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on the Formation of First Marriages

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ABSTRACT

We examine the association between nonmarital childbearing and the subsequent likelihood of first marriage and document a negative association between these variables -- controlling for a variety of potentially confounding influences – in several large survey data sets for the United States. We then subject possible explanations of this finding to empirical test.

The analyses performed support the following conclusions: Nonmarital childbearing does not appear to be driven by low expectations of future marriage. Rather, the direction of causation is just the reverse: Nonmarital childbearing tends to be an unexpected and unwanted event that has multiple effects, which on balance are negative, on a woman's subsequent likelihood of first marriage. Further, the upward trend in the proportion of childbearing that occurs outside of marriage may account for one-fourth of the increase in the proportion of women never marrying in the United States over cohorts separated by almost two decades. We do, however, find that nonmarital childbearers are more likely to enter informal cohabitational unions than are their single counterparts who do not bear a child.

We find evidence that the negative association between out-of-wedlock childbearing and subsequent marriage is particularly strong among welfare recipients as well as evidence that out-of-wedlock childbearing increases the likelihood that a woman marries her child's biological father. On the other hand, we find no evidence that (a) stigma associated with nonmarital childbearing plays an important role in this process or (b) the demands of children reduce the time that unmarried mothers have to devote to marriage market activities.

I. **Introduction**

Over the past two decades, teenage childbearing in the United States -- as measured by the number of births to teenagers -- has decreased considerably. The number of teen births declined 19 percent between 1970 and 1990 from 656 to 533 thousand (see Figure 1a, which is based on data reported in Moore, Snyder, and Halla, 1993). But this downward trend masks the fact that births to married and unmarried teens have been moving in opposite directions. Births to married teens fell by 62 percent from 457 thousand in 1970 to 173 thousand in 1990, while births to unmarried teens over this same period increased by 80 percent from 200 to 361 thousand. As a consequence of these divergent trends, the proportion of teen births that occur to unmarried women rose from 30 to 68 percent between 1970 and 1990 (see Figure 1b).

Americans are generally not dispassionate about teenage out-of-wedlock childbearing (a term we use, along with "nonmarital childbearing," to refer specifically to childbearing occurring prior to first marriage). For some, concerns are rooted mainly in moral or religious beliefs. Others are troubled because single parenthood seems to trigger the onset of difficult social and economic circumstances. Indeed, a long line of academic research has documented strong associations between nonmarital teenage childbearing and low levels of completed schooling, earnings, and family income, increased likelihoods of being in poverty or on welfare, and future marital instability (see, e.g., Bachrach and Carver, 1992; Geronimus and Korenman, 1992 and 1993; Hayes, 1987; and Hoffman, Foster, and Furstenberg, Jr., 1993 for reviews of much of this literature).

One dimension of a single teenage woman's future life circumstances whose

connection to childbearing has not previously been explored in depth is her first marriage behavior. The objective of this study is to help fill this gap in the literature. It seems reasonable to hypothesize that out-of-wedlock childbearing influences a woman's likelihood of marriage. Whether or not they were born outside of marriage, children may be perceived by prospective husbands as a financial and emotional burden; they may also limit a woman's ability to search for a marriage partner or possibly dissipate her interest in finding such a partner, especially in light of rules governing eligibility for AFDC. To the extent that social stigma is associated with "illegitimacy," the presence of such children may be expected to diminish the marriage prospects of an unwed mother. On the other hand, the presence of children might increase a woman's desirability to prospective husbands for whom instant parenthood, or parenthood of non-infant children or of their own biological children, is an attraction. It is also conceivable that an unwed mother interested in attracting a husband might be willing to go to greater lengths to find a spouse or to make herself attractive as a spouse, thereby increasing her likelihood of marriage. Insofar as some of these mechanisms suggest a negative effect of out-of-wedlock childbearing on marriage, while others suggest a positive effect, the overall effect is very much an empirical issue.

The central objective of this paper is to explore the interrelationships between out-of-wedlock childbearing and subsequent first marriage behavior. In Section II we document a negative association between these events in four large survey data sets. We also fit some simple hazard models that account for varying degrees of exposure to marriage formation experienced by individuals and for other possibly confounding influences on the main association of interest, that between out-of-wedlock childbearing

and subsequent marriage behavior.

The estimates show that the negative association persists (although somewhat less strongly) when one contrasts women who are comparable in terms of a standard set of social and demographic background variables and also when we examine the association between childbearing occurring prior to a first union and the subsequent formation of unions, both formal and informal. We also find a negative association when we examine the data using a "within-family" framework of analysis that attempts to control for possible confounding influences of unobserved family background attributes on marriage behavior.

In Section III we attempt to assess some alternative explanations for the negative association between out-of-wedlock childbearing and the subsequent likelihood of marriage. We do this first by exploring the presence of reverse causality in the relationship between unwed motherhood and marriage by examining whether women who think they are less likely to marry (for whatever reason) have higher rates of unwed motherhood. We also test for a relationship between the receipt of AFDC payments and future marriage behavior. We then explore the importance of stigma by examining the effect of children (both those maritally and nonmaritally borne) on a woman's likelihood of remarriage. Last, we analyze some time use data for unwed mothers and other single women in order to see whether these two groups differ with respect to the time they have available to engage in social activities.

Our results are summarized and discussed in Section IV, where we estimate that the increase in teenage out-of-wedlock childbearing in the United States may account for one-fourth of the increase in the proportion never married across cohorts separated by

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almost two decades.

II. Out-of-Wedlock Childbearing and Subsequent First Marriage Formation

In previous work, Bennett, Bloom, and Craig (1989) found that never-married women who had an out-of-wedlock first birth were considerably less likely to marry by the age of 30 than their counterparts who did not have such a birth. Here we wish to elaborate on that finding, by examining this relationship in the context of additional information.

The Data

The data sets used to perform most of the analyses described below were extracted from Cycle IV of the National Survey of Family Growth (NSFG), the National Survey of Families and Households (NSFH), the National Longitudinal Survey of Youth (NLSY), and the National Longitudinal Survey of Young Women (NLSYW).

The field work of the NSFG took place between January and August of 1988. Respondents numbered 8,450 and consisted of women of all marital statuses aged 15 through 44. Blacks were oversampled. The NSFG contains detailed information regarding the marital and childbearing histories of each respondent. In addition, the survey includes items that provide data on various background characteristics for which we would like to control, such as race and education.

The NSFH, which was conducted by the University of Wisconsin, consists of interviews with 13,017 women and men aged 19 and older of all marital statuses. The field work took place between March 1987 and May 1988. Several population groups

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were double-sampled: minority groups (blacks, Puerto Ricans, and Chicanos), single-parents, parents with step-children, cohabiting persons, and persons who recently married. Detailed information on respondents' cohabitation, marriage, and fertility histories, in addition to a rich set of social and economic indicators, are included in this data set.

The NLSY is sponsored by the Center for Human Resources at Ohio State University. A national probability sample was drawn for the NLSY in 1978 consisting of 5,578 young women and 5,828 young men between the ages of 14 and 21, with overrepresentation of blacks, Hispanics, and economically disadvantaged whites. The oversampling of these three groups resulted in a supplement of 5,295 individuals included in the sample. With funding from the Department of Defense, an additional 1,280 persons serving in the Armed Forces were selected for interviewing. The latest wave used for our analyses included data on 5,369 women as of 1987. Core questions focused upon an individual's marital history, schooling, labor force status, work experience, employer information, fertility, and income. The NLSY also provides useful data on women's marital expectations (Center for Human Resource Research, 1991).

The NLSYW, also out of Ohio State, initially sampled 5,159 women aged 14 through 24 in 1968. Each of the original NLS samples was designed to represent the civilian noninstitutionalized population of the United States at the time of the initial survey. Interviews with the young women have been conducted at regular intervals since 1968. Core questions addressed education, employment, earnings, and other income. Additional questions delved into fertility, child care, educational goals, and high school and college experiences. To provide reliable statistics for blacks, households in

predominantly black enumeration districts were selected at a rate between three and four times that of households in predominantly white enumeration districts. In 1968, the sample included 3,638 whites and 1,459 blacks, with the remainder being of other groups. The 1987 wave, the latest that we analyzed, surveyed 3,639 women (Center for Human Resource Research, 1991).

Preliminary Analysis

Following the approach of Bennett, Bloom, and Craig (1989), we classify women who were never-married and childless at exact age x (the single-year ages from 14 through 19) into two categories: (1) those who had an out-of-wedlock birth in the following year, and (2) those who did not.

If we examine Table 1, we find that the association in the NSFG, NSFH, and NLSYW between a woman's out-of-wedlock first birth status at ages 14 through 19 (and 20 through 24) and the likelihood of marriage by age 35 is unambiguously negative. Generally, women who bear a child out of wedlock in their teenage years are about two to three times as likely not to marry by age 35 as those who do not bear a child out of wedlock. For example, in the NSFG approximately 22 percent of those women who had a premarital birth at age 17 did not marry by age 35. By comparison, about 11 percent of their counterparts who did not have such a birth at age 17 remained unmarried by age 35.

The differentials referring to marriage by ages 25 and 30, although not shown here, tell much the same story. For these same 17-year-olds in the NSFH, for example, 25 percent of those who had an out-of-wedlock child did not marry by age 30 versus 14

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percent among those who did have a child out of wedlock. The corresponding figures for those not marrying by age 25 were 33 versus 27 percent.[1]

The Hazard Model — Method

It is clear from many articles in the literature on marriage patterns (note, e.g., Rodgers and Thornton, 1985, Bennett, Bloom, and Craig, 1989, and Bloom and Bennett, 1990) that there are several factors that may simultaneously affect the timing of entry into first marriage. Consequently, we invoke a hazards model approach, which, as a multivariate extension of simple life table analysis (see, e.g., Cox and Oakes, 1984), is well suited to the nature of the problem and the data at hand.

We assume that there is a hazard or risk of first marriage formation at each age, a, and we allow this age-specific risk to depend on individual characteristics. Thus, for individual i at age a, with an observed set of characteristics represented by a vector of covariates, Z_i, some of which are time-varying (e.g., the occurrence of an out-of-wedlock first birth), the first marriage hazard function, $\mu_i(a)$, is assumed to be

$$\mu_i(a) = \exp[\lambda(a)]\exp[Z_i(a)\beta],$$

where β is a vector of parameters and $\lambda(a)$ is the underlying age pattern of first marriage risk.[2] In this model, the underlying risk of marriage for an individual i with characteristics Z_i is multiplied by the factor $\exp[Z_i(a)\beta]$. The impact of a given event on the hazard of marital formation only takes effect subsequent to the occurrence of that event.

The model's parameters are estimated using maximum likelihood routines in the package LIMDEP (Econometrics Software, 1992). The estimation procedure assumes that

the hazard, $\mu(a)$, is constant within age intervals.[3]

The Hazard Model -- Results

Table 2 reports selected descriptive statistics computed from the NSFG, NSFH, NLSY, and NLSYW for unrestricted samples and for samples of women who married within six months of having an out-of-wedlock birth (at any age). For the moment, we will refer only to statistics calculated for the unrestricted sample from each survey, that is, the figures in the four columns (1). Given the different age ranges of women interviewed in the two surveys, the sample averages are quite consistent with one another.

Table 3 reports estimates of the parameters of a simple hazard model applied separately to data from the NSFG, NSFH, NLSY, and NLSYW. In Model 1, we estimate the gross relationship between having a premarital birth and the subsequent likelihood of first marriage. There is a strong negative relationship: Those who have an out-of-wedlock birth are considerably less likely to marry subsequent to that birth than those who do not have an out-of-wedlock birth. By taking the antilog of the coefficient estimate, for example, exp[-.411] = .66 in the NSFG data, we calculate that women who have an out-of-wedlock birth have, on average, a 34 percent lower monthly probability of first marriage after that birth than their childless counterparts. The corresponding figures from the NSFH, NLSY, and the NLSYW are 22, 19, and 45 percent, respectively.

Incorporating a number of control variables, we note, for example, in Table 4 that black women are significantly less likely to marry than white women, as has been well documented in the literature (see, e.g., Bennett, Bloom, and Craig, 1989).[4] In addition,

women whose mothers obtained at least a high school degree are less likely to marry than those whose mothers had lower educational attainment. Last, women who reside in rural areas (at the time of the survey) are notably more likely to marry than their counterparts from urban areas.

Despite the significant relationships between these control variables and marital formation, the relationship of predominant interest to us -- that between premarital childbearing and subsequent marriage -- although diminished in magnitude, still holds in the analysis of the NSFG, NSFH, and NLSYW data. However, for the NLSY, the association apparent in the simple analysis now all but disappears.[5]

If we are trying to assess the influence of an out-of-wedlock birth on future marriage behavior, it is instructive to distinguish between women who marry the father of their child and women who marry someone other than the father since the presence of a child may, for example, make women relatively more attractive as a spouse to the biological father. Also, the birth of a child prior to marriage may induce a couple to marry sooner than they had planned. Unfortunately, none of our four principal data sets provides complete information on the paternity of children born outside of marriage. However, as a crude proxy, we may assume that women who marry within six months of the birth of their child have in fact married the child's biological father. Evidence provided by Larry Bumpass (1993) provides some support for this assumption.

Based on data from the National Survey of Families and Households (NSFH), Bumpass (1993) calculates that of all women who had a first premarital birth during the period 1980 through 1984 and who married within one year of the birth (53 cases), about three-quarters were living with the biological father of the child at the time of the survey,

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1987-1988 (unweighted number of cases, but weighted estimates). This figure is in contrast to about half (of 36 cases) among those who married more than one year after the birth, a statistically significant difference.[6]

In Model 2 of Table 3, we examine the risk of first marriage for all women except those who married within six months of the child's birth. This exclusion encompasses slightly more than one percent of the overall samples that we analyze and nine to 12 percent of the women experiencing an out-of-wedlock birth: 111 women in the NSFG, 110 women in the NSFH, 65 women in the NLSY, and 46 women in the NLSYW. Columns (2) of Table 2 report descriptive statistics for these excluded groups.

The negative association between out-of-wedlock childbearing and subsequent marriage hazards is substantially stronger when analyzing the restricted sample. This is especially so when we fit the full model shown in Table 4. The out-of-wedlock birth coefficients approximately triple in magnitude for the NSFG and NSFH and quintuple for the NLSY. In all four data sets, the coefficient on the out-of-wedlock birth variable is now highly significant. Net of other socio-demographic factors that influence the likelihood of marriage, giving birth prior to marriage is associated with approximately a one-fifth to one-half lower monthly risk of first marriage (corresponding to coefficients of -.228, -.316, -.359, and -.734) than the average risk experienced by women who do not give birth out of wedlock.

At a minimum, we can say that women who do not marry within six months of having a nonmarital birth are considerably less likely to ever marry than those who do not have a nonmarital birth. Whether this finding reflects a positive linkage between out-of-wedlock childbearing and subsequent marriage to the child's biological father, an

interpretation that is consistent with the NSFH data, or arises instead because we have

excluded premarital childbearers with the highest risk of marriage, can be tested, albeit

crudely, using the NSFH, which does identify currently married women whose husbands

are the biological fathers of their children born out of wedlock. (Unfortunately, it does

not identify ever-divorced women who first married the biological father of their out-of-

wedlock child(ren).) Excluding these women from the sample, a group that is not

restricted to women who married within a particular time period following an out-of-

wedlock birth, reduces the sample size by 145 (relative to 110 excluded using the six-

month restriction). These hazard model estimates (which are available from the authors

upon request) are remarkably similar to the previous estimates, showing a reduction in

the out-of-wedlock birth coefficient, from -.096 to -.338. These results provide further

support for the hypothesis that out-of-wedlock childbearing increases the hazard of

subsequent marriage to the child's biological father.

We now report another set of analyses designed to control for the possible

confounding effects of various family background characteristics that may also affect the

likelihood of marriage. This set of analyses follows the work of Geronimus and

Korenman (1992), who have adopted the approach of "within-family" estimation,

developed by Griliches (1979) and others, to study the consequences of teenage

childbearing. This statistical model controls, in principle, for both observed and

unobserved family background heterogeneity by focusing on differences between sisters

in childbearing and marriage experience. Performing these analyses necessitates

constructing a sample that consists of sister pairs, with the restriction that only one of

each pair is married (see Chamberlain, 1982). The estimation involves fitting a standard

logit model to data on differences in the event of first marriage among sister pairs; differences in their out-of-wedlock birth experience and their ages are included as regressors.

Column 1 of Table 5 reports the within-family estimates for the NLSY, the only one of our three data sets for which this analysis can be performed. Although sample size is small (62 sister pairs), the coefficient for the out-of-wedlock birth variable is negative and highly significant in the logit specification that accounts for family effects. Thus, the negative association between out-of-wedlock childbearing and the likelihood of first marriage appears to hold up while controlling for family background heterogeneity in unobserved dimensions.[7]

To gauge the robustness of this within-family result, we attempted to replicate this analysis using the Panel Study of Income Dynamics (PSID). The PSID is a nationally representative survey of American households, longitudinal in design, that has been conducted by the Institute for Social Research at the University of Michigan since 1968. There were approximately 5000 households in the survey's initial wave. The data restrictions resulted in a sample of 53 sister pairs for the PSID. Column 2 of Table 5 reports the results from this data set. The significant negative coefficient on the out-of-wedlock birth variable lends further support to our basic finding of a negative association between out-of-wedlock childbearing and subsequent marriage.

We now examine whether the negative association between out-of-wedlock childbearing and formal marriage is accompanied by an increased likelihood among out-of-wedlock childbearers of entry into informal cohabitational unions, the prevalence of which has increased rapidly in recent years (Bumpass and Sweet, 1989). We do this by

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using data from the NSFG to examine the connection between childbearing outside of cohabitational unions and the subsequent probability of the formation of such unions (both formal and informal).

We report in Table 6 estimates of hazard models for entry into first marriage, entry into first cohabitational union (either formal or informal), and entry into first informal union. Identical samples and sets of control variables are used, including controls for age at first intercourse, which is intended to control for sexuality development. The birth variable of interest is a time-varying covariate referring to whether a woman had a birth prior to her first union. The estimates indicate that pre-first union childbearing is associated with a lower risk of entry into both first marriage and first union. However, the positive coefficient on out-of-union childbearing in Model 3 of Table 6 suggests that the negative association between out-of-wedlock childbearing and the risk of first marriage is accompanied by a somewhat greater propensity of out-of-union childbearers to enter informal unions subsequent to their first birth than those who do not have an out-of-union child. Although the magnitude of the estimates varies somewhat, the pattern of results in Table 6 is generally upheld when we vary the controls or examine a sample restricted to women who did not form a first union within six months of the birth of their first child.

III. Determinants of the Negative Association Between Out-of-Wedlock Childbearing and First Marriage

Thus far we have documented a significant negative association between out-of-wedlock childbearing and subsequent marriage – using multiple data sets, empirical

techniques, and sets of control variables. The purpose of this section is to explore further the nature of this association. We begin by addressing the direction of causation between out-of-wedlock childbearing and marriage behavior, obtaining some clear indications that out-of-wedlock childbearing has a negative effect on subsequent marriage behavior. We then set forth and test alternative hypotheses about mechanisms underlying this relationship relating to (a) pecuniary disincentives, (b) stigma, and (c) time use.

Expectations of Marriage

The association between out-of-wedlock childbearing and subsequent marriage behavior is clearly negative; our next step is to determine the direction of causation. Does having a child outside of marriage decrease the likelihood of future marriage or do poor marriage prospects or a lack of desire to marry increase the likelihood that a woman will have a child out of wedlock (as argued, e.g., by Conrad [1992] and Guttenberg and Secord [1983])? The hypothesis implied by the latter question suggests that unmarried women tend to defer their childbearing plans if they perceive that an adequate supply of appropriate-quality men are available for marriage. Women who do not feel that such a pool of men exists will tend to have children in the more immediate future, without waiting for a suitable spouse to present himself.

We have carried out three simple analyses that provide evidence that is consistent with the view that the direction of association runs principally from out-of-wedlock childbearing to not marrying. First, to examine whether low marriage expectations increase the likelihood that a woman will give birth outside of marriage, we can simply

see whether those who answered in the negative the following question posed to females in the initial wave of the NLSY — "Do you expect to be married five years from now?" — were more likely to have had a nonmarital birth during the subsequent five years. If the causality runs from marital expectations to fertility, then we would expect to see a relatively high rate of out-of-wedlock childbearing among women who said they did not expect to marry in the next five years.

According to Table 7, of those women who expected to marry in the five-year period subsequent to the initial survey date, 8.1 percent had an out-of-wedlock birth. Because an insignificantly different 6.4 percent of women who did not expect to marry gave birth out of wedlock during this five-year period, the hypothesis that women with low expectations of marriage are more likely to have an out-of-wedlock child is not borne out in this simple analysis. This result is upheld when one controls for age at initial survey.

Further support for the conclusion suggested by Table 7 is found in Table 8, which is based on data from the NSFG. Out-of-wedlock childbearing is, for most, by no means a planned event based upon perceptions of a dim future. Nearly three-quarters (73 percent) of births occurring to women outside of marriage (84 percent for teen mothers) were unwanted in the NSFG (defined in the responses as either "mistimed" or "unwanted"). By contrast, only one-third (34 percent) of those taking place within marriage were unwanted.

Additionally, Table 9 (based on data from the NLSY) provides evidence that among women who expected to marry -- and presumably such an expectation reflects at least some desire to marry -- those who had an out-of-wedlock child were less likely to

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achieve the expected/desired outcome than their childless counterparts. In particular, the two panels of Table 9 indicate that 45 percent of those women who did not have an out-of-wedlock birth and expected to marry actually did so in the subsequent five years. By contrast, only 28 percent of those who did have an out-of-wedlock birth and expected to marry actually did so.

Pecuniary Disincentives to Marriage

According to data from the PSID, 50 percent of women who had an out-of-wedlock birth received Aid to Families with Dependent Children (AFDC) for some period of time during the three years subsequent to the birth. To the extent that receipt of such payments affects a woman's incentive to marry, we might expect to see different marriage rates among supported and non-supported women. AFDC may create a disincentive to marry from both the woman's and the man's point of view, since the woman becomes ineligible to receive benefits after she marries.

To measure the disincentive effects of AFDC on marriage, it is necessary to return to the PSID, the only data set we have that contains sufficient information on AFDC recipiency and also allows us to follow a reasonable number of women through age 30. In Table 10, we present estimates of a logit model in which the event of interest is whether a woman ever married by age 30. Although the results indicate that welfare receipt is negatively associated with marriage, the coefficient on the out-of-wedlock birth variable is still significantly negative. Nonetheless, the reduction in the magnitude of this coefficient from -.91 to -.72 suggests that welfare recipiency accounts for a small but nontrivial portion (i.e., about one-fifth) of the negative association between nonmarital

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childbearing and the subsequent likelihood of marriage.

In Table 11, we explore further the negative association between welfare receipt and first marriage by fitting a logit model for marriage expectations in which welfare receipt is a control variable. The coefficient on the welfare receipt variable is negative but insignificant, providing little support for the view that the connection between welfare receipt and first marriage operates because welfare mothers have less incentive to marry. Rather, this result seems to suggest that the negative association between welfare and marriage has some other explanation, possibly diminished marriageability of welfare mothers, a relatively low interest in marriage among potential male partners who may themselves effectively experience a loss of resources with the cessation of AFDC payments, or a shortage of marriageable men in communities with a high concentration of welfare mothers.[8]

Stigma

One possible reason that nonmarital childbearing gives rise to a lower probability of first marriage revolves around the notion of stigma. A man may reject a woman as a suitable partner if he feels she has violated societal norms or has offended his own sense of morality. By studying remarriage behavior, we can distinguish between the effects of nonmaritally-borne children from those borne within marriage.

Table 12 presents hazard model estimates of the relationship between a woman's childbearing history at the time of her divorce and the risk of remarriage. We replicate in Model 1 the well-known fact that women with children have a significantly lower likelihood of remarrying (37 percent) than those without children (Koo and Suchindran,

1980, Koo, Suchindran, and Griffith, 1984, Teachman and Heckert, 1985, and Thornton, 1977). In Model 2 we estimate parameters of a specification that allows us to infer whether there is an added effect associated with children born out of wedlock. Indeed, we find that a 34 percent reduction in remarriage rates experienced by all women with children is compounded by a 24 percent reduction among those who have at least one child born prior to the first marriage. Model 3 includes control variables that might have some bearing on the relationship of interest. With their inclusion, we find that the added negative effect of an out-of-wedlock child all but disappears. Thus, we find no strong evidence that stigma plays a role in the process under examination, although we cannot rule out the possibility that stigma associated with a nonmarital birth is important but wears away by the time a woman enters the remarriage market.

Time Available to Women for Social Activities

In a further effort to clarify the reasons that never-married women with children are less likely to ever marry, we explore the amount of time that women of various statuses have available to engage in social activities most closely related to the marriage market. In particular, we test the hypothesis that single women with children spend less time in social activities than those without children.

We analyze the Time Use in Economic and Social Accounts survey of 1975-1976, which determined how many minutes in a synthetic week the respondents spent taking part in a variety of activities. Of those women age 50 and under, 47 were single with children and 64 were single without children. We restrict our analysis to these two groups of women.

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Regression estimates from Model 1 of Table 13 indicate that unmarried women

with children spent almost one and one-half hours fewer per week in any of nine social

activities -- participation in political/citizen organizations, voluntary/helping

organizations, hobbies, parties, travel related to socializing or attending entertainment

events, travel related to sports and active forms of leisure, music/dance/drama, movies,

miscellaneous events -- than their childless counterparts. In Model 2 of Table 13, we

explore whether this differential persists when one controls for other factors that might

be correlated with marital and childbearing statuses and at the same time be associated

with the amount of time devoted to social activities. Net of these other factors, we find

that time use does not appear to be affected significantly by the presence of children.

Thus, the presence of children, which does seem to diminish the likelihood of marriage,

apparently does not do so by crowding out marriage market activities.[9]

IV. **Summary and Conclusions**

We have elaborated in this paper upon a striking finding in earlier work

indicating that women who have an out-of-wedlock birth are considerably less likely to

marry subsequently than those who do not. Figure 2, based on the NSFG results shown

in column (1) of Table 3, shows, for example, that a woman bearing a child out of

wedlock at age 14 faces a 33 percent probability of not marrying by age 30. By contrast,

her counterpart who does not have such a birth at age 14 faces only a 19 percent

probability of not marrying by age 30. A multivariate hazard model confirms the

general relationship, net of other, perhaps confounding factors. The relationship is

further confirmed using a within-family estimator that controls for observed and

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unobserved family background heterogeneity.

When we exclude women who married men who presumably were the child's father, we find that women who had a child outside of marriage were one-fifth to one-half less likely to marry each month than their childless counterparts. Put differently, without reference to the biological father, we can say that women who do not marry within six months of giving birth to a child outside of marriage are considerably less likely to ever marry than those who remain childless before marriage.

What is the nature of this decision not to marry? Is it volitional or is it not really a "decision" at all? In this connection, an important finding is that women who have a child outside of marriage are considerably less likely to realize their expectations of marriage. Despite provocative conjectures to the contrary, it seems that women are not generally having children nonmaritally as a response to poor marriage prospects. Rather, having a child outside of marriage appears to derail the existing plans of these women. For most women, non-marriage is the consequence, not the cause, of their nonmarital childbearing. Our analyses of entry into informal versus formal unions suggests that informal unions seem, to some extent, to substitute for formal marriage among these women. Even so, using an expanded definition of marriage (informal cohabitation in addition to formal marriage), having an out-of-union birth significantly diminishes the probability of entry into a first union.

Given these results concerning the relationship between out-of-wedlock childbearing and marriage, we attempt to measure how much of the secular decline in first marriage rates can be accounted for by the rise in out-of-wedlock childbearing. To do this, we first express the proportion of women aged 40 to 44 in 1987-88, the time at

which the National Survey of Families and Households was conducted, who have never married, NM(1988) (.0577), as a weighted average of that same proportion among those who experienced an out-of-wedlock birth in their teens, NM(1988,OOWB) (.2265), and those who did not, NM(1988, no OOWB) (.0443). Thus, we have

$$NM(1988) = NM(1988,OOWB) \times W(1988,OOWB) + NM(1988,no\ OOWB) \times W(1988,no\ OOWB),$$

where W(1988,OOWB) (.0737) denotes the proportion of women in that cohort who had a teen out-of-wedlock birth and W(1988, no OOWB) (.9263) is its complement.

We can express NM(1970), the proportion of women aged 40 to 44 in 1970 who never married by that age (.0382), in the same way, where NM(1970, OOWB) is .1211, NM(1970, no OOWB) is .0341, W(1970, OOWB) is .0480, and W(1970, no OOWB) is .9520.

We are now able to compute NM'(1988), the proportion never-married that would have occurred among the more recent cohort had they experienced the level of out-of-wedlock childbearing that had occurred in the earlier cohort:

$$NM'(1988) = NM(1988,OOWB) \times W(1970,OOWB) + NM(1988,no\ OOWB) \times W(1970,no\ OOWB).$$

This latter equation suggests that 5.30 percent of the more recent cohort would have never married by age 40 to 44 had they followed the out-of-wedlock childbearing patterns of their earlier counterparts. This result implies that the rapid rise in nonmarital births may account for one-quarter (24%) of the rise in the proportion never married taking place over the two decades or so separating these cohorts.

Upon finding that women who bear children out of wedlock subsequently marry in fewer numbers than those who do not have children, we sought to test several hypotheses that might explain this relationship. Having noted the positive correlation between out-of-wedlock childbearing and AFDC receipt, we first examined whether the

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negative association between out-of-wedlock childbearing and entry into first marriage operates through pecuniary disincentives. Indeed, the negative effect of an out-of-wedlock birth on the probability of marriage is diminished, albeit modestly, by the inclusion of a control for the receipt of AFDC. However, using data on marital expectations, we found little support for the hypothesis that the receipt of AFDC depresses a woman's likelihood of marriage by reducing her near-term expectation of marriage.

Our analysis of remarriage data among divorced women offers little support for the hypothesis that stigma associated with premarital childbearing is a dominant cause of lower marriage rates. By examining time use data referring to single women, we also found little evidence to support the hypothesis that the negative association between out-of-wedlock childbearing and subsequent first marriage rates arises because unmarried women with children have less time to engage in activities that would lead, whether directly or indirectly, to a greater likelihood of marriage.

A disturbing implication of our results arises from the well-established negative associations between single parenthood and economic status. For example, tabulations from the March 1989 Current Population Survey reveal that the poverty rate among individuals living in households headed by never-married females was roughly five times the rate experienced in two-parent families (34.1% versus 6.6%). Our results therefore suggest a link between out-of-wedlock childbearing and an increased likelihood of subsequent poverty.

Even among those premarital childbearers who do marry, earlier empirical analyses (see Menken et al., 1981, as well as several confirmatory analyses conducted in

connection with this project) suggest that marital instability is more likely in the presence of one or more out-of-wedlock births. Among families headed by divorced or separated women, the poverty rate in the March 1989 Current Population Survey was over four times that among two-parent families (29.8% versus 6.6%). Thus, out-of-wedlock childbearing seems to be associated with a higher likelihood of future poverty, both among women who never marry as well as among women who do marry but whose marriages prove unstable.

The adverse economic consequences of premarital childbearing are not limited, however, to the women experiencing such births. Their increased chance of future poverty is likely to have an intergenerational spillover effect, with their children less likely to complete high school, more likely to experience poverty, and more likely to be recipients of welfare payments (see McLanahan 1988; Haveman, Wolfe, and Spaulding, 1991; and Miller, 1993). Thus, our results suggest that out-of-wedlock childbearing is an unanticipated event with important future consequences, not only for the mother's marital status, but also for her economic well-being and the economic well-being of her offspring.

Notes

The NLSY is excluded from Table 1, for the cohorts surveyed were too young in the 1987 wave to track them out to age 35. However, women in the NLSY who had a teen birth out of wedlock were less likely to marry by age 25 than their counterparts who did not.

We also experimented with alternative parametric forms for the underlying hazard, some allowing for unobserved heterogeneity, but found that these provided a poor fit to the data. Results are available from the authors upon request.

The age intervals used in the data sets were as follows:

    NSFG: 14-16, 17-18, 19-21, 22-24, 25-30, 31-34, 35+

    NSFH: 14-16, 17-18, 19-21, 22-24, 25-30, 31-34, 35-39, 40+

    NLSY: 14-15, 16-17, 18-19, 20-21

    NLSYW: 14-16, 17-18, 19-21, 22-24

The out-of-wedlock birth coefficient estimated from the NLSYW is considerably larger in absolute value than those calculated from the three other data sets. This difference persists when one examines comparable birth cohorts across data sets.

Several of the analyses reported in this paper were also performed separately for blacks and nonblacks. Generally, there were few qualitative differences between the

coefficients of interest in these separate equations.

"If we were able to focus on marriages contracted within six months after the birth of an out-of-wedlock child, we would expect that the proportion that involved the biological father would be higher than three-quarters for two reasons. First, the NSFH statistic of three-quarters refers to marriages that remain intact at least until the time of the survey. Certainly, some marital dissolution has taken place in the intervening years, and in all likelihood disproportionately so among those couples who had a child before marriage (see Menken, Trussell, Stempel, and Babakol, 1981). Therefore, had the survey been taken directly at the time of marriage, the proportion would likely have been higher than three-quarters. Second, we eliminated women from our analysis who married within six months of having their child, rather than one year. As is shown in the progression of statistics from one-half to three-quarters, referring to the proportion of marriages that are to the biological father among unions taking place more than one year and within one year after the birth, the shorter the duration between birth and marriage, the higher the proportion of marriages to biological fathers.

⁷One possible limitation of the "within-family" approach relates to the representativeness of the sample of sister pairs. We examine this issue by first estimating the hazard model specified in Table 4 for the sample of 124 sisters (not reported). We find that the coefficient for the out-of-wedlock birth variable is marginally significant and negative. We then conduct a likelihood ratio test for the pooling of individuals in the NLSY sisters sample with the remainder of the NLSY sample, again based on the

specification in Table 4. On this basis, we reject the hypothesis that the sister pairs are a random sample of the broader NLSY sample.

The receipt of child support payments also diminishes one incentive a single mother may have to marry. To explore the disincentive effects associated with the receipt of child support, we examined NLSY data from 1978 to 1983. Due to the small number of never-married women receiving such payments (3%), we focused our analysis on divorced women with children. We find that women who are receiving child support in a given year are not significantly more or less likely to marry within the subsequent two years than their counterparts who are not receiving such support. In 1980, for example, 66 percent of divorced women receiving child support married in the subsequent two years, compared with 59 percent of divorced women with children not receiving child support. From these results, it can be inferred that child support does not appear to play an important role in the marriage behavior of single mothers.

We arrive at the same conclusion when the dependent variable is augmented to include time spent at work.

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Number of Teen Births by Marital Status

Number of Teen Births (Thousands)

700
800
500
400
300
200
100
0
1970   1975   1980   1985   1990
Year

— All Teens   □ Married Teens   ▲ Unmarried Teens

Figure 1a

Percentage of Teen Births
to Unmarried Women, 1970-1990

Percent

70
80
50
40
30
20
10
0
1970   1975   1980   1985   1990
Year
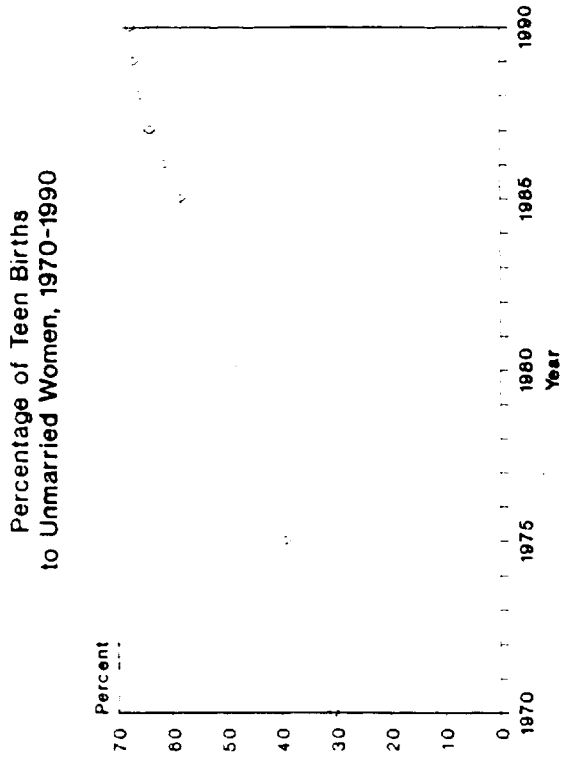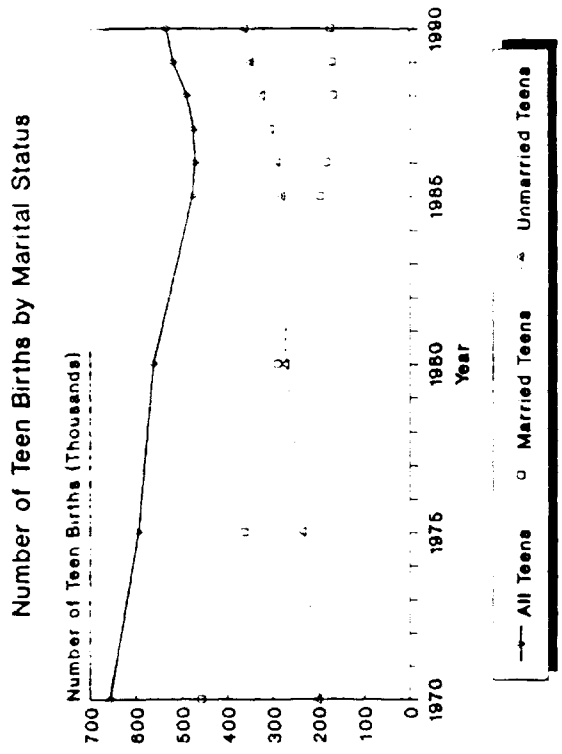
Figure 1b

Proportions Remaining Never-Married OOWB vs. No OOWB
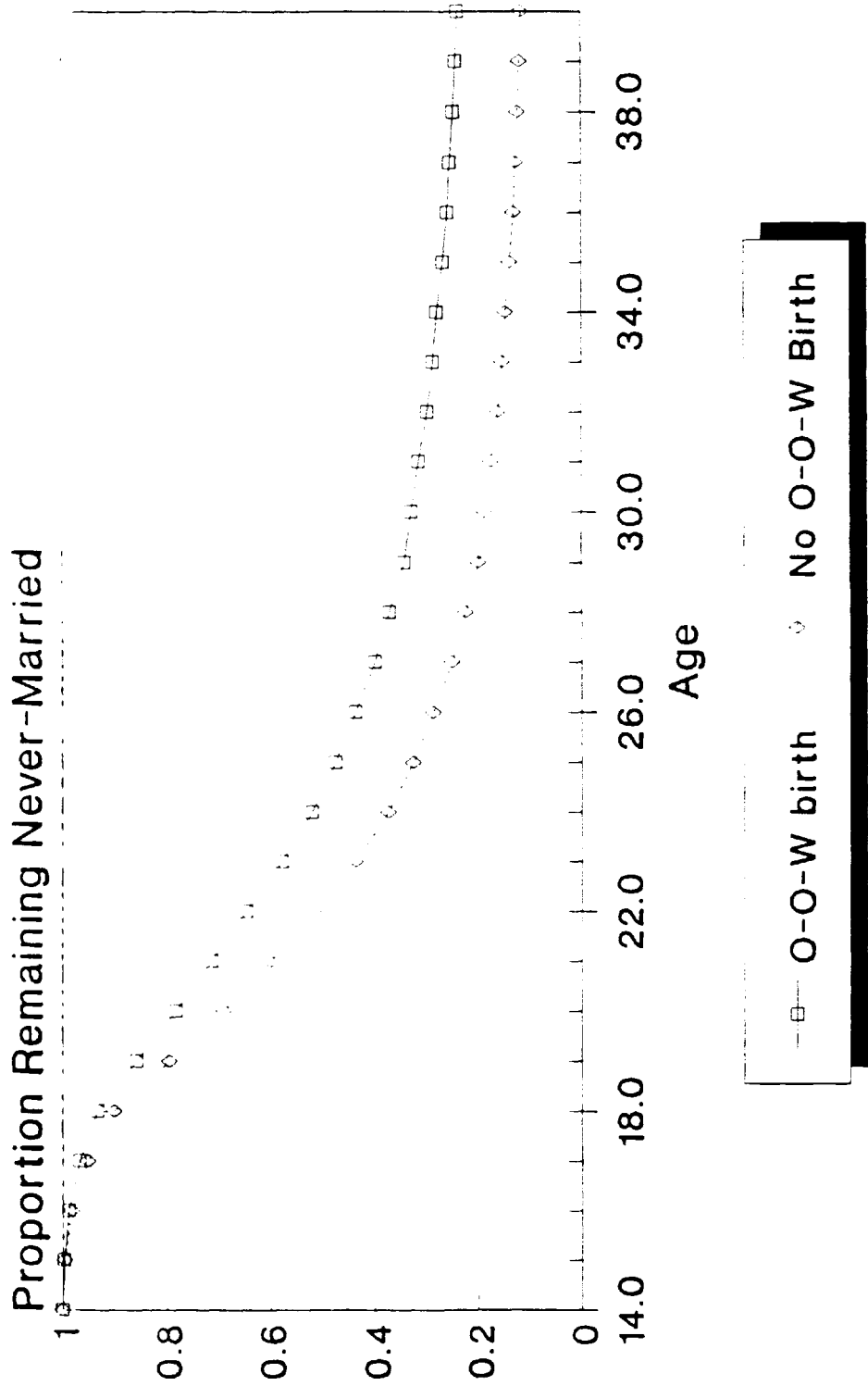
Figure 2

Table 1: Percentage of women never-married by age 35, by whether a childless woman of a given age had an out-of-wedlock first birth (OOWB) in each of the teenage years (samples restricted to those at least 35 years of age)

Age	NSFG		NSFH		NLSYW	
	No OOWB	OOWB	No OOWB	OOWB	No OOWB	OOWB
14	10.4	21.8	8.0	14.6	16.6	43.9
15	10.5	13.5	8.0	17.7	16.6	36.7
16	10.4	43.5	8.1	22.2	16.4	61.8
17	10.7	21.7	8.4	19.4	16.5	43.8
18	11.1	21.3	8.9	21.3	16.9	49.0
19	12.9	27.7	10.2	27.8	19.1	42.6
20-24	14.5	36.1	11.3	30.7	19.4	65.6

Table 2: Descriptive statistics from the NSFG (1988), NSFH (1987-88), NLSY (1987), and NLSYW (1987) for (1) unrestricted samples and (2) samples of women who married within six months of having an out-of-wedlock birth

Variable Name	Description	Sample Average							
		NSFG		NSFH		NLSY		NLSYW	
		(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
OOW	1 if date of birth of first child preceded date of first marriage	.11	1.0	.10	1.0	.15	1.0	.19	1.0
Black	1 if black, 0 if non-black	.13	.29	.10	.24	.15	.23	.25	.63
EdMom < HS	1 if highest grade completed by respondent's mother is less than 12th	.32	.47	.44	.57	.31	.52	.54	.65
EdMom = HS	1 if highest grade completed by respondent's mother is the 12th	.43	.42	.37	.32	.46	.42	.33	.27
EdMom > HS	1 if highest grade completed by respondent's mother is greater than the 12th	.24	.10	.19	.12	.23	.06	.13	.08
Rural	1 if current residence is rural at time of (latest) survey	.25	.33	.22	.15	.20	.18	.30	.44
Exp-mar	Do you expect to be married 5 years from now? Yes = 1	N/A	N/A	N/A	N/A	.53	.77	N/A	N/A
Mar5	Actually married within 5 years? Yes = 1	N/A	N/A	N/A	N/A	.31	.87	N/A	N/A
Mar30	Ever-married by age 30, among those aged 30 and above: Yes = 1	.84	1.0	.88	.97	N/A	1.0	.77	.96
EverMar	Ever-married by time of survey	.64	1.0	.81	1.0	.57	1.0	.80	1.0
Kids	Presence of children at dissolution of first marriage: Yes = 1	.84	1.0	.74	1.0	.54	1.0	.69	1.0
AgeDiv	Age at divorce	25.7	23.8	27.9	27.8	22.7	25.6	28.2	26.8
Sample size (unweighted)		8345	111	6366	110	4863	65	3256	46

Note: Sample weights were used in all calculations performed.

Table 3: Hazard model estimates of the relationship between out-of-wedlock childbearing and the risk of first marriage, with (Model 1) and without (Model 2) women who married within six months of their out-of-wedlock child's birth. (Asymptotic standard errors are reported in parentheses.)

Variable	NSFG IV		NSFH		NLSY		NLSYW	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
Out-of-wedlock birth (time-varying)	-.411 (.046)	-.592 (.043)	-.251 (.047)	-.495 (.052)	-.213 (.052)	-.384 (.055)	-.602 (.065)	-.815 (.071)
-log L	33347	32513	33382	32524	19522	19050	17575	17200
No. of observations	8345	8234	6366	6256	4859	4794	3629	3577
Excludes women marrying within six months of out-of-wedlock first birth	No	Yes	No	Yes	No	Yes	No	Yes

Table 4: Hazard model estimates of the relationship between out-of-wedlock childbearing and the risk of first marriage, controlling for the effects of other covariates, with (Model 1) and without (Model 2) women who married within six months of their out-of-wedlock child's birth. (Asymptotic standard errors are reported in parentheses.)

Variables	NSFG		NSFH		NLSY		NLSYW	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
Out-of-wedlock birth (time-varying)	-.121 (.045)	-.316 (.047)	-.096 (.050)	-.359 (.055)	-.043 (.056)	-.228 (.059)	-.536 (.068)	-.756 (.074)
Black	-.695 (.036)	-.669 (.037)	-.467 (.043)	-.425 (.044)	-.788 (.051)	-.767 (.052)	-.423 (.049)	-.413 (.050)
EdMom=HS	-.144 (.032)	-.150 (.032)	-.169 (.031)	-.177 (.031)	-.167 (.041)	-.182 (.043)	-.196 (.043)	-.206 (.044)
EdMom>HS	-.479 (.041)	-.496 (.041)	-.340 (.040)	-.359 (.041)	-.527 (.058)	-.546 (.058)	-.396 (.059)	-.413 (.059)
Rural	.385 (.032)	.388 (.033)	.252 (.032)	.260 (.032)	.409 (.043)	.413 (.043)	.259 (.040)	.257 (.041)
-log L	32993	32171	33157	32386	19298	18834	17499	17126
No. of observations	8345	8234	6366	6256	4859	4794	3629	3577
Excludes women marrying within six months of out-of-wedlock birth	No	Yes	No	Yes	No	Yes	No	Yes

Table 5:	The influence of an out-of-wedlock birth on the likelihood of first marriage, estimated using a family fixed effects logit model. (Asymptotic standard errors are reported in parentheses.)	
Differenced Variable	NLSY	PSID
Out-of-wedlock birth	-.598 (.094)	-1.295 (.468)
Age	.169 (.064)	-.016 (.129)
-log L	807.2	30.5
No. of observations (sister pairs)	62	53

Table 6: Hazard model estimation of impact of out-of-union childbearing on probability of first marriage and first union, controlling for the effects of other covariates. Data refer to women age 30 and above in the NSFG (N=4,221). (Asymptotic standard errors are reported in parentheses.)

Variables	First marriage	First union	First informal union
Out-of-union birth	-.343 (.060)	-.151 (.055)	.249 (.084)
Black	-.644 (.043)	-.507 (.040)	-.216 (.071)
EdMom=HS	-.104 (.038)	-.159 (.037)	-.121 (.072)
EdMom>HS	-.370 (.049)	-.364 (.048)	.063 (.083)
Rural	.322 (.039)	.237 (.038)	-.309 (.088)
Age at first intercourse 16-18	.117 (.051)	.065 (.049)	-.013 (.082)
Age at first intercourse 19-22	-.295 (.055)	-.471 (.053)	-.732 (.095)
Age at first intercourse 23+	-.864 (.074)	-1.114 (.072)	-1.768 (.160)
-log L	22631	23755	6415

Table 7: Of those who expected to marry within 5 years of the initial survey date, the percentage who had an out-of-wedlock child during that 5-year period, NLSY*

| | | Had Out-of-Wedlock Child | |
		Yes	No
Expected to Marry	Yes	8.1	91.9
	No	6.4	93.6
	N	426	3126

*This table is based on a sample of 3552 women aged 14 to 21 in 1979.

Table 8: Percentage of first births that are unwanted by marital status of mother at time of birth, all women, NSFG IV, 1988. *

		Birth Status	
		Outside of Marriage	Within Marriage
Wantedness Status	Unwanted	73.2	34.1
	Not Unwanted	26.8	65.9

*This table is based on a sample of 5229 women aged 15 to 44 in 1988.

Note: "Unwanted" includes the responses "mistimed" and "unwanted." "Not unwanted" includes the responses "overdue," "on time," "indifferent," and "undetermined."

Table 9: Of those who expected to marry within 5 years of the initial survey date, the percentage who actually married during that 5 year period, by whether they had an out-of-wedlock child during that period, NLSY

Had Out-of-Wedlock Child (n=426)

		Expected to Marry	
		Yes	No
Actually Married	Yes	28.1	14.4
	No	71.9	85.6

Did Not Have Out-of-Wedlock Child (n=3126)

		Expected to Marry	
		Yes	No
Actually Married	Yes	44.6	16.7
	No	55.4	83.3

Table 10: Logit model estimates of impact of out-of-wedlock childbearing on likelihood of first marriage by age 30, controlling for the effects of other covariates, including welfare receipt. Data refer to all women from PSID aged 30-34 in 1987 (N=689). (Asymptotic standard errors are reported in parentheses.)

Variables	(1)	(2)
Out-of-wedlock birth	-.913 (.060)	-.722 (.075)
Received AFDC within subsequent 3 years	—	-.400 (.091)
Black	-1.500 (.063)	-1.519 (.063)
EdMom=HS	-.941 (.059)	-.968 (.059)
EdMom>HS	-.857 (.061)	-.889 (.062)
Rural	.412 (.047)	.406 (.047)
-log L	6309.0	6299.4

Table 11: Logit model estimates of impact of welfare recipiency on marital expectations. Data refer to women of the NLSY who had an out-of-wedlock birth by the time of the 1979 interview. (Asymptotic standard errors are reported in parentheses.)

Variables	
Receiving AFDC in 1979	-.069 (.071)
Black	.059 (.072)
EdMom=HS	.279 (.075)
EdMom>HS	-.752 (.165)
Rural	-.113 (.086)
Age 16-17	.411 (.225)
Age 18-19	.382 (.201)
Age 20-21	.519 (.199)
-log L	2536.3
No. of observations	212

Note: Dependent variable is 1 if response is "Yes" to question, "Do you expect to be married in five years?" (asked in 1979 wave)

Table 12: Hazard model estimates of the relationship between childbearing and the risk of remarriage, controlling for the effects of other characteristics, NSFG (N=1375). (Asymptotic standard errors are reported in parentheses.)

Variables	Model 1	Model 2	Model 3
Had kid(s) at divorce	-.462 (.074)	-.409 (.077)	-.214 (.085)
At least one birth prior to first marriage		-.279 (.123)	.041 (.133)
Education at least HS degree			.277 (.096)
Age at divorce:			
22.00 - 29.99			-.362 (.095)
30.00 - 34.99			-1.091 (.188)
35.00 and over			-0.962 (.281)
Duration of first marriage:			
3.00 - 9.99			-.014 (.097)
10.00 and longer			.176 (.189)
Catholic			-.398 (.094)
Black			-.978 (.106)
-log L	4941.7	4938.9	4582.1

Table 13: Regression model estimates of the relationship between a woman's socioeconomic and demographic characteristics and the number of minutes per week that she participates in leisure activities. Sample consists of unmarried women age 50 and under (N=111). Source: Time Use in Economic and Social Accounts, 1975-1976. (Asymptotic standard errors are reported in parentheses.)

Variables	(1)	(2)
Constant	278.64 (28.79)	392.65 (74.55)
With child(ren)	-83.91 (2.62)	-36.42 (60.48)
Age		-2.85 (2.92)
Ed < HS		-34.23 (67.07)
Black		16.36 (67.81)
Working		-76.46 (50.67)
R^2	.029	.072
F	3.35	1.63