Pre-Marital Birth, Marriage and Welfare

José J. Canals-Cerdá[1]

July 2003

Abstract

This paper investigates the transition into premarital birth or marriage for a sample of young women from the NLSY. Overall, welfare has a significant effect on a woman's decision to marry and an insignificant effect on an unmarried woman's fertility decision. We find the strongest welfare effect on the likelihood of marriage among disadvantaged women, and the strongest positive effect of welfare on fertility among hispanic women. Most of the observed differences in behavior between white women and disadvantaged women are the result of differences in endowments. The women that experience a premarital birth are characterized by a high probability of fertility and low marital prospects over their teen years.

[1] José J. Canals-Cerdá, Department of Economics, University of Colorado at Boulder, Campus Box 256, Boulder, Colorado 80309-0256. Phone: (303) 492-7869, Fax: (303) 492-8960. E-mail: jose.canals-cerda@colorado.edu.

Pre-Marital Birth, Marriage and Welfare

Abstract

This paper investigates the transition into premarital birth or marriage for a sample of young women from the NLSY. Overall, welfare has a significant effect on a woman's decision to marry and an insignificant effect on an unmarried woman's fertility decision. We find the strongest welfare effect on the likelihood of marriage among disadvantaged women, and the strongest positive effect of welfare on fertility among hispanic women. Most of the observed differences in behavior between white women and disadvantaged women are the result of differences in endowments. The women that experience a premarital birth are characterized by a high probability of fertility and low marital prospects over their teen years.

1 Introduction

Over the last thirty years American society has experienced important changes in family structure. These changes have been especially dramatic among African-Americans (Ellwood and Crane 1990). While birth rates have remained relatively stable over the period 1970-1990, the proportion of non-marital births has increased steadily. These changes deserve our attention for many reasons. Teenaged unwed mothers are more likely to live in poverty and have, on average, lower educational attainment than women who postpone fertility, although these outcomes may be partly the result of unobserved heterogeneity and self selection (Hotz, McElroy, and Sanders 1997, Ribar 1996). Children born to teenage mothers are more likely to grow up in poor, single parent families and experience high risk to both their health status and school achievement (Haveman, Wolfe, Wilson and Peterson 1997). Furthermore, unwed mothers are more likely to participate in government welfare programs (Maynard 1997). Moffitt (1992) reports a dramatic caseload expansion in welfare programs like the Aid to Families with Dependent Children (AFDC), Medicaid and Food Stamps. In particular, the AFDC increased by 270 percent between 1965 and 1985.

Several theories have been proposed to explain the increase in illegitimate births among teenage women. Based on Becker's (1991) theory of marriage, researchers have pointed at the welfare system as a possible reason for this increase. The main argument is that, by favoring single-parent families, the welfare system reduces the costs of having children and increases the value of single parenthood as an alternative to marriage.

The empirical evidence is inconclusive. In a survey of the literature, Moffit (1992) concluded that there was no evidence of a strong link between welfare generosity and premarital fertility. In a recent survey (Moffitt, 1997), he concludes that a majority of recent studies support the hypothesis that the welfare system has a significant effect on fertility behavior, but it alone cannot explain the increase in non-marital fertility and the decline in marriage.

Moffitt (1994) uses data from the Current Population Survey (CPS) years 1969 to 1989 to study the effect of welfare generosity on the probability of female headship. Initially, he finds a positive and significant effect of welfare generosity for white women and insignificant effects for black women. After controlling for state fixed effects, he finds no effect for white women and negative effects for black women. Hoynes (1997) uses data from the Panel Study of Income Dynamics (PSID) to also study the effect of welfare generosity on the probability of female headship. She finds no significant effect of welfare on female headship for white women and a significant positive effect for black women after controlling for state fixed effects. Moreover, the effect of welfare on female headship became insignificant for black women after controlling for individual unobserved heterogeneity. These studies bundle together single and divorced mothers of different ages. Because welfare can affect different groups of women differently, much can still be learned from studies that consider a more homogeneous group of women.

Schultz (1994) uses data from the 1980 U.S. Census to analyze probit equations on the effect of welfare on the Probability of a Woman Living with a Spouse and Tobit and OLS equations to analyze the effects of welfare on the number of children ever born. He divides his sample by race, black and white, and for three age groups. Because his analysis relies on the variation in welfare benefits across states in order to identify the effects of welfare, his study does not control for state fixed effects. He finds that AFDC generosity has a negative and statistically significant effect on marriage for the group of women ages 14-24. Moreover, the AFDC effects on fertility are negative and statistically significant only for the group of white women ages 15-24. Studies that do not consider state fixed effects have been criticized for not controlling for the possible endogeneity of the welfare program.[2]

In recent years several studies have analyzed the effects of welfare generosity on marriage, premarital birth and abortion among young women. Lundberg and Plotnick (1995) consider a subsample of women from the National Longitudinal Survey of Youth (NLSY) that experienced a premarital pregnancy and study the effect of welfare and other policy variables on the probability that a teen carries a pregnancy to term, premarital birth and marriage. In both cases, they find a significant effect of welfare generosity on each outcome

[2] "Cross-sectional variation in the AFDC program appears to be strongly correlated with unmeasured factors determining behavior. Thus AFDC effects cannot be identified from cross-sectional variations across states." (Rosenzweig, 1999). See also Moffitt (1994).

for whites and insignificant effects for blacks. Their econometric model does not control for state fixed effects.

Grogger and Bronans (2001) consider the relationship between welfare benefits and the time to first marriage and time to next birth among initially unwed mothers using a sample of twin births to control for unobservables. They find that "Higher welfare benefits lead unwed white mothers to forestall their eventual marriage and lead unwed black mothers to hasten their next birth." However, they found these effects to be small.

Rosenzweig (1999) uses NLSY data to study the effect of welfare on the probability that a woman has a premarital birth versus only marital births or no births by age 22. After controlling for state fixed effects and cohort fixed effects, he finds a significant and quantitatively large positive effect of welfare on the probability of premarital fertility, especially among low income women. Hoffman and Foster (2001) replicate Rosenzweig's study using data from the PSID and obtain the same results. However, when they repeat the study for women at age 19, they find no significant effect of welfare on the probability of premarital fertility.

In this paper we focus our attention on the population of young women and on the problem of premarital birth and first marriage. At each point in time a woman in our sample is at risk of marriage or premarital birth, and we only observe the time of occurrence of the first realized risk. This process is analyzed within the framework of a competing risk model with age-variant coefficients. This specification allow us to distinguish between the process of young women's premarital fertility and the process of marriage. This distinction is necessary in order to understand the different effects of these two processes on the process of out of wedlock childbearing.

We present results for four different groups of women, three racial or ethnic groups, black, white and hispanic women, and a group of economically disadvantaged women. This is in contrast with previous studies that have either ignored the population of hispanic women or have combined this population with the group of white or non-white women.

Unlike in Rosenzweig (1999) that only considers the status quo of the young women at age twenty-two, our approach allows us to follow the evolution of premarital birth and marriage over time. More precisely, the age-variant specification allows us to capture the differential effect of relevant model covariates at different ages. In particular, we are able to measure the differential effects of welfare on the process of marriage and premarital birth at different ages.

The paper is divided into five sections. In Section two, we describe the data to be used in this analysis. In section three we construct the basic econometric model and present novel ways to interpret the estimation results. In section four we present the estimation results. Section five draws conclusions.

2 Data Description and Preliminary Findings

The main dataset used in this paper is the NLSY. The NLSY is a nationally representative sample of 12,686 young men and young women who were 14 to 22 years of age when they were first surveyed in 1979. The NLSY is representative of all American men and women born in the late 1950s and early 1960s. The NLSY is comprised of three sub-samples. In the empirical work, we use a sample of 2324 white women from the cross-sectional sub-sample representative of the non- institutionalized civilian segment of the young population, and two samples of 1399 black and 886 hispanic women drawn from the same cross-sectional sub-sample and the supplemental sub-sample designed to oversample civilian Hispanic, black, and economically disadvantaged white youth.

The NLSY data set collects extensive information on family background, fertility and marital history, and other individual characteristics. Individuals in the sample have been interviewed every year since 1979. In addition, retrospective fertility and marital histories were collected in 1979. We follow women until the time of their first transition into marriage or premarital birth. The premarital birth duration is defined from the time the young woman becomes at risk of having a child, at age thirteen,[3] until the time of the first premarital birth.

[3] Only one individual in our sample had a chid at the young age of eleven, this observation was disregarded.

Similarly, the first marriage duration begins at age thirteen and continues until the time of the first marriage.

For each individual, the NLSY provides the state of residence at age 14 and the state of residence for each survey year. However, the state of residence between age 14 and the age at the time of their first interview is unknown. We substitute the missing information with the state of residence at age 14, or at the age of the first interview depending on which one is closest in time.[4] We will use this information latter on to associate state dummies to each individual-year observation.

Another shortcoming of the NLSY data set is that it does not provide information on parental income. As in Rosenzweig (1999) , a measure of parental income is constructed by combining information on the characteristics of the parents of the women in the sample when they were age 14 with information on median wages by occupation, education level, gender, race and marital status, obtained from the census. Finally, the NLSY data is supplemented with data on welfare generosity, the availability of abortion services, and wages at the state level.[5]

A. Welfare Generosity Over Time

Figure 1 describes the changes over time in average AFDC state specific payments for a family of two. As the graph shows, AFDC payments have been decreasing consistently over the time period of interest. Thus, the older cohorts in the NLSY have been exposed to a more generous welfare program than younger cohorts. In contrast, the proportion of women that experience a premarital birth is higher among the younger cohorts, as noticed by Rosenzweig (1999). This is consistent with the evidence reported in Moffit (1997) indicating a decrease in marriage rates and an increase in nonmarital childbearing over time.

Figure 1 also depicts a composite measure of welfare generosity defined and used in Moffit (1994). Because participants on the AFDC program usually participate in other

[4] Rosenzweig (1999) follows a similar strategy. Hoffman and Foster (2001) found that this technique results in 10 percent of the sample being assigned incorrect state of residency. We obtain similar results using the oldest NLSY cohort as a benchmark.

[5] The wage variable represents average yearly wages associated with the services and retail and wholesale trade industries, at the state level, and was obtained from the Bureau of Economic Analysis webpage.

welfare programs, Moffit's measure of welfare generosity attempts to capture the overall value of welfare by including AFDC, Food Stamps and Medicaid Benefits.[6] According to Figure 1 Moffit's measure of welfare generosity for a family of two has remained relatively constant over the period of interest. We will use Moffit's measure of welfare generosity in our analysis.[7]

Figure 2 describes average changes over time in the availability of abortion providers at the state level. As the graph shows, the number of abortion providers increased steadily during the 70's and remained relatively constant during the 80's. In addition to the large differences in the availability of abortion providers over time, a closer look at the data indicates large differences in the availability of abortion providers across states.

B. Descriptive Statistics

The longitudinal structure of the NLSY allows us to measure the risk of premarital birth and marriage at different ages. Figures 3 and 4 present non-parametric Kaplan-Meier (KM) estimates of the survivor functions associated to the process of marriage, with premarital birth treated as random censoring, and premarital birth, with marriage treated as random censoring.[8] We present KM estimates by race (black, hispanic and white) and for the group of disadvantaged black and white women. Recent teoretical work by Rosenzweig (1999) suggests that the effects of welfare should be larger for the group of disadvantaged women. The group of disadvantaged women in our study consist of black and white women with parental incomes in the bottom sixty percent of the distribution of incomes in the overall sample. Figures 3 and 4 provide preliminary evidence of important behavioral differences across racial groups. White women are much more likely to marry than black women, specially between the ages of eighteen and twenty-five, while hispanic women are more likely

[6] This measure of welfare is defined in Moffit (1994) page 626, footnote 12.

[7] Like Moffit (1994) we did not find significant differences in our results when using the AFDC variable instead of Moffit's index of welfare generosity.

[8] By definition, the KM estimates of the survivor function associated to the process of marriage/premarital-birth represent the probability that a premarital birth has not occurred at each particular age. Kaplan-Meier estimates are consistent under the unlikely assumption that the premarital-birth/marriage process behaves as random censoring. Thus, the Kaplan-Meier estimates reported in this paper should be interpreted with caution.

to marry at a young age. In contrast, black women are much more likely to experience a premarital birth than white women, specially between the ages of sixteen to twenty-five, while the likelihood of premarital birth for hispanic and disadvantaged women lays in between these two groups.

Table 1 reports descriptive statistics for the incidence and timing of premarital birth and first marriage. About forty two percent of black women in our sample experience a premarital birth as compared with only thirteen percent of white women, twenty-eight percent of hispanic women and thirty two percent of disadvantaged women. The average age at the time of the first premarital birth is around twenty years for all groups of women. We also observe important differences in marriage among the different groups of women. About seventy-one percent of white women marry without experiencing a premarital birth compared with forty-five percent of black women, fifty-three percent of disadvantaged women, and sixty percent of hispanic women.

Overall, we observe very different marriage and premarital fertility behavior among the different groups of women considered. Some of the observed behavioral differences may be the result of differences in the distribution of observed characteristics across groups. Some of the variables describe characteristics of the household in which each woman in the sample resided at age 14. White women were raised in wealthier households by more educated parents and had three siblings, in average. Black and Hispanic women were raised in households with less educated parents, lower incomes and five siblings, in average. About forty-tree percent of disadvantaged women and thirty-two percent of black women were living with a single mother at age 14 as compared with seventeen percent of hispanic women and ten percent of white women. In contrast, about seventy-eight percent of white women were living with both parents at age 14 as compared with sixty-eight percent of hispanic women, fifty percent of black women and forty-two percent of disadvantaged women. Table 1 also provides evidence of important differences in cognitive skills among the different groups as measured by the standardized Armed Forces Qualification Test (AFQT).[9] The average AFQT for black women

[9] The AFQT consists of four tests measuring arithmetic reasoning, word knowledge, paragraph compo-

is 0.64 standard deviations below the average AFQT for the whole sample, the average for hispanic women is 0.45 standard deviations below the average, and the average for the group of disadvantaged women is 0.27 standard deviations below the average. In contrast, the average AFQT for white women is 0.47 standard deviations above the average AFQT for the whole sample. Table 1 also provides additional evidence of differences across groups in characteristics like religiosity and urban residence.

C. Cohabitation

If the women in our sample are choosing cohabitation as an alternative to marriage, then it may not be reasonable to study premarital birth and marriage as the only two possible alternatives that a woman faces. Unfortunately, the information available in the NLSY about cohabitation is not as detailed as the information on marriage and fertility. At the time of each interview, the woman is asked if she is cohabitating with a partner of the opposite sex. There is no information about the duration of the cohabitation and there is no retrospective information on cohabitation for the years prior to 1979.

Table 2 presents descriptive statistics on the likelihood of cohabitation for the sample of women that experienced a premarital birth after 1979. Because these women are in average older, and younger women are less likely to cohabitate, this information can be interpreted as an upper bound to the incidence of cohabitation in the full sample. Eighty-eight percent of women were not cohabitating the year before their first premarital birth. Of these women, seventy-eight percent were not cohabitating the year after, eight percent were cohabitating and seventeen percent were married. Of the group of women cohabitating the year before premarital birth forty percent were not cohabitating the year after, forty percent were still cohabitating and twenty percent were married. Thus, the probability of cohabitation a year after premarital birth is much higher for those women that were cohabitating a year before, while the probability of marriage is similar for both groups of women. There are significant differences in cohabitation behavior among the four different

sition, and numeric operations. This test was administered to most of the subjects in the NLSY and is commonly used by researchers as a measure of unobserved ability.

groups of women under consideration. Cohabitation is more common among white women and less common among black women. Also, from these women who were cohabitating the year before premarital birth, white women are more likely to be cohabitating the year after experiencing a premarital birth while women in all other groups are more likely to be not cohabitating the year after. Overall, cohabitation appears to be a long-term alternative to marriage for only a small proportion of the women in our sample who experience a premarital birth.

Moffitt, Reville and Winkler (1998) analyze the extent of cohabitation among welfare recipients. They find that a significant proportion of single mothers cohabitate. The results reported in Table 2 are not inconsistent with their findings since we focus our attention on women at the time of their first premarital birth while their sample includes all single women. One of the findings in their paper is that "cohabiting couples in which the male is the natural father of the children are ineligible for AFDC-Basic and can be considered only for the AFDC-UP program. Thus the key eligibility requirement for AFDC-Basic is not that a woman be unmarried, but that she not live with the father of her children." Thus, according to this finding we would expect welfare to have similar effect on marriage and cohabitation.

3 The Empirical Model

In contrast to much of the existing literature, we focus our attention on the population of young women and on the problem of premarital birth. At each point in time a woman in our sample is at risk of marriage or premarital birth. The empirical specification is a competing risk model with two possible risks, the risk of premarital fertility and the risk of marriage. This model can be interpreted as a reduced form of a model of marital search in which women search for marriageable men and at each point in time have to decide whether to conceive a child out of wedlock, or to postpone fertility (Mortensen 1988; Becker, Landes and Michael 1977).

A The econometric model

We consider a competing risks model with two distinct risks, the risk of marriage and the risk of premarital fertility, and we only observe the time of occurrence of the first realized risk.[10] Thus, for individuals $i = 1, 2, ..., N$, we observe data of the form $\{x_i, t_i, d_{mi}, d_{fi}, d_{ci}\}_{i=1}^{N}$, where x_i represents a vector of observable individual characteristics, $t_i = \min(t_{mi}, t_{fi}, t_{ci})$, with t_{mi} and t_{fi} representing the time of first marriage and the time of premarital fertility, respectively, t_{ci} represents the random time of censoring, and $d_{ji} = I\left(t_{ji} = t_i\right)$, $j = m, f, c$, is an indicator variable. We also assume that, in addition to x_i, there are additional individual-specific characteristics affecting the duration process which are not observed by the researcher. In the tradition of Lancaster (1979) and Heckman and Singer (1984), we assume that the effect of unobservable characteristics, or unobserved hetegoreneity, on risk j can be summarized by a single variable $v_{ji} \in R_+$, for $j = m, f$, and is independent of x_i. In particular, we adopt the following specification for the hazard functions:

$$\lambda_j(t_j \mid x_j, \nu_j) = \lambda_j(t_j \mid x_j)\nu_j, \;\; j = m, f \tag{1}$$

Thus, consider $\nu_i = (\nu_{mi}, \nu_{fi})$ and denote its associated distribution function as $G(\nu_i)$. This specification allows for the possibility of dependence between $t_m|x_m$ and $t_f|x_m$ because v_m and ν_f are not necessarily independent. Furthermore, this specification is similar to the one analyzed in Heckman and Honore (1989), which guarantees identification of the model. After specifying the hazard function we can define the joint survivor function for (t_m, t_f), conditional on x and ν, as:

[10] Altough the NLSY includes the full fertility and marital history of women, we choose to focus our attention on the process of premarital birth and first marriage alone because it is of special interest. Furthermore, marital fertility is likely to be a very different process.

$$S\left(t_m, t_f \mid x, \nu\right) \quad = \quad \exp\left\{-\Lambda_m\left(t_m, x_m, \nu_m\right)\right\}\exp\left\{-\Lambda_f\left(t_f, x_f, \nu_f\right)\right\}, \quad \textit{with } j = m, f, \tag{2}$$

$$\textit{and } \Lambda_j(t_j \quad \mid \quad x_j, \nu_j) = \int_0^{t_j} \lambda_j(z \mid x_j, \nu_j)dz. \tag{3}$$

representing the integrated hazard. After integrating out the effects of the unobserved heterogeneity components, the ensuing mixture survivor function can be represented as:

$$\begin{aligned} S\left(t_m, t_f \mid x\right) &= \int \exp\left\{-\Lambda_m\left(t_m, x_m\right)\nu_m\right\} \exp\left\{-\Lambda_f\left(t_f, x_f\right)\nu_f\right\} dG(\nu) \\ &= M\left[-\Lambda_m(t_m \mid x_m),\ -\Lambda_f(t_f \mid x_f)\right], \end{aligned} \tag{4}$$

with $M(.)$ representing the moment generating function (MGF) of ν evaluated at $(-\Lambda_m,\ -\Lambda_f)$.

Because of its simplicity a single duration model is preferred to a more complex competing risk model. We can use equation (4) to analyze under what conditions a single spell duration model will represent a suitable econometric model for the problem at hand. If v_m and v_f are independent, we have that

$$\begin{aligned} S\left(t_m, t_f \mid x\right) &= M_{v_m}\left[-\Lambda_m(t_m \mid x_m)\right] M_{v_f}\left[-\Lambda_f(t_f \mid x_f)\right] \\ &= S\left(t_m \mid x\right) S\left(t_f \mid x\right), \end{aligned}$$

which implies that the process $(t_f|x)$ is independent of the marriage process. If this is the case, the process of premarital birth and the process of marriage could be analyzed independently, as simple single duration models, by treating the other process as random censoring. On the other hand, if (v_m, v_f) are not independent a single spell duration model generally produces inconsistent estimates of the parameters of the model because it will result in the wrong likelihood function being optimized. Given that the independency of (v_m, v_f) is ultimately an empirical question, it seems appropriate to start with a model that allows for dependency between the unobserved heterogeneity components affecting the process of marriage and the process of premarital birth.

The likelihood function for the competing risk model can now be developed. Depending on which final state we observe, we define

$$q_{mi}(t_i) = \Pr(t_{mi} = t_i, t_{fi} \geq t_i \mid x_i) \ \textit{and} \tag{5}$$

$$q_{fi}(t_i) = \Pr(t_{mi} \geq t_i, t_{fi} = t_i \mid x_i), \tag{6}$$

as the probability of marriage first or premarital birth first at time t_i. With

$$\begin{aligned} q_{ji}(t_i) &= \left.\frac{-\partial S(t_{mi}, t_{fi} \mid x_i)}{\partial t_j}\right|_{t_{mi}=t_{fi}=t_i} \\ &= \lambda_j(t_i \mid x_{ji}) \times M_j^{(1)}\left[-\Lambda_m(t_i \mid x_{mi}),\ -\Lambda_f(t_i \mid x_{fi})\right], \text{ for } j = m, f. \end{aligned} \tag{7}$$

Moreover, for $j = c$ both t_{mi} and t_{fi} are censored and the probability of this event can be computed as $q_{ci}(t_i) = S(t_i, t_i \mid x_i; \theta)$. Thus, the contribution of a single observation to the log-likelihood function can now be expressed as:

$$l_i = d_{mi} \log q_{mi}(t_i) + d_{fi} \log q_{fi}(t_i) + d_{ci} \log q_{ci}(t_i) \tag{8}$$

and the log-likelihood can be defined as the sum of the individual contributions. However, before we can estimate the model we still need to specify the structure of the hazard functions and the unobserved heterogeneity.

B. The Empirical Specification

We specify the observed component of the hazards of marriage and premarital birth as

$$\lambda_j(t_i, x_{ji}) = \lambda_j(t_i) \exp\left[x'_{ji}\beta_j(t_i)\right], \ j = m, f.$$

We use a spline function of time (Meyer, 1990) to model the time dependent baseline hazards $\lambda_j(t)$. In addition, the parameter vector $\beta_m(t)$ is also allowed to change over time. This allow us to account for the potential different effect of covariates, x_i, on the duration process at different ages.[11]

With respect to the unobserved heterogeneity component, it has been shown by researchers that the misspecification of the distribution of the unobserved heterogeneity can result on inconsistent estimates.[12] This consideration lead Heckman and Singer (1984) to the development of an estimation method that does not require a parametric specification of the distribution of unobserved heterogeneity. Thus, in our estimation strategy we control for unobserved heterogeneity using the nonparametric Heckman-Singer approach.[13] More precisely, we approximate the density of unobserved heterogeneity by a bivariate discrete distribution of the form $g(\nu_k, \nu_r) = p_{kr}$, for $k = 1, ..., M_1$ and $r = 1, ..., M_2$, with the sum of the p_{kr}'s being equal to one and the expected value of v_j equal to one, for $j = m, f$, as necessary identification restrictions given the multiplicative form of the proportional hazard specification (1). With this specification for $g(\bullet)$ it is straightforward to compute the approximate moment generating function and its derivatives.

C. Interpreting Estimates of the Competing Risk Model

Given the non-linearity and complexity of the competing risk model it is in general difficult to interpret the estimation results by simply looking at the tables of parameter estimates. For this reason, it is important to provide alternative characterizations of the estimation results. Based on equations (5) and (6) we can specify

$$Q_m(t|x;\theta) = \int_0^t q_m(y|x;\theta)\,dy \text{ and } Q_f(t|x;\theta) = \int_0^t q_f(y|x;\theta)\,dy$$

as the probability of marriage before a certain age t and before premarital birth, and as the probability of premarital birth before time t, respectively.[14] In particular, we can better understand the overall effect of welfare on marriage and premarital birth by looking at the

[11] McCall (1996) studies the problem of identification of duration models whith time variant coefficients.

[12] See Baker and Melino (2000) for a recent Monte Carlo study.

[13] See McCall (1996) , for an example of application of the Heckman-Singer approach to a competing risk framework.

[14] This integral is computed numerically using Gaussian Quadrature techniques. Standard errors are computed using parametric bootstrap.

effects of a change in welfare generosity on

$$E_i\left(Q_j\left(t|x_i;\theta\right)\right),\ \text{for } j=m,f, \tag{9}$$

the probability of marriage/premarital-birth averaged over the sample of interest. This characterization will be used in the next section to provide a better understanding of the estimation results.

4 Results

Table 3 describes the four basic competing risk models estimated. Each one of the models is estimated with and without state fixed effects making the total number of models estimated equal to eight. In addition, each model is estimated separately for each one of the four groups in which the data has been divided. Models one and three share the same basic structure and the same is true for models two and four. In addition, in models three and four we allow for the presence of unobserved heterogeneity while in model one and two we do not allow for the presence of unobserved heterogeneity.[15] The hazard of premarital birth and marriage in models one and three depend on a small set of explanatory variables including welfare generosity, the standardized AFQT test, mother's education, the number of siblings, and family income. The hazard of premarital birth and marriage in models two and four depend on a larger set of explanatory variables consisting of all the family background, living arrangements, and religious attendance, variables listed in table 1, as well as the standarized AFQT test and its square, a dummy for urban residency, a dummy indicating private school attendance at age forteen, a measure of average state wages for low skill jobs, and a variable indicating the number non-hospital abortion providers per ten thousand women, at the state level. In addition, all models include cohort dummies and a time trend to absorb cohort specific differences and aggregate intertemporal changes in customs.

[15] The case without unobserved heterogeneity is equivalent to considering a degenerated distribution of unobserved heterogeneity that takes only the value $(1,1)$.

In the models that control for state fixed-effects identification of welfare effects comes mainly from individual and cohort specific differences in exposure to the welfare program (Rosenzweig 1999, Hoynes 1997, Moffit 1994). In all other models variation on welfare generosity across states also contributes to identify the effects of the welfare program (Shultz 1994). Econometric models that do not include state-fixed effects have been criticized for not controlling for the possible endogeneity of the welfare program.

A. Welfare effects

As reported in table 3, we estimate eight different model specifications for each one of the four sub-samples considered. Estimates of the parameters associated with the welfare variable and the hazards of marriage and premarital birth are reported in table 4.a and 4.b.[16] For the subsample of black and white disadvantaged women we observe that the coefficients associated with the hazard of marriage are negative for all age groups and statistically significant for the first two age groups. In addition, the welfare effect is strongest for the first age group. Comparing across model specifications, we observe that the effects of welfare on marriage are stronger in the models that control for state fixed-effects and weaker in the models that control for unobserved heterogeneity. The inclusion of a larger set of explanatory variables in models two and four results in a small increase in the magnitude of the effect. Thus, welfare significantly reduces the likelihood of marriage specially at a young age.

The effect of welfare on the hazard of premarital birth is less clear. Economic theory suggests that welfare should increase the likelihood of premarital birth (Becker, 1991). As a result, we would expect the coefficients associated to the welfare variable to be positive in this case. However, in the models that do not control for fixed effects the coefficients associated with the hazard of premarital birth are negative for all age groups but statistically significant, only in some models, for the first age group. In contrast, in the models that control for state fixed-effects the coefficients are positive in most model specifications, except for model four, and are insignificant in all model specifications.

[16] The models that control for state fixed-effects are estimated using a subsample consisting of only those states with at least twenty five individuals in the NLSY in year 1979.

The overall effects of the welfare system are similar for the subsample of black women (table 4.a). The coefficients associated with the hazard of marriage are negative for all age groups and statistically significant for the age group of eighteen to twenty-two years old, but not for all model specifications. In addition, the welfare effect seems stronger in the age group of eighteen to twenty-two. The inclusion of a larger set of explanatory variables in models two and four results in a sizable increase in the magnitude of the effect. The coefficients associated with the hazard of premarital birth are for the most part negative and statistically insignificant.

For the subsample of hispanic women (table 4.b), the coefficients associated with the hazard of marriage are negative for all age groups but are not statistically significant. The coefficients associated with the hazard of premarital birth are for the most part positive, as suggested by the theory, and statistically significant for the age group of eighteen to twenty-two years old, although not for all model specifications.

For the subsample of white women (table 4.b), the coefficients associated with the hazard of marriage are negative and statistically significant for the age group of thirteen to seventeen, are negative and not statistically significant for the age group of eighteen to twenty-two, in all but one case, and have different signs and are not statistically significant for the age group of twenty-tree years or older. The coefficients associated with the hazard of premarital birth are negative for most model specifications and statistically insignificant.

Overall, the evidence presented indicates that welfare has a significant effect on a woman's decision to marry. The direction of this effect is negative as suggested by economic theory. The theory also suggests that welfare should increase the likelihood of premarital birth. In contrast, the evidence indicates that welfare has an insignificant effect on a woman's premarital fertility decisions and in most cases the direction of this effect is negative.

The parameters of non-linear econometric models are generally difficult to interpret. In an attempt to provide a simple account of the quantitative impact of welfare, table 5 reports the average change in the probability of marriage and premarital birth, respectively, as a result of a ten percent increase in welfare generosity. Although the model allows us to compute the results of the policy at any age, for simplicity of exposition we present the outcomes of the policy change at four different ages, seventeen, nineteen twenty-two and twenty-five. The results presented correspond to models one and three with state fixed effects and have been computed using equation (9). We will focus our attention on the results from model specification three.[17]

For the subsample of black and white disadvantaged women the policy results in an eight percent decrease in the probability of marriage averaged over the four ages considered. With the largest effect observed in the group of women seventeen or younger that experience a decrease in the probability of marriage of fourteen percent. Moreover, the policy results in a four percent average increase in the probability of premarital birth, with the largest effect observed in the age group of nineteen to twenty-five.

In contrast, the result of the policy are much less conclusive for the subsample of black and the subsample of white women, which can be interpreted as evidence of the differential effect of welfare on women at different income levels. In both cases, our results predict a decrease in the probability of premarital birth as a result of the policy in contrast with the theoretical predictions. The policy also results in a two percent average decrease in the probability of marriage for whites. Also, the two models predict very different results of the policy with respect to the probability of marriage among black women. Model one predicts an average decrease in the probability of marriage of nine percent while model three predicts a very small decrease in the probability of marriage for the age groups seventeen to twenty-two and a small increase for the remaining two groups.

We observe the largest impact of welfare on the probability of premarital birth on the subsample of hispanic women. The average impact of the policy change for this group is a sixteen and a half percent increase in the probability of premarital birth. The fact that this increase is not significant at the usual significance level is most likely the result of the

[17] Overal, we observe larger effects of welfare in models with a large number of explanatory variables (models two and four) and state fixed effects. We observe smaller effects of welfare in models that control for unobserved heterogeneity (models three and four). Thus the results obtained from models one and three should be representative of the average effect of welfare across different model specifications.

small sample size. The policy change also results in a nine percent average decrease in the probability of marriage, and this effect is significant.

B. Marriage prospects and premarital birth

For each individual in our dataset we observe only the time of marriage or the time of premarital-birth, whichever occurs first. However, identification of the competing risk model allows us to recover the underlying structure of the marriage/premarital-birth process. Using the estimated model structure we simulate a large number of marriage/premarital-birth events. For each one of the four groups of women considered we divide the simulated sample into two categories, those that experience marriage first and those that experience premarital-birth first. Finally, for each category we compute the timing of marriage and premarital birth for each one of five quantiles in an attempt to better understand this process. Table 6 summarizes the results of this exercise.

For each one of the groups of women considered in table 6 we observe a positive correlation between the timing of marriage and the timing of premarital birth. We also observe important differences in the proportion of premarital births across racial groups. However, the predicted marriage/premarital-birth process among these women that experience a premarital birth is strikingly similar across the four groups of women considered.

As expected, the predicted average age of premarital birth is much lower for the group of women that experience a premarital birth. The average age of premarital birth is around twenty years for this group of women while it is around thirty years for the group of women that experience a marriage first. Also, among these women that experience a marriage first we observe sizeable differences across racial groups on the predicted "latent" average age of premarital birth, with this average being equal to twenty-eight for blacks, twenty-nine for hispanic and thirty-tree for whites. In addition, within this group of women more than seventy-five percent of white women in our simulations would have not experienced a premarital birth by age thirty even if they had not married before then. In contrast, less than fifty percent of hispanic women and approximately twenty-percent of black women would have not experienced a premarital birth in such case. We also observe important differences in the predicted "latent" average age of marriage between the group of women that experience a premarital birth and those that experience a marriage first. More precisely, the predicted average age of marriage is equal to twenty-three years for the first group and twenty-six for the second group. Finally, among these women that experience a premarital birth first we do not observe significant differences across racial groups on the predicted "latent" average age of marriage. Overall, our simulation exercise indicates that these women that experienced a premarital birth had a high risk of premarital birth and low marital prospects throughout their teen years.

C. Understanding the Sources of Racial Differences in Premarital Birth

To what extent are the observed differences in marriage and premarital-birth across groups the result of observable differences in endowments (covariates)? A simple decomposition of equation (9) may provide the answer to this question. Consider

$$E_g \left(Q_j \left(t | x_g ; \theta_g \right) \right), \ with \ j = m, f, \ and \ g = w, b, h, d,$$

representing the average predicted probability of marriage (m) before a certain age t and before premarital birth, or the probability of premarital birth (f) before time t, respectively, with the average computed over the distribution of endowments, x_g, for the groups of white (w), black (b), hispanic (h) and disadvantaged (d), women. Using this expression, we can decompose the differences in marriage or premarital birth between white women and any other group of women as follows,[18]

$$E_w \left(Q_j \left(t | x_w ; \theta_w \right) \right) - E_g \left(Q_j \left(t | x_g ; \theta_g \right) \right) =$$
$$\left[E_w \left(Q_j \left(t | x_w ; \theta_w \right) \right) - E_w \left(Q_j \left(t | x_w ; \theta_g \right) \right) \right] + \left[E_w \left(Q_j \left(t | x_w ; \theta_g \right) \right) - E_g \left(Q_j \left(t | x_g ; \theta_g \right) \right) \right],$$

for $j = m, f$. The first component in this decomposition can be interpreted as a measure of the differences in marriage/premarital-birth due to differences in behavior and unob-

[18] Heckman and Cameron (2001) equation 6.a defines a simmilar expression that they use to study the sources of differences in predicted high school graduation rates across racial groups.

served heterogeneity between white women and the other group of women under consideration, while the second component can be interpreted as a measure of the differences in marriage/premarital-birth due to observed differences in endowments. Thus, taking the group of white women as a benchmark we are going to use this second component to analyze the relative importance of differences in endowments across groups in explaining the observed differences in marriage and premarital-birth behavior.

The first two columns in table 7 report information about $E_g\left(Q_j\left(t|x_g;\theta_g\right)\right)$, the average predicted probability of marriage and premarital birth, for each group of women at four different ages. For the groups of disadvantaged, black and hispanic women, the third and fourth columns report information about $E_w\left(Q_j\left(t|x_w;\theta_g\right)\right)$, the average predicted probability of marriage and premarital birth for the corresponding group of women when they are given the same distribution of endowments as the group of white women. For the group of white women, the third and fourth columns report information about $E_b\left(Q_j\left(t|x_b;\theta_w\right)\right)$, the average predicted probability of marriage and premarital birth for the group of white women when they are given the same distribution of endowments as the group of black women. Finally, the last two columns report information about the changes in the probability of marriage and premarital birth when women of a specific group are given the endowments of women in another group. In this last case the results are reported as a percentage change with respect to the status quo.

On a first look at table 7 we observe that the standard errors associated to the objects of interest are for the most part relatively large, indicating that the results reported in this table are not measured very precisely and should be interpreted with caution. With this in mind, we begin our interpretation of results.

After assigning to the group of disadvantaged women the distribution of endowments of white women we observe a seventy seven percent average increase in marriage and a forty-six percent decrease in premarital birth. The largest effect on marriage occurs at the youngest age considered while the effect on premarital birth is more evenly distributed across different age groups. Interestingly, the new levels of marriage and premarital birth are similar to those in the group of white women.

After assigning to the group of black women the endowments of white women we observe a small five percent increase in the number of marriages and a twenty-one percent decrease in the number of premarital births. The predicted probability of marriage is fifteen points lower than for white women, while the probability of premarital birth is twenty-two points higher. Thus, a large gap between white and black women still remain even after the change in endowments.

Perhaps unexpectedly, after assigning to the group of hispanic women the distribution of endowments of white women we observe a nine percent decrease in the probability of marriage and a ten percent increase in the probability of premarital birth, with the largest effect occurring at the two oldest age groups considered.

Finally, after assigning to the group of white women the distribution of endowments of the group of black women we observe an eighteen percent increase in marriage, with the largest effect occurring at the two youngest age groups considered. We also observe a forty percent increase in premarital birth and this effect is evenly distributed across age groups. Even after this increase a premarital births among black women are twice as likely.

5 Conclusions

In this paper we have analyzed the complex selection process that leads women into premarital birth or marriage. In particular, we have examined the effects of welfare generosity and endowments (covariates) on a young woman's premarital fertility and marriage choices. We present results for four different groups of young women: three racial or ethnic groups (black, white and hispanic women) and a group of economically disadvantaged women.

The empirical specification considered is a competing risk model with two possible risks, the risk of premarital fertility and the risk of marriage. The model includes age-variant coefficients that allow us to analyze the effects of welfare, and other model covariates, on the process of marriage and premarital birth at different ages. Also, we have estimated a variety of econometric specifications for different sets of explanatory variables, state fixed effects and individual specific unobserved heterogeneity.

We observe very different marriage and premarital fertility behavior among the different groups of women considered. Overall, the evidence presented indicates that welfare has a significant effect on a woman's decision to marry. The direction of this effect is negative as suggested by economic theory. The theory also suggests that welfare should increase the likelihood of premarital birth. In contrast, the evidence indicates that welfare has an insignificant effect on a woman's premarital fertility decisions and in most cases the direction of this effect is negative.

We find the strongest negative welfare effect on the likelihood of marriage for the sample of disadvantaged women, this is consistent with the theoretical model and empirical evidence presented in Rosenzweig (1999). In contrast, the strongest positive effect of welfare on the likelihood of premarital birth is observed for the sample of hispanic women. Furthermore, model specifications with fixed effects and models with a large set of explanatory variables generate the strongest welfare effects on marriage while models that control for unobserved heterogeneity produce less significant effects.

In addition, the competing risk specification allows us to recover the underlying structure of the marriage/premarital-birth process. As expected, the predicted average age of premarital birth is much lower for the group of women that experience a premarital birth. Our results also indicate that these women that experienced a premarital birth had a high risk of premarital birth and low marital prospects throughout their teen years.

In a policy simulation exercise we consider the average change in the probability of marriage, and premarital birth, as a result of a ten percent increase in welfare generosity. For the subsample of black and white disadvantaged women the policy results in an eight percent decrease in the probability of marriage and a four percent increase in the probability of premarital birth. We observe the largest impact of welfare on the subsample of hispanic women. The average impact of the policy change for this group is a sixteen and a half percent increase in the probability of premarital birth and a nine percent decrease in the probability of marriage. In contrast, the result of the policy are much less conclusive for the subsample of black and the subsample of white women.

Finally, we also investigate to what extent the observed differences across groups in marriage and premarital-birth are the result of observable differences in endowments (covariates). After assigning to the group of disadvantaged women the distribution of endowments of white women we observe new levels of marriage and premarital birth similar to those in the group of white women. For the group of black women with the endowments of white women we observe a small increase in the number of marriages and a large decrease in the number of premarital births. However, a large gap between white and black women still remain even after the change in endowments. After assigning to the group of hispanic women the distribution of endowments of white women we observe an increase in the probability of premarital birth and, perhaps surprisingly, a decrease in the probability of marriage.

References

Baker, M. and A. Melino (2000) , "Duration Dependence and Nonparametric Heterogeneity: A Monte Carlo Study," *Journal of Econometrics* 96, 357-393.

Becker, G. (1991), *A Treatise on the Family*, Cambridge: Harvard University Press.

Becker, Gary S., Elisabeth M. Landes, and Robert T. Michael (1977), "An Economic Analysis of Marital Instability," *Journal of Political Economy* 85 (6), 1141-1187.

Ellwood, David T. and Crane, Jonathan (1990), "Family Change among Black Americans: What Do We Know?," *Journal of Economic Perspectives* 4, 65-84.

Grogger, Jeff and S.G. Bronars (2001), "The Effect of Welfare Payments on the Marriage and Fertility Behavior of Unwed Mothers: Results from a Twins Experiment,"*Journal of Political Economy*, 109 (3), 529-545.

Haveman, R., Wolfe, B., Wilson, K., and Peterson, E. (1997), "Do Teens Make Rational Choices? The Case of Teen Nonmarital Childbearing," Institute for Research on Poverty, Discussion Paper no. 113797.

Heckman, J. J. and B. Honore (2001), "The Identifiability of the Competing Risks Model," *Journal of Political Economy*, 109 (3), 455-499.

Heckman, J. J. and B. Honore (1989), "The Identifiability of the Competing Risks Model," *Biometrika*. 76 (2), 325-330.

Heckman, J. J. and B. Singer (1984), "A Method of Minimizing the Impact of Distributional Assumptions in Econometric Models for Duration Data," *Econometrica*, 52 (2), 271-320.

Hoffman, S.D. and E.M. Foster (2000), "AFDC Benefits and Non-Marital Births to Young Women," The Journal of Human Resources, 35 (2), 376-391.

Hotz, V. J., S. McElroy and S. Sanders (1997), "The Impacts of Teenage Childbearing on the Mothers and the Consequences of Those Impacts for Government," In *Kids Having Kids: Economic Costs and Social Consequences of Teen Pregnancy*, (ed.) Rebecca Maynard. Washington, D.C.: Urban Institute Press.

Hoynes, Hillary (1997), "Does Welfare Play Any Role in Female Headship Decisions," *Journal of Public Economics* 65, 89-117.

Lancaster, T. (1979), "Econometric Methods for the Duration of Unemployment," *Econometrica*, 47 (4), 939-956.

Lundberg, Shelly J., and Robert D. Plotnick (1995), "Adolescent Premarital Childbearing: Do Economic Incentives Matter?" Journal of Labor Economics, April 1995, pp. 177-200.

Rebecca A. Maynard (1997), "The Costs of Adolescent Childbearing," in *Kids Having Kids: The Costs and Social Consequences of Teenage Childbearing*, (ed.) Rebecca Maynard. Washington, D.C.: Urban Institute Press.

McCall, B. (1996). "Unemployment Insurance Rules, Joblessness, and Part-Time Work," *Econometrica*, 64 (3), 647-682.

McCall, B. (1996). "The Identifiability of the Mixed Proportional Hazards Model with Time-Varying Coefficients," Econometric Theory, 12, 733-738.

Meyer, B. D. (1990), "Unemployment Insurance and Unemployment Spells," *Econometrica*, 58 (4), 757-782.

Moffitt, Robert A. (1992), "Incentive Effects of the U.S. Welfare System: A Review," *Journal of Economic Literature*, XXX, 1-61.

Moffitt, Robert A. (1994), "Welfare Effects on Female Headship with Area Effects," *Journal of Human Resources*, 29, 621-636.

Moffitt, Robert A. (1997), "The Effect of Welfare on marriage and Fertility: What Do We Know and What Do We Need to Know?," Institute for Research on Poverty, Discussion Paper no. 1153-97.

Moffitt, R.A., R. Reville and A. Winkler (1998), "Beyond Single Mothers: Cohabitation, Marriage, and the U.S. Welfare System." *Demography*, 35 (3), 259-278 .

Mortensen, Dale T. (1988), "Matching: Finding a Partner for Life or Otherwise," *American Journal of Sociology* 94, S215-S240.

Ribar, D. C. (1996), "A Longitudinal Analysis of Young Women's Fertility and Educational Advancement," Working Paper, Department of Economics, George Washington University.

Rosenzweig, Mark (1999), "Welfare, Marital Prospects and Nonmarital Childbearing," *Journal of Political Economy*, 107 (6-2), S3-S32.

Schultz, T. Paul (1994), "Marital Status and Fertility in the United States," *Journal of Human Resources*, 29, 637-669.

FIGURE 1: WELFARE GENEROSITY

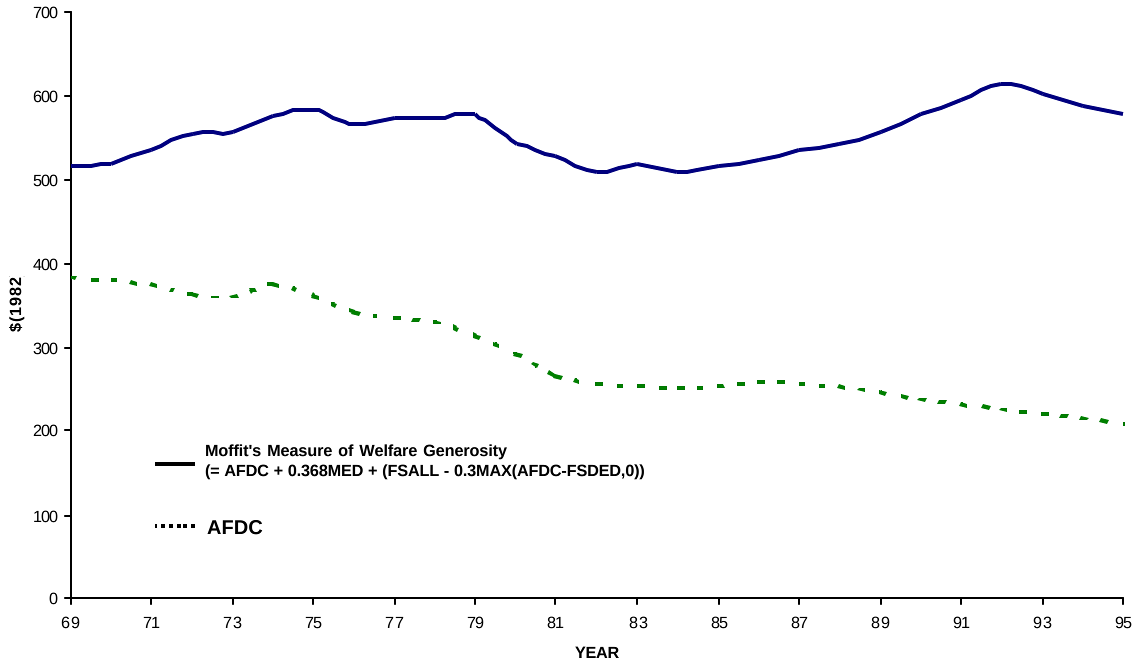

FIGURE 2: NUMBER OF NON-HOSPITAL ABORTION PROVIDERS BY 100000 WOMEN

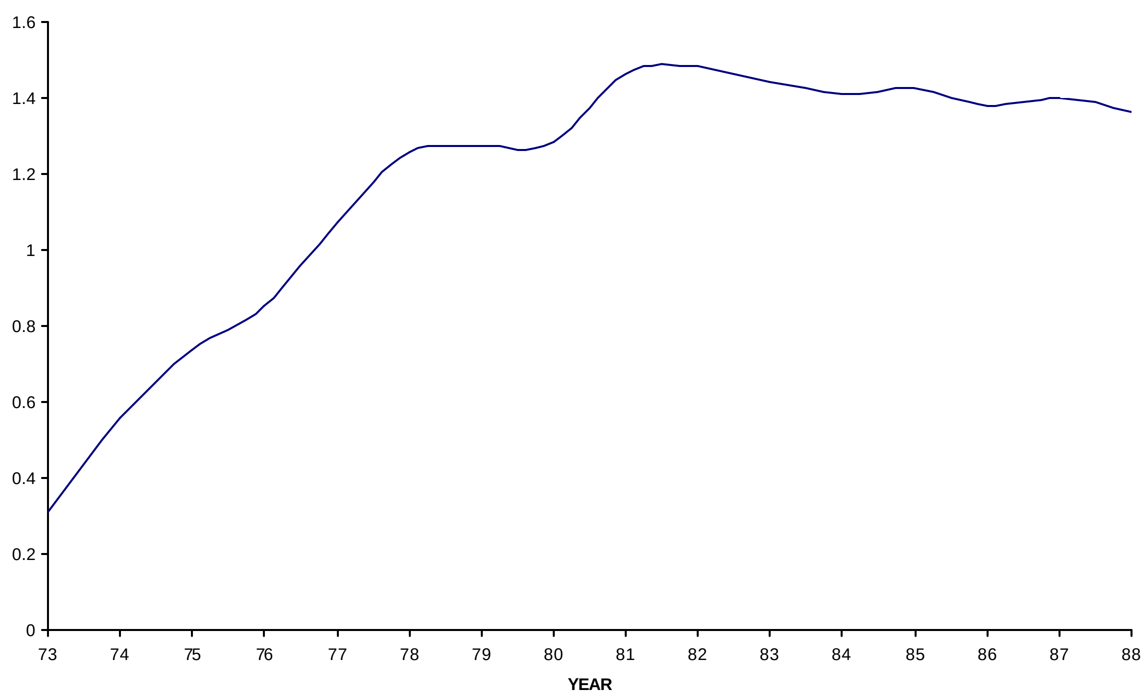

FIGURE 3: SURVIVOR FUNCTION FOR FIRST MARRIAGE BY RACE

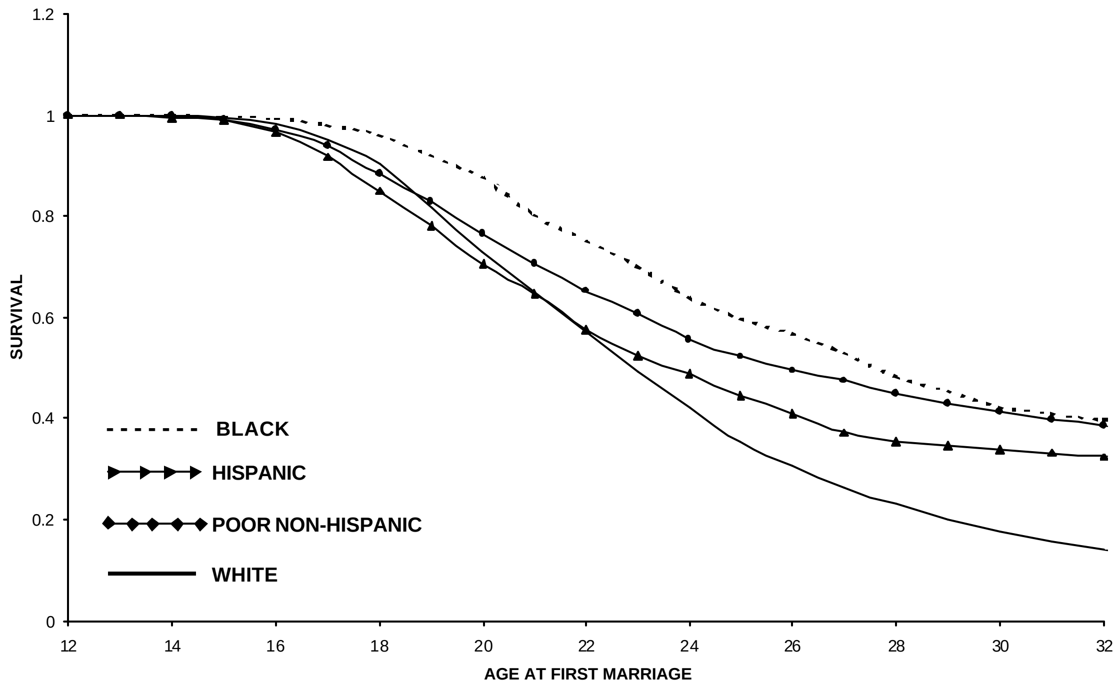

FIGURE 4: SURVIVOR FUNCTION FOR PREMARITAL BIRTH BY RACE

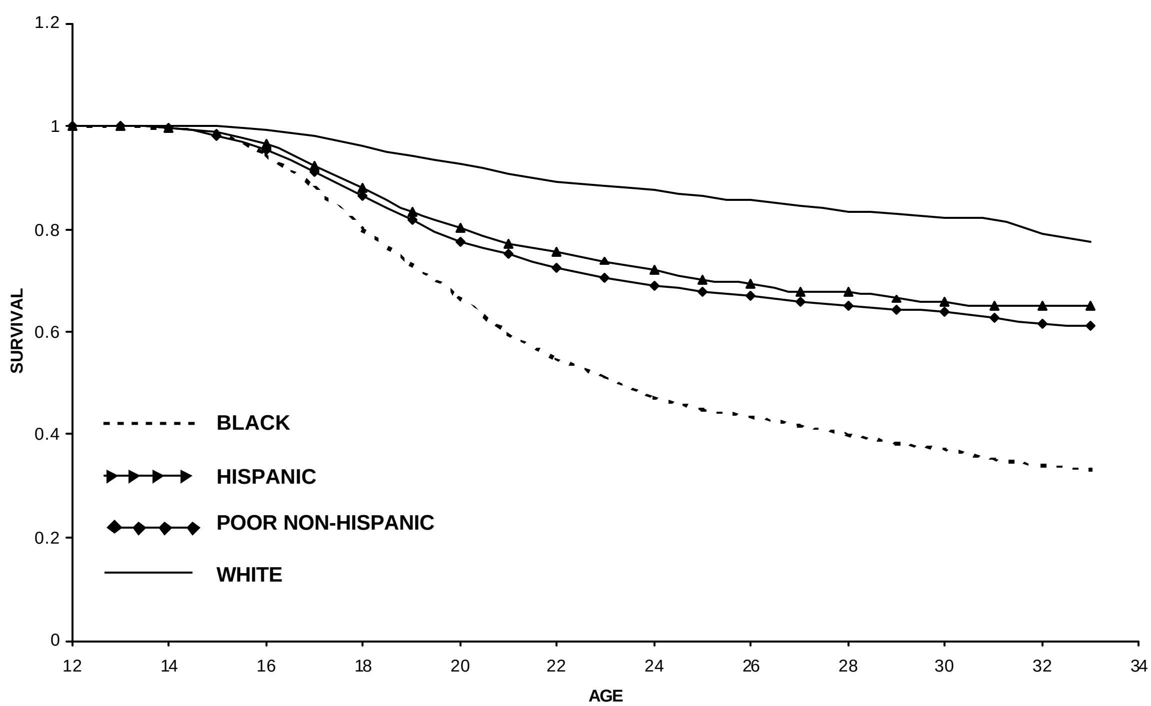

Table 1: Means and Standard Deviations of individual characteristics by groups.

	B&W Poor	Black	Hispanic	White
Age in Years at the time of:				
Premarital Birth	19.854	19.826	19.742	20.256
First marriage	21.704	21.308	21.228	22.119
Censoring	29.173	29.159	29.366	29.762
Proportion of:				
Premarital Birth	31.55	41.60	27.65	13.30
First Marriage	53.36	44.53	59.71	71.30
Censoring	15.09	13.87	12.64	15.40
Family Background				
Mother's Education	9.8108 (3.68)	9.8720 (3.80)	7.4289 (4.31)	11.429 (3.33)
Father's education	7.8944 (5.35)	7.4667 (5.43)	6.7923 (5.23)	11.310 (4.42)
Family income ($ 1000's)	5.6988 (5.74)	13.651 (12.2)	14.264 (11.7)	26.236 (15.6)
Number of Siblings	4.3176 (2.83)	4.7762 (3.05)	4.6173 (3.07)	3.0950 (1.96)
Reading Materials at Home	0.3663 (0.48)	0.3137 (0.46)	0.2844 (0.45)	0.6708 (0.47)
Living Arrangements at 14				
Both Parents	0.4231 (0.49)	0.4960 (0.50)	0.6783 (0.47)	0.7848 (0.41)
Single Mother	0.4281 (0.49)	0.3173 (0.47)	0.1726 (0.38)	0.0955 (0.29)
Single Father	0.0092 (0.09)	0.0150 (0.12)	0.0079 (0.09)	0.0098 (0.09)
Mother and Step Father	0.0476 (0.21)	0.0679 (0.25)	0.0666 (0.25)	0.0671 (0.25)
Father and Step Mother	0.0087 (0.09)	0.0050 (0.07)	0.0124 (0.11)	0.0180 (0.13)
Other Family Arrangements	0.0831 (0.27)	0.0986 (0.29)	0.0621 (0.24)	0.0245 (0.15)
Religious Attendance				
Not at all	0.0525 (0.22)	0.0385 (0.19)	0.0124 (0.11)	0.0382 (0.19)
Frequently	0.3384 (0.47)	0.4010 (0.49)	0.4108 (0.49	0.3558 (0.48)
Aptitude Tests				
Standardized AFQT Score.	-0.2691 (0.97)	-0.6427 (0.75)	-0.4523 (0.88)	0.4665 (0.98)
Residence at age 14				
Urban	0.7605 (0.43)	0.8105 (0.39)	0.8848 (0.32)	0.7538 (0.43)
Other				
Private School	0.0426 (0.20)	0.0357 (0.19)	0.0654 (0.24)	0.0727 (0.25)

Note: The Income variable is measured in thousands of real dollars of 1982. Standard errors are in parenthesis.

Table 2: Cohabitation in the NLSY the year before/after the first premarital birth.

Living arrangements before/after premarital birth	Full Sample	Poor	Black	Hispanic	White
No cohab./ No cohab.	66.36 (75.56)	66.95 (74.53)	72.78 (80.86)	62.82 (72.59)	56.80 (69.64)
No cohab./ cohab.	6.60 (7.51)	7.06 (7.86)	5.28 (5.86)	7.69 (8.89)	7.28 (8.93)
No cohab./ Marriage	14.87 (16.93)	15.82 (17.61)	11.94 (13.27)	16.03 (18.52)	17.48 (21.43)
cohab./ No cohab.	4.83 (39.69)	4.52 (44.44)	4.17 (41.67)	5.77 (42.86)	5.83 (31.58)
cohab./ cohab.	4.93 (40.46)	3.95 (38.89)	3.61 (36.11)	5.13 (38.10)	8.74 (47.37)
cohab./ Marriage	2.42 (19.85)	1.69 (16.67)	2.22 (22.22)	2.56 (19.05)	3.88 (21.05)
Number of Women	1076	354	360	156	206

Note: The numbers in parenthesis represent the relative proportion with respect to the sub-sample of no cohabitating, or cohabitating, individuals the year before premarital birth.

Table 3: Description of the different competing risk models estimated.

	MODEL 1	MODEL 2	MODEL 3	MODEL 4
Large Set of Explanatory Variables		**X**		**X**
Small Set of Explanatory Variables	**X**		**X**	
Cohort Specific Dummies	**X**	**X**	**X**	**X**
Year Trend	**X**	**X**	**X**	**X**
Unobserved Heterogeneity			**X**	**X**

Note: In addition, each model is estimated with and without state specific fixed effects resulting in eight different model specifications. The small set of explanatory variables includes welfare generosity, the standardized AFQT test, mother's education, the number of siblings, and family income. For a list of variables included in the large set of explanatory variables see table 8.

Table 4.a: Estimates of the coefficients associated to the welfare variable.

	Age	Black and White Poor Model 1	Black and White Poor Model 2	Black and White Poor Model 3	Black and White Poor Model 4	Black Model 1	Black Model 2	Black Model 3	Black Model 4
Without State Dummies									
Marriage	**13 to 17**	-2.9920 (3.60)	-3.1677 (3.09)	-2.8880 (3.43)	-3.3194 (3.22)	-1.7965 (1.99)	-1.3189 (1.13)	-0.9880 (0.02)	-1.1394 (0.97)
	18 to 22	-0.6351 (1.59)	-1.1817 (2.23)	-1.0177 (2.19)	-1.5133 (2.65)	-1.7654 (3.55)	-2.8061 (3.91)	-0.7088 (0.01)	-2.7930 (3.7)
	23 to 35	-0.2803 (0.57)	0.7362 (1.11)	-0.1860 (0.27)	-0.4388 (0.45)	-0.6214 (0.97)	0.9159 (0.92)	-0.4568 (0.02)	-0.2588 (0.20)
Fertility	**13 to 17**	-1.5060 (2.48)	-1.1830 (1.53)	-1.3809 (2.26)	-1.2186 (1.57)	-1.6383 (2.79)	-0.9121 (1.16)	-1.7150 (1.02)	-0.8820 (1.12)
	18 to 22	-0.9001 (1.77)	-0.7219 (1.07)	-0.9002 (1.72)	-0.9654 (1.39)	-0.5131 (1.03)	0.3054 (0.43)	-0.6968 (0.04)	0.1882 (0.25)
	23 to 35	0.3294 (0.33)	-0.9084 (0.68)	-0.2572 (0.23)	-0.3189 (1.93)	1.0453 (1.10)	0.4125 (0.30)	-0.3618 (0.07)	-3.4887 (1.91)
LLF		-9450.46	-9393.56	-9395.37	-9336.81	-7357.29	-7304.60	-7270.79	-7242.71
N. of Obs.		2182	2182	2182	2182	1399	1399	1399	1399
With State Dummies									
Marriage	**13 to 17**	-4.3036 (3.88)	-4.5153 (3.51)	-3.1554 (2.65)	-3.3113 (2.42)	-2.6465 (2.14)	-2.1043 (1.28)	-0.0109 (0.01)	-0.8466 (0.50)
	18 to 22	-1.4171 (1.82)	-2.3099 (2.45)	-1.0290 (1.15)	-0.9602 (0.93)	-2.8569 (3.09)	-3.0981 (2.48)	-0.2996 (0.29)	-1.0061 (0.74)
	23 to 35	-1.0555 (1.30)	-0.0158 (0.01)	0.0234 (0.02)	-0.3785 (0.29)	-0.9686 (1.02)	-0.0054 (0.01)	0.2658 (0.25)	-0.2444 (0.24)
Fertility	**13 to 17**	0.0168 (0.02)	0.4886 (0.41)	0.3939 (0.35)	-0.1762 (1.39)	-1.7476 (1.47)	-1.1714 (0.01)	-1.6884 (1.35)	-1.6217 (0.91)
	18 to 22	0.8845 (0.82)	0.6808 (0.54)	1.0948 (0.96)	-0.2908 (0.22)	-0.4615 (0.35)	0.6681 (0.01)	-0.8168 (0.58)	0.3272 (0.15)
	23 to 35	1.8820 (1.28)	0.1172 (0.06)	1.3145 (0.81)	-2.5191 (1.18)	2.0616 (1.14)	0.9802 (0.02)	-0.4689 (0.23)	-1.6570 (0.65)
LLF		-8118.93	-8072.38	-8069.61	-8029.51	-6617.23	-6.57580	-6468.75	-6533.51
N. of Obs.		1572	1572	1572	1572	1248	1248	1248	1248
N. of States		23	23	23	23	19	19	19	19
Common Components									
N. of Controls		7	19	7	19	7	19	7	19
Cohort Dummies		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time trend		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Unobs. Het.		No	No	Yes	Yes	No	No	Yes	Yes

Note: Welfare measured in thousands of dollars. T-values in parenthesis.

Table 4.b: Estimates of the coefficients associated to the welfare variable.

		Hispanic				White			
	Age	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 1**	**Model 2**	**Model 3**	**Model 4**
Without State Dummies									
	13 to 17	-0.9006 (0.99)	-2.4128 (1.82)	-0.6635 (0.69)	-1.8349 (1.35)	-2.6458 (3.74)	-2.4797 (2.99)	-2.8867 (4.07)	-2.3277 (2.40)
Marriage	**18 to 22**	-0.1800 (0.39)	-0.9457 (1.32)	-0.2118 (0.33)	-0.0506 (0.01)	-0.5546 (1.83)	-0.6971 (1.83)	-1.3192 (3.67)	-1.2482 (3.11)
	23 to 35	-0.7857 (1.25)	-0.2576 (0.25)	-0.8024 (0.89)	0.5806 (0.50)	-0.3903 (1.08)	0.4074 (0.83)	-1.1088 (1.82)	-0.8801 (1.38)
	13 to 17	0.3271 (0.35)	1.4471 (1.25)	0.6570 (0.67)	2.0324 (0.51)	-0.0178 (0.02)	0.1689 (0.16)	-0.7394 (0.72)	0.3694 (0.33)
Fertility	**18 to 22**	1.0817 (1.45)	2.8074 (2.96)	1.4120 (1.77)	2.5175 (2.28)	-0.4380 (0.64)	-1.3954 (1.57)	0.6591 (0.86)	-0.1220 (1.39)
	23 to 35	-0.8805 (0.63)	0.3361 (0.18)	0.8318 (0.46)	1.4850 (0.04)	-0.7531 (0.57)	-0.9166 (0.55)	0.6357 (0.48)	-0.3235 (0.18)
LLF		-4658.32	-4606.22	-4629.44	-4579.23	-11723.36	-11663.48	-11615.81	-11592.10
N. of Obs.		886	886	886	886	2324	2324	2324	2324
With State Dummies									
	13 to 17	-1.7530 (1.22)	-2.3378 (1.15)	-1.4736 (0.89)	-3.6993 (1.50)	-2.1972 (2.51)	-2.9158 (2.57)	-1.6898 (1.81)	-2.3504 (1.97)
Marriage	**18 to 22**	-1.7792 (1.47)	-0.1945 (0.12)	-1.7283 (1.18)	-1.2118 (0.60)	0.3722 (0.63)	-0.7277 (1.00)	0.3134 (0.46)	-0.1737 (0.22)
	23 to 35	-2.2106 (1.61)	-0.8563 (0.43)	-2.1829 (1.20)	-0.3931 (0.24)	0.7792 (1.17)	0.7218 (0.83)	0.9068 (1.10)	0.0786 (0.08)
	13 to 17	2.4198 (1.21)	3.2246 (1.38)	2.5963 (1.21)	1.8219 (0.57)	-1.8477 (1.40)	-0.8748 (0.46)	-1.9699 (1.40)	-0.5671 (0.31)
Fertility	**18 to 22**	2.9251 (1.47)	5.3989 (2.36)	2.9807 (1.40)	3.8949 (1.26)	-1.4699 (1.13)	-1.7798 (0.93)	-1.5818 (1.15)	-1.5739 (0.83)
	23 to 35	1.4804 (0.58)	4.0020 (0.87)	2.0876 (0.71)	5.9048 (0.98)	0.3331 (0.18)	0.5716 (0.19)	-0.1233 (0.63)	-0.0478 (1.57)
LLF		-3779.51	-3730.26	-3745.14	-3687.36	-10905.04	-10844.68	-10843.48	-10783.88
N. of Obs.		717	717	717	717	2176	2176	2176	2176
N. of States		8	8	8	8	27	27	27	27
Common Components									
N. of Controls		7	19	7	19	7	19	7	19
Cohort Dummies		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time trend		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Unobs. Het.		No	No	Yes	Yes	No	No	Yes	Yes

Note: Welfare measured in thousands of dollars. T-values in parenthesis.

Table 5: Policy simulation for a 10% increase in welfare generosity.

	Black and White Poor				**Black**			
	Predicted Probability		**% Change in Probability**		**Predicted Probability**		**% Change in Probability**	
	Model 1	**Model 3**	**Model 1**	**Model 3**	**Model 1**	**Model 3**	**Model 1**	**Model 3**
Age at Marriage £								
17	0.0531 (.047)	0.0531 (.023)	-18.46 (9.42)	-13.94 (5.65)	0.0515 (.038)	0.0480 (.044)	-11.26 (5.83)	0.286 (8.51)
19	0.1486 (.066)	0.1455 (.038)	-11.51 (4.04)	-8.385 (4.12)	0.1386 (.048)	0.1259 (.051)	-10.46 (4.33)	-0.148 (4.96)
22	0.3164 (.079)	0.3191 (.089)	-7.522 (3.16)	-5.014 (3.45)	0.2923 (.067)	0.2878 (.090)	-8.826 (3.42)	-0.012 (3.93)
25	0.4220 (.076)	0.4108 (.139)	-6.564 (2.61)	-3.481 (2.68)	0.3369 (.056)	0.3439 (.144)	-5.699 (2.97)	0.9306 (2.87)
		Average:	-11.0123	-7.70399		**Average**:	-9.06237	0.26430
Age of Prem. Birth £								
17	0.0805 (.032)	0.0810 (.037)	0.621 (6.21)	2.469 (3.70)	0.1240 (.059)	0.1197 (.052)	-6.774 (4.03)	-3.258 (4.18)
19	0.1675 (.046)	0.1664 (.070)	2.866 (4.78)	4.207 (4.21)	0.2144 (.061)	0.2081 (.084)	-4.991 (3.26)	-2.307 (3.36)
22	0.2647 (.059)	0.2617 (.109)	4.609 (4.16)	5.273 (4.20)	0.3508 (.066)	0.3487 (.140)	-2.452 (3.14)	-1.176 (2.58)
25	0.3110 (.065)	0.3013 (.126)	5.176 (3.86)	4.879 (3.65)	0.3808 (.061)	0.3876 (.155)	-0.971 (2.89)	-1.367 (2.32)
		Average:	3.31816	4.20698		**Average**:	-3.79701	-2.02698

	Hispanic				**White**			
	Predicted Probability		**% Change in Probability**		**Predicted Probability**		**% Change in Probability**	
	Model 1	**Model 3**	**Model 1**	**Model 3**	**Model 1**	**Model 3**	**Model 1**	**Model 3**
Age at Marriage £								
17	0.0923 (.057)	0.0876 (.050)	-9.317 (7.58)	-8.105 (9.13)	0.0516 (.046)	0.0514 (.047)	-10.85 (5.81)	-8.171 (3.89)
19	0.2168 (.062)	0.2082 (.057)	-9.409 (5.07)	-8.597 (6.24)	0.1739 (.056)	0.1681 (.061)	-2.185 (2.87)	-1.547 (2.97)
22	0.4344 (.077)	0.4372 (.091)	-9.139 (4.37)	-8.188 (4.57)	0.4055 (.070)	0.4073 (.069)	1.2330 (2.47)	1.3258 (2.21)
25	0.5012 (.072)	0.5056 (.127)	-8.978 (3.79)	-7.140 (4.35)	0.5636 (.074)	0.5541 (.067)	1.4726 (1.77)	1.5340 (1.44)
		Average	-9.21113	-8.00775		**Average**	-2.58303	-1.71452
Age of Prem. Birth £								
17	0.0629 (.060)	0.0599 (.048)	15.103 (17.5)	16.026 (15.0)	0.0272 (.031)	0.0274 (.030)	-9.559 (7.35)	-10.22 (7.30)
19	0.1223 (.065)	0.1158 (.061)	16.435 (12.3)	16.839 (13.0)	0.0581 (.042)	0.0585 (.040)	-8.433 (6.88)	-8.718 (5.13)
22	0.2088 (.088)	0.2045 (.090)	17.145 (11.0)	17.163 (11.7)	0.0998 (.055)	0.0998 (.049)	-7.515 (6.01)	-7.414 (6.02)
25	0.2234 (.069)	0.2243 (.099)	16.204 (9.85)	16.050 (11.1)	0.1152 (.065)	0.1139 (.050)	-6.770 (6.08)	-6.672 (5.27)
		Average:	16.22201	16.51996		**Average**:	-8.06961	-8.25607

Note: Model specification includes state fixed effects. The "change in probability" is presented in percentage points with respect to the original "predicted probability." Standard errors (in parentheses) were computed using 500 random draws from the distributions of the estimated parameters.

Table 6: Simulated quantiles.

	Black and White Poor				Black			
Sample:	**Marriage First**		**Premarital Birth**		**Marriage First**		**Premarital Birth**	
Timing of:	**Marriage**	**Fertility**	**Marriage**	**Fertility**	**Marriage**	**Fertility**	**Marriage**	**Fertility**
Quantiles:								
0.1	17.8 (0.6)	21.8 (6.4)	20.0 (3.7)	16.3 (1.7)	20.5 (1.4)	20.9 (5.8)	20.1 (2.6)	16.3 (0.7)
0.25	19.3 (0.7)	25.8 (4.9)	21.8 (4.0)	17.7 (1.6)	19.1 (0.9)	23.6 (5.0)	21.8 (3.0)	17.5 (0.9)
0.50	21.9 (0.9)	30.8 (3.0)	24.4 (5.0)	19.6 (1.5)	21.4 (1.3)	26.8 (4.1)	24.2 (4.5)	19.4 (1.3)
0.75	25.3 (1.1)	>35.0 (1.4)	29.0 (4.7)	22.2 (1.7)	24.4 (1.5)	31.2 (3.1)	28.8 (4.2)	21.8 (1.7)
0.90	30.0 (1.7)	>35.0 (0.8)	>35.0 (4.1)	26.2 (2.1)	29.2 (2.2)	>35.0 (2.6)	>35.0 (4.4)	24.9 (2.5)
Means	22.9 (0.8)	30.0 (3.0)	25.9 (4.0)	20.5 (1.4)	22.3 (1.1)	27.6 (3.7)	25.9 (3.4)	20.1 (1.3)
Correlation	0.56 (0.20)		0.58 (0.23)		0.71 (0.21)		0.51 (0.18)	
Proportions	0.590 (0.143)		0.337 (0.129)		0.482 (0.150)		0.431 (0.153)	

	Hispanic				White			
Sample:	**Marriage First**		**Premarital Birth**		**Marriage First**		**Premarital Birth**	
Timing:	**Marriage**	**Fertility**	**Marriage**	**Fertility**	**Marriage**	**Fertility**	**Marriage**	**Fertility**
Quantiles								
0.1	17.4 (2.9)	20.9 (8.9)	19.1 (3.2)	16.1 (5.0)	18.2 (0.4)	25.6 (5.5)	20.2 (1.8)	16.5 (1.4)
0.25	18.8 (3.8)	23.2 (9.0)	20.9 (3.0)	17.6 (5.0)	19.7 (0.5)	31.2 (3.3)	22.2 (2.9)	18.1 (2.1)
0.50	21.4 (4.5)	27.4 (9.2)	23.1 (4.0)	19.6 (5.0)	22.3 (0.7)	>35.0 (1.8)	24.8 (4.0)	20.1 (2.4)
0.75	25.2 (5.2)	>35.0 (9.2)	29.3 (6.8)	21.9 (5.0)	25.8 (0.9)	>35.0 (1.3)	28.4 (4.1)	22.8 (2.2)
0.90	30.2 (6.5)	>35.0 (9.4)	>35.0 (4.5)	24.3 (5.1)	30.2 (1.1)	>35.0 (0.9)	>35.0 (3.4)	27.1 (2.2)
Means	22.5 (4.4)	28.7 (9.1)	25.3 (3.75)	20.0 (5.0)	23.2 (0.6)	33.2 (1.9)	25.8 (3.0)	21.0 (1.7)
Correlation	0.73 (0.24)		0.56 (0.12)		0.33 (0.12)		0.64 (0.13)	
Proportions	0.667 (0.394)		0.282 (0.428)		0.786 (0.099)		0.142 (0.092)	

Note: Simulations performed for model specification 4 without fixed effects. Standard errors (in parentheses) were computed using 500 random draws from the distributions of the estimated parameters.

Table 7: Understanding the Sources of Racial Differences in Premarital Birth

	Black and White Poor					
Age £	**Probability**		**Probability (White X's)**		**% Change**	
	Marriage	**Fertility**	**Marriage**	**Fertility**	**Marriage**	**Fertility**
17	0.0520 (0.04)	0.0794 (0.05)	0.1628 (0.11)	0.0466 (0.04)	212.88 (173.)	-41.310 (25.2)
19	0.1489 (0.06)	0.1642 (0.08)	0.2497 (0.12)	0.0865 (0.06)	67.629 (67.2)	-47.381 (24.4)
22	0.3278 (0.10)	0.2593 (0.11)	0.3536 (0.11)	0.1323 (0.07)	7.8706 (24.4)	-48.978 (19.3)
25	0.4229 (0.13)	0.2948 (0.13)	0.5030 (0.13)	0.1544 (0.09)	18.940 (23.6)	-47.626 (20.4)
				Average:	76.853 (70.9)	-46.334 (21.4)

	Black					
	Probability		**Probability (White X's)**		**% Change**	
Age £	**Marriage**	**Fertility**	**Marriage**	**Fertility**	**Marriage**	**Fertility**
17	0.0516 (0.08)	0.1088 (0.09)	0.0589 (0.09)	0.0763 (0.08)	14.147 (58.1)	-29.871 (18.4)
19	0.1376 (0.09)	0.2193 (0.10)	0.1363 (0.11)	0.1663 (0.10)	-0.872 (29.1)	-24.168 (13.7)
22	0.2936 (0.12)	0.3391 (0.13)	0.2857 (0.13)	0.2816 (0.13)	-2.690 (17.0)	-14.843 (10.1)
25	0.3613 (0.13)	0.3948 (0.15)	0.3966 (0.14)	0.3362 (0.14)	9.7702 (13.8)	-0.0586 (0.04)
				Average:	5.0758 (25.4)	-21.485 (13.0)

	Hispanic					
	Probability		**Probability (White X's)**		**% Change**	
Age £	**Marriage**	**Fertility**	**Marriage**	**Fertility**	**Marriage**	**Fertility**
17	0.0730 (0.07)	0.0676 (0.08)	0.0634 (0.07)	0.0697 (0.08)	-13.151 (27.4)	2.9586 (29.6)
19	0.2065 (0.14)	0.1377 (0.10)	0.1903 (0.14)	0.1524 (0.10)	-7.8935 (9.69)	10.675 (14.5)
22	0.4072 (0.31)	0.2223 (0.13)	0.3783 (0.31)	0.2569 (0.13)	-7.1218 (4.91)	15.565 (13.5)
25	0.4613 (0.31)	0.2503 (0.14)	0.4327 (0.30)	0.2746 (0.14)	-6.1782 (6.50)	9.6684 (12.0)
				Average:	-8.5789 (10.7)	9.7413 (14.1)

	White					
	Probability		**Probability (Black X's)**		**% Change**	
Age £	**Marriage**	**Fertility**	**Marriage**	**Fertility**	**Marriage**	**Fertility**
17	0.0522 (0.05)	0.0281 (0.06)	0.0737 (0.05)	0.0406 (0.05)	41.188 (38.3)	44.483 (106.)
19	0.1725 (0.05)	0.0614 (0.07)	0.2077 (0.05)	0.0862 (0.07)	20.406 (11.6)	40.390 (48.8)
22	0.4101 (0.07)	0.1039 (0.07)	0.4408 (0.07)	0.1405 (0.08)	7.4615 (9.75)	35.226 (28.9)
25	0.5507 (0.08)	0.1213 (0.09)	0.5696 (0.10)	0.1691 (0.09)	3.4138 (7.26)	39.324 (33.0)
				Average:	18.105 (14.2)	39.911 (51.1)

Note: Simulations performed for model specification 4 without fixed effects. Standard errors (in parentheses) were computed using 500 random draws from the distributions of the estimated parameters.

APENDIX NOT FOR PUBLICATION

Table 8.a: Parameter Estimates for Competing risk Model 4 without state specific fixed effects.

BLACK AND WHITE POOR

	Marriage			**Fertility**		
Age	13 to 17	18 to 22	23 to 35	13 to 17	18 to 22	23 to 35
Family Background						
Mother's Education	-0.0428 (0.98)	-0.0081 (0.33)	-0.0058 (0.15)	0.0594 (1.60)	0.0210 (0.74)	0.0379 (0.60)
Father's education	-0.0139 (0.36)	-0.0036 (0.18)	-0.0082 (0.28)	-0.0622 (2.03)	-0.0583 (2.39)	-0.0259 (0.51)
Family income ($ 1000's)	0.0628 (1.75)	-0.0236 (1.26)	-0.0284 (0.85)	-0.0016 (0.06)	-0.0267 (1.19)	-0.0515 (1.20)
Number of Siblings	0.0425 (1.17)	-0.0099 (0.49)	-0.0575 (1.52)	0.0496 (1.75)	0.0126 (0.56)	-0.0034 (0.07)
Reading Materials at Home	0.0568 (0.25)	-0.2731 (2.31)	-0.3099 (1.50)	-0.4208 (2.06)	-0.2394 (1.66)	-0.1424 (0.51)
Living Arrangements at 14						
Both Parents	0.1707 (0.70)	-0.0701 (0.57)	-0.1159 (0.58)	-0.3243 (1.64)	-0.2454 (1.64)	-0.4639 (1.53)
Single Father	-10.037 (0.08)	-0.8113 (1.49)	-2.2987 (2.96)	-0.4936 (0.67)	-0.1371 (0.28)	-0.2182 (0.25)
Mother and Step Father	0.2247 (0.50)	-0.2087 (0.84)	0.0044 (0.01)	-0.4079 (0.95)	-0.1022 (0.36)	-1.1952 (1.72)
Father and Step Mother	1.0353 (1.61)	-0.3256 (0.65)	-0.7918 (1.12)	-0.7592 (0.74)	-0.4499 (0.60)	-8.9702 (0.06)
Other Family Arrangements	0.0044 (0.01)	0.0123 (0.06)	-0.4460 (0.82)	-0.1684 (0.56)	0.1534 (0.72)	-0.1283 (0.19)
Religious Attendance						
Not at all	0.1696 (0.42)	0.0417 (0.20)	-0.1973 (0.56)	-0.3786 (0.96)	0.2808 (1.23)	-0.4330 (0.58)
Frequently	-0.0377 (0.18)	-0.0802 (0.73)	0.0982 (0.57)	0.0638 (0.38)	0.0027 (0.02)	-0.6650 (2.33)
Aptitude Tests						
Standarized AFQT Score.	0.7511 (1.81)	0.2995 (1.49)	-0.1431 (0.43)	-0.1435 (0.44)	0.2867 (1.14)	-1.2613 (2.58)
Square S. AFQT Score.	-0.1543 (1.46)	-0.0752 (1.50)	0.0556 (0.69)	-0.0053 (0.06)	-0.1258 (1.82)	0.1903 (1.48)
Residence at age 14						
Urban	0.1768 (0.76)	-0.4137 (3.41)	-0.2631 (1.05)	-0.0384 (0.20)	-0.0656 (0.44)	-0.2091 (0.66)
Other						
Private School	0.1836 (0.39)	-0.1298 (0.50)	-0.6691 (1.94)	0.0355 (0.07)	-0.2935 (0.74)	1.4066 (2.56)
Rwage1	-0.0539 (0.66)	0.0498 (1.22)	0.0408 (0.95)	0.0832 (1.52)	0.0911 (1.99)	0.1912 (2.03)
Nhr	0.3104 (2.30)	0.0410 (0.53)	0.0002 (0.65)	-0.2074 (1.31)	-0.2549 (2.24)	0.0011 (1.92)
Time trend						
Linear coefficient	0.3309 (3.67)	0.3309 (3.67)	0.3309 (3.67)	0.2197 (2.04)	0.2197 (2.04)	0.2197 (2.04)
Quadratic coefficient	-0.0034 (1.09)	-0.0034 (1.09)	-0.0034 (1.09)	0.0010 (0.29)	0.0010 (0.29)	0.0010 (0.29)
Unobserved Heterogeneity						
Correlation						

Note: also included in the model specification are State dummies, cohort dummies and baseline hazards. T-values are in parenthesis.

Table 8.b: Parameter Estimates for Competing risk Model 4 without state specific fixed effects.

BLACK

	Marriage			**Fertility**		
Age	13 to 17	18 to 22	23 to 35	13 to 17	18 to 22	23 to 35
Family Background						
Mother's Education	-0.0346 (0.63)	-0.0113 (0.29)	-0.0298 (0.18)	0.0962 (2.55)	-0.0053 (0.19)	-0.0055 (0.09)
Father's education	-0.0533 (1.14)	0.0290 (0.76)	-0.0478 (0.31)	-0.0566 (1.85)	-0.0373 (1.58)	-0.0423 (0.79)
Family income ($ 1000's)	0.0231 (1.53)	-0.0010 (0.07)	0.0014 (0.03)	0.0028 (0.26)	-0.0035 (0.40)	0.0115 (0.65)
Number of Siblings	-0.0104 (0.25)	0.0471 (2.21)	0.0272 (0.60)	0.0426 (1.61)	0.0163 (0.75)	0.0521 (1.02)
Reading Materials at Home	-0.0918 (0.30)	-0.0844 (0.43)	0.2782 (0.73)	-0.3851 (1.90)	0.0560 (0.40)	0.0995 (0.34)
Living Arrangements at 14						
Both Parents	-0.0421 (0.12)	0.0178 (0.10)	-0.3527 (0.88)	-0.2046 (0.91)	-0.0231 (0.13)	-0.0026 (0.01)
Single Father	-0.2880 (0.27)	-0.4664 (0.81)	-2.9985 (2.21)	-0.6288 (0.86)	0.3303 (0.85)	0.0814 (0.13)
Mother and Step Father	-0.0107 (0.02)	0.3855 (1.20)	1.3789 (1.46)	-0.7271 (1.70)	0.5012 (1.84)	0.5567 (0.94)
Father and Step Mother	2.3569 (2.68)	0.0492 (0.04)	3.5057 (2.96)	-0.1524 (0.14)	0.3029 (0.26)	-13.600 (0.01)
Other Family Arrangements	0.5233 (1.37)	0.4588 (2.17)	0.6754 (1.86)	-0.0576 (0.20)	0.1706 (0.77)	1.2338 (2.17)
Religious Attendance						
Not at all	0.6443 (1.45)	0.2620 (0.92)	-1.1576 (2.02)	-0.2639 (0.62)	-0.1455 (0.45)	-1.2111 (1.93)
Frequently	0.0581 (0.24)	0.0381 (0.26)	-0.3491 (0.80)	0.0426 (0.26)	0.0076 (0.05)	-0.8836 (3.35)
Aptitude Tests						
Standarized AFQT Score.	0.2992 (0.53)	-0.0616 (0.15)	0.5218 (0.48)	-0.4713 (1.35)	0.3480 (1.20)	-0.7968 (1.43)
Square S. AFQT Score.	-0.0508 (0.28)	0.0030 (0.02)	-0.0868 (0.21)	0.1105 (1.01)	-0.1010 (1.12)	0.1785 (1.13)
Residence at age 14						
Urban	0.6777 (1.95)	0.0272 (0.17)	0.7406 (1.86)	0.1062 (0.52)	0.0176 (0.11)	0.4059 (1.35)
Other						
Private school	-0.1450 (0.17)	0.2432 (0.40)	-0.7489 (0.35)	0.4204 (0.96)	-0.1333 (0.34)	2.4103 (4.53)
Rwage1	-0.1278 (1.28)	0.0309 (0.63)	-0.0304 (0.40)	0.0140 (0.23)	0.0131 (0.26)	0.1674 (1.45)
Nhr	0.3985 (1.75)	0.2052 (1.62)	0.0001 (0.27)	-0.2484 (1.19)	-0.4038 (2.78)	0.0006 (0.90)
Time trend						
Linear coefficient	0.2608 (2.15)	0.2608 (2.15)	0.2608 (2.15)	-0.0422 (0.39)	-0.0422 (0.39)	-0.0422 (0.39)
Quadratic coefficient	-0.0006 (0.15)	-0.0006 (0.15)	-0.0006 (0.15)	0.0101 (2.67)	0.0101 (2.67)	0.0101 (2.67)
Unobserved Heterogeneity						
Correlation						

Note: also included in the model specification are State dummies, cohort dummies and baseline hazards. T-values are in parenthesis.

Table 8.c: Parameter Estimates for Competing risk Model 4 without state specific fixed effects.

HISPANIC

	Marriage			**Fertility**		
Age	13 to 17	18 to 22	23 to 35	13 to 17	18 to 22	23 to 35
Family Background						
Mother's Education	0.0061 (0.14)	0.0464 (1.51)	0.0110 (0.35)	0.0057 (0.13)	0.0352 (1.00)	-0.1230 (0.00)
Father's education	-0.0908 (2.31)	-0.0019 (0.06)	-0.0492 (1.73)	0.0020 (0.05)	0.0071 (0.22)	0.0196 (0.27)
Family income ($ 1000's)	-0.0174 (0.90)	0.0001 (0.01)	-0.0025 (0.25)	-0.0374 (1.77)	0.0041 (0.27)	0.0782 (0.00)
Number of Siblings	-0.1090 (2.08)	-0.0074 (0.21)	0.0256 (0.85)	-0.0210 (0.43)	-0.0352 (0.92)	0.0563 (0.00)
Reading Materials at Home	0.6841 (2.32)	-0.1035 (0.49)	0.2497 (1.18)	0.1548 (0.49)	-0.0745 (0.31)	0.2019 (0.00)
Living Arrangements at 14						
Both Parents	0.0933 (0.20)	-0.0070 (0.02)	0.0671 (0.26)	0.0815 (0.21)	-0.1663 (0.50)	-0.1255 (0.21)
Single Father	0.9353 (0.83)	-1.2746 (1.08)	2.7612 (2.59)	0.5373 (0.50)	0.1928 (0.24)	-14.454 (0.00)
Mother and Step Father	-0.0170 (0.03)	-1.0436 (2.63)	-0.8163 (1.47)	0.0974 (0.16)	-0.9780 (1.85)	0.0465 (0.00)
Father and Step Mother	-13.978 (0.02)	-0.7994 (0.86)	-3.6873 (3.75)	-0.2132 (0.19)	-0.4664 (0.57)	-9.1777 (1.33)
Other Family Arrangements	0.4205 (0.70)	-0.0142 (0.03)	0.3610 (0.81)	0.2285 (0.44)	-0.0666 (0.16)	-1.2098 (1.22)
Religious Attendance						
Not at all	0.4117 (0.37)	-2.6906 (2.26)	0.4764 (0.95)	-3.5624 (0.43)	-0.5199 (0.49)	2.3873 (0.00)
Frequently	-0.0720 (0.28)	-0.1953 (1.05)	0.0445 (0.25)	-0.1071 (0.41)	-0.0729 (0.37)	0.0366 (0.09)
Aptitude Tests						
Standarized AFQT Score.	-0.3431 (0.66)	0.6933 (1.88)	-0.0079 (0.03)	0.3914 (0.71)	0.1518 (0.37)	-2.0538 (0.00)
Square S. AFQT Score.	0.1161 (0.84)	-0.2223 (2.18)	0.0199 (0.26)	-0.0513 (0.35)	-0.1032 (0.90)	0.3856 (0.00)
Residence at age 14						
Urban	-0.1374 (0.34)	-1.0107 (3.46)	0.1545 (0.58)	0.2350 (0.50)	-0.3874 (1.28)	-0.4221 (0.00)
Other						
Private school	-0.4533 (0.73)	-0.7379 (2.31)	0.1336 (0.34)	0.0550 (0.10)	-0.4241 (1.11)	-1.1153 (1.53)
Rwage1	0.1648 (1.56)	-0.0982 (1.82)	-0.0816 (1.31)	-0.1756 (1.76)	-0.1458 (1.87)	-0.0084 (0.00)
Nhr	0.2144 (0.99)	0.3801 (3.33)	-0.0014 (2.13)	-0.1717 (0.87)	-0.2316 (1.53)	0.0012 (0.16)
Time trend						
Linear coefficient	0.3082 (5.50)	0.3082 (5.50)	0.3082 (5.50)	0.2253 (0.00)	0.2253 (0.00)	0.2253 (0.00)
Quadratic coefficient						
Unobserved Heterogeneity						
Correlation						

Note: also included in the model specification are State dummies, cohort dummies and baseline hazards. T-values are in parenthesis.

Table 8.d: Parameter Estimates for Competing risk Model 4 without state specific fixed effects.

WHITE

	Marriage			**Fertility**		
Age	13 to 17	18 to 22	23 to 35	13 to 17	18 to 22	23 to 35
Family Background						
Mother's Education	0.0516 (1.19)	-0.0132 (0.65)	-0.0550 (2.08)	0.0079 (0.09)	-0.0089 (0.21)	0.0667 (0.87)
Father's education	-0.0465 (1.25)	-0.0314 (2.10)	-0.0059 (0.28)	-0.0189 (0.30)	-0.0048 (0.13)	-0.0373 (0.56)
Family income ($ 1000's)	-0.0145 (1.58)	0.0023 (0.63)	-0.0051 (1.09)	-0.0070 (0.54)	0.0022 (0.26)	-0.0076 (0.52)
Number of Siblings	-0.0169 (0.31)	-0.0118 (0.60)	-0.0214 (0.79)	0.0353 (0.52)	-0.0507 (0.99)	-0.0490 (0.73)
Reading Materials at Home	-0.4703 (2.34)	-0.1171 (1.36)	-0.2661 (2.05)	-0.2149 (0.70)	-0.0358 (0.18)	-0.1180 (0.30)
Living Arrangements at 14						
Both Parents	1.1423 (2.65)	-0.1192 (0.84)	0.1382 (0.67)	-0.2271 (0.53)	-0.0543 (0.18)	-0.6701 (1.27)
Single Father	-13.054 (0.00)	-0.7704 (0.71)	-0.3124 (0.20)	-13.054 (0.00)	-0.7704 (0.71)	-0.3124 (0.20)
Mother and Step Father	0.7818 (1.37)	-0.0583 (0.31)	0.0264 (0.09)	-0.9628 (1.26)	-0.0797 (0.19)	-0.9474 (1.21)
Father and Step Mother	1.3032 (1.81)	0.1802 (0.63)	1.8595 (3.50)	-8.9284 (0.18)	0.4402 (0.83)	-7.1975 (0.19)
Other Family Arrangements	1.1839 (1.86)	0.0947 (0.29)	1.9370 (3.41)	-13.953 (0.00)	0.5694 (0.97)	3.4255 (3.81)
Religious Attendance						
Not at all	-0.4584 (0.77)	0.0254 (0.12)	-0.1843 (0.60)	0.2996 (0.49)	0.1375 (0.34)	-0.3909 (0.51)
Frequently	-0.2492 (1.22)	0.0350 (0.45)	0.2814 (2.51)	-0.3297 (1.14)	0.0573 (0.31)	0.0656 (0.21)
Aptitude Tests						
Standarized AFQT Score.	0.1264 (0.34)	0.4102 (2.24)	0.0093 (0.04)	-0.5227 (0.83)	-0.1265 (0.33)	-0.6239 (0.83)
Square S. AFQT Score.	-0.0623 (0.71)	-0.1076 (2.71)	0.0061 (0.12)	0.0726 (0.52)	-0.0574 (0.66)	0.0839 (0.52)
Residence at age 14						
Urban	-0.1102 (0.55)	-0.2701 (3.16)	-0.0671 (0.49)	-0.1819 (0.56)	0.1235 (0.59)	-0.3812 (0.91)
Other						
Private School	-0.5027 (1.01)	-0.2979 (1.78)	-0.4745 (2.47)	0.6674 (1.52)	-0.4850 (1.26)	0.0853 (0.17)
Rwage1	-0.0771 (1.11)	0.0136 (0.47)	0.0065 (0.20)	0.0179 (0.23)	0.0302 (0.47)	0.0111 (0.09)
Nhr	0.2520 (1.95)	-0.1118 (1.75)	-0.0004 (1.22)	-0.0796 (0.36)	0.2176 (1.58)	0.0003 (0.29)
Time trend						
Linear coefficient	0.1718 (15.2)	0.1718 (15.2)	0.1718 (15.2)	0.0556 (0.64)	0.0556 (0.64)	0.0556 (0.64)
Quadratic coefficient						
Unobserved Heterogeneity						
Correlation						

Note: also included in the model specification are State dummies, cohort dummies and baseline hazards. T-values are in parenthesis.

Table 9.a: Parameter Estimates for Competing risk Model 4 with state specific fixed effects.

BLACK AND WHITE POOR

	Marriage			**Fertility**		
Age	13 to 17	18 to 22	23 to 35	13 to 17	18 to 22	23 to 35
Family Background						
Mother's Education	-0.0234 (0.49)	-0.0263 (0.98)	0.0006 (0.02)	0.0681 (1.72)	0.0358 (1.16)	0.0443 (0.66)
Father's education	-0.0199 (0.48)	-0.0106 (0.46)	-0.0530 (1.57)	-0.0711 (2.19)	-0.0721 (2.69)	-0.0425 (0.75)
Family income ($ 1000's)	0.0144 (0.37)	-0.0314 (1.57)	-0.0293 (0.90)	0.0098 (0.32)	-0.0321 (1.31)	-0.0371 (0.83)
Number of Siblings	0.0369 (0.92)	-0.0025 (0.11)	-0.0559 (1.69)	0.0384 (1.26)	0.0075 (0.31)	-0.0415 (0.79)
Reading Materials at Home	-0.0060 (0.02)	-0.4844 (3.60)	-0.7073 (3.57)	-0.3009 (1.35)	-0.2732 (1.70)	-0.3343 (1.05)
Living Arrangements at 14						
Both Parents	0.2994 (1.15)	0.0496 (0.36)	-0.0809 (0.40)	-0.1945 (0.90)	-0.2893 (1.77)	-0.4237 (1.25)
Single Father	-6.3177 (0.38)	-1.1094 (1.98)	-2.5644 (3.14)	-0.9287 (0.94)	-0.1368 (0.27)	-0.5418 (0.60)
Mother and Step Father	0.0775 (0.14)	-0.4260 (1.51)	-0.5302 (1.55)	-0.1940 (0.45)	-0.0767 (0.25)	-1.6630 (2.03)
Father and Step Mother	0.5471 (0.70)	-0.2152 (0.38)	-0.4283 (0.49)	-0.2304 (0.23)	-0.1959 (0.25)	-5.8541 (0.11)
Other Family Arrangements	0.5409 (1.53)	0.1535 (0.70)	-0.0347 (0.08)	-0.0439 (0.14)	0.2054 (0.94)	0.5208 (0.86)
Religious Attendance						
Not at all	0.5452 (1.33)	0.0654 (0.26)	-0.1124 (0.24)	-0.2545 (0.60)	0.3012 (1.20)	0.0032 (0.00)
Frequently	-0.0506 (0.22)	-0.2186 (1.78)	-0.2831 (1.63)	0.0827 (0.46)	-0.0995 (0.70)	-0.9397 (2.97)
Aptitude Tests						
Standarized AFQT Score.	0.6860 (1.59)	0.5472 (2.32)	0.0720 (0.24)	0.1372 (0.36)	0.4721 (1.66)	-0.6134 (1.18)
Square S. AFQT Score.	-0.1226 (1.12)	-0.1185 (2.04)	0.0589 (0.83)	-0.1109 (1.00)	-0.1773 (2.21)	0.0621 (0.44)
Residence at age 14						
Urban	0.0506 (0.20)	-0.3782 (2.80)	-0.0065 (0.03)	0.0200 (0.10)	0.0406 (0.25)	0.1159 (0.35)
Other						
Private School	0.7188 (1.49)	-0.1160 (0.38)	-0.8498 (2.32)	0.1728 (0.34)	0.0346 (0.09)	1.9022 (3.94)
Rwage1	-0.0410 (0.39)	0.0319 (0.51)	0.0228 (0.56)	0.0064 (0.06)	0.0485 (0.57)	0.1350 (1.41)
Nhr	0.0695 (0.24)	0.0043 (0.03)	-0.0006 (1.47)	-0.0863 (0.28)	-0.0424 (0.17)	0.0009 (1.61)
Time trend						
Linear coefficient	0.3290 (10.9)	0.3290 (10.9)	0.3290 (10.9)	0.2042 (3.78)	0.2042 (3.78)	0.2042 (3.78)
Quadratic coefficient						
Unobserved Heterogeneity						
Correlation	0.6915	0.6915	0.6915	0.6915	0.6915	0.6915

Note: also included in the model specification are State dummies, cohort dummies and baseline hazards. T-values are in parenthesis.

Table 9.b: Parameter Estimates for Competing risk Model 4 with state specific fixed effects.

BLACK

	Marriage			**Fertility**		
Age	13 to 17	18 to 22	23 to 35	13 to 17	18 to 22	23 to 35
Family Background						
Mother’s Education	-0.0418 (0.75)	-0.0306 (0.62)	-0.0891 (0.94)	0.1080 (2.59)	-0.0166 (0.43)	-0.0606 (0.50)
Father’s education	-0.0812 (1.62)	0.0202 (0.70)	-0.0445 (0.88)	-0.0501 (1.63)	-0.0383 (1.48)	0.0001 (0.00)
Family income ($ 1000’s)	0.0177 (1.07)	-0.0041 (0.34)	-0.0056 (0.15)	-0.0044 (0.38)	-0.0046 (0.49)	0.0082 (0.40)
Number of Siblings	-0.0331 (0.69)	0.0209 (0.61)	-0.0632 (1.50)	0.0344 (1.23)	-0.0112 (0.39)	-0.0284 (0.37)
Reading Materials at Home	0.1362 (0.43)	-0.0323 (0.15)	0.2168 (0.55)	-0.1983 (0.92)	0.0273 (0.14)	0.3025 (0.72)
Living Arrangements at 14						
Both Parents	-0.1021 (0.27)	0.0760 (0.27)	0.0919 (0.13)	-0.1874 (0.80)	-0.1172 (0.61)	-0.0928 (0.23)
Single Father	-11.758 (0.04)	-0.5783 (0.79)	-2.1215 (0.98)	-0.7338 (0.97)	0.1952 (0.48)	0.4407 (0.46)
Mother and Step Father	0.2715 (0.51)	0.3189 (1.03)	1.9228 (4.33)	-0.5093 (1.18)	0.5656 (1.72)	1.0464 (1.03)
Father and Step Mother	1.0364 (0.93)	-1.1979 (1.11)	-0.5740 (0.52)	0.2226 (0.21)	-0.1299 (0.12)	-5.4406 (0.19)
Other Family Arrangements	0.4417 (0.96)	0.4237 (1.49)	0.5855 (0.75)	0.0128 (0.04)	0.1531 (0.56)	1.3755 (0.91)
Religious Attendance						
Not at all	0.6694 (1.21)	0.4814 (1.29)	-1.0528 (1.56)	0.0447 (0.10)	-0.0041 (0.01)	-0.3857 (0.60)
Frequently	-0.0465 (0.17)	-0.0491 (0.25)	-0.5302 (1.82)	0.0225 (0.13)	-0.0963 (0.61)	-0.9234 (2.15)
Aptitude Tests						
Standarized AFQT Score.	0.1853 (0.26)	-0.1956 (0.25)	0.2181 (0.15)	-0.3160 (0.73)	0.3857 (0.66)	-0.8311 (0.68)
Square S. AFQT Score.	-0.0324 (0.15)	0.0422 (0.19)	-0.0504 (0.13)	0.0669 (0.50)	-0.1250 (0.74)	0.1500 (0.44)
Residence at age 14						
Urban	0.5690 (1.52)	0.0458 (0.22)	0.3620 (0.85)	0.0986 (0.46)	0.0873 (0.50)	0.2785 (0.85)
Other						
Private school	0.1478 (0.19)	0.4723 (1.14)	-0.4368 (0.86)	0.2996 (0.61)	-0.4360 (0.92)	1.4989 (2.02)
Rwage1	-0.0224 (0.17)	0.0001 (0.00)	0.0407 (0.65)	0.0286 (0.27)	-0.0158 (0.17)	-0.0572 (0.43)
Nhr	0.2151 (0.44)	0.0466 (0.14)	0.0002 (0.36)	-0.3205 (1.12)	-0.5098 (2.15)	0.0003 (0.46)
Time trend						
Linear coefficient	0.2945 (9.79)	0.2945 (9.79)	0.2945 (9.79)	0.2218 (6.75)	0.2218 (6.75)	0.2218 (6.75)
Quadratic coefficient						
Unobserved Heterogeneity						
Correlation	0.6622	0.6622	0.6622	0.6622	0.6622	0.6622

Note: also included in the model specification are State dummies, cohort dummies and baseline hazards. T-values are in parenthesis.

Table 9.c: Parameter Estimates for Competing risk Model 4 with state specific fixed effects.

HISPANIC

	Marriage			**Fertility**		
Age	13 to 17	18 to 22	23 to 35	13 to 17	18 to 22	23 to 35
Family Background						
Mother's Education	-0.0185 (0.42)	0.0088 (0.32)	0.1047 (2.34)	0.0629 (1.08)	0.0855 (1.52)	0.0882 (0.58)
Father's education	-0.0646 (1.64)	0.0557 (2.48)	0.0552 (1.61)	-0.0450 (0.83)	0.0210 (0.46)	0.0311 (0.40)
Family income ($ 1000's)	-0.0153 (0.83)	0.0114 (1.23)	-0.0089 (0.60)	-0.0151 (0.61)	0.0307 (1.74)	0.0973 (0.75)
Number of Siblings	-0.1416 (2.55)	0.0361 (1.32)	0.1416 (3.14)	0.0455 (0.73)	0.0125 (0.23)	0.3490 (2.69)
Reading Materials at Home	0.5656 (1.92)	-0.2915 (1.58)	0.5534 (1.92)	0.1059 (0.27)	-0.4731 (1.41)	-0.1982 (0.51)
Living Arrangements at 14						
Both Parents	0.0181 (0.04)	-0.1761 (0.69)	-0.1562 (0.42)	0.0615 (0.11)	0.1063 (0.20)	2.8524 (2.65)
Single Father	2.0649 (1.81)	-1.3833 (1.28)	0.6044 (0.52)	-2.5393 (0.49)	-1.2982 (1.07)	-18.612 (0.00)
Mother and Step Father	0.2088 (0.33)	-0.1858 (0.47)	-1.5658 (1.71)	-0.2389 (0.30)	-0.8679 (1.13)	3.0603 (2.50)
Father and Step Mother	-3.2092 (0.64)	0.3075 (0.39)	-0.5182 (0.47)	-8.9544 (0.03)	-0.6623 (0.54)	-1.2434 (0.77)
Other Family Arrangements	0.4817 (0.80)	0.0511 (0.14)	0.0966 (0.18)	-0.3008 (0.45)	-0.2311 (0.34)	0.7470 (0.41)
Religious Attendance						
Not at all	0.1077 (0.10)	-5.7251 (0.82)	0.4375 (0.67)	-3.7910 (0.24)	-0.4982 (0.42)	0.1152 (0.06)
Frequently	0.0531 (0.20)	0.1324 (0.86)	0.0442 (0.19)	-0.1469 (0.43)	0.3283 (1.20)	0.2801 (0.93)
Aptitude Tests						
Standarized AFQT Score.	-0.3144 (0.62)	0.5305 (1.71)	0.2578 (0.57)	0.7191 (0.97)	-0.0037 (0.01)	0.4311 (0.43)
Square S. AFQT Score.	0.0972 (0.70)	-0.2200 (2.42)	-0.1472 (1.18)	-0.1820 (0.86)	0.0068 (0.05)	-0.1186 (0.44)
Residence at age 14						
Urban	-0.0427 (0.11)	-0.2383 (1.14)	-0.4064 (1.28)	0.2200 (0.38)	-0.5548 (1.66)	-0.8350 (1.38)
Other						
Private school	-0.3964 (0.65)	-0.5686 (1.59)	-0.4322 (0.87)	-0.8549 (0.84)	-0.1148 (0.25)	-0.6981 (0.71)
Rwage1	0.1988 (1.26)	-0.0950 (0.95)	-0.1291 (1.12)	-0.1060 (0.51)	-0.2748 (1.80)	-0.5199 (2.22)
Nhr	0.3062 (0.99)	0.0654 (0.43)	-0.0003 (0.43)	0.2834 (0.63)	-0.3471 (0.91)	-0.0001 (0.06)
Time trend						
Linear coefficient	0.3088 (8.66)	0.3088 (8.66)	0.3088 (8.66)	0.2723 (3.97)	0.2723 (3.97)	0.2723 (3.97)
Quadratic coefficient						
Unobserved Heterogeneity						
Correlation	-0.054	-0.054	-0.054	-0.054	-0.054	-0.054

Note: also included in the model specification are State dummies, cohort dummies and baseline hazards. T-values are in parenthesis.

Table 9.d: Parameter Estimates for Competing risk Model 4 with state specific fixed effects.

WHITE

	Marriage			**Fertility**		
Age	13 to 17	18 to 22	23 to 35	13 to 17	18 to 22	23 to 35
Family Background						
Mother's Education	0.0823 (1.79)	-0.0020 (0.10)	-0.0604 (1.88)	0.0437 (0.68)	-0.0113 (0.27)	-0.0114 (0.14)
Father's education	-0.0811 (2.43)	-0.0407 (2.37)	-0.0349 (1.27)	-0.0151 (0.29)	-0.0160 (0.44)	-0.0134 (0.23)
Family income ($ 1000's)	-0.0100 (7.16)	0.0058 (1.54)	0.0020 (0.29)	-0.0036 (0.31)	0.0036 (0.44)	-0.0108 (0.81)
Number of Siblings	-0.0053 (0.11)	-0.0304 (1.40)	-0.0250 (0.79)	0.0521 (0.82)	-0.0697 (1.54)	-0.0742 (0.98)
Reading Materials at Home	-0.4966 (2.45)	-0.1336 (1.40)	-0.3222 (1.98)	-0.2059 (0.71)	0.1283 (0.64)	0.2035 (0.54)
Living Arrangements at 14						
Both Parents	1.2799 (2.87)	-0.1189 (0.80)	0.0957 (0.42)	-0.1073 (0.26)	-0.2767 (0.95)	-0.7288 (1.61)
Single Father	1.5138 (1.79)	-0.1488 (0.33)	0.5433 (1.10)	-13.157 (0.02)	-0.8186 (0.78)	-0.2916 (0.23)
Mother and Step Father	0.7038 (1.23)	-0.1210 (0.60)	-0.2861 (0.82)	-1.2361 (1.53)	-0.4826 (1.13)	-1.3270 (1.74)
Father and Step Mother	1.4492 (2.14)	0.3966 (1.00)	2.0301 (3.20)	-12.629 (0.03)	0.3577 (0.64)	-12.620 (0.02)
Other Family Arrangements	1.3254 (2.11)	0.2679 (0.87)	1.8674 (4.76)	-10.708 (0.09)	0.2685 (0.52)	4.0518 (3.14)
Religious Attendance						
Not at all	-0.7972 (1.34)	0.0014 (0.01)	-0.3714 (1.19)	0.1648 (0.27)	-0.1668 (0.35)	-1.5106 (1.35)
Frequently	-0.3076 (1.57)	-0.0289 (0.33)	0.1469 (1.02)	-0.4332 (1.51)	0.0104 (0.06)	-0.3560 (1.07)
Aptitude Tests						
Standarized AFQT Score.	0.1336 (0.33)	0.4339 (2.18)	0.0638 (0.23)	-0.3510 (0.66)	-0.2522 (0.68)	-1.0977 (1.52)
Square S. AFQT Score.	-0.0526 (0.57)	-0.1054 (2.47)	0.0109 (0.19)	0.0399 (0.34)	-0.0229 (0.27)	0.1838 (1.20)
Residence at age 14						
Urban	0.0023 (0.01)	-0.1881 (2.05)	-0.0296 (0.20)	-0.0919 (0.31)	0.1563 (0.74)	-0.6133 (1.67)
Other						
Private School	-0.2619 (0.57)	-0.1213 (0.74)	-0.2877 (1.49)	0.7543 (1.78)	-0.4101 (1.02)	0.2656 (0.54)
Rwage1	0.0142 (0.16)	0.0331 (0.64)	0.0582 (1.17)	-0.1059 (0.83)	-0.0609 (0.51)	-0.0312 (0.25)
Nhr	0.3398 (2.18)	0.0235 (0.23)	-0.0003 (1.10)	-0.2057 (0.74)	0.0585 (0.25)	0.0000 (0.06)
Time trend						
Linear coefficient	0.2437 (2.95)	0.2437 (2.95)	0.2437 (2.95)	0.0215 (0.14)	0.0215 (0.14)	0.0215 (0.14)
Quadratic coefficient	0.0008 (0.28)	0.0008 (0.28)	0.0008 (0.28)	0.0044 (0.88)	0.0044 (0.88)	0.0044 (0.88)
Unobserved Heterogeneity						
Correlation	0.8238	0.8238	0.8238	0.8238	0.8238	0.8238

Note: also included in the model specification are State dummies, cohort dummies and baseline hazards. T-values are in parenthesis.