other	0.027	1.287	0.261	0.030	0.784	0.188
Father's occupation						
Blue-collar	0.396	1.000	(ref.cat.)	0.380	1.000	(ref.cat.)
White-collar	0.308	0.974	0.775	0.301	0.973	0.722
Self-empl (0-10)	0.133	0.983	0.873	0.142	0.889	0.196
Self-empl (10+)	0.016	0.986	0.957	0.023	0.964	0.873
Farmer	0.081	0.931	0.633	0.067	0.726	0.014
Other	0.065	0.848	0.339	0.086	1.027	0.828
Mother's occupation						
Home	0.447	1.000	(ref.cat.)	0.401	1.000	(ref.cat.)
Blue-collar	0.272	1.192	0.038	0.290	1.073	0.320
White-collar	0.190	0.851	0.160	0.216	0.907	0.259
Other	0.091	0.877	0.329	0.093	1.112	0.309
Number of siblings						
No siblings	0.081	1.000	(ref.cat.)	0.090	1.000	(ref.cat.)
1 sibling	0.331	1.029	0.845	0.321	1.492	0.001
2 siblings	0.278	1.211	0.192	0.281	1.462	0.002
3 siblings	0.143	1.388	0.037	0.144	1.646	0.000
4+ siblings	0.167	1.446	0.016	0.163	1.669	0.000

Family religiousness						
Non-religious	0.826	1.000	(ref.cat.)	0.836	1.000	(ref.cat.)
Religious	0.174	1.021	0.828	0.164	0.838	0.032
Current activity						
Non-univ. education	0.156	1.000	(ref.cat.)	0.190	1.000	(ref.cat.)
University education	0.056	0.521	0.027	0.063	0.628	0.041
Full-time private sect.	0.387	1.597	0.009	0.253	2.066	0.000
Full-time public sect.	0.083	1.596	0.022	0.225	2.082	0.000
Part-time employed	0.015	1.094	0.819	0.060	2.444	0.000
Other activity	0.149	1.386	0.113	0.096	2.106	0.000
No registered activity	0.154	1.906	0.001	0.113	0.79	0.164
Previous work experience						
No previous work	0.413	1.000	(ref.cat.)	0.390	1.000	(ref.cat.)
Part-time	0.035	1.189	0.440	0.092	1.120	0.344
Full-time	0.552	1.293	0.026	0.518	1.114	0.207
Vacancies	0.005	1.921	0.001	-0.006	2.617	0.000
Events	867			1306		
Total time at risk	15270			15066		
Max. log. likelihood	-5644			-8630		
LR test statistic	929			1224		
Degrees of freedom	37			37		
Overall p-value	0.000			0.000		

Source: See table 1.

Table 3. Net effects (relative risks, RR) of current activity, previous work experience and education in different cohorts.

a. Males

	1949		1959		1964	
	RR	Wald p	RR	Wald p	RR	Wald p
Current activity						
Non-university education	1.000	(ref.cat.)	1.000	(ref.cat.)	1.000	(ref.cat.)
University education	0.752	0.489	0.367	0.304	0.387	0.395
Full-time private sector	1.988	0.015	1.062	0.118	1.829	0.853
Full-time public sector	1.973	0.030	1.129	0.223	1.758	0.819
Part-time employed	1.249	0.735	1.381	0.907	0.689	0.558
Other activity	2.054	0.022	0.803	0.048	1.341	0.399
No registered activity	2.263	0.009	1.202	0.149	2.261	0.998
Previous work experience						
No previous work	1.000	(ref.cat.)	1.000	(ref.cat.)	1.000	(ref.cat.)
Part-time	0.736	0.488	1.980	0.077	1.108	0.456
Full-time	1.285	0.100	1.348	0.848	1.271	0.961
Education						
Basic education	1.000	(ref.cat.)	1.000	(ref.cat.)	1.000	(ref.cat.)
High school	0.974	0.823	0.717	0.133	1.063	0.643
University	0.990	0.957	0.970	0.954	0.885	0.730
Other	0.971	0.866	1.282	0.323	0.828	0.574

b. Females

	1949		1959		1964	
	RR	Wald p	RR	Wald p	RR	Wald p
Current activity						
Non-university education	1.000	(ref.cat.)	1.000	(ref.cat.)	1.000	(ref.cat.)
University education	0.359	0.024	0.901	0.102	0.635	0.347
Full-time private sector	1.902	0.001	1.853	0.929	2.326	0.496
Full-time public sector	1.555	0.034	2.202	0.230	2.665	0.072
Part-time employed	1.810	0.025	2.925	0.170	2.577	0.332
Other activity	1.790	0.017	2.150	0.600	2.402	0.402
No registered activity	0.608	0.152	1.151	0.153	0.771	0.582
Previous work experience						
No previous work	1.000	(ref.cat.)	1.000	(ref.cat.)	1.000	(ref.cat.)
Part-time	0.647	0.073	1.425	0.007	1.267	0.013
Full-time	0.893	0.340	1.350	0.039	1.333	0.024
Education						
Basic education	1.000	(ref.cat.)	1.000	(ref.cat.)	1.000	(ref.cat.)
High school	0.725	0.022	0.771	0.730	0.992	0.091
University	0.616	0.009	0.933	0.089	0.710	0.633
Other	1.058	0.685	1.033	0.904	1.045	0.953

Note: Based on estimations of interaction effects controlling for the same set of covariates as in Table 2. Cohort 1949 is the reference category and p-values refer to base effects of current activity, previous work experience and education in the regression models. For cohorts 1959 and 1964, p-values refer to interaction effects and thus the test of the hypothesis that the effect is different from the base effect in the reference category.
Source: See table 1.

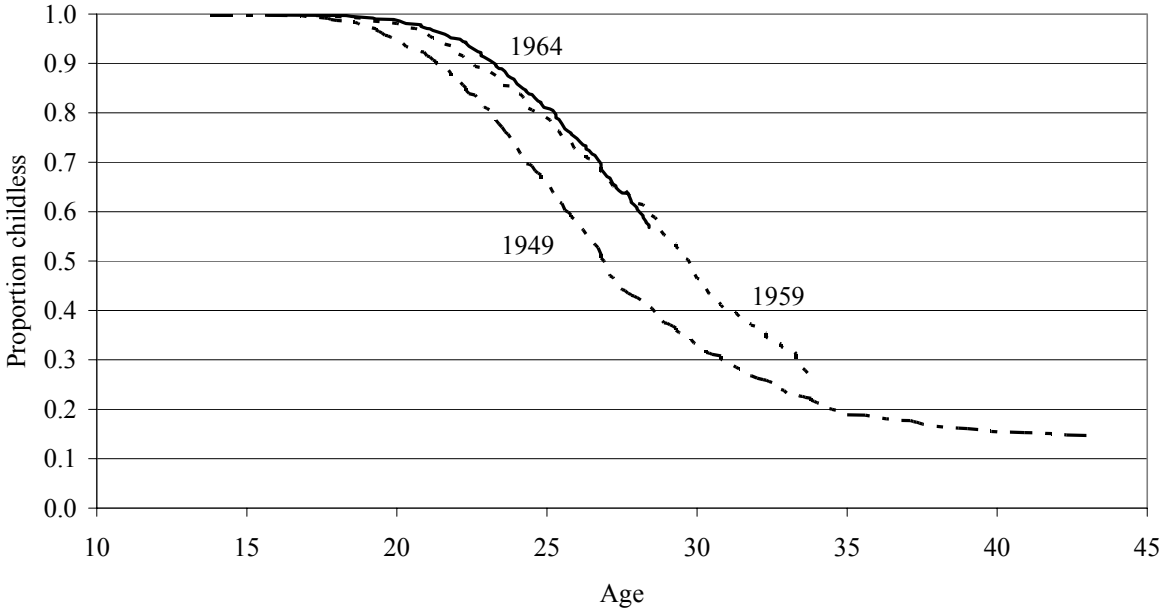
Table 4. Percentage change in risk of conception of 10 per cent more vacancies in different groups.

	Males		Females	
	%	Wald p	%	Wald p
Cohort				
1949 (ref.cat.)	17.8	0.052	18.8	0.015
1959	9.4	0.411	11.5	0.397
1964	4.5	0.176	8.0	0.209
Current activity				
Non-university education (ref.cat.)	5.9	0.484	18.9	0.001
University education	11.4	0.694	10.8	0.446
Full-time private sector	6.3	0.961	9.0	0.109
Full-time public sector	5.0	0.935	9.3	0.120
Part-time employed	-6.6	0.493	11.1	0.281
Other activity	0.2	0.577	4.4	0.049
No registered activity	8.5	0.776	9.4	0.195
Education				
Basic education (ref. cat.)	5.4	0.068	9.3	0.000
High school	7.5	0.560	10.8	0.660
University	1.6	0.536	9.4	0.987
Other	7.9	0.621	8.0	0.735
Previous work experience				
No previous work (ref. cat.)	2.7	0.570	11.0	0.002
Part-time	9.0	0.490	7.4	0.492
Full-time	6.9	0.422	9.7	0.745

Note: Based on estimations of interaction effects controlling for the same set of covariates as in Table 2. P-values for the reference categories refer to base effects of vacancies, while p-values in other categories refer to interaction effects and thus the test of the hypothesis that the effect is different from the base effect in the reference category. The estimated coefficients *b*, expressing the ln relative risk of a one unit change in ln vacancies, were transformed to effects of a ten per cent change in vacancies using the formula: $100\,(e^{\,b\,\log(1.1)}-1)$. See Campbell, Lee and Bengtsson, 2004.

Source: See table 1.

Figure 1. Kaplan-Meier estimates of the proportion childless at different ages by cohort. Males.

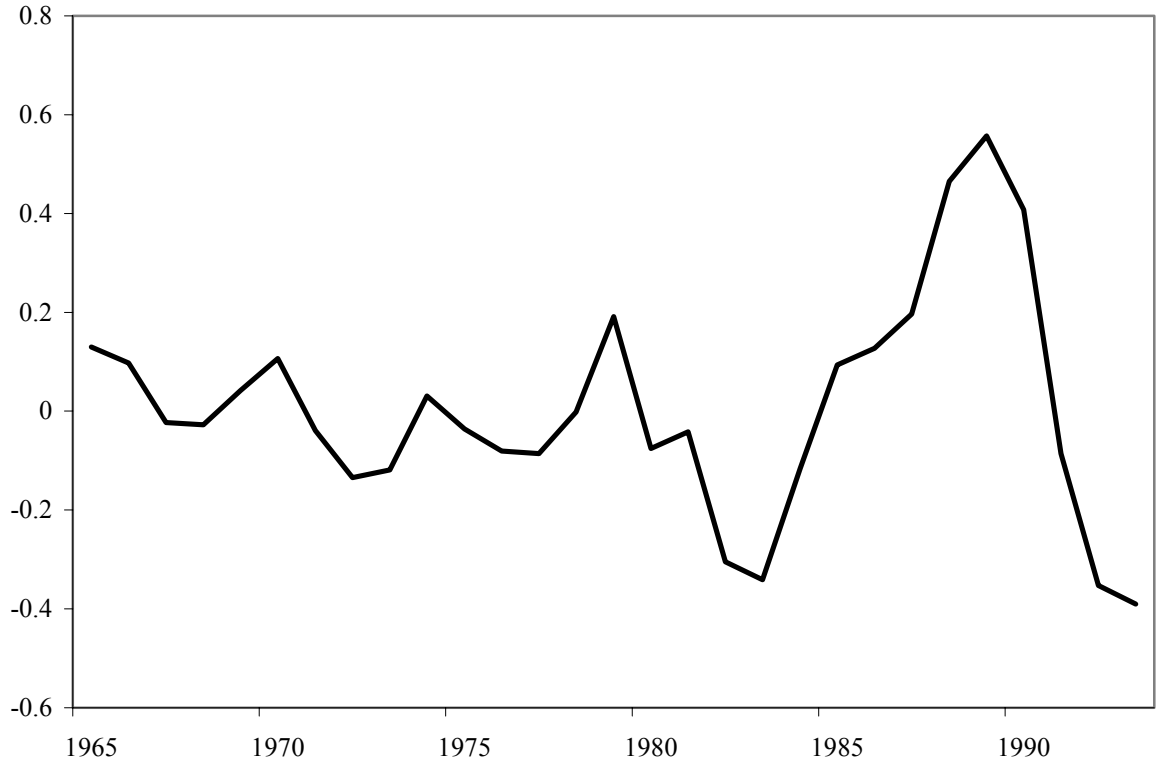


Source: See table 1.

Figure 2. Kaplan-Meier estimates of the proportion childless at different ages by cohort. Females.

Source: See table 1.

Figure 3. Business cycle indicator: deviations in ln vacancies from long term linear trend.



Source: Stanfors, 2003:56.