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THE SOCIOECONOMIC CONSEQUENCES OF TEEN CHILDBEARING RECONSIDERED

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ABSTRACT

Teen childbearing is commonly viewed as an irrational behavior that leads to long-term socioeconomic disadvantage for mothers and their children. Cross-sectional studies that estimate relationships between maternal age at first birth and socioeconomic indicators measured later in life form the empirical basis for this view. However, these studies have failed to account adequately for differences in family background among women who time their births at different ages. We present new estimates of the consequences of teen childbearing that take into account observed and unobserved family background heterogeneity, comparing sisters who have timed their first births at different ages. Sister comparisons suggest that previous estimates are biased by failure to control adequately for family background heterogeneity, and, as a result, have overstated the consequences of early fertility.

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Teenage childbearing has been described as a cause of persistent poverty and poverty that is transmitted intergenerationally (Trussell 1976, 1981, 1988; Card and Wise 1978; Jencks 1989; Bane and Ellwood 1986; Ellwood 1989). It has been similarly implicated in a host of other social and public health problems ranging from dropping out of high school (Mott and Marsiglio 1985) or rising numbers of households headed by single women (Garfinkel and McLanahan 1986; Ellwood 1988; Bane 1986; Wilson and Neckerman 1986; Hogan and Kitigawa 1985), to excessive rates of low birth weight and infant mortality among US blacks (Institute of Medicine 1985; Brown 1985). Teenage childbearing has recently gained currency along-side substance abuse and violent crime as a defining characteristic of the "urban underclass," leading one scholar to propose the term "moral underclass" to describe a population that includes "both a criminal and a reproductive underclass" (Jencks 1989).

Reports such as those cited above that document cross-sectional associations between teen childbearing and various measures of socioeconomic well-being form the scientific basis for the view that teen childbearing contributes to socioeconomic disadvantage. However, new literature is emerging that takes as its central focus the problems in drawing causal inferences from such findings. Cross-sectional estimates, comparisons of socioeconomic status later in life among women who timed their first births at different ages, are open to the criticism that they are biased by failure to account for heterogeneity in the population of mothers (Geronimus 1987; Geronimus and Korenman 1988; Lundberg and Plotnick 1990): i.e., as suggested by Jenck's notion of a "reproductive underclass," teen mothers come disproportionately from disadvantaged backgrounds. Not only is this relationship between family background and fertility timing present today (Abrahamse et al.1988), but it has persisted in the United States at least since the 1940s (Upchurch, Astone and McCarthy 1990). Therefore, observed differences in subsequent socioeconomic status between a teen mother and a woman who times her first birth at a later age may reflect unmeasured socioeconomic differences in family background, rather than the effects of a teen birth.

Furthermore, ethnographic research suggests that, within specific poor communities, teen childbearing may be a strategic, collective response to the constraints imposed by poverty (Ladner 1971; Stack 1974; Geronimus 1987, 1990; Burton 1990; Sullivan 1989).[1] Recent econometric studies indicate that the opportunity costs of teen childbearing appear to be lower where teen childbearing is common than in settings where it is less common (Lundberg and Plotnick 1990; Duncan and Hoffman 1989; McCrate 1989).

Such findings underscore the importance of controlling carefully for differences in socioeconomic background when studying the effects of teen childbearing on the future well-being of women or their children. They also suggest that further consideration should be given to the possibility that the women who actually have their first-births in their teens may not he damaging their future prospects.

That observed differences in subsequent socioeconomic status between a teen mother and a woman who times her first birth at a later age may be plagued by heterogeneity hias poses a conundrum for investigators seeking to understand the

[1] For a discussion of this point, see Geronimus 1987.

relationship of fertility timing to subsequent well-being. In fact, if it is true that teen childbearing is a strategy adaptive to life in poverty, then a teen birth may itself be taken as a socioeconomic indicator (Geronimus and Korenman 1988). Randomized trials are clearly unavailable as a solution to this problem. However, if we wish to draw causal inferences about the effects of teen childbearing we must take seriously the possibility of bias due to unmeasured family background characteristics. We should not be content with what are, in essence, simple cross-sectional comparisons of women who have births at different ages. In this paper we apply a standard method of controlling for unobserved family background heterogeneity: "within family" estimation (e.g., Griliches 1979; Behrman and Wolfe 1989). In particular, we compare differences in subsequent socioeconomic status of sisters who experienced their first births at different ages, including cases where one sister became a mother as a teenager. We also present conventional cross-sectional estimates using the same data. By comparing the two types of estimates we gauge the degree to which differences in family background of mothers underlie the large cross-sectional associations between teenage childbearing and socioeconomic status of mothers later in life.[2]

We have the following findings to report. When we control for race, age and urban/rural status only, we find substantial differences between teen and older mothers in nearly all indicators of socioeconomic status in later life. When, in addition, we control for a set of detailed family background characteristics (mother's and father's education,

[2]In companion studies (in progress), we examine differences in infant health and in sociocognitive development among the children of sisters who time their births at different ages (e.g., Geronimus and Korenman, 1991).

number of siblings, parental family arrangement, father's occupational status) the estimated effects of a teen birth are diminished, but remain sizable. Finally, when we compare sisters who time their births at different ages, the estimated effects of a teen birth are dramatically reduced. Our findings raise concerns about previous estimates, suggesting that failure to control adequately for family background differences among women who have births at different ages has led to greatly overstated estimates of the long term socioeconomic consequences of teen childbearing.

Longitudinal comparison group studies

Sisters comparisons are very much in the tradition of previous studies that have controlled for family background differences by using matched comparison group analyses (Furstenberg 1976; Furstenberg et al. 1987; Card and Wise 1978). However, as we shall argue, sisters comparisons have some methodological advantages over these studies.

Furstenberg and his colleagues followed for 17 years a group of Baltimore mothers who became pregnant premaritally while in their teens in the mid-1960's. A comparison group of their classmates who became mothers at older ages was followed for the initial 5 years of the study. While this study produced a wealth of information about the experience of a specific group of adolescent mothers, the financial inability of the researchers to reinterview the comparison group at 17 year follow-up is a shortcoming addressed by the present study.

Furthermore, comparing siblings would seem to be a more natural way to control for differences in family background than would using a comparison group of classmates. For example, the adolescent mothers in the Baltimore study came from more disadvantaged backgrounds than their classmates: the classmates were more likely to come from two-parent present homes, where parents had completed at least a high school education, were employed, worked in skilled occupations, and were less likely to have been on welfare during the respondent's childhood (Furstenberg 1976, Table 2.2.).

Furstenberg et al. found at 17 year follow-up that the adolescent mothers had achieved a surprising measure of economic success, even in absolute terms. For example, despite originating from very modest circumstances, by 17 year follow-up, one quarter of the Baltimore teen mothers had achieved middle-class incomes. Such findings lend support to the hypothesis that the long-term consequences of teen childbearing have been exaggerated. The inability of the researchers to follow the comparison group longitudinally leaves any interpretation of the long-term effects of teen births tentative and calls for continued research.[3]

Card and Wise (1978) analyzed data from Project TALENT. They matched women who had a first birth before age 18 (in the late 1950's through early 1960's) with women who had a first birth in one of three age categories: 18-19, 20-24, or no birth by age 24. They were matched on the basis of five characteristics measured in the ninth grade (before first births): race, indexes of socioeconomic status, academic aptitude,

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[3] Lacking information on the comparison group at 17 year follow-up, the authors compared the Baltimore teen mothers to national samples of metropolitan black women who had their first births above age 20. A national metropolitan sample would seem an inadequate control group for a group of teen mothers. There also appears to have been no attempt to control for other initial differences between the two samples.

educational expectations, and age for grade. The outcomes studied were educational attainment and number of births at age 29. At first, differences in outcomes appeared very large. They narrowed as the respondents reached the target age of 29, but remained substantial nonetheless.

In terms of their control group, the authors never demonstrated the ability of the match characteristics to explain variation in the outcomes of interest. Moreover, while the match was good, it was far from perfect. For example, the fraction of women who were black was 26 per cent higher in the lowest age-at-birth group than in the next group (18-19 year olds). The possibility remains that unmeasured or uncontrolled differences in family background, such as parental education levels, could be reflected in the pattern of educational attainment or number of births across age-at-birth categories. There was also no direct information on a variety of socioeconomic outcomes that are presently of interest to the research and policy communities (such as welfare status, family income, employment, or marital status).

It is also unclear whether conclusions drawn from data collected starting in the late 1950's should be generalized to the present. This will be a problem faced to some extent by any study of the long-term consequences of teen childbearing. However, the Card and Wise study ended in the early 1970's. Major social changes have occurred in the interim between the time their data were collected and the present day, ranging from the advent of wide-spread contraceptive access for unmarried minors and the legalization of abortion, to a more general revolution in women's status. For example, Upchurch and McCarthy (1990) have shown that the percentage of teenage mothers who complete high school has increased dramatically over this period.

Sisters comparisons

The studies cited above suggest the importance of family background in conditioning fertility timing. Therefore, using sisters allows us to control for an important way in which women who time births in their teens differ from women who have births at older ages. It seems plausible to us that sister comparisons will better capture the effects of socioeconomic background than would other comparison groups. Sisters who have grown up in the same household and hence shared a common environment are more similar in socioeconomic background than two women drawn at random from the population. We hypothesize that the relationship between age at first birth and the socioeconomic status of mother and child estimated by sister comparisons is freer from heterogeneity bias than would be the same relationship estimated on a cross-section of the population of first-time mothers, even if observed measures of family background are taken into account in the latter case. Thus, the obvious theoretical benefit of comparing sisters is that they serve as "natural controls."

While sisters provide an improved way of accounting for unmeasured family background characteristics that can bias cross-sectional estimates, an important consideration should be kept in mind while interpreting estimates based on sisters comparisons: heterogeneity surely exists within families. Siblings vary in their endowments or in the extent and ways in which their parents invest in them (e.g., Rosenzweig and Wolpin 1988). Regarding the effects of teen childbearing, ethnographers have observed that within families where teenage childbearing may be accepted or even promoted for some young women, it is not for others (Stack 1974; Burton 1990). For example, Ladner (1971) observed that girls who exhibited exceptional academic potential were discouraged from teenage childbearing. These ethnographic findings suggest that even within poor families, teen motherhood is not randomly determined, but is endogenously determined according to differences between siblings in perceived opportunities. These selection criteria within the family -- the degree to which specific siblings are believed to possess the skills necessary to overcome chronic barriers to achievement, employment, and upward social mobility -- would bias upward (in absolute value) the estimated effects of a teen birth on long-term socioeconomic status, even when the comparison is made between sisters.

To summarize, sister comparisons eliminate one important source of heterogeneity bias--unobserved family background characteristics. Moreover, the problem of heterogeneity bias induced by unobserved family background may be better addressed using sisters comparisons than standard cross-sectional regression techniques. Nonetheless, we expect estimates based on sister comparisons to represent an upper bound of the long-term socioeconomic consequences of teen childbearing, especially since, due to insufficiently detailed data, we are unable to control adequately for pre-childbearing differences among sisters from the same family.[4]

[4] We originally hoped to control for "IQ" differences between sisters, but were hampered in our estimation by a very large number of missing cases (e.g., 63 percent of teen mothers).

Methodology and data

The principal aim of this analysis is to assess the degree to which differences in family socioeconomic background underlie the associations between teen childbearing and measures of a woman's subsequent socioeconomic status. Throughout this paper, we use the term "family background" to mean socioeconomic characteristics that precede first pregnancy. Using multivariate analyses, the relationships between teen childbearing and subsequent socioeconomic status are estimated using specifications that include and exclude controls for family background and individual characteristics.

For continuous outcome variables, regressions are estimated by generalized least squares (GLS).[5] For discrete (dichotomous) outcomes, such as whether or not a woman has completed high school, we conduct logit and fixed effects logit analyses (Chamberlain 1980; Maddala 1987). Cross-sectional estimates of the effects of teen childbearing are estimated for a pooled cross-sectional sample of sisters, and within-families, between sisters. The teen birth variable enters the regression equations alternatively as a dummy variable for a teen first birth and as a linear term for age at first birth.[6]

We estimate relationships between teen childbearing and a number of dependent variables that we group into two categories. We chose these outcomes to represent a

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[5]The GLS estimator allows correlation between error terms for sisters from the same family because family effects may lead the OLS assumption of uncorrelated errors to be violated (Kiefer 1980).

[6] We also estimated specifications where maternal age was entered as a quadratic function, since some bivariate correlations between maternal age and infant health outcomes appear curvilinear. However, entering age at first birth as a quadratic function most often yielded insignificant coefficients for the quadratic term. For simplicity of presentation, we use a linear specification when studying the effects of age at first birth.

standard set of socioeconomic indicators typical of previous studies of the consequences of teen childbearing (e.g., Furstenberg et al. 1988). Included in the first category, which we refer to as "primary outcomes," are the most direct indicators of material well-being: family income and income per family member. We have also included welfare status in this category due to recent concern that welfare use can lead to long term dependence and impoverishment among recipients (e.g., Murray 1984). The second category contains outcomes that we call "secondary"; they are chiefly of interest as correlates of or instruments for achieving economic well-being, but are further removed from measures of economic well-being. These (outcome) variables include indicators of: whether or not a woman completed high school, whether she completed at least one year of post-secondary schooling, her current employment status, and her marital status (ever married and currently married).

The estimation is conducted using data from the National Longitudinal Survey of Young Women (NLSYW) (Center for Human Resource Research 1988). The NLSYW has followed women aged 14 to 24 in 1968 for 20 years. Although data for more recent years are currently available, we analyze data from 1982 due to sample size considerations. The NLSYW oversamples black, Hispanic, and economically disadvantaged white women; it collects a wide array of socioeconomic and demographic information, including information on the family background of women; and it includes information on siblings needed for within-family estimation.

The NLSYW data also have some limitations: there is some attrition from the sample, although, remarkably, about 70% of the original sample has been retained some

20 years later (the retention rate is slightly higher for women with siblings); and the number of sisters sampled, while adequate, is not large. The number of sister pairs available depends principally on the years chosen and requirements for other information. The number of pairs ranges from roughly 1000 in 1968 with no data requirements, to nearly 300 in 1982 if more stringent data requirements are imposed.

Although sample size is a limitation, the advantages of this data set would seem to far outweigh the disadvantages. First, the data contain family background measures. Moreover, the NLSYW data, and the NLSYM (the counterpart for young men) have been used successfully in a number of studies that estimate within-family differences in a variety of socioeconomic measures such as educational attainment and earnings of men and women (e.g., Griliches 1979; Bound, Griliches and Hall 1986). To our knowledge, the present study is the first to use sisters comparisons to examine the relationship between teen childbearing and future socioeconomic status.

Empirical findings

Table 1 (two pages) presents descriptive statistics for a sample of women who have at least one sister in the sample, drawn from the NLSYW in 1982. Recall that the women are aged 28 to 38 in 1982. The first column presents sample means for women who did not have teen births, including women who have not had children as well as women who became mothers after age 19; the second column presents figures for women who became mothers after age 19, and the third, for teen mothers.

Two points are evident from the figures presented in Table 1. First, there are large differences in all indicators of (subsequent) socioeconomic status according to the age at which a woman times her first birth. In 1982, among women aged 28 to 38, those who had first births after age 19 lived in families with over fifty percent higher income per family member compared to those who had births as teenagers ($6977 vs. $4460). Over 20 percent of women who became mothers in their teens were on welfare compared to about 5 percent of women who had first births at older ages. Almost 90 percent of older mothers had graduated from high school by 1982, versus only about 65 percent of women who had births as teenagers. Women who had births after age 20 are almost three times as likely as teen mothers to have completed at least one year of post-secondary schooling. Women who became mothers as teenagers are also less likely to have (ever) married, and are much less likely to be married as of the time of their 1982 interviews (80 versus 47 percent).

The second point to emerge from Table 1 is that women who have births as teenagers are different to begin with, compared to women who had their first births at older ages. The teen mothers come disproportionately from disadvantaged backgrounds. For example, teen mothers in the sample are almost twice as likely as older mothers to be black (54 vs. 29 percent), to themselves have a mother with less than a high school education (71 vs. 53 percent), to have parents with "low status" occupations, and to have lived in a "single parent" home at age 14.

It seems natural, therefore, to ask: To what extent can the observed differences in socioeconomic status of teen mothers later in life be accounted for by these differences in family background or initial socioeconomic status? We take two approaches to answering this question. The first simulates a traditional cross-sectional study by including a standard set of family background measures along with teen birth variables in regression analyses. The second approach uses sisters as a control group for teen mothers. This approach "controls" for family background by estimating differences in socioeconomic status between sisters who time first births at different ages. By comparing the two sets of estimates (cross-sectional vs. sisters) we can gauge the degree to which unmeasured family background heterogeneity leads to biased cross-sectional estimates of the effect of teen childbearing on measures of socioeconomic status.

Tables 2 and 3 summarize these estimates. Reported in Table 2 are estimated coefficients (and standard errors) of a variable that is equal to one if a woman had her first birth as a teenager, and zero if she had her first birth after age 19 (from logit analyses and GLS regressions). Dependent variables are listed in the left-hand column and are categorized as primary or secondary outcomes, as described above.

The first two columns correspond to different cross-sectional regression specifications estimated for a sample of women from the NLSYW in 1982 who have a sister who is also in the sample in 1982. The first column reports coefficient and standard error estimates for a teen birth indicator variable from regressions that include controls for urban/rural residence, race, and current age only. The second specification adds to the first set of controls additional controls for "family background": father's education and mother's education (each as a set of four dummy variables), occupational status of the father in 1967 (or the "household head" if information for the father is missing) as measured by the Duncan Index, parental family arrangement at age 14 (two dummy variables), and number of siblings in 1968. Finally, the third column presents "within-family" (or "fixed effects" or "between sisters") estimates. These estimates correspond to the average difference in the dependent variable (e.g., income) between a woman who had a teen birth and her sister who had a later birth (controlling for differences among sisters in age and urban/rural residence).[7]

Three clear patterns emerge from the results presented in Table 2. First, there are large cross-sectional differences in most (subsequent) socioeconomic outcomes between women who became mothers in their teens and those who had later first births (column one). These differences remain substantial when differences in measured individual attributes and family background are taken into account (column two). Second, comparing columns one and two indicates that adding controls for observable family background characteristics does decrease somewhat the socioeconomic differences associated with a teen birth, although sizable differences remain. Finally, differences in indicators of socioeconomic status between sisters who time their births at different ages are much smaller than differences in socioeconomic status associated with a teen birth in the population as a whole.[8]

Declines in estimated associations between teen births and the primary measures of financial well-being are striking. The difference in (the natural log of) per capita

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[7] Details about the estimation procedures are provided in the footnotes following Table 2. Sample statistics corresponding to the models presented in Table 2 are presented in Table A1 in the appendix.

[8] The coefficients in column two are similar to those from the same regressions (not reported) estimated using the entire 1982 NLSYW sample, rather than the subsample of sisters.

family income falls to about one-sixth of its cross-sectional size from column one and one-quarter of its size from column 2. The difference in (the natural log of) family income falls to about half of its cross-sectional size from column one and two-thirds of its cross sectional size from column 2.[9] Similarly, the change in the probability of being on welfare associated with a teen birth falls from fifteen percentage points to two percentage points (comparing logit analyses to fixed effects logit analyses).

Among the "secondary" outcomes the most dramatic decline is in the effect of a teen birth on graduating from high school, where the effect of a teen birth falls from a large and statistically significant minus 23 percentage points in column two, to essentially zero (column 3). Post-high school education and current marital status are the exceptions to the pattern of effects that are estimated to be sizable in cross-sectional analyses that include family background controls, but are small when estimated using sister comparisons.[10] [11]

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[9]Data for (ln) family income and (ln) family income per capita were also averaged for sample persons over the years 1982, 1983, 1985 following Solon's (1989) suggestion for reducing measurement error or, alternatively, for constructing more "permanent" measures of economic well-being. The resulting coefficient and standard error estimates (not shown) were similar to those reported in Tables 2 and 3.

[10] To estimate the effect of a teen birth, it seems conceptually clearest to compare outcomes of women who became mothers as teenagers to those of women who became mothers at later ages. Therefore, the results reported in table are for a sample of mothers. We also estimated models where we included women who have not yet had births in the analyses by grouping them with women who had births after age 19. The principal results reported in Table 2 were unchanged, with the exception that the within-family effects of a teen birth on the probability of undertaking post-secondary schooling were larger (the derivative equals -0.41), and the effects on the probability of being currently married were smaller (the derivative equals -0.07).

It has been noted that errors in measuring explanatory variables can lead to downward-biased coefficient estimates, and taking differences may exacerbate such bias most importantly by reducing true variance in the explanatory variable (e.g., Freeman, 1985; Griliches 1979). Therefore, measurement error in the teen birth variable could lead us to find a smaller effect of a teen birth using sister differences compared to cross-sectional estimates. While there is no satisfactory solution to this problem, we note that the "within family" difference in age at first birth among sisters who differ on the teen birth variable is 5.3 years, nearly as large as the difference in mean age at first birth between all teen and all older mothers in the sample (6.3 years).

Table 3 presents differences in socioeconomic outcomes associated with differences in the mother's age at first birth. We study the coefficients of a linear age at first birth variable primarily as a robustness check for the dichotomous teen births variable presented in Table 3. Because age 20 is an arbitrary (although widely used) dividing line,[12] we would derive a measure of comfort if estimates from this alternative specification upheld the findings based on comparisons of teen and older mothers. Moreover, using a linear age-at-first-birth control addresses the concern that the teen

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[11] We also estimated models in which the within-family effect of a teen hirth was allowed to differ depending on whether the younger or older sister was the teen mother. We found no evidence of such an "order" effect.

[12]We also estimated cross-sectional regressions that allowed for an interaction of a "young teen birth" (age at first birth <18) variable with the teen birth variable. For five of the eight outcomes young teen mothers did "better" than older teen mothers, but differences were statistically significant for only two outcomes: high school graduation (older teen mothers were more likely to graduate) and currently married (younger teen mothers were more likely to be currently married). The same pattern was found within families, i.e., when younger teen mothers were compared to their sisters who had births after age 17.

birth effects in Table 2 are based on comparisons of an "unusual" group of women who differ from their sister in whether or not they had a teen birth. In Table 3, the age-at-first-birth effect is identified by any sisters who differ by as little as one year in the age at which they had their first births (which is 95 percent of the sisters sample).

The estimated effects presented in Table 3 are generally consistent with those in Table 2.[13] As in the previous two tables, the effects estimated using sisters comparisons are much smaller than their cross-sectional counterparts. Unlike the estimates reported in Table 2, the employment-depressing effect of delaying child bearing is significant at the 0.05 level in Table 3, although the two magnitudes are roughly equivalent. Also, unlike the within-family effect on current marital status in Table 2, which is larger than the cross-sectional effect, the within-family effect on current marital status reported in Table 3 is roughly comparable to the cross-sectional effects.

Discussion

Using a cross-sectional approach similar to those taken in many previous studies we are able to replicate empirical findings that have led investigators to conclude that teen childbearing, in and of itself, causes substantial, long-term, socioeconomic disadvantage. However, sister comparisons leave one with a different impression. Sisters estimates suggest that the standard cross-sectional approaches to studying the effects of teen childbearing on future socioeconomic well-being overstate the "costs" of teen

[13] Because the difference in mean age at first birth between teen and older mothers in this sample is roughly 6.3 years, for comparative purposes one can estimate the effect of a teen birth by multiplying the coefficients in Table 3 by (minus) 6.3.

childbearing. The estimates also suggest that policy makers may be overly optimistic about the ability of programs that (solely) encourage delayed childbearing to improve the socioeconomic status of poor women and their children. While due to sample size limitations our empirical findings are best viewed as suggestive, they do expose potentially serious problems with existing estimates of the long-term effects of teen childbearing. The sensitivity of the results to the methodological approach taken should serve as a flag of caution to researchers who may be tempted to interpret cross-sectional associations between teen childbearing and various measures of subsequent socioeconomic well-being of mother (and child) to be **causal**.

Given the sample size limitations of the NLSYW data, as a robustness check we analyzed a second sample of sisters (aged 28 to 38 in 1985), drawn from the Panel Study of Income Dynamics (PSID). Cross tabulations are presented in Table A1 in the appendix. As to be expected from two small samples drawn from two distinct surveys, sample means differ somewhat. Nonetheless, findings from the PSID data are broadly consistent with the those from the NLSYW data and support the conclusion that standard cross-sectional estimates of the long-term effects of a teen birth on the socioeconomic status of mothers are biased.[14]

[14] In particular, there were very large cross-sectional differences in measures of socioeconomic status between teen and older mothers, but the corresponding "within-family" differences were generally small. Estimates from the two data sets lead to similar conclusions regarding the effect of a teen birth on our primary indicators of socioeconomic status (income, income per capita, and welfare use), as well as on the probability of ever-marrying or of being currently employed. The two data sets suggest somewhat different conclusions regarding the effects on educational attainment: in contrast to findings from the NLSYW data, the PSID data suggest no effect of a teen birth on the attainment of post-secondary schooling. On the other hand, although the within-family difference between teen

Studies of the relationship between maternal age at first birth to pregnancy outcomes provide another source of empirical evidence that standard cross-sectional associations between fertility timing and measures of well-being reflect heterogeneity bias. Despite earlier widespread belief to the contrary, a thorough review of the biomedical literature concluded that associations between teen childbearing and poor birth outcomes do not appear to reflect biological effects peculiar to youth (Kline et al. 1989). There is even some evidence that suggests postponing childbearing may lead to increased health risks for mothers and infants within the disadvantaged populations in which teen childbearing is most common.[15]

Given evidence that heterogeneity bias is important, how are we to interpret the remaining modest effects we found within families? One interpretation is that they reflect the "true" costs or benefits of teen births. We find such an interpretation to be problematic for two specific reasons, to be discussed in turn, and for a more general reason, with which we conclude. First, even the estimates based on sisters comparisons are likely to reflect differences between sisters in pre-childbearing characteristics. In an

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and older mothers in the probability of completing high school was smaller than the cross-sectional difference, some difference remained within family. The PSID data suggest a smaller effect of a teen birth on the probability of being currently married (compared to the NLSY data).

[15] These include an increased risk of pre-term birth, low birth weight, and neonatal death (Geronimus 1986, 1987; Geronimus and Korenman 1991); an increased probability that mothers will enter pregnancies with adverse health characteristics, such as hypertension, smoking, or high blood lead levels (Geronimus, Andersen and Bound 1989; Geronimus and Bound 1990; Geronimus and Hillemeier 1990); increased chances that mothers will smoke or drink during pregnancy and decreased chances that mothers will breast-feed their infants (Geronimus and Korenman 1991).

earlier section we noted the possibility that sisters estimates reflect, in part, unmeasured heterogeneity since, due to data limitations, we were unable to control for differences in important attributes that are likely to vary between sisters (e.g., "ability," "motivation," "parental or familial investment"). Studies by Ladner (1971) and Burton (1990) indicate that identifiable pre-childbearing differences exist between sisters who may act upon them by timing their births at different ages.

A second reason why one would not want to accept prima facie that the remaining modest effects represent the true costs of teen childbearing is that they (as well as estimates generated by more conventional statistical studies) are comparisons made in a single year. As such they provide an incomplete appraisal of the lifetime costs or benefits of early childbearing. (Such life-cycle objections apply to both the cross-sectional and within-family estimates; they should not, therefore, affect our principal conclusions that are based on comparisons of cross-sectional and within-family estimates.) For some socioeconomic measures single year comparisons allow only a partial appraisal (e.g., welfare use), although single year comparison may be adequate for others measures (e.g., educational attainment as of age 28 to 38). An interesting case for dynamic consideration is that of marriage. We found that teen mothers are less likely than their sisters who had later births to be married in 1982, although they were only slightly less likely ever to have married. But women who have later first births tend to marry later, and, since we control for age in all models, a later marriage would have had less time to dissolve by 1982 (i.e., in 1982 the older mothers have been exposed less to the risk of divorce), calling into question the permanence of the marital status differential.

More generally, in any given year women who had later first births may have younger children than their sisters who had earlier first births (although there may be additional, young, children). Similarly, young children are associated with lower labor force participation and higher probabilities of welfare use. Temporary absence from the labor force may be characteristic of mothers with young children, no matter what their socioeconomic status. It is important to note, however, that welfare use is restricted to the economically disadvantaged. Thus, even if differences in life-cycle stage (the presence of young children) between teen and older mothers are reflected in the findings related to welfare use, these figures very clearly contradict the view that a woman can avoid poverty or welfare use simply by postponing childbearing beyond her teen years.

The possibility that women who have births at different ages exhibit distinct life-cycle patterns of employment or welfare use suggests, in turn, that comparisons of family income figures in any year (at older or younger ages) are imperfect measures of differences in lifetime economic status.[16] However, as mentioned above (see footnote 9), three year averages of income yielded estimates of teen childbearing effects that were very similar to those for single-year measures. Furthermore, as noted, the estimates relating to educational attainment are probably less affected by life-cycle considerations than are other measures of socioeconomic status.

The findings related to income, marriage and educational attainment merit further

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[16]A more comprehensive approach might count the number of months employed or on welfare over the entire child rearing years. Such an approach would ideally distinguish between continuous and interrupted spells of labor force participation because young mothers may enter the labor force later, but have fewer labor force interruptions due to childbearing once employed.

discussion. A seemingly puzzling finding is that, even with the apparent disparity between sisters in the likelihood of having undertaken some post-secondary schooling and of being married currently, we found little difference in our direct measures of economic well-being (family income, income per capita, welfare status). This raises questions about the degree to which differences between sisters in our sample in post-secondary schooling and marriage enhance subsequent socioeconomic well-being. To help resolve this puzzle, we re-estimated the income regressions including, in turn, education and marital status controls. As Table 2 indicates, teen births are associated with slightly lower family income and income per family member (about six to fourteen percent), but we found that virtually none of this differential is explained by differences in educational attainment. Although graduating from high school is associated with higher family income, a teen birth is essentially unrelated to high school graduation in the sample; and although older mothers are more likely to undertake some post-secondary schooling, this additional schooling has little effect on their family income. When we included a current marital status control in the income regressions we found that the remaining (within-family) negative effect of teen childbearing on family income apparent in Table 2 could be accounted for by differences in current marital status. That the modest current income differences can be accounted for by differences (permanent or temporary?) in current marital status underscores the need for continued research that will move beyond static comparisons.

Conclusion

Our primary conclusion is that measured and unmeasured heterogeneity in the population of mothers who time their births at different ages must be taken into account in order to arrive at accurate estimates of the consequences of teen births. Sisters comparisons represent an improvement over the standard cross-sectional estimates by taking into account an important source of heterogeneity--family background characteristics, which are common among siblings. However it is probably inappropriate to think of fertility timing as exogenously determined even within families. The most judicious interpretation of the empirical findings of this paper is, therefore, that they expose potentially substantial problems with existing cross-sectional estimates. It would be fair to conclude that we have shown that it is misleading to assume, as many have done and continue to do, that observed differences in socioeconomic status result from exogenously determined differences in women's fertility timing.

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References

Abrahamse, A.F., P.A. Morrison, and L.J. Waite. 1988. "Beyond Stereotypes: Who Becomes a Single Teenage Mother?" Santa Monica, CA: RAND Corporation.

Bane, Mary Jo. 1986. "Household Composition and Poverty." In Sheldon Danziger and Daniel Weinberg, eds. Fighting Poverty, Cambridge: Harvard University Press, 209-31.

-----, and David Ellwood. 1986. "Slipping Into and Out of Poverty: The Dynamics of Spells." The Journal of Human Resources Winter, 1-23.

Behrman, Jere and Barbara Wolfe. 1989. "Does More Schooling Make Women Better Nourished and Healthier? Adult Sibling Random and Fixed Effects Estimates from Nicaragua." Journal of Human Resources 24(4): 644-63.

Bound, John, Zvi Griliches and Bronwyn Hall. 1986. "Wages, Schooling and IQ of Brothers and Sisters: Do the Family Factors Differ?" International Economic Review 21(1): 77-105.

Brown, Sarah. 1985. "Can Low Birth Weight be Prevented?" Family Planning Perspectives 17(3): 112-18.

Burton, Linda. 1990. "Teenage Childbearing as an Alternative Life-Course Strategy in Multigenerational Black Families." Human Nature, 1(2):123-43.

Card, J.J. and L.L Wise. 1978. "Teenage Mothers and Teenage Fathers: The Impact of Early Childbearing on the Parent's Personal and Professional Lives." Family Planning Perspectives 10(4): 199-205.

Center for Human Resource Research. 1988. NLS Handbook 1988. Columbus: The Ohio State University.

Chamberlain, Gary. 1980. "Analysis of Covariance with Qualitative Data." Review of Economic Studies XLVII: 225-38.

Duncan, Greg and Saul Hoffman. 1989. "Teenage Underclass Behavior and Subsequent Poverty: Have the Rules Changed?" paper presented at the conference on The Truly Disadvantaged, September.

Ellwood, David. 1988. Poor Support. New York: Basic Books.

------. 1989. "The Origins of Dependency: Choices, Confidence, or Culture?" Focus (Special Issue: Defining and Measuring the Underclass 12(1):6-13.

Freeman, Richard. 1985. "Longitudinal Analyses of the Effects of Trade Unions," Journal of Labor Economics 2(1):1-26.

Furstenberg, Frank. 1976. Unplanned Parenthood. New York: Free Press.

------. 1981. "The Social Consequences of Teenage Childbearing." In Furstenberg, Lincoln and Menken, eds. Teenage Sexuality, Pregnancy, and Childbearing. Philadelphia: University of Pennsylvania.

------, Richard Lincoln, and Jane Menken, eds. 1981. Teenage Sexuality, Pregnancy, and Childbearing, Philadelphia: University of Pennsylvania.

------, James Brooks-Gunn, and Phillip Morgan. 1987. Adolescent Mothers in Later Life, Cambridge: Cambridge University Press.

------. 1988. "Adolescent Mothers and Their Children in Later Life." Family Planning Perspectives, 19(4): 142-51.

Garfinkel, Irwin and Sara McLanahan. 1986. Single Mothers and Their Children: A New American Dilemma. Washington: The Urban Institute.

Geronimus, Arline T. 1986. "The Effects of Race, Residence and Prenatal Care on the Relationship of Maternal Age to Neonatal Mortality." American Journal of Public Health, 76(12): 1416-21.

------. 1987. "On Teenage Childbearing and Neonatal Mortality in the United States." Population and Development Review, 13(2): 245-79.

------. 1991. "Clashes of Common Sense: On the Previous Child-Care Experience of Teenage Mothers-To-Be," Population Studies Center Research Report No. 91-202, University of Michigan, January.

------, H. Frank Andersen, and John Bound. 1991. "Differences in Hypertension Prevalence Among U.S. Black and White Women of Childbearing Age." Public Health Reports, forthcoming.

------, and John Bound. 1990. "Black/White Differences in Women's Reproductive-Related Health Status: Evidence from Vital Statistics." Demography 27(3): 457-66.

------, and Marianne Hillemeier. 1990. "Patterns of Blood Lead Levels by Race/Ethnicity in U.S. Women of Childbearing Ages." Population Studies Center Research Report No. 90-197, University of Michigan, December.

------, and Sanders Korenman. 1988. "Comment on Pampel and Pillai's 'Patterns and Determinants of Infant Mortality in Developed Nations, 1950-1975'." Demography 25(1): 155-58.

------, and Sanders Korenman. 1991. "Maternal Youth or Family Background? Preliminary Findings on the Health Disadvantages of Infants with Teenage Mothers," Population Studies Center Research Report No. 91-204, University of Michigan, March.

Griliches, Zvi. 1979. "Sibling Estimates, The Beginnings of a Survey." Journal of Political Economy 87(5, Part I): S37-64.

Hayes, C.D. ed. 1987. Risking the Future: Adolescent Sexuality, Pregnancy, and Childbearing, Vol. I, Washington: National Academy Press.

Hogan, Dennis, and Evelyn Kitagawa. 1985. "The Impact of Social Status, Family Structure, and Neighborhood on the Fertility of Black Adolescents." American Journal of Sociology 90(4):825-55.

Institute of Medicine (U.S.), Committee to Study the Prevention of Low Birthweight. 1985. Preventing Low Birthweight. Washington, D.C.: National Academy Press.

Jencks, Christopher et al. 1979. Who Gets Ahead? New York: Basic Books.

------. 1989. "What is the Underclass-And Is it Growing?" Focus (Special Issue: Defining and Measuring the Underclass) 12(1):14-26.

Kiefer, Nicholas. 1980. "Estimation of Fixed Effect Models for Time Series of Cross-Sections with Arbitrary Intertemporal Covariance." Journal of Econometrics 14(2):195-202.

Kline, J. Stein, Z. and M. Susser. 1989. Conception to Birth: Epidemiology of Prenatal Development. New York: Oxford University Press.

Ladner, Joyce. 1971. Tomorrow's Tomorrow: The Black Woman. New York: Doubleday.

Lundberg, Shelly and Robert Plotnick. 1990. "Earnings Losses Caused by Teenage Premarital and Marital Childbearing." Paper presented at the annual meetings of the American Economics Association, Washington D.C., December.

Maddala, G.S. 1987. "Limited Dependent Variable Models Using Panel Data." The Journal of Human Resources 22(3):307-38.

McCrate, Elaine. 1989. "Returns to Education and Teenage Childbearing," mimeo, Bunting Institute, Harvard University, June.

Mott, Frank and William Marsiglio. 1985. "Early Childbearing and Completion of High School," Family Planning Perspectives 17(5):234-37.

Murray, Charles. 1984. Losing Ground: American Social Policy, 1950-1980. New York: Basic Books.

Rosenzweig, Mark and Kenneth Wolpin. 1988. "Heterogeneity, Intrafamily Distribution, and Child Health," Journal of Human Resources 23(4):437-61.

Solon, Gary, Mary Corcoran, Roger Gordon, and Deborah Laren. 1987. "The Effect of Family Background on Economic Status: A Longitudinal Analysis of Sibling Correlations." NBER Working Paper No. 2282, June.

Solon, Gary. 1989. "Biases in the Estimation of Intergenerational Earnings Correlations," Review of Economics and Statistics 71:172-74.

Stack, Carol. 1974. All Our Kin. New York: Harper and Row.

Sullivan, Mercer. 1989. "Absent Fathers in the Inner City." The Annals of The American Academy of Political and Social Science 501(January):48-58.

Trussell, T. James. 1976. "The Economic Consequences of Teenage Childbearing." Family Planning Perspectives 8(4):184-90.

------. 1981. "The Economic Consequences of Teenage Childbearing." In Frank Furstenberg, Richard Lincoln and Jane Menken, eds. Teenage Sexuality, Pregnancy, and Childbearing, Philadelphia: University of Pennsylvania.

------. 1988. "Teen Childbearing in The United States," Family Planning Perspectives, 25th Anniversary Issue, November/December.

Upchurch, Dawn, Nan Marie Astone, and James McCarthy. 1990. "Influences of Family Background on Adolescent Childbearing: From the 1940s to the 1980s," paper presented at the Annual Meetings of the Population Association of America, Toronto, May.

Upchurch, Dawn, and James McCarthy. 1990. "The Timing of a First Birth and High School Completion." American Journal of Sociology 55:224-34.

Wilson, William J. 1987. The Truly Disadvantaged. Chicago: University of Chicago.

------, and Kathryn Neckerman. 1986. "Poverty and Family Structure: The Widening Gap Between Evidence and Public Policy Issues." In Sheldon Danziger and Daniel Weinberg, eds. Fighting Poverty, 232-59. Cambridge: Harvard University Press.

TABLE 1: MEANS (SEs OF MEANS)
WOMEN WITH SISTERS IN THE SAMPLE, AGES 28-38, 1982

Outcome Variables	No Teen Birth [1]	Age at First Birth ≥ 20	Age at First Birth < 20
Primary:			
Family Income per Capita	9,571 (370)	6,977 (277)	4,460 (278)
Family Income	25,527 (728)	25,608 (988)	17,216 (1116)
On Welfare	4.5	5.1	21.1
Secondary:			
Graduated High School	90.2	88.8	65.3
Attended Post-Secondary School	51.4	43.1	16.9
Currently Married	66.5	80.7	47.3
Ever Married	83.6	95.9	77.5
Currently Employed	69.7	61.9	61.2
Individual Characteristics			
Urban	75.7	76.6	76.7
Black	23.8	28.9	54.2
Age	31.9 (0.1)	32.2 (0.2)	30.9 (0.2)
Age at First Birth	NA	24.1 (0.2)	17.8 (0.1)

(continued, see notes at end of table)

TABLE I continued

Family Background	No Teen Birth	Age at First Birth ≥ 20	Age at First Birth < 20
Mother's Education (if not missing):			
< High School Graduate	42.3	53.3	71.4
High School Graduate	36.4	35.0	25.2
Post-Secondary Schooling	21.3	11.7	3.4
Missing (%)	4.9	5.6	7.8
Father's Education (if not missing):			
< High School Graduate	47.1	60.3	77.8
High School Graduate	24.9	23.7	17.8
Post-Secondary Schooling	28.0	16.0	4.4
Missing (%)	13.2	14.2	30.2
Father's Occupational Status 1967 [2] (Duncan Index, if not missing)	37.3 (1.4)	35.5 (1.9)	27.9 (1.9)
Duncan Index Missing (%)	4.5	6.6	10.9
Parental Family Arrangement, Age 14:			
Two-Parent	85.9	84.8	70.6
Single Parent	8.9	8.6	22.4
Other	5.2	6.6	7.0
Number of Siblings, 1968	4.2 (0.1)	4.6 (0.2)	5.5 (0.2)
Sample Size	403	197	129

1. "No Teen Birth" includes women who had first births over age 19, as well as women who have not had a first birth.
2. Father's occupational status in 1967, if not missing. Otherwise, occupational status of head of household at age 14.

TABLE 2: COEFFICIENTS (SEs) [DERIVATIVES] OF TEEN BIRTH VARIABLE FROM LOGIT AND GLS REGRESSION ANALYSES, SISTERS (WHO ARE ALSO MOTHERS), 1982

Outcomes	Cross-Section (1)	Cross-Section (2)	Within Family (Fixed Effects)
Primary:			
LN (Income per Capita)	-0.38 (0.09)	-0.28 (0.09)	-0.06 (0.13)
LN (Family Income)	-0.35 (0.09)	-0.24 (0.09)	-0.16 (0.14)
On Welfare?	1.42 (0.43) [0.14]	1.44 (0.48) [0.15]	0.17 (1.07) [0.02]
Secondary:			
Graduated High School?	-1.51 (0.33) [-0.24]	-1.46 (0.35) [-0.23]	0.45 (0.74) [0.07]
Any Post-Secondary Schooling?	-1.32 (0.30) [-0.29]	-1.17 (0.33) [-0.26]	-0.99 (0.60) [-0.22]
Currently Married?	-1.26 (0.30) [-0.28]	-1.13 (0.31) [-0.25]	-1.87 (0.76) [-0.41]
Ever Married?	-1.43 (0.45) [-0.14]	-1.28 (0.48) [-0.13]	-0.55 (0.80) [-0.05]
Currently Employed?	0.02 (0.26) [0.00]	-0.08 (0.27) [-0.02]	0.61 (0.50) [0.14]

Notes: See next page.

Notes:

1. Coefficients are for a variable equal to one if a woman had her first birth as a teenager, zero if later. Specification (1) includes controls for racial identification, urban/rural location, and age. Specification (2) includes, in addition, controls for the education of the woman's mother and father (each as a set of three dummy variables, including dummy variables for missing values); occupational status of the woman's father in 1967 (or of the household head if information for the father is missing) measured by the Duncan Index; parental family arrangement (two dummy variables); and number of siblings in 1968.

2. Figures for continuous dependent variables are coefficients and standard errors from GLS cross-sectional regressions, and within family, from OLS fixed effects regressions. GLS estimates take into account correlation between error terms of sisters from the same family. In fixed effects analyses, only the oldest pair of sisters in each family is retained, eliminating approximately 20 observations from the sample. Fixed effects analysis requires the dropping of one observation per household. Because we consider only the oldest sister pair in each household, there is one observation per household in fixed effects analyses (representing the difference between the variable values of the two sisters). Hence, for continuous outcomes, OLS is used for fixed effects regressions.

3. For discrete dependent variables, denoted in the tables by a question mark, figures are coefficients, standard errors, and derivatives from logit and fixed effects logit analyses. Derivatives are calculated at the sample mean probability of the corresponding outcome. They are interpreted as the percentage point change in the probability of the corresponding outcome associated with a teen birth, and are therefore analogous to coefficients from linear probability models. Fixed effects logits are estimated using the procedure developed by Chamberlain (1980), and described by Maddala (1987). First, for each outcome variable, sister pairs are included in the analysis if they differ on that particular outcome. One sister is dropped from each pair, and the discrete outcome is modeled as a logit of the between-sister differences in the explanatory variables.

TABLE 3 COEFFICIENTS (SE) [DERIVATIVES] OF AGE AT FIRST BIRTH VARIABLE FROM LOGIT AND GLS REGRESSION ANALYSES, SISTERS (WHO ARE ALSO MOTHERS), 1982

Outcomes	Cross-Section (1)	Cross-Section (2)	Within Family (Fixed Effects)
Primary:			
LN (Income per Capita)	0.049 (0.011)	0.038 (0.011)	0.020 (0.015)
LN (Family Income)	0.035 (0.011)	0.025 (0.011)	0.011 (0.016)
On Welfare?	-0.25 (0.08) [-0.024]	-0.24 (0.08) [-0.023]	-0.06 (0.12) [-0.006]
Secondary:			
Graduated High School?	0.29 (0.06) [0.046]	0.27 (0.06) [0.043]	0.07 (0.11) [0.011]
Any Post-Secondary Schooling?	0.21 (0.04) [0.046]	0.17 (0.04) [0.038]	0.17 (0.07) [0.038]
Currently Married?	0.15 (0.04) [0.033]	0.13 (0.04) [0.029]	0.11 (0.07) [0.024]
Ever Married?	0.14 (0.07) [0.014]	0.10 (0.07) [0.010]	-0.02 (0.10) [-0.002]
Currently Employed?	-0.07 (0.03) [-0.016]	-0.04 (0.03) [-0.009]	-0.13 (0.07) [-0.031]

Notes: See footnotes to Table 2.

Table A1: Sample Means (SEs of Means) and Frequencies by Race and Age at First Birth, Women with Sisters in the Sample, Ages 28-38, NLS Young Women 1982 and PSID 1985*

	NLS Young Women				Panel Study of Income Dynamics			
	All		Within Family		All		Within Family	
Outcomes	Teen	Non-Teen	Teen	Non-Teen	Teen	Non-Teen	Teen	Non-Teen
Primary:								
Family income/ capita ($)	4,460 (278)	6,977 (277)	5,388 (444)	6,312 (564)	4,057 (308)	7,069 (622)	4,284 (434)	5,637 (734)
Family income ($)	17,216 (1116)	25,608 (988)	19,615 (1849)	23,444 (2011)	17,142 (1287)	27,976 (1575)	18,885 (2023)	22,151 (2213)
On welfare?	21.1	5.1	8.0	9.4	31.7	16.9	26.9	23.1
Secondary:								
Graduated HS?	65.3	88.8	78.0	75.9	58.2	90.0	62.7	84.6
Any Post-Secondary Schooling?	16.9	43.1	18.0	35.2	26.2	45.4	29.4	25.0
Currently Married?	47.3	80.7	52.9	74.1	45.5	69.2	50.7	57.7
Ever Married?	77.5	95.9	84.3	94.4	74.8	88.5	80.8	80.8
Employed?	61.2	61.9	68.6	59.3	54.7	62.0	62.0	62.7
Age at First Birth (years)	17.8	24.1	18.0	23.2	17.1	22.7	17.4	21.3
Number of Observations	129	197	51	54	123	130	52	52

* Notes (see next page)

Notes:

1. Figures in the "within family" columns are for women with at least one sister in the sample who differed from her in the timing of her first birth (teen vs. non-teen).

2. "On welfare" in the NLSYW is defined as the sample person or her spouse receiving welfare or public assistance in the year prior to the interview date; in the PSID it is head or wife/"wife" receiving positive AFDC or "other welfare" income in the year prior to the interview date.