Does Marriage Matter for Kids?
The Impact of Legal Marriage on Child Outcomes

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ABSTRACT:

This paper focuses on children who live with both biological parents and analyzes whether parental marriage confers any educational advantages to children relative to cohabitation. Cohabitation has been increasing in most countries and is more common in Sweden than anywhere else in the industrialized world. We use the marriage boom in the last two months of 1989 created by the reform of the widow's pension system in Sweden to identify the causal effect of a marginal increase in the exposure to married parents on children's educational outcomes as measured by grade point averages (GPA) at age 16. We find no positive effect of marriage on children's GPAs for parents who married in the end of 1989 but we do find that children whose parents were married before they were born had higher GPAs than all other children. We attribute these findings to selection into marriage.

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1. Introduction

Many studies have found that children who grow up in non-intact families experience lower educational outcomes compared to those who grow up with both biological parents (see e.g. McLanahan and Sandefur 1994; for reviews see e.g. Cherlin 1999). However, recent studies have questioned the causal interpretation of this relationship and have argued that since marriage is not randomly assigned, this finding reflects selection rather than causation (Ginther and Pollack 2004, Björklund and Sundström 2002, Björklund, Ginther and Sundström 2004, Pikketty 2003, Winkelmann 2003, de Galdeano and Vuri 2005). In this paper we focus on children who live with both biological parents and analyze whether parental marriage confers any educational advantages to children relative to cohabitation in Sweden. Cohabitation has been increasing in most countries and is more common in Sweden than anywhere else in the industrialized world. Furthermore, cohabitation in Sweden is more similar to legal marriage than in other countries, but it does not have the same legal implications. In this paper we use a spectacular event in Sweden, namely the marriage boom in the last two months of 1989 created by the reform of the widow's pension system to identify the causal marginal effect of marriage on child outcomes.

Despite its increasing prevalence, research on the impact of cohabitation on children is scarce, but suggests that cohabitation may have adverse outcomes for children (Graefe and Licther 1999, Manning 2002, Smock and Gupta 2002, Bumpass and Lu 2000, Manning and Lichter 1996). Our research will provide the first evidence on the impact of cohabitation on children's outcomes in Sweden. In this paper, we analyze children who lived with both biological parents and use a large random sample of children born in Sweden in 1978-87 drawn from the population registers. The data sample roughly 20 percent of children born each year. This data set is combined with family and individual information from the bidecennial censuses from 1980, 1985 and 1990. Our outcome variable is grade point average (GPA) at age 16 obtained from educational registers.

The change to the Swedish widow's pension in 1990 provides a useful case for evaluating the impact of marriage on children's educational outcomes. In 1989, when the Swedish parliament enacted a reform abolishing the widow's pension starting in January 1990, it included transitional provisions that allowed women who were born before 1945 and married by the end of 1989 to be entitled to widow's pension if their husband died. Those already receiving a widow's pension would continue to do so as long as they lived. The implications became gradually known to Swedish public and resulted in a dramatic marriage boom in the last two months of 1989.

We use this marriage boom to assess the causal effect of a marginal increase in children's exposure to married parents. We compare educational outcomes for children whose parents married in November and December 1989 to those of children whose parents continued to cohabitate or were married prior to the birth of the children. In addition, we compare the GPAs for children who were older (born in 1978-82) in 1989 to those of children who were younger (born in 1983-87) with the hypothesis that if there are any causal effects of parents' marriage on child outcomes they should be larger for the latter since they should have been exposed to married parents during a larger fraction of their childhood. We find no positive effect of marriage on children's GPAs for parents who married in the end of 1989. However, we do find that children whose parents were married before they were born had higher grade point averages (GPA) than all other children but that this is mainly due to selection. The paper proceeds as follows: Section 2 describes the trends in cohabitation and marriage, and discusses the legal differences between marriage and cohabitation in Sweden. Section 3 presents our theoretical perspectives. In Section 4 we present our data, describe the marriage boom in the end of 1989 and discuss our estimation strategy. Section 5 presents our findings. We end with a discussion of the results.

2. Cohabitation and marriage in Sweden

2.1 Trends in cohabitation and marriage in Sweden

Cohabiting unions are more common in Sweden than anywhere else in the industrialized world, although levels in Denmark now come rather close. Marriage rates have been declining since the late 1960s while cohabitation rates have been rising. At the same time, the duration of cohabitation has increased. For example, among women born in the late 1940s about half had married their partner after three years of cohabitation while this was the case for only about one-tenth of women born in the late 1960s – after five years of cohabitation about two-thirds and one-third of the respective cohorts had married (Bracher and Santow 1998).

Thus, cohabitations in Sweden are stable and relatively long-lasting unions. These unions are, however, less stable than formal marriages, and break-up rates have increased over cohorts. For example, about one-tenth of the first consensual unions for women born in the late 1940s were dissolved within three years, while this was true for about one-fourth of the first unions for women born in the mid-1960s (Hoem B. 1995). In spite of elevated marriage rates for pregnant cohabiting women, the majority of women are not formally married at first birth but cohabiting in Sweden. Births to non-cohabiting, unmarried women are rare (less than 10 percent of all births). Sweden is probably unique in the industrialized world in having a lower median age for women at first birth than at first marriage; both medians have been increasing, the former from 25.0 years in 1980 to 26.2 years in 1993 and to 28.4 years in 2001 and the latter from 25.6 years to 27.4 years and to 29.6 years in the same years.

2.2 Legal differences between cohabitation and marriage in Sweden in 1989[1]

Since there are no allowances, tax deductions or other financial benefits that accrue to married couples but not to cohabiting couples, it is commonly believed that there are very minor differences in the legal implications of marriage and cohabitation in Sweden. However, this is only true as long as the union

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[1] This Section draws on Agell (1982, 1989), Insulander-Lindh & Thunberg (1996) and Ståhlberg (2004).

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stays intact, if the couple has no children together (or prior to their union), or if they have no savings or property. A crucial difference between married spouses and cohabitants is that married spouses are obliged under the law to support each other according to their ability. Further, for a child of married parents, paternity is automatically attributed to the husband of the mother and the couple will have joint custody of the child. However, if the parents are unmarried or cohabiting, the father has to acknowledge paternity, and they will have joint custody of the child provided they both agree on that, which most couples do. While earnings of married couples have been taxed individually since 1971, wealth and income from property and businesses is still taxed jointly. Cohabitants are taxed jointly on property income only if they have children under age 18 together or if they have previously been married to each other.

Moreover, in a consensual union there is no community property as there is in marriage. The 1988 "cohabitation-law" stipulates that if cohabitants split-up, what they have acquired for common use should be divided between them. This applies to dwellings provided they have been acquired for common use. In the event of a separation, according to the law, the partner who is most in need of the apartment/house should have it, regardless of who bought it.[2] Private property, such as stock and bank savings, is not divided. This is true also for property that was acquired before cohabitation and for property that has been acquired for private use.

Finally, while children of married and cohabiting parents inherit equally, cohabiting couples do not automatically inherit each other. Cohabiting couples may of course write testaments in favor of each other but bequeaths are taxed. Survivors from a cohabiting union have never been entitled to widows' or widowers' pension in the supplementary pension system, but under certain very specific circumstances they were eligible in the general retirement scheme. Those who received a widow's pension prior to 1990

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[2] However, if the house/apartment was bought by one of the partners, the other one has to buy the owner off.

and those who were eligible under the pre-1990 rules still receive their pensions and will do so as long as they live (for further discussion, see Section 4.2). There continue to be widow's pensions available from collective bargaining agreements, however, the availability and size of such pensions differ across agreements. For example, blue-collar workers and low-earning white-collar workers in the private sector have no such protection for their survivors. In contrast, widows/widowers of high-earning white collar workers in the private sector, receive survivor's pensions as long as they live and as long as they do not remarry. Thus, these legal implications should affect the incentives to marry differently for different groups. We should expect the selection into marriage and cohabitation to be non-random processes, and as a result, married and cohabiting parents should differ.[3]

3. Theoretical perspectives

Unlike cohabitation which ends when one partner moves out, marriage requires a legal separation of property and custody rights, as indicated above, making it more difficult to dissolve. Thus, it could be that marriage is a signal of greater commitment. Also, the expected duration of a marriage is longer than that of a consensual union. Both these aspects together with the legal arrangement of marriage may provide for pooling of family resources, greater specialization within the family leading to economies of scale in household production, and greater investments in children. We know, for example, that in Sweden among employed mothers of children below age 10, the fraction working part time was 62 percent among married mothers but only 35 percent among cohabiting mothers (Swedish level of Living Survey 1991).[4] Further, Sundström and Duvander (2002) find that married fathers used a larger share of the parental leave for newborn children than cohabiting fathers, net of earnings and other factors. In addition, using U.S. data Stratton (2004) finds that cohabiting households engage in less intrahousehold

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[3] Henz and Sundström (2001) show, for example, that married mothers were more highly educated and older at first birth, on average, than cohabiting mothers. The differences between the two groups have increased over time.
[4] We are grateful to Elin Olsson for help with these computations.

specialization than married households. These results indicate that marriage may provide for greater investments in children.

If both parents value a child's well-being, then investments in children by one parent may create a positive externality for the other parent. The absence of legal marriage may create a coordination failure where a parent has an incentive to under-invest in their children and free-ride off of the investments of the other parent. Thus, the legal status of the parent's relationship may lead to better (worse) outcomes in the case of marriage (cohabitation). It could be that the legal status of marriage makes a difference in outcomes for children.

Given the potential differences in their impact, few studies exist that examine the differences in the impact of cohabitation and marriage on child outcomes. Research on the impact of cohabitation on children is limited in the United States, and we are unaware of any studies of the impact of cohabitation on children in Sweden. Cohabitation may have adverse outcomes for children because adults in cohabiting families have lower educational attainment and earnings and cohabiting unions are less stable than married unions (Manning and Lichter 1996, Graefe and Licther 1999, Bumpass and Lu 2000, Manning 2002, Smock and Gupta 2002, Manning 2002, Manning, Smock and Majumdar 2004, Acs and Nelson 2002, Acs and Nelson 2004a, Acs and Nelson 2004b). Other research has found mixed effects on children's well-being of living in cohabiting families.   Poverty rates for children are reduced by 29 percent when researchers account for the income of cohabiting partners (Manning and Lichter 1996). Cohabiting households with children spend more on alcohol and tobacco and less on education than married households (DeLeire and Kalil 2002). When researchers compare outcomes for children in married biological parent unions with those for children in all cohabitating unions, children in cohabiting families fare worse (Manning 2002, Brown 2004).

However, Manning (2002) argues that key comparisons should be made between cohabiting biological parents (cohabiting parents) and married biological parents (married parents), and cohabiting partners and stepparent families. When Manning makes these distinctions, she finds no significant differences in behavior outcomes and school achievement for children living with cohabiting compared with married parents. Brown (2004) makes the same comparison. In contrast, she finds that young children and adolescents of cohabiting parents have lower school engagement and more behavior problems than children of married parents. However, the impact of cohabitation becomes insignificant for young children when parental education and resources are included in the specifications. Manning and Lamb (2003) examined adolescent well-being in cohabiting partner, stepparent, and married families. They find worse behavioral and academic outcomes for adolescents in cohabiting partner families when compared with stepfamilies. Studies based on U.S. data are plagued by relatively small numbers of cohabiting biological parents. Yet, taken together, this research suggests that outcomes for children in cohabiting families are dissimilar from outcomes for children in married families.

Although research on marriage suggests that it benefits adults and children alike, much of this research does not control for the selection of marriage (Lerman 2002, Ribar 2004) and in the case of children's outcomes the biological relationship of cohabiting adults to children. In their comprehensive book, McLanahan and Sandefur (1994) show that educational, fertility, and inactivity outcomes for children who grow up with a single-parent or stepparent are far worse than for those children who grow up in an intact family with both (married) biological parents. They conclude that the biological relationship of parents to children matters the most. Manning (2002) suggests that current research on children's well-being in cohabiting families would be enhanced if studies included controls for selection into cohabitation, used dynamic measures of family structure, and considered the effect of cohabitation on outcomes in other countries. Thus far, studies that compare children's outcomes in cohabiting and

married families do not take these issues into account (Manning 2002). This study seeks to address Manning's critiqueque by examining cohabiting biological parents, controlling for family structure over the entire childhood, and addressing the selection into marriage. We will examine whether there are significant differences in children's educational outcomes as a function of parent's martial status using data from Sweden.

4. Data and methods

4.1 Data

We use a random sample of children born in 1978-87 drawn from the population registers of Statistics Sweden. The data sample roughly 20 percent of Swedish children born each year (approximately 20,000 children per year) and their siblings. We also impose the restriction that the parents were born in Sweden. These data are combined with family and individual information from the bidecennial censuses from 1980, 1985 and 1990 and from Statistics Sweden's special multigenerational register. From the censuses we obtain information on whether the child lived with his/her biological parents or not and only include children living with both biological parents in our analysis. All these requirements leaves us with about 14,000 children of each cohort, in total about 120,000 children. Our outcome variable is grade point average (GPA) at age 16. . The grades at age 16 are the final grades from compulsory school and used for entrance to different high-school tracks and are therefore vital for pupils. Further, there are compulsory national tests (in Math, Swedish and English) aimed at guiding teachers' grading so that grades should be comparable across the whole country. For the cohorts covered by our study, Statistics Sweden has collected the grades at age 16 for all students who have graduated from a school in the country and made the data available for research purposes (*Årskurs 9 registret*).

To exploit this information for our study, we must overcome two problems.[5] First, all pupils do not follow the same study tracks through compulsory school; for example in some fields of study there are both advanced and elementary level courses. We avoid this problem by only using the fields of study that all pupils study. These are Swedish, (natural) science and social science.[6] Second, the grading system underwent a major change during the period of our study. Through graduation year 1997 Sweden had a so-called relative grading system ranging from 1 to 5. The goal was that the national average should be 3.0 with standard deviation 1. In practice the averages in most fields of studies were between 3.1 and 3.2. For this period we simply use the pupil's average grade and standardize it by the overall mean and standard deviation in our sample. From graduation year 1998 and onwards, Sweden has had a so-called criterion referenced grading system with grades at four levels: IG (not pass), G (pass), VG (pass with distinction) and MVG (pass with special distinction). For entrance to high school these grades are valued 0, 10, 15 and 20 points. We use these weights to compute a GPA for each student and standardize by the mean and the standard deviation in our sample.

We create marital history for the parents of the children using information from population records and the censuses. We have information on all changes in marital status since 1968. From this information we create dummy variables for married parents according to date of marriage. Our explanatory variables include child's gender and year and month of birth, father's and mother's age, parents' earnings and the sibling composition of the household (his children, her children, and their joint biological children).

4.2 The Swedish widow's pension reform and the marriage boom in 1989

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[5] Another problem in using grade data is that pupils with immigrant background often study special courses from which the grades are not comparable to the rest of the population. By only including Sweden-born pupils with Sweden-born parents, we avoid this problem.

[6] Some schools apply an overall grade in science and social science, whereas other apply separate grades in biology, physics, chemistry in science and in geography, history and social issues in social science.

In 1988 the Swedish parliament enacted a reform abolishing the Widow's Pension beginning in January 1990. Under the old system, if a woman's husband (and certain cohabiting partners) died she was entitled to a widow's pension for the rest of her life. The pension was based on the husband's retirement income. A widow who was below the general retirement age of 65 received 40 percent of his retirement income; starting at age 65 she received the difference between the widow's pension and her own pension. This system was replaced in 1990 by a system where children of the deceased receive Child Pensions at most until age 18 and the surviving partner—both sexes, married or cohabiting-- receive an Adjustment pension for up to 12 months.

The Adjustment pension depends upon the age of the children and the income of the deceased, thus, it is not an unconditional right like the Widow's pension. Survivors receive the Adjustment pension as long as they have children below age 12. For example, if the husband died in 1990 and the couple had a 16-year old child, the child would receive a Child Pension until age 18 and the widow would get the Adjustment pension for a maximum of 12 months. Survivors who have no children at home could get the Adjustment pension for a maximum of ten months. In sum, the Adjustment pension is only available for about one year or until the youngest child turns 12, whereas the widow's pension was for life. The change in the Widow's pension was particularly disadvantageous for women with older children or no children at home.

Widows who received a pension prior to 1990 and those who were eligible under the pre-1990 rules receive their Widow's pensions and will do so as long as they live. Importantly for our analysis, there were a number of transitional provisions included in the reform, the main impact of which was that all non-married women born before 1945 could gain rights to the Swedish Widow's Pension by marrying before the end of 1989 (Hoem 1991).[7] In addition, some women who were born in 1945 or later and who had children could improve their rights to a widow's pension by marrying before 1990, but the

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[7] The transitional provisions for women born in 1945 or later were more restrictive and more complicated.

entitlement was much more restrictive than for older women. The effect of the policy change was dramatic. The propensity to marry sky-rocketed in December 1989, especially for cohabiting couples; the number of marriages increased from an average of 3,000 in previous Decembers to 64,000 in December, 1989 a 21-fold increase (Andersson 1998, Hoem 1991). Figure 1 reproduces results from Andersson (2003), showing the impact of the change in the Swedish Widow's Pension on marriage rates in 1989.

Although marriage rates in November and December 1989 were particularly elevated for women over 45 (Hoem 1991, Figure 2 and 3), they were also very high for younger women, who would not benefit directly from marrying. We can interpret the latter change as a "band-wagon" effect--couples who held more or less vague plans of marrying in the future, stopped putting it off and married because so many other couples were doing so. Alternatively, they may have found it too time consuming to find out whether the woman would be eligible for a widow's pension and simpler to just to marry. Still another interpretation of the "band-wagon" effect is that the marriage boom made it less expensive to marry since it became acceptable to marry without having a costly reception.[8] This dramatic response to the change in Widow's Pension system constitutes a quasi-natural experiment that will enable us to examine the causal marginal effect of marriage on child outcomes.

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[8] The most common answer among cohabiting women to the question why they were not planning to marry was that they could not afford the wedding they wished to have (Hoem B 1995).

**Figure 1: Annual index of marriage-risk level.
Never-married Swedish women, 1971-2002,
standardized for parity and age.**

Risks relative to 1980
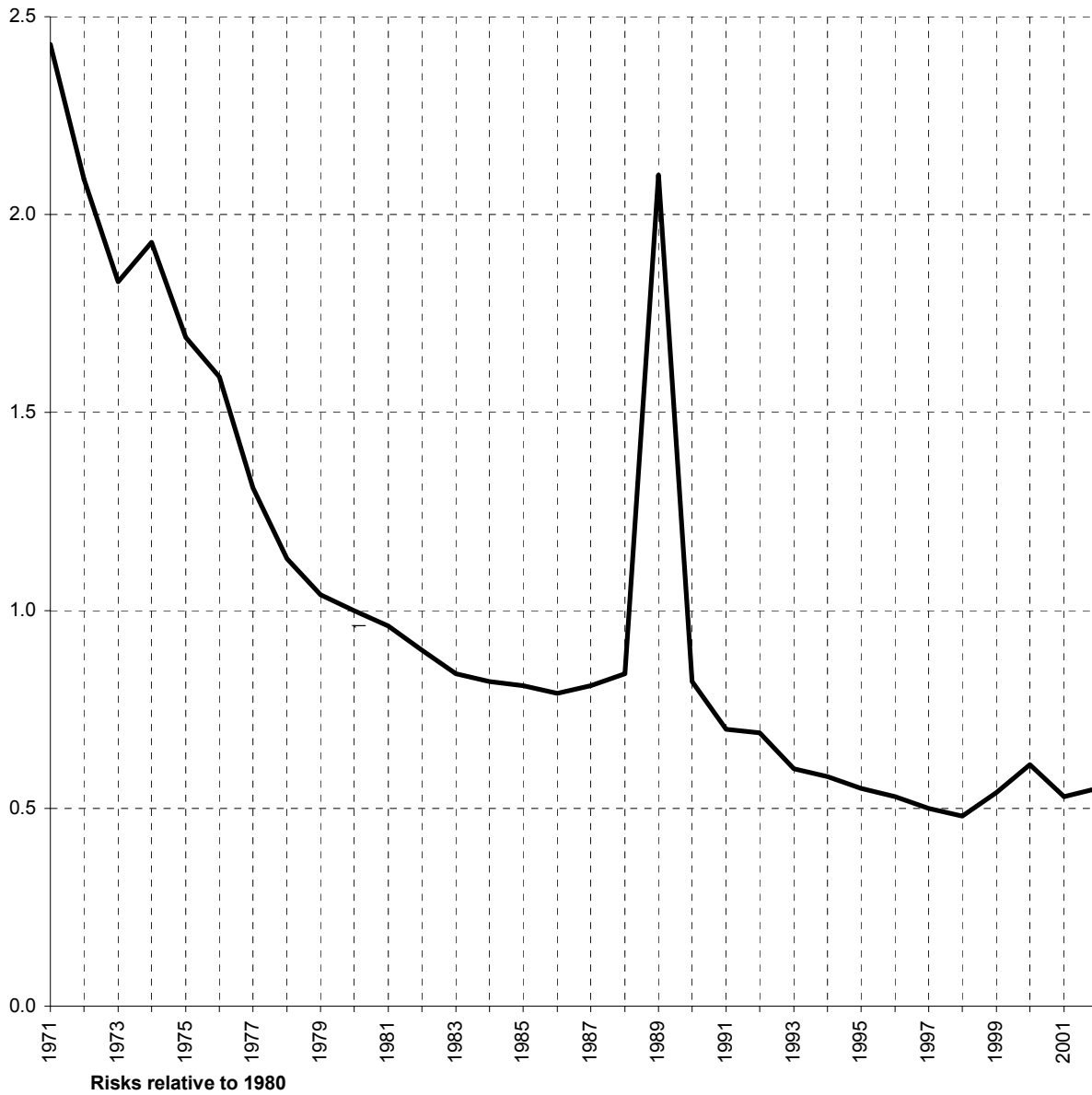
Source: Gunnar Andersson 2003: "Demographic trends in Sweden: An update of childbearing and nuptiality through 2002".
MPIDR Working Paper, WP 2003-034. Max Planck Institute for Demographic Research,
Rostock.

4.3 Estimation strategy

Our approach is based on the assumption that marriage is not randomly assigned and we pose the following research question: How does a marginal increase in the exposure to married parents affect the educational outcomes of children? In other words, suppose parents are initially cohabiting, if they marry, how does parents' marital status affect children's GPAs?

Let M_i be the marriage treatment and y_{1i} be the outcome with treatment and y_{0i} be the outcome without treatment and let $M_i = 1$ if treatment (marriage) is received and $M_i = 0$ otherwise (cohabitation). The model for the observed outcome can be written
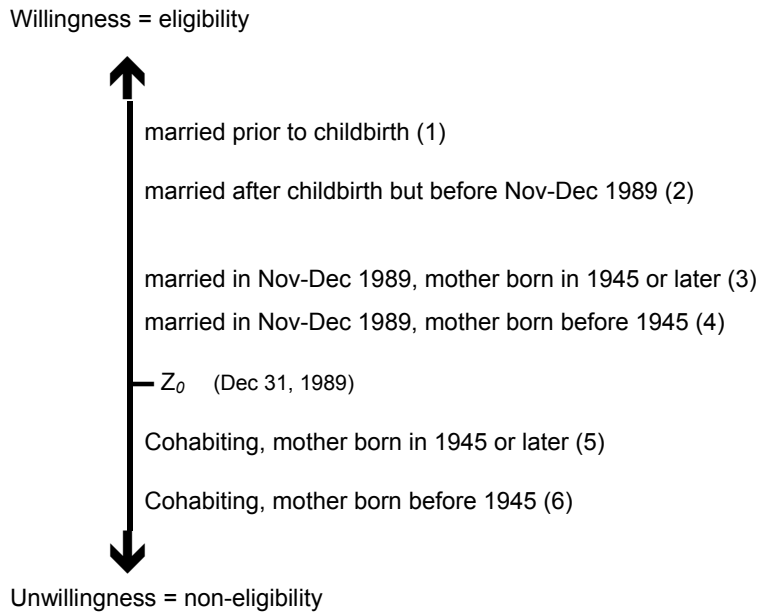
$$y_i = \alpha_i + \gamma_i M_i$$

where $\alpha_i \equiv y_{0i}$ and $\gamma_i \equiv y_{1i} - y_{0i}$. Let z_i be an indicator variable of eligibility for widow's pension which is discontinuous in calendar time, namely at $z_0 =$ December 31, 1989 (see Figure 2 below). Let $M_i = f(z)$ where $\Pr[M_i = 1 \mid z_i = z]$ is known to be discontinuous at the point z_0. In the case of Sweden, the change in the widow's pension system provides a case which allows us to examine the marginal effect of parents' marriage on child outcomes.

To estimate the marginal effect of treatment (marriage) we compare the outcomes of individuals with an incremental increased exposure to married parents (just above the threshold, z_0) to the outcome of those without such an increased exposure (just below z_0), given by Figure 2 below. Thus, we compare the outcomes of children whose parents married in Nov-Dec 1989 and had a financial incentive to do so, where the mother was born before 1945, (Group 4 in Figure 2) to the outcomes of the children whose parents remained cohabiting and had no financial incentive to marry, where the mother was born in 1945 or later (Group 5). However, if marriage matters for kids child outcomes should not depend upon why parents marry. Therefore, it is interesting to compare also the outcomes of children of Group 3-parents to those of children of Group 5-parents.

In addition, if there is a causal effect on children's educational outcomes of a marginal increase in the exposure to married parents it should be greater for children who were young in 1989 than for those who were older. Therefore, we compare the GPAs for children who were older (born in 1978-82) in 1989 to those of children who were younger (born in 1983-87).

Figure 2 Parents' willingness to marry and eligibility for widow's pension

Willingness = eligibility

married prior to childbirth (1)

married after childbirth but before Nov-Dec 1989 (2)

married in Nov-Dec 1989, mother born in 1945 or later (3)
married in Nov-Dec 1989, mother born before 1945 (4)

Z_0 (Dec 31, 1989)

Cohabiting, mother born in 1945 or later (5)

Cohabiting, mother born before 1945 (6)

Unwillingness = non-eligibility

We implement this strategy by including a series of marital status dummy variables $K_i = f(z_i)$ in place of M_i and including additional explanatory covariates X, we estimate the following equation:

$$y_i = \alpha + \phi K_i + X_i'\beta + u_i$$

Conceptually, this approach is equivalent to calculating mean differences in the impact of marriage for these different groups controlling for observable characteristics. These marital status dummies account for unobserved differences in characteristics shared by these different groups.

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5. Findings

We start by presenting some descriptive statistics. Table 1 shows the type of family that individuals in our sample lived in when they were 3-12 years old in 1990 for the full sample. As expected, the fraction that lived with both biological parents decreases by age but the fraction whose parents are married increases. Table 2 focuses on the children who lived with both biological parents in 1990 (our estimating sample) and displays their mean GPAs at age 16 by parents' marital status, if parents were married, and when they married. We see, first of all, that children of parents who married before they were born had significantly higher GPAs, on average; the GPA differences between the other groups of children are not statistically significant. Second, children in Group 1-3 had more full siblings and fewer half siblings in 1990 than those in Group 4-6, which reflects the more stable family situation for the former (Column 6). Third and unsurprisingly, those who married late 1989 in order for the woman to become eligible for widow's pension (Group 4) had fewer divorces than the other groups of married parents (Column 9).

Next, we estimate cross-section equations using the sample in Table 2 with GPA at age 16 as our dependent variable. In model 1 we include our indicators for parents' marital status and date of marriage, gender, and year and month of birth. We see, first, that girls have considerably higher GPAs than boys and that children who had parents who married before they were born have significantly higher GPAs than all the other groups of children. Second, the difference in GPAs between children in Group 4 and Group 5 is only weakly significant. i.e. children whose parents married in the end of 1989 and whose mother was born before 1945 and those whose parents continued to cohabit and whose mother was born 1945 or later. In model 2 we add controls for parents' ages, and it turns out that there also were differences among children whose parents who continued to cohabit: those who had an older mother who

would have been eligible for widow's pension if she had married before the end of 1989 did substantially worse in terms of GPA than those who had a younger mother.

Turning to model 3, we see that controlling for parents' income and the number of full and half siblings (mother's side and father's side) in 1990 narrows the estimates for Group 3-6 but brings the estimate for Group 2 closer to zero, i.e. Group 1. The estimates for all groups with the exception of Group 4 are however still statistically different from zero which means that children in Group 1 still do better in school than children from all the other groups. Moving from Model 2 to Model 3, the estimated coefficient for Group 4 falls by over half and the estimate is not statistically significant from zero. The change is the result of controlling for the presence of full and half-siblings. Taken together, these results suggest that the educational advantage for children whose parents married before they were born (Group 1) is due to selection and that there is no additional benefit for children from a marginal increase in the exposure to married parents.

Next, we compare the effect of marriage on children who were older in 1989 to those who were younger. We hypothesize that the causal effect of marriage may operate through the length of the child's exposure to marriage. These estimates are presented in Table 4, and three results stand out in the analysis. First, if parents married after the birth but before 1989, these children do better than other groups whose parents cohabitated. Second, there is a large negative effect on children's GPA regardless of the child's age, for those parents who 'jumped on the marriage bandwagon' in 1989 despite being ineligible for the widow's pension. Finally, for those whose mothers were eligible for the widow's pension, the negative impact of marriage on GPA is larger for younger children, although the effect is not statistically significant. These results suggest that the length of exposure to married parents matters for children only as long as marriage is self-selected by parents.

6. Conclusions

We started out observing the contradiction between the finding that children who grow up with both biological parents have more favorable educational outcomes than those who grow up in a non-intact family, and the more recent finding that the impact of marriage or divorce reflects selection rather than causation. Thus, this research poses the question: what matters most for children's educational outcomes, the biological relationship of the parents or parents' marital status? More specifically, we ask: for a child lives with both biological parents, does it matter if parents are married or living in a consensual union?

Cohabitation has been increasing in most Western countries, but is most prevalent in Sweden. At the same time, research on the relationship between cohabitation and child outcomes is limited and what exists has mainly been conducted using U.S. data. In this paper we use data from Sweden, and more precisely, we use the marriage boom in the end of 1989 created by the reform of the widow's pension system to identify the marginal effect of marriage on child outcomes. In the reform there were transitional provisions that resulted in a marriage boom in the last two months of 1989.

We use this increase in marriages to compare educational outcomes for children whose parents married in the end of 1989 to those of children whose parents continued to cohabit. We use a random sample of children born in Sweden in 1978-87 and are able to combine it with information from the censuses in 1980, 1985 and 1990 and the tax records in quite a unique way to create parents' marital history. Our outcome variable is grade point average at age 16 obtained from educational registers. We find that children whose parents continued to cohabit had lower GPAs, on average, than children whose parents were married before they were born. Controlling for background characteristics, we find, however, no significant difference in GPAs between children of cohabiting parents and children whose parents married after they were born, including those who married in the end of 1989.   When we examine results for younger and older children in 1989 in order to control for length of exposure to

parents being married, we find that the duration of marriage confers benefits to children insofar as parents self-select into marriage.

Our interpretation of these findings is that there is no causal effect of marriage on children's educational outcomes and that much of the apparent benefit of parental marriage is due to selection. Our results are also bad news for policy-makers who want to "promote healthy marriages." For marriage to have a positive impact on child outcomes, it seems necessary that parents marry because they want to, not because they gain financially from doing so.

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Table 1. Family type in the 1990 Census by year of birth. Percent

Family type in 1990	Born 1978	Born 1979	Born 1980	Born 1981	Born 1982	Born 1983	Born 1984	Born 1985	Born 1986	Born 1987
Both bio parents	77.4	79.1	79.1	80.9	81.4	82.8	84.7	84.7	86.1	87.8
-- cohabiting	5.7	6.9	6.9	7.5	8.5	9.4	10.9	12.4	15.0	17.8
-- married	71.7	72.2	72.2	73.4	72.9	73.4	73.8	72.3	71.1	70.0
Single parent	14.0	13.2	13.5	13.2	12.6	12.3	11.4	11.8	11.4	10.4
Bio + stepparent	8.5	7.7	7.3	6.0	6.0	4.9	3.9	3.4	2.5	1.8
# of observations	14,145	14,605	14,754	14,344	14.200	14,216	13,921	14,634	15,549	15,424

Table 2. Descriptive statistics by parents' marital status and gender. Children born 1978-87 living with both biological parents in 1990. (# observations in parentheses).

Parental marital Status	GPA	Mums age 1989	Dads age 1989	Dad's Income 1985	Mum's income, 1985	# full sibs, half sibs (mum), half sibs (dad) in 1990	Mum dies 1991-2000	Dad dies 1991-2000	Parents divorce 1991-2000
1. Married before birth of child (N=69,982)	0.109 (0.993)	36.5	39.0	1223 (602)	615 (393)	1.71 0.09 0.11	0.008	0.014	0.125
2. Married after birth but before Fall 1989 (N=21,822)	-0.079 (0.984)	32.6	35.1	1065 (404)	604 (290)	1.52 0.16 0.15	0.005	0.009	0.143
3. Married Fall 1989--mum born in 1945 or later (N=9,073)	-0.112 (0.965)	32.9	35.8	1051 (351)	612 (279)	1.43 0.14 0.15	0.005	0.010	0.132
4. Married Nov-Dec 1989 --mum born before 1945 (N=149)	-0.076 (1.017)	46.9	47.0	1223 (446)	642 (344)	0.60 0.66 0.39	0.020	0.027	0.054
5. Not married in 1989, mum born in 1945 or later (N=18,492)	-0.135 (0.995)	31.9	34.7	990 (432)	642 (310)	1.31 0.25 0.24	0.006	0.015	-
6. Not married in 1989, mum born before 1945 (N=447)	-0.089 (1.083)	46.7	45.9	1144 (527)	693 (443)	0.57 0.76 0.40	0.029	0.051	-
All who live with bio parents in 1990 (N=119,965)	0.020 (0.995)	34.8	37.4	1145 (538)	617 (357)	1.45 0.22 0.24	0.007	0.013	-

Note: The group numbers refer to their numbers in Figure 2.

Table 3 Cross-section regressions. Dependent variable: Standardized grade point average at age 16 for children born in 1978-87. Standard errors in parentheses. N=119,965.

	Model 1	Model 2	Model 3
Constant	Yes	Yes	Yes
Female	0.511 (0.006)	0.510 (0.005)	0.510 (0.005)
(1) Reference group: Parents married before child's birth	-	-	-
(2) Married after birth but before Fall 1989	-.189 (.007)	-.069 (.008)	-.048 (.008)
(3) Married Nov-Dec 1989 -- mum born in 1945 or later	-.225 (.010)	-.154 (.011)	-.125 (.011)
(4) Married Nov-Dec 1989 -- mum born before 1945	-.116 (.078)	-.213 (.078)	-.101 (.077)
(5) Cohabiting in 1985 and 1990, not married in 1989, mum born in 1945 or later	-.249 (.008)	-.157 (.008)	-.110 (.008)
(6) Cohabiting in 1985 and 1990, not married in 1989, mum born before 1945	-.183 (.045)	-.269 (.046)	-.155 (.045)
Mum's age[a]	No	Yes	Yes
Dad's age[a]	No	Yes	Yes
Father's income (also squared)	No	No	Yes
Mother's income (also squared)	No	No	Yes
# of full sibs	No	No	-.030 (.003)
# of half sibs, mother's side	No	No	-.190 (.006)
# of half sibs, father's side	No	No	-.078 (.006)
Adj R-sq.	.081	.098	.134
F-value for group 4 ≠ group 5	2.87	0.51	0.01
(Pr > F)	(0.09)	(0.47)	(0.92)

[a] Includes linear quadratic dummy for teenage parent and interaction between mum' age and dad's age.

Note: We control for year and month of birth in all models. The group numbers refer to their numbers in Figure 2.

Table 4. Cross-section regressions. Dependent variable: Standardized grade point average at age 16. Children born in 1978-82 compared to those born 1983-87. Standard errors in parentheses.

	Children born in 1978-82 Model 3	Children born in 1983-87 Model 3
Constant	Yes	Yes
Female	0.368 (0.009)	0.600 (0.007)
(1) Reference group: Parents married before child's birth	-	-
(2) Married after birth but before Fall 1989	-.074 (.012)	-.028 (.010)
(3) Married Nov-Dec 1989 --mum born in 1945 or later	-.113 (.021)	-.121 (.012)
(4) Married Nov-Dec 1989 --mum born before 1945	-.066 (.094)	-.147 (.134)
(5) Cohabiting in 1985 and 1990, not married in 1989, mum born in 1945 or later	-.186 (.017)	-.079 (.010)
(6) Cohabiting in 1985 and 1990, not married in 1989, mum born before 1945	-.138 (.059)	-.147 (.072)
Mum's age[a]	Yes	Yes
Dad's age[a]	Yes	Yes
Father's income (also squared)	Yes	Yes
Mother's income (also squared)	Yes	Yes
# of full sibs	Yes	Yes
# of half sibs, mother's side	Yes	Yes
# of half sibs, father's side	No	Yes
Adj R-sq.	.108	.158
# observations	45,606	74,357

[a] Includes linear quadratic dummy for teenage parent and interaction between mum' age and dad's age.
Note: We control for year and month of birth in all models. The group numbers refer to their numbers in Figure 2.