Married and Unmarried Parenthood and Economic Well-Being: A Dynamic Analysis of a Recent Cohort

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Abstract

This paper examines the dynamics of marriage and family patterns and their relationship to living standards of a recent cohort of mothers. It is not obvious that married mothers should perform economically better than mothers in cohabiting relationships or single mothers living with at least one other adult. But marriage is *likely* to raise living standards if it is associated with family and income stability. Using a variety of statistical techniques, the study finds that marriages, even shotgun marriages, significantly raise both the level and stability of living standards experienced by mothers and their children.

1. Introduction

Over the last four decades, the declining proportion of married adults in the United States has contributed to a significant worsening of the economic status of families with children. The rise in single parenthood, together with limited child support payments, has meant that more children must rely primarily on the income of only one of their parents, usually the mother. As a result, despite healthy growth in per capita income, child poverty rates in the U.S. have remained at their 1970s levels. Researchers have demonstrated that reduced marriage propensities have caused substantially higher child poverty rates, even after accounting for the fact that the men unmarried mothers might marry have lower incomes than current married fathers (Lerman, 1996; Sawhill and Thomas, 2001).

On one level, it should be no surprise that single-parent families, with fewer potential earners or caregivers, would have much lower incomes than married couple families. But, in fact, understanding the decline in marriage and its implications for economic well-being is a complex problem. Given the dramatic increases in cohabitation and the high levels of co-residence of single mothers with their parents or other adults, many single mothers live with a second potential earner/caregiver and thus do not have a built-in economic disadvantage relative to married couple families. The simple distinctions between married parents and single parents are no longer sufficient for analyzing economic differences. The specific household form as well as the timing of marriage, divorce, separation, and non-marital childbearing will all be relevant to the way marriage and other family structures affect economic hardship. The analysis must take account of trends and patterns of marriage rates at each age, of childbearing rates within

and outside marriage, of the duration of marriages, of cohabitation rates, of separation and divorce rates, and of household living arrangements of single parents.

The low and unstable incomes of potential husbands are another reason why marriage might not improve economic welfare of many mothers and children. According to ethnographer Kathryn Edin (2000), when asked about marriage, low-income mothers say that, "…marriage usually entails more risks than potential rewards." Although some of the risks relate to non-economic issues, such as domestic violence, trust, and sharing control of the household, women often mentioned the risk that potential husbands lacked the ability to earn a steady, adequate income and that they consequently become an economic burden.

In a recent paper (Lerman, 2001), I examined the role of marriage in limiting the degree of material hardship faced by families with children. The paper's focus was on whether marriage limited the incidence of material hardship, even among poor or near-poor families. The results showed that married, biological parents experienced lower rates of hardship than other parents with similar characteristics, including those with similar family income-to-needs ratios.[1]

This paper analyzes the relationship between marriage and economic well-being in a dynamic context. Using data on women and mothers over time enhances our ability to distinguish a causal effect of marriage from a selection effect. Cross section estimates are subject to bias because individuals who marry may have unobserved advantages

[1] Arguably, holding income-to-need levels constant may bias any observed impact of marriage downward. If marriage induced income gains, then married mothers with the same incomes may well have weaker earnings capacities than unmarried mothers. Still, the findings of reduced hardship among married women were robust and revealed consistent gains not only compared to single parents living with no other adults, but also compared to unmarried mothers living with a cohabiting partner or with other adults.

affecting their incomes over individuals who do not marry. With panel data, we can observe the income profiles over time of individuals who marry and those who do not.

Still, limiting the selection problem is inherently difficult in the absence of an exogenous variable that reduces or stimulates marriages in one environment but not in another. I turn to four strategies. The most straightforward compares the economic outcomes of mothers by marital and family status categories, while taking account of differences in race, academic and technical ability, and other observed characteristics. The second is to compare women in "shotgun" marriages (marriages induced by childbearing, i.e., women with premarital pregnancies in marriages that take place after the pregnancy but before the birth of a child) to women who have premarital pregnancies and who do not marrry before or soon after the child's birth. A third comparison is between women in shotgun marriages and women in conventional marriages (women who marry before becoming pregnant).

The third approach uses propensity score matching. Specifically, I estimate the probabilities of marriage among women who have a non-marital pregnancy and then comparing married and unmarried mothers who have similar probabilities of marriage. Fourth, I estimate the impact of marriage on outcomes, while controlling for unobserved differences among individuals using fixed and random effect models.

The diverse approaches deal with different questions about potential economic gains from marriage. The tabulations, basic regressions, and propensity score matching approaches ask mostly about what happens to the long-run economic gains from marrying before or soon after the birth of their first child. This approach focuses on the impact of an initial marriage on subsequent outcomes, incorporating direct and indirect

effects of early marriages. This approach does not capture benefits from marriages that occur some years after initial childbearing and thus may understate income gaps associated with marriage. The reason is that income gaps might narrow between the initially married and initially unmarried as marital status changes for both groups; some of the initially married women become unmarried for some years and vice versa. To deal with the potential ongoing benefits of marriage, while at the same time controlling for unobserved differences among mothers, we employ fixed and random effects models to examine the question of how changes in marriage in specific years affect changes in economic status. These models control for the possibility that unobserved individual differences might be responsible for any observed connections between marriage and economic well-being.

The major goal of the paper is to bring new evidence to bear on the question of how marriage affects economic status. No single answer is plausible because any impacts from marriage itself are likely to vary with the circumstances such as which men and women marry and when they marry (say, before or after pregnancy or childbearing). Of particular interest are marriages to women with relatively low earnings capacities and to women who have a premarital pregnancy. A second goal is to describe in detail the marriage and family status experiences of women after their first pregnancy.

The following section takes up the task of clarifying the mechanisms by which marriage could enhance the economic status of mothers and children. I then discuss the data and present initial tabulations of patterns of marriage and family status over time. Next, I present descriptive evidence about the connection between marriage and economic well-being. The fifth section describes the propensity score methodology and

the results drawn from applying this approach. The sixth section discusses and uses fixed and random effects models. I conclude with some summary remarks and interpretations.

2. How Marriage Might or Might Not Enhance Economic Well-Being

Any assessment of the economic gains from marriage must begin by clarifying the questions. Marriage compared to what? Whose economic gains? What is the counterfactual? Restricting the population to mothers and children, we might ask about married couples with children compared to single parents living with no other adults, to single parents with other adults, or to mothers cohabiting with the father or with some other partner. Each comparison suggests different reasons why marriage *per se* (as distinct from the types of people who normally marry) affects economic status.

Marriage compared to single motherhood is likely to raise economic status since the potential earnings and/or reduced child care costs are usually higher than the costs of necessities for the additional person. Given economies of scale in household consumption and the likely earnings contributions of fathers, mothers and their children are very likely to have a higher economic status in a married state than as a single mother household. The 2001 poverty threshold or basic needs for a household rises by only about $2,100 per year (from $12,207) if a mother living only with her one child married; family needs would go up by about $3,700 (from $14,269) if a mother of two children married. Thus, even if the husband worked only at the minimum wage, he would have to work only 30 percent of the year to earn enough to offset his addition to the family's basic needs. Income support programs complicate the matter, since the husband's addition to countable family income will generally reduce benefits by more than the increase in benefits associated with the presence of an additional adult in the family.

Child support payments add another complication, since non-custodial fathers must pay some of their income to the custodial mother in any event. However, the income of non-custodial fathers net of child support payments will still generally be well above the amount of income to provide for the father's basic needs.

Long-term benefits from marriage relative to single parenthood could result from the division of labor within the household (Becker 1991). Specialization by the husband in child care and other housework allows the wife to concentrate on her career. Since either the husband or wife will have a comparative advantage in one or another activity, the two parties can gain from trade and specialization. In addition, economies of scale in household production make marriage economically beneficial over single parenthood.

Marriage may permit families to adapt more effectively than other family types in times of transition and economic disruption. The presence of more than one potential earner helps diversify the risks arising from unemployment, lost wages, or shifts in demand for various occupations. In principle, mothers can achieve this diversification through cohabitation or the presence of other adults. However, if marriage involves a more stable residential and economic sharing arrangement, it may achieve higher economic well-being, especially in economic downturns.

Can other family forms duplicate these gains from marriage? If not, why not? In principle, a cohabiting partner should be able to add income and to allow for a division of labor within the household in the same way as a husband. In fact, given the provisions of some benefit programs, the addition of income from a cohabiting partner may not reduce income transfer benefits as much as the same income from a husband (Moffitt, et al., 1998). Similar gains could accrue to mothers and children when other adults are present.

If the presence of another caring adult were all that was at stake, then marriage might bring few special advantages over cohabitation and sharing with other adults.

Yet, there are several additional reasons for expecting a positive marriage effect on economic well-being. The first is that marriage might provide another working age adult on a more stable basis than do other family/household forms, especially cohabitation. Mothers cohabiting with a partner might be more likely to find themselves with little adult help at some future point than married mothers. The lower risks faced by married mothers and fathers might encourage them to take a longer time horizon, to save more, and to invest more in housing and/or human capital than unmarried mothers with other adults. The lasting relationship expected in marriage may do more to stimulate the earnings of parents, especially men. A long-term presence may mean higher permanent income and a larger build-up of consumer durables, factors that could limit the extent of economic hardship experienced in downturns in the economy. Married couples may be more easily able to draw on relatives for help in difficult situations. On the other hand, cohabitation as compared to marriage may encourage mothers to invest more in skill development and work experience in order to guard against the higher likelihood of separation. In addition, in some cultures, formal marriage may be unusual and cohabitation may create the same expectations as marriage about the duration of a relationship. The literature suggests these patterns are particularly important for selected Hispanic ethnic groups.

Sharing patterns within the household may also affect the benefits from marriage. A husband might be more likely to share income with his wife and children than a cohabiting partner, especially someone who is not the father of his partner's children.

Similarly, one would expect husbands to share income more fully than other adults in a mother's household. However, actual differences in sharing patterns and in any associated economic hardships are hard to observe from survey data on incomes.

So far, we have focused on short-term economic differences between marriage and other family forms. But differences over the life cycle may be more important. One question is, what is the likelihood that mothers will experience a period in which they are the only potential earner in the household? Although many marriages end in divorce, often leaving mothers to cope as the only adult in the household, cohabitation and sharing households with other relatives are generally less stable household forms. If marriage does indeed last longer than other household structures, then married mothers are likely to have a higher permanent income than unmarried mothers. This point has implications for comparing mothers at a point in time. Differences in living standards associated with marriage may be understated or overstated. Divorced or separated mothers may have only modestly lower living standards than married mothers not because of the inherent economic viability of divorce or separation but because of prior experience as married mothers provides income and assets for use after the marriage ends. A previous marriage allows mothers to build up assets (such as consumer durables) and to have a higher probability of obtaining child support (Hao 1996). On the other hand, the gap in living standards between married and unmarried mothers may be lower than observed at a point in time because many married mothers will suffer losses during periods of divorce or separation.

For any given level of permanent income, income variability can reduce economic welfare. Families facing higher risks must do more saving and/or borrowing to maintain

a constant consumption flow. But, the cost of smoothing consumption can be especially high for low-income families, because of the large gap between the interest earned on savings and interest charged when they borrow. It is not entirely clear whether marriage lowers the degree of income variability, especially in low-income communities. Prior to the time limits imposed by the Temporary Assistance for Needy Families (TANF), single parents could rely on a low, but stable income source from the Aid to Families with Dependent Children (AFDC), food stamps and other programs. Mothers who remained married should achieve stable incomes, but marital disruption is likely to induce higher income losses than staying a single parent or separating from a cohabiting partner.

These considerations raise specific questions about marriage, including:

- What are the patterns of family status over time? What share of mothers experience single parenthood, marriage, or cohabitation? How does the initial family status of mothers affect long-term status? Do high-risk mothers who initially marry end up spending as many years in single parenthood as mothers who postpone marriage?

- How does the time mothers spend as a single mother in a single adult household vary between mothers who marry before or soon after their first birth compared to mothers who do not?

- Do women who marry before or soon after their first birth attain higher permanent income and fewer years in poverty than women who delay marriage or never marry?

- What are the differences in the variability of income relative to needs between the mothers who marry before or soon after their first birth compared to mothers who do not?

- What are the differences in permanent income between mothers who marry and remained married for at least ten years and mothers who never marry?

- Can we distinguish differences in impacts between mothers in "shotgun" marriages from mothers in marriages that occur before a first pregnancy?

- How do these patterns vary by the educational status and race of the mother?

- Finally, are the observed economic gains associated with marriage the result of marriage itself or of the favorable observed and unobserved characteristics of women who marry?

3. The Data

The data for this paper come from the 1979 National Longitudinal Survey of Youth (NLSY79). The U.S. Department of Labor sponsored this survey primarily to determine the work and career profiles of the cohort born between 1958 and 1965. The original sample consisted of a national probability sample of 6,111 men and women in this age range, plus 5,296 individuals from randomly selected oversamples of black, Hispanic, and economically disadvantaged white youth.[2] Beginning in 1979, in-person interviews were conducted annually; 1998 is the most recent year available and the last year we analyze.

In this paper, we use data on the 6,283 women in the sample to determine how their marital status in various years affected economic outcomes. The data are extensive, providing information on household structure, family status, marriage, childbearing as well as extensive personal and family characteristics. We focus on women with children and follow them as many years as they appear in the NLSY sample. There were 4,809 women in the sample who ever had children as of 1998. The data offer a rich array of information on the family structure experience of these women.

Unfortunately, about 18 percent of respondents did not report enough information to derive family income on an annual basis. Still, many do report some income sources,

[2] The original NLSY also contained an oversample of youth who were enlisted in the military as of 1979. This sample was only followed until 1984 and then dropped from the study. Because of this limitation, we did not include any observations from this oversample in our analysis.

especially earned income, thus giving partial information on economic status. The use of family income generally excludes income of the cohabiting partner, since he is typically not counted in the Census family definition (people related by blood, marriage or adoption). Moreover, including the male cohabiting partner's income raises the difficult issue of how much he shares his income with the rest of the household. Bauman (1999) and Winkler (1997) find considerably less sharing among cohabiting couples than among married couples. Still, a comparison between marriage versus cohabitation could be highly misleading if it ignored the cohabiting partner's income completely. In this analysis, we add the cohabiter's income to the family and increase the family's needs by one person to take account of the added household costs of the cohabiting partner.[3] I focus on the ratio of income to needs (the poverty threshold). This measure takes direct account of family or household size and accounts for inflation when judging economic well-being.

Because virtually all respondents took Armed Forces Qualifying Tests (AFQT), I am able to prepare separate analyses for women with low academic and technical abilities, as measured by their ranking in the distribution of AFQT scores. Many of the analyses focus on periods observed after the woman's first pregnancy leading to a birth. This limits the sample to the 3,306 women whose first pregnancy occurred after 1979. We sometimes focus on the 1,995 women whose first pregnancy took place before a first marriage.

[3] We assume those mothers not reporting any income from cohabiting partners receive no support from them. For these cohabiting partners, we neither increase the unit's poverty threshold or the unit's income.

4. Patterns of Marriage and Family Structure in the Short-Term and Long-Term

One mechanism by which marriage can enhance the economic status of mothers and children is by lowering their probability of living as a single parent, especially with other adults. While living as a single parent with no other adults brings clear economic disadvantages, the probability and duration of single parenthood may well depend on the mother's initial marital status. If marriage limits the extent of single parenthood more than cohabitation does, then marriage could convey long-term economic benefits even if it provided little short-term advantage over cohabitation. On the other hand, if cohabitors were no less likely to become or remain single parents, then this potential advantage of marriage over cohabitation would not exist. Early marriages in particular might have no special advantages over cohabitation and thus yield no long-term benefits because they are less likely to last than marriages of older persons.

To gain perspective on the short-term and long-term patterns of family structure of the 1958-65 birth cohort, we tabulate several measures that take advantage of the NLSY panel data. The first step is to measure the number of years each woman spends in various household categories. Since the number of years women are in the sample vary, I calculate the number of years missing for each observation as well. The data on household status are for every year of the sample from 1980 through 1998. Since the survey was not conducted in 1995 and 1997, there are 17 years of observations, though many respondents will be missing from the sample in some years.

The data in Table 1 provide a picture of the 17 years of household status for women who became pregnant after 1978 and, for comparison, all women who were under age 19 in 1979. Of the years mothers are observed with their first-born child, 28 percent

of the years were in cohabiting or single parent households. As expected, single parenthood was most common among black, non-Hispanic women and least common among white, non-Hispanic women. Cohabitation was highest among Hispanic women and lowest among white women. If we sum the years spent cohabiting with years in single parent households with other adults, the total is about as high as years in single parent households with no other adults. Thus, for about half the years mothers spent unmarried, another adult made it possible in principle to benefit from some economies of scale and risk pooling.

Turning to the sample of young women, we find similar patterns, though the share of observed years of motherhood spent in marriage amounted to only 65 percent. For black mothers, the proportion of motherhood years in marriage was only 31 percent. Again, this did not mean that mothers lacked the availability of another earner/caregiver. The combined years in cohabitation or as single mothers with another adult exceeded the years mothers spent living with their children and no other adults. Put another way, while years spent in marriage averaged only 65 percent, the years in marriage or with another adult amounted to 83 percent of all years.

These averages include those who did and those who did not experience marriage or other statuses. Another part of the picture is the experience of one or another status. It is revealing to ask what share of mothers ever experienced marriage while living with their children, so that we can distinguish women who never find a marriage partner from those who do so but divorce or separate or marry well after their child's birth. In calculating the incidence of each family status, we take account of the year each respondent is in the sample by applying an average weight over all years (women not in

the sample for two years would have a weight of zero for those years). As Table 2 reveals, about 90 percent of mothers have lived with their children in a married state at some point by their mid-30s and 94 percent at some point had lived with a child and a husband or cohabiting partner. Among black women, the percentage of mothers ever married is much lower, at 62-65 percent, but still about double the share of years black mothers spend in a married state.

The incidence of single motherhood varied widely by group of mothers. The highest share was among black mothers; 83 percent of black mothers who were ages 14-18 in 1979 experienced single motherhood. The lowest incidence of single motherhood was 38 percent, among white mothers. Hispanic single motherhood reached 58 percent, 25 percentage points below the black rate but 20 points above the white rate.

Low marriage rates and high single parenthood also varied widely by scores on the Armed Forces Qualifying Test (AFQT). Of all medium and high scoring mothers, the incidence of marriage was over 90 percent and the incidence of single parenthood ranged from 29 to 47 percent. In contrast, low scoring mothers had a much lower incidence of marriage (76 percent) and higher incidence of single parenthood (72 percent). Still, 87 percent of these low scoring mothers at one point either lived with their child and a husband or cohabiting partner.

The relatively high incidence of marriage or cohabitation suggests that for the vast majority of single mothers, the duration of marriage or cohabiting arrangement is more important that the ability to find a male husband/partner. Even among those who experience marriage, an average of 21 percent of their years of motherhood through 1998

were spent as single mothers, including 12.7 percent of years living with no other adult, and another 5 percent with cohabiting partners.

To examine whether early marriage reduces the probability and duration of single parenthood, I examine the time profiles of family status among mothers by their initial status within a year of the birth of their first child. Of special interest is the question of whether initial marriages among less educated women last several years or quickly lead to divorce, separation, and single motherhood. Table 3 shows that, although family status changes are common, initial differences in family patterns are highly correlated with long-term differences. Women who were married in the first year of their first child's life spent an average of 84 percent of the following 8 years as married and only 9 percent as single parents living alone. Marital stability was nearly as high among Hispanic mothers as among white mothers, but lower among black mothers. Still, even among initially married black mothers, continuing marriage was the norm—they were married for 71 percent of the subsequent nine years.

The probability of living as single parents in a given year differed markedly by initial family status. The size of the differences varied by race. Note that among Hispanic mothers, the share of years in single parenthood with no other adult was only four percentage points higher among cohabiting than among married mothers and 13 points higher among single parents with other adults than among married mothers. Cohabitation was commonly associated with single parenthood among white mothers—nearly half of the years of those initially cohabiting were in single parenthood with no other adults and only about 40 percent of the years were in marriage or cohabitation. In contrast, black and Hispanic mothers who were initially cohabiting often remained in that

status or married. For all groups, starting out as a single parent with other adults did not add much to the probability of marriage over being a single parent without other adults. Note that the percent of married years was virtually the same 26 percent for both groups of single parents. However, the highest share of years spent as single parents with no other adults was among those mothers who started out that way.

What about mothers with low academic and technical ability, as measured by AFQT scores? Do those mothers who are initially married stay married or often wind up as single parents? The tabulations in Table 4 demonstrate high marriage retention even among low AFQT mothers. Those initially married spent over 75 percent of the next 10 years in marriage and only 11.7 percent as single mothers with no other adults. In contrast, one-third of the years of low AFQT mothers who initially cohabited were in single motherhood with no other adults. Those who started out unmarried were in a married status for only about one-quarter of their years in motherhood. Initially married mothers with modest or above average AFQT scores were even more likely to stay married than those with low AFQT scores. Initial cohabitation among modest and high AFQT mothers was frequently associated with continuing cohabitation or marriage. About 70-80 percent of the years of these mothers were spent in marriage or cohabitation.

One high-risk group of mothers is women who become pregnant before marriage. For these women, a marriage that occurs before the child's birth may have been induced by the impending birth and thus less planned and potentially more risky than conventional marriages. To what extent are these mothers likely to end up as single parents? As Table 4 shows, mothers in "shotgun marriages" (marriages between pregnancy and birth of a mother's first child) remained in a married status for nearly 70

percent of the subsequent 12 years. While the proportion was somewhat lower than among mothers married at the time of pregnancy, the number of years covered was substantially higher than among mothers who were not married at the birth of their first child. Equally important, the chances of a mother being in a married status in a particular year was 50 percentage points higher among mothers in shotgun marriages than among mothers with pre-marital pregnancies that did not lead to an immediate marriage. While about one-fourth of the years of mothers in shotgun marriages were spent as single mothers, the figure was about 64 percent for mothers with pre-marital pregnancies who did not marry before the first child's birth.

So far, we have seen evidence suggesting that mothers who start out married—whether the mothers are minority, have low AFQT scores, or had a pre-marital pregnancy—are much more likely to spend their mothering years in a married status as opposed to single motherhood. But, we have only controlled for one characteristic at a time.

To summarize the data in a way that holds constant for differences among women before their first pregnancy, we turn to regressions predicting the annual probability of living as a single parent with no other adults. The results appear in Tables 5 and 6. Note that early marriage reduces the annual probability of living as a single parent by 26 percentage points relative to mothers who start out as single parents living with no adult relatives. However, in comparison to early cohabitation or to single parenthood with other adults present, the adjusted impact of early marriage is 6-10 percentage points, once we control for other personal and area characteristics. In Table 6, we see that, controlling for personal and area characteristics, shotgun marriages reduce the single parent-no adult

probability by 16 percentage points, only 2.4 points less than the impact of conventional marriages (marriages prior to a first pregnancy).

Overall, the women from the 1958-65 birth cohort experienced a wide variety of family situations in the years after bearing a child. The evidence strongly suggests that marriage—even shotgun marriages and early marriages by minority and women with very low AFQT scores—greatly reduces the likelihood of single parenthood. However, the size of the impact adjusted for differences in other characteristics is only about six percentage points if the comparison is between marriage and cohabitation. More importantly, these analyses do not control for potential selection bias, such as differences among women in the availability of husbands or partners with adequate earnings and stability.

5. Initial Family Status Effects on Income-to-Needs Ratios and on Poverty Rates

One theoretical role for marriage is risk pooling. In the event of an unforeseen shock that reduces one spouse's income, the other spouse can enter the labor force or work longer hours to offset at least part of the partner's income losses. In principle, cohabiting couples and single parents with other adults could take advantage of the risk pooling as well, since both have more than one potential earner/caregiver. However, as noted in the previous section, these family forms raise the probability a mother will become a single parent with no other adults and thus lose the risk pooling. In addition, the informal nature of the relationships in cases of cohabitation and single parenthood with other adults may limit the actual risk pooling that takes place. An economic shock may simply cause a cohabiting partner or other adult to leave the household.

This section examines the degree to which the income level and income variability of mothers varies with their early and subsequent family status. In order to take account of scale economies and changes in household size, we focus on estimates of levels and variations in the welfare ratio, or the ratio of family income to the family's poverty threshold. The welfare ratio, a commonly used measure, equals 1 when the family's income equals the family's poverty line, 2 when the family's income is double its poverty line and so on. For each woman, we calculate her family's welfare ratio in each year after her first pregnancy leading to a birth. We then create each family's average welfare ratio, variance, and standard deviation of the family's welfare ratios over time. Our primary measure of variability is the coefficient of variation, the standard deviation divided by the mean.

The tabulations in Table 7 show that mothers who were married in the year after their first pregnancy (leading to a birth) subsequently had higher long-term welfare ratios and sharply lower variability in welfare ratios. For all women with a first pregnancy after 1978 who started out married, long-term living standards were double those who started out cohabiting or more than double the welfare ratios of single parents living with other adults. Surprisingly, on average, women who began motherhood as single parents with no other adults ended up with higher average welfare ratios than other non-married groups. The gain in average living standards and lower variability of living standards carried over to black women and to women at the bottom and second quarters of AFQT scores. The differences in living standards of women who were not married in the year after their first birth vary across groups; cohabiting black women did much better than black single parents, while among those with modest AFQT scores, women who started

out cohabiting did about as well as those beginning as single parents living with another adult.

One revealing comparison is between women in shotgun marriages and women who did not marry before the birth of their first child. All women in both groups became pregnant before marriage. Note that the women entering shotgun marriages experienced a 38 percent higher level of living standards and a 20 percent lower variability of living standards.

Estimates of marriage effects net of differences in many observed characteristics, come from regression analyses on the level and variability of welfare ratios. These multivariate analyses are hardly foolproof since they omit two potentially important unobserved differences among women in the sample—the woman's motivation to marry and the availability of economically productive husband/partners. Nevertheless, the regressions help summarize the data and provide a second step toward understanding the connection between family status and economic outcomes. The first two regressions (in Table 8) cover all women who became mothers and were under age 19 in 1979 and the second two (in Table 9) limit the sample further to include only women in the bottom quarter of AFQT scores. The third regressions (in Table 10) estimate the impact of shotgun marriages on a sample of women who became pregnant before marriage. The dependent variables are the natural log of the average welfare ratio in the years after first pregnancy leading to a birth and the coefficient of variation of the welfare ratio across years. I include the beta coefficients to ease comparisons of effects across variables based on a common metric—how much of a standard deviation change in the dependent variable occurs as a result of a one standard deviation change in an independent variable.

The findings generally show that, controlling for a series of personal and area characteristics, marriage exerted a significant positive impact on level of welfare ratios and a significant negative impact on the variability of welfare ratios. For the first sample, being married in the year after first pregnancy (leading to a birth) raised a woman's average annual welfare ratio by 22 percent over single parents living alone and other groups. Marriage also reduced the variability of welfare ratios relative to single mothers but surprisingly, not relative to those initially cohabiting. Note that the effect of marriage exceeds the effect of being black but is less than the effect of prior poverty status. The beta coefficients indicate that the largest effects on living standards come from educational attainment and AFQT scores, followed by age at first pregnancy.

For women with low AFQT scores, the gains for marriage were higher than for the sample as a whole. As Table 9 shows, the marriage increment to average annual welfare ratios increased to 24 percent relative to single mothers living alone and over 40 percent relative to those initially cohabiting. Note in Table 11 that the gains were positive and significant for other at-risk groups as well, including all black women and Hispanic women who had became mothers. The increases in living standards associated with early marriage were highly positive and significant for all races among women who had a premarital pregnancy (leading to a birth). In some narrow subgroups, however, the estimates were too imprecise to reach high levels of statistical significance.

Women who become pregnant before marriage make up another group at high risk of low income. Does marriage before the child's birth (a shotgun marriage) raise the long-term living standards of these women? Or do these early and pregnancy-induced marriages offer little to these women over the long run? According to estimates reported

in Table 10, marriage significantly raises the average living standards and lowers the variability in living standards for these women with premarital pregnancies. Even controlling for a test of academic ability, school completion, family background, race, and age at first pregnancy, women who married between pregnancy and the birth of their first child averaged a 30 percent higher income-to-needs ratio and a 15 percent lower degree of variability of income-to-needs ratios.

Do the effects on welfare ratios extend to poverty? The panel data permit calculations of the total number of years in poverty beginning in the year after pregnancy or 1980, whichever comes later. After compiling these data, I estimated the total years in poverty as a function of years after pregnancy and an array of personal and family characteristics. The results revealed early marriages were associated with significantly fewer years in poverty. For example, years in poverty fell by nearly 2 years. Shotgun marriages were associated with a reduction by half in the years of poverty relative to other with a premarital pregnancy and birth. Long-term poverty was sharply lower as well. One indicator was the share of mothers who spent more than four years in poverty. As of 1998, the data provide an average of nearly 12 years after the year women had a premarital pregnancy leading to a birth. Over this period, a stunning 33 percent of these women were poor for four or more years. However, women who married between pregnancy and first birth experienced a 20 percent chronic poverty rate, less than half the 47 percent rate of those who did not marry.

To capture the impact of shotgun marriages on chronic poverty, net of other observed characteristics, I estimated probit equations on the probability of experiencing four or more years over the 1980-98 period. The results in Table 12 indicate that shotgun

marriages lowered the probability of long-term poverty by an average 25 percentage points. The marriage-induced reductions in chronic poverty were at least as high among high-risk groups, who experienced declines of 28 percentage points among non-Hispanic black mothers and 36 percentage points among mothers with low AFQT scores.

Overall, the evidence is solid that starting motherhood in a married state reduces time spent as a single mother alone when compared to those who start in cohabiting relationships or as single parents with other adults. Partly as a result, women who began their motherhood in a married state do better economically than other groups of mothers. The higher income levels associated with marriage extend to women at risk of marrying low-income men, including minority women and women with low AFQT scores. Further, mothers who start out married have not only higher long-term living standards but also a lower variability of living standards.

While the results derived from estimates that control for many observable differences among women, unobserved pre-existing differences among women may still be a good part of the explanation. To cast doubt on the existing evidence, these pre-existing differences would have to affect marriage and economic prospects (in the absence of marriage) in the same direction. One way of considering how robust are these results is to use an independent, alternative strategy for identifying marriage effects. While even these techniques cannot control for the characteristics of available husbands or partners, they do offer additional revealing evidence about the impact of marriage. We turn to one such strategy in the next section.

6. A Quasi-Experimental Approach: A Propensity Score Matching Strategy

In considering how to measure the effect of marriage, we might ask: what experiment might we perform to determine how marriage affects economic well-being? Ideally, we would find and isolate two groups of paired, virtually identical communities. We would then randomly assign one in each pair to receive a treatment that would directly increase marriage (say, by suddenly making the preference for marriage higher through a publicity campaign) without directly affecting economic status. Assuming that the treatment did induce marriages that would not have taken place without the intervention (as shown by the higher increase in marriages in treatment than in control communities), differences in the income levels between all families in treatment and control communities would yield an unbiased estimate of the economic gain from inducing additional marriages.

Even this experiment would be subject to several limitations. First, it would not capture the broad effects of marriage on the groups who were married before the intervention but in some other world (where laws and mores were targeted against marriage) would not have been married. Second, it assumes that some communities could be isolated on a continuing basis from the cultural changes in other communities. Third, it ignores the possibility that any intervention to promote marriage (like improving relationships between couples) could in principle affect employability directly if the improvements in soft skills for marriage offer benefits in worker productivity.

Despite these objections, the experiment would offer evidence on the question: what would happen to economic well-being if an exogenous policy or program change induced unmarried individuals on the margin of marriage to marry?

While even such a limited experiment is infeasible at this time and certainly well beyond the scope of this paper, the propensity score approach offers a practical method for drawing on existing data to divide individuals into types of quasi-treatment and quasi-control groups (Rosenbaum and Rubin, 1983; Dehajia and Wahba, 1999). Assume that we observe some people in one status of interest (say, married) and another group not in that status (say, unmarried). We know the individuals are not randomly assigned to this status and thus comparing the two groups largely involves comparing people with high propensities to marry (most of whom are married) with people with low propensities to marry (most of whom are unmarried). With the propensity score approach, we develop direct estimates of the propensity of each person to marry based on the extent to which their characteristics predict a high or low probability of marriage. The first step is to estimate the probability of marriage as a function of observed characteristics. The next step is to divide the sample into groups based on their probabilities or propensities. Within each of these groups, members have similar characteristics relevant to the marriage outcome. The propensity scores are the probability of treatment, conditional on pre-outcome characteristics. Thus, when we make comparisons of married and unmarried within groups, we can think of married individuals as a quasi-treatment group and unmarried individuals with similar characteristics as a quasi-control group.

If, in fact, variables exogenous to the individuals and unrelated to long-term economic outcomes were what caused some within each group to marry and others not to marry, then the comparisons would yield valid estimates of the economic impact of marriage. Of course, even within the groups with similar marriage propensities, idiosyncratic differences among individuals that were relevant to economic success might

have caused some to marry others not to marry. In this case, the standard selection problem will arise and not all of even the within-group differences can be attributed to marriage itself.

In this paper, partly in an effort to limit the scope of the selection problem, we conduct propensity score matching analyses on two sets of groups that are similar along a key behavioral dimension. One group is mothers whose first pregnancy took place before marriage and led to a birth. The second is mothers who were married within six months of their first child's birth. For the first group, we compare mothers who marry between pregnancy and six months of the birth (an expanded definition of shotgun marriages) to mothers who have not married by six months after the birth of their first child. In the second, the comparison is between shotgun marriages and marriages before the first pregnancy (conventional marriages). In both cases, the idea is to isolate the effect of induced marriages, first relative to no marriage and second relative to conventional marriages.

After predicting the likelihood of marriage, conditional on the premarital pregnancy, I divided the mothers into four groups of equal size based on their propensity to marry: mothers in the bottom quarter of probabilities of marriage and mothers in the second, third, and highest quarters. After checking to insure that the married and unmarried women within propensity score groups are similar with respect to the pre-pregnancy characteristics, we compare economic outcomes of the married and unmarried members of each propensity score group. The comparisons are estimates of the effects of a shotgun marriage over not marrying after the premarital pregnancy. Because the comparisons are within each group, they offer evidence on whether the gains to marriage

vary by the likelihood of marriage. Thus, the findings shed light on the question of whether marriage benefits even those with the weakest chances of marriage, typically the most at-risk, lowest educated women. Overall, this propensity score analysis, which looks only at women with a premarital pregnancy, provides one estimate of the economic impact of marginal marriages over no marriage.

The second propensity score analysis focuses on mothers who are married before or soon after the birth of their first child. Here, the idea is to ask whether marriages induced by a woman's pregnancy yield economic gains as high or nearly as high as standard marriages. Again, once I obtained the propensity of a shotgun marriage, conditional on some marriage before six months of the child's birth, I divided the mothers into four groups based on their propensity scores. The outcomes within each propensity score reveal the extent to which economic outcomes are as positive for shotgun marriages as they are for conventional marriages. Equally important, they show whether the shortfall for shotgun marriages depends on the likelihood of being in a shotgun or conventional marriage.

Before examining the outcomes, we compared the pre-pregnancy characteristics of the propensity score groups. Among women with premarital pregnancies, those in groups with similar propensities to marry within 6 months of the child's birth have similar pre-pregnancy characteristics, such as mother's education, own education, family income, and weeks worked. Comparisons of married women with similar propensities of a shotgun marriage generally yielded modest within-group pre-pregnancy differences, except that for women with the lowest probability of a shotgun marriage. Within this group, women with a conventional marriage were less likely to be poor, had higher

incomes, and higher education than women with a shotgun marriage. Thus, outcome comparisons for this propensity score group should be viewed with most caution.

The results comparing shotgun marriages to no marriage appear in Table 13. The findings reveal that even among women with premarital pregnancies who were least likely to marry, incomes, welfare ratios, poverty rates and the incidence of long-term poverty were significantly lower among married than the unmarried. In three of the four propensity score groups, average welfare ratios were 26-38 percent lower among mothers who did not have an early marriage compared to mothers who did marry within six month's of their first child's birth. Even after ten years, poverty rates were 15-51 percent lower among the mothers with early marriages than among other mothers with premarital pregnancies.

While shotgun marriages apparently contributed to better outcomes relative to no marriage, women in such marriages did not do as well as women in conventional marriages (see Table 14). However, among those most likely to have a shotgun marriage (and least likely to have been married before the first pregnancy), those in shotgun marriages did almost as well as those starting in conventional marriages. Their average post-pregnancy welfare ratio over several years is virtually as high as those with similar propensity scores but in conventional marriages. This is additional evidence that the benefits of marriage extend to those in the high-risk groups even those entering shotgun marriages.

7. Controlling for Unobserved Differences Using Fixed and Random Effects

A common problem with observational studies is that the estimated effects of a causal variable (e.g., marriage) might incorporate unobserved individual differences (e.g.,

a positive personality) that are correlated with marriage and the outcome variable of interest (e.g., family income). With panel data providing multiple observations on the same person, it is possible to take account of these unobserved differences in two ways.

The fixed effects models include a dummy variable for each individual along with other variables of interest. Since each person has a number of observations, the impact of time varying factors can be identified from the changes over time, while holding constant for each individual distinctive effect. Without these individual dummies, the analysis would be subject to the potential problem that an omitted variable—unobserved individual differences—bias estimates of the causal variables. The fixed effect model provides estimates of impacts of only those factors that vary over time. In one sense, we isolate marriage impacts from the effects of fixed, individual differences by estimating how changes in marital status affect changes in economic outcomes.

A second approach, the random effects model, deals with individual differences by thinking of all the observations for one individual as a group and incorporating a group specific error term that is fixed for all periods. This model yields estimated coefficients for all variables, including those that do not vary over time, while still controlling for individual heterogeneity.

The results in Tables 15 and 16 yield random and fixed effects estimates of each year's marital and family status on each mother's welfare ratio, controlling for observed individual, area and family background variables. The estimates are for all mothers, non-Hispanic blacks and whites, Hispanics, mothers with low or modest AFQT scores, and mothers whose first pregnancy took place before their first marriage. Again, the results

show large positive and statistically significant effects of marriage on living standards in the years after first pregnancy.

Consider first the random effects estimates in Table 15. For all mothers, marriage raised the welfare ratio by an amazing 65 percent over the level attained by single parents living with no other adults. Gains were nearly as high for marriage relative to single parents living with at least one other adult (65 – 12, or 53 percent). Even comparisons of effects of marriage relative to effects of cohabitation indicate a marriage advantage of about 30 percent. The effects of marriage relative to all other statuses were about as high for subgroups of mothers as for all mothers. Cohabiting partners raised economic welfare significantly and consistently relative to single mothers. While single parents typically raised their living standards from the presence of one or more other adults, the effects varied across groups. These increases were largest among white mothers and smallest among mothers with the lowest AFQT scores. Not surprisingly, increasing one's education and declines in local unemployment rates significantly raised living standards as well.

The evidence on the effects of marriage from fixed effects regressions reported in Table 16 is consistent with the random effects findings. In fact, the coefficient impacts are quite similar to those based on a random effects design. Again, marriage yielded large and significant increases in welfare ratios for all groups relative to single parents with no other adults. Cohabitation raised welfare ratios significantly relative to single parenthood, but not nearly as much as marriage did. Single parents with other adults did better than other single parents, but not consistently across all groups.

8. Concluding Comments

This study examines marriage and family patterns and their relationship to the economic well-being of the cohort of women who have reached their mid- to late-30s in the late 1990s. In clarifying the reasons for expecting or not expecting a marriage effect relative to other family forms, the paper points out that it is by no means obvious that married mothers should perform economically better than mothers in cohabiting relationships or single mothers living with at least one other adult. At the same time, marriage is *likely* to raise living standards if it is associated with family and income stability.

The findings in the study relate both to family patterns and to economic consequences. No family status is stable across people. But, turnover has two implications. On the one hand, the instability of marriages, cohabiting relationships, and the presence of other adults among single mothers places mothers at economic risk of losing a potential earner or caregiver. On the other hand, single mothers who subsequently experience marriage can raise their living standards. The evidence of family patterns reveals the striking fact that close to 95 percent of mothers were at one time married or cohabiting. This fact implies that almost all mothers (but only 75 percent of black mothers) were able to live with their children and a husband or partner at least part of their years as mothers. In other words, it is not primarily an issue of finding a husband or partner, but mainly a matter of having a stable, long-term relationship.

An impressive body of evidence suggests clear economic gains from marriage for this cohort. The results suggest both a higher level and a lower instability of living standards. In part, the lower income instability comes from the lower instability of family arrangements among married mothers.

One critical question is whether marriages among the most at-risk women yield economic benefits. The results reported in this paper suggest the economic gains do indeed extend to these groups. For example, consider mothers with a premarital pregnancy. Upon the birth of their first child, some will become single parents, others will cohabitate, and still others will marry before or immediately after the birth of the child. Many of the early marriages will come about because of the pregnancy and impending birth and not because of long-term planning. Yet even among this group, marriage appeared to raise living standards. This was also the case for marriages among minority mothers and those with the lowest test scores on Armed Forces Qualifying exams.

The findings using fixed and random effects represent additional evidence for a marriage effect on economic well-being. Even after taking account of much of the observed and unobserved difference among mothers, being in a married state appears to add substantially to living standards, not only relative to single parents living alone but also compared to mothers in cohabiting relationships or single parents living with other adult relatives. Even among the mothers with the least qualifications and highest risks of poverty, marriage effects are consistently large and statistically significant. Controlling for the observed and unobserved capacities of individual mothers, moving into a married state raises living standards by about 65 percent relative to single parents living with no other adult, over 50 percent relative to single parents living with at least another adult, and 20 percent relative to cohabitation.

The findings are far from foolproof. In particular, knowing more about the opportunities mothers face in finding suitable men is a potentially critical element of a

more complete model of the marriage process. Nevertheless, the robust nature of the estimates lends some credence to the view that marriage itself generates economic benefits for mothers and children.

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Table 1: Years Women Spent in Each Family Type, Among Women Who Became Pregnant After 1978 And Among Women Ages 14-18 in 1979, By Race and Hispanic Origin

	Women Who Became Pregnant After 1978			
Percent of Years in Family Status	All	Hispanic	Black	White
No Children	5.5	6.3	6.0	5.4
Married	29.4	31.8	17.2	31.0
Cohabitation	2.2	3.9	3.3	1.9
Single Parent, Other Adult	3.5	5.2	11.8	2.1
Single Parent, No Other Adult	5.7	8.2	15.1	4.2
Missing	27.3	23.3	27.5	27.5
Before Pregnancy	26.5	21.5	19.1	27.9
All	100.0	100.0	100.0	100.0
Nonmissing Years with Children	6.5	7.8	7.6	6.3
Married	72.1	64.9	36.3	79.0
Cohabitation	5.3	8.0	7.0	4.8
Single Parent, Other Adult	8.5	10.5	24.9	5.4
Single Parent, No Other Adult	14.1	16.6	31.9	10.8
All Years with Children	100.0	100.0	100.0	100.0
Percent of Years in Family Status	Women Ages 14-18 in 1979			
No Children	26.5	22.5	23.5	27.4
Married	27.0	31.7	17.1	28.4
Cohabitation	2.8	4.7	3.8	2.4
Single Parent, Other Adult	4.9	6.6	15.6	2.8
Single Parent, No Other Adult	7.0	8.7	18.7	4.7
Missing	27.4	21.2	17.3	29.7
Before Pregnancy	4.4	4.6	3.9	4.5
All	100.0	100.0	100.0	100.0
Nonmissing Years with Children	6.7	8.3	8.8	6.1
Married	64.9	61.3	31.0	74.0
Cohabitation	6.6	9.2	6.8	6.3
Single Parent, Other Adult	11.7	12.7	28.2	7.4
Single Parent, No Other Adult	16.8	16.8	33.9	12.4
All Years with Children	100.0	100.0	100.0	100.0

Source: Tabulations by author from the National Longitudinal Survey of Youth, 1979.

Table 2: Proportion of Mothers Ever Experiencing Marriage, Cohabitation, and Single Motherhood: 1980-1998, by Race and Hispanic Origin

Experience between 1980-1998	Percent Experiencing Family Status			
Mothers, Pregnant after 1979	All	Hispanic	Black, Non-Hispanic	White, Non-Hispanic
Ever a Single Mother	38.4	51.8	77.2	32.3
Ever Single Mom, Other Adult	22.7	35.1	58.8	17.0
Ever Single Mom, No Other Adult	31.5	39.9	61.4	26.9
Ever Married	90.1	86.2	64.6	93.8
Ever Cohabiting	15.7	23.8	25.4	13.8
Ever Married or Cohabiting	94.3	94.4	75.9	96.8
Mothers, Ages 14-18 in 1979				
Ever a Single Mother	47.1	58.1	83.0	37.8
Ever Single Mom, Other Adult	31.9	44.2	69.7	21.6
Ever Single Mom, No Other Adult	38.3	45.5	67.3	31.2
Ever Married	88.4	85.8	62.4	94.1
Ever Cohabiting	20.6	29.9	27.4	18.2
Ever Married or Cohabiting	93.5	94.4	74.9	97.0

	AFQT Level, Ages 14-18 in 1979			
Mothers, Ages 14-18 in 1979	All	Low	Medium	High
Ever a Single Mother	47.1	72.1	47.3	29.2
Ever Single Mom, Other Adult	31.9	54.3	29.9	17.3
Ever Single Mom, No Other Adult	38.3	57.4	39.7	23.6
Ever Married	88.4	76.0	92.3	94.5
Ever Cohabiting	20.6	33.8	22.4	9.7
Ever Married or Cohabiting	93.5	87.2	95.5	96.3

Source: Same as Table 1.

Table 3: Relationship between Initial Family Status and Years Spent In Marriage, Cohabitation, and Single Parenthood, by Race and Hispanic Origin

Women, Ages 14-18, Who Became Mothers Between 1980 and 1998	Initial Family Status in Year After Birth of First Child: Marriage	Cohabitation	Single Parent, Other Adult	Single Parent, No Other Adult
	Percent of Years Observed with Children			
Years Married	83.5	31.1	26.9	26.3
Years Cohabiting	3.1	37.5	9.2	9.6
Years Single Parent, Other Adult	4.5	8.3	35.2	10.1
Years Single Parent, No Other Adult	8.9	23.1	28.7	54.0
Average Years Observed with Children	8.1	9.6	11.8	10.0
Hispanic				
Years Married	80.2	27.1	32.5	23.3
Years Cohabiting	3.6	40.0	12.1	18.7
Years Single Parent, Other Adult	5.7	18.7	32.4	11.6
Years Single Parent, No Other Adult	10.4	14.1	22.9	46.4
Average Years Observed with Children	10.2	10.0	11.6	11.6
Black, non-Hispanic				
Years Married	70.8	23.1	19.8	18.6
Years Cohabiting	2.7	33.4	5.8	7.2
Years Single Parent, Other Adult	8.0	8.5	40.8	8.3
Years Single Parent, No Other Adult	18.5	35.0	33.6	65.8
Average Years Observed with Children	9.2	10.0	12.6	10.7
White, non-Hispanic				
Years Married	84.7	32.1	35.2	32.1
Years Cohabiting	3.1	9.8	13.3	9.8
Years Single Parent, Other Adult	4.1	11.1	28.2	11.1
Years Single Parent, No Other Adult	8.0	47.0	23.3	47.0
Average Years Observed with Children	7.9	9.4	10.8	9.4

Source: Same as Table 1.

Table 4: Relationship between Initial Family Status and Years Spent In Marriage, Cohabitation, and Single Parenthood, by AFQT Score and By Type of Marriage at the Time of the 1st Child's Birth

Women, Ages 14-18, Who Became Mothers Between 1980 and 1998	Initial Family Status in Year After Birth of First Child: Marriage	Cohabitation	Single Parent, Other Adult	Single Parent, No Other Adult
	Percent of Years Observed with Children			
Low AFQT Score				
Years Married	76.3	23.1	22.7	24.9
Years Cohabiting	5.2	37.5	9.6	12.3
Years Single Parent, Other Adult	6.9	7.3	36.7	8.9
Years Single Parent, No Other Adult	11.7	32.1	31.0	53.9
Average Years Observed with Children	10.0	9.9	12.3	10.6
Medium AFQT Score				
Years Married	82.2	46.7	34.5	22.4
Years Cohabiting	2.9	33.0	8.5	9.8
Years Single Parent, Other Adult	4.8	8.7	32.3	10.4
Years Single Parent, No Other Adult	10.2	11.6	24.8	57.4
Average Years Observed with Children	9.0	9.2	11.8	10.1
Above Average AFQT Score				
Years Married	89.2	23.9	33.8	33.4
Years Cohabiting	2.0	47.3	8.7	4.1
Years Single Parent, Other Adult	2.7	10.9	33.0	12.2
Years Single Parent, No Other Adult	6.0	17.8	24.5	50.2
Average Years Observed with Children	6.8	9.6	9.5	9.1

Family Status Category	Pregnancy but no marriage before birth of 1st child	Marriage between pregnancy and birth of 1st child	Marriage before pregnancy and birth of 1st child
Years Married	19.7	69.4	85.2
Years Cohabiting	15.6	5.3	2.5
Years Single Parent, Other Adult	29.0	10.8	4.1
Years Single Parent, No Other Adult	35.7	14.6	8.2
Average Years Observed with Children	10.8	11.8	7.1

Source: Same as Table 1.

Table 5: Influence of First Family Status after Birth and Other Determinants on Single Parenthood with No Other Adults: All Mothers and Mothers Ages 14-18 in 1979

	Mothers, Ages 14-18 in 1979			All Mothers		
	Coefficient	Significance	Beta Coefficient	Coefficient	Significance	Beta Coefficient
Age in 1979	0.005	0.210	0.024	0.006	0.001	0.045
Marriage in First Year After First Child	-0.262	0.000	-0.490	-0.278	0.000	-0.501
Cohabitation in First Year after First Child	-0.198	0.000	-0.171	-0.196	0.000	-0.156
Single Parenthood with Other Adult in First Year after First Child	-0.161	0.000	-0.251	-0.176	0.000	-0.250
Black	0.111	0.000	0.188	0.137	0.000	0.224
AFQT	0.000	0.384	-0.022	0.000	0.455	-0.014
Unemployment Rate Before 1st Pregnancy	0.009	0.051	0.038	0.003	0.414	0.012
Grade Completed Before 1st Pregnancy	-0.008	0.009	-0.070	-0.011	0.000	-0.097
Poor Before 1st Pregnancy	0.026	0.051	0.043	0.029	0.004	0.047
Lived with Both Parents at Age 14	-0.039	0.000	-0.072	-0.032	0.000	-0.056
Family Size Before 1st Pregnancy	0.004	0.115	0.035	-0.002	0.200	-0.020
Weeks Worked Before 1st Pregnancy	0.000	0.105	-0.040	0.000	0.106	-0.028
Urban-Rural Before 1st Pregnancy	0.018	0.147	0.028	0.014	0.134	0.021
Constant	0.342	0.000	.	0.405	0.000	.
Observations	2,031			3,650		
R^2	.28			.31		

Source: Ordinary least squares regressions based on NLSY79.

Table 6: Influence of Shotgun Marriages and Marriages Before Pregnancies and Other Determinants on Single Parenthood with No Other Adults: All Mothers and Mothers Ages 14-18 in 1979

	Mothers, Ages 14-18 in 1979			All Mothers		
	Coefficient	Significance	Beta Coefficient	Coefficient	Significance	Beta Coefficient
Age in 1979	0.002	0.657	0.009	0.007	0.000	0.056
Shotgun Marriage	-0.161	0.000	-0.233	-0.164	0.000	-0.236
Conventional Marriage	-0.185	0.000	-0.352	-0.196	0.000	-0.363
Black	0.089	0.000	0.152	0.119	0.000	0.194
AFQT	0.000	0.157	-0.038	0.000	0.087	-0.035
Unemployment Rate Before 1st Pregnancy	0.008	0.099	0.034	0.004	0.292	0.016
Grade Completed Before 1st Pregnancy	-0.006	0.079	-0.050	-0.010	0.000	-0.088
Poor Before 1st Pregnancy	0.023	0.092	0.039	0.034	0.002	0.055
Lived with Both Parents at Age 14	-0.043	0.000	-0.079	-0.036	0.000	-0.063
Family Size Before 1st Pregnancy	0.001	0.680	0.010	-0.007	0.001	-0.056
Weeks Worked Before 1st Pregnancy	0.000	0.368	-0.023	0.000	0.463	-0.014
Urban-Rural Before 1st Pregnancy	0.025	0.054	0.039	0.024	0.016	0.036
Constant	0.304	0.000	.	0.300	0.000	.
Observations	1,919			3,419		
R^2	0.25			0.27		

Source: Ordinary least squares regressions based on NLSY79.

Table 7: Average Welfare Ratio and Coefficient of Variation of Welfare Ratio In Years After Pregnancy Leading to 1st Birth, by Subgroup

Family Status by Selected Groups	Average Welfare Ratio	Coefficient of Variation	Years After Pregnancy
All Women, 1st Pregnancy After 1978			
Married in Year After 1st Pregnancy	3.96	0.69	9.5
Cohabitation in Year After 1st Pregnancy	2.00	0.76	10.6
Single Parent, Other Adult, in Year After 1st Pregnancy	1.53	1.04	12.3
Single Parent, No Other Adult, in Year After 1st Pregnancy	2.47	0.88	10.9
Black Women, 1st Pregnancy After 1978			
Married in Year After 1st Pregnancy	2.44	0.81	10.4
Cohabitation in Year After 1st Pregnancy	2.13	0.76	10.8
Single Parent, Other Adult, in Year After 1st Pregnancy	1.29	1.10	13.6
Single Parent, No Other Adult, in Year After 1st Pregnancy	1.58	0.91	11.4
Low AFQT Scores, 1st Pregnancy After 1978			
Married in Year After 1st Pregnancy	2.15	0.83	11.1
Cohabitation in Year After 1st Pregnancy	1.29	0.89	10.4
Single Parent, Other Adult, in Year After 1st Pregnancy	1.20	1.13	12.8
Single Parent, No Other Adult, in Year After 1st Pregnancy	1.46	.96	11.3
Modest AFQT Scores, 1st Pregnancy After 1978			
Married in Year After 1st Pregnancy	3.13	0.68	10.3
Cohabitation in Year After 1st Pregnancy	2.44	0.66	11.0
Single Parent, Other Adult, in Year After 1st Pregnancy	1.93	0.88	12.5
Single Parent, No Other Adult, in Year After 1st Pregnancy	1.77	0.90	11.5
Women Pregnant Before Marriage, 1st Pregnancy After 1978			
Marriage Between Pregnancy and Birth	2.39	0.78	11.6
No Marriage Between Pregnancy and Birth	1.73	0.98	11.6

Source: Same as Table 1.

Table 8: Family Status and Other Determinants of the Average and Coefficient of Variation of Welfare Ratios, Years After 1st Pregnancy Resulting in Birth

	Women , Ages 14-18 in 1979 Who Became Mothers Before 1995 and After 1978			
	Natural Log of Average Welfare Ratio		Coefficient of Variation of Welfare Ratio	
	Coefficient	Beta Coefficient	Coefficient	Beta Coefficient
Married in Year After 1st Pregnancy	0.222***	0.129	-0.219***	-0.183
Cohabitation in Year After 1st Pregnancy	-0.018	-0.005	-0.261***	-0.109
Single Parent, with Other Adult Year After 1st Pregnancy	-0.033	-0.014	-0.065	-0.039
AFQT Score	0.005***	0.184	-0.001**	-0.058
Years After 1st Pregnancy	0.011	0.061	-0.092***	-0.726
Black	-0.196***	-0.086	0.087**	0.055
Hispanic	-0.027	-0.009	-0.036	-0.016
Age of 1st Pregnancy	0.032***	0.168	-0.092***	-0.689
Unemployment Rate Before 1st Pregnancy	-0.031**	-0.045	0.014	0.030
Urban Area Before 1st Pregnancy	0.021	0.011	0.135***	0.104
Poverty Status Before 1st Pregnancy	-0.341***	-0.156	0.022	0.014
Weeks Worked Before 1st Pregnancy	0.003***	0.080	-0.003***	-0.108
Family Size Before 1st Pregnancy	-0.012	-0.029	0.005	0.019
Grade Completed Before 1st Pregnancy	0.070***	0.210	-0.003	-0.014
Enrolled in School Before 1st Pregnancy	-0.028	-0.038	-0.041***	-0.080
Constant	-1.098***		4.073***	
Observations	1,696		1,683	
R^2	.42		.26	

Note: ***, **, and * represent significance at the 1%, 5%, and 10% level, respectively.

Source: OLS regressions based on NLSY79.

Table 9: Family Status, and Other Determinants of the Average and Coefficient of Variation of Welfare Ratios, Years After 1st Pregnancy Resulting in Birth: Women with Low AFQT Scores

	Women , Ages 14-18 in 1979 Who Became Mothers Before 1995 and After 1978			
	Natural Log of Average Welfare Ratio		Coefficient of Variation of Welfare Ratio	
Independent Variables	Coefficient	Beta Coefficient	Coefficient	Beta Coefficient
Married in Year After 1st Pregnancy	0.241***	0.156	-0.164***	-0.140
Cohabitation in Year After 1st Pregnancy	-0.188*	-0.067	-0.214**	-0.100
Single Parent, with Other Adult Year After 1st Pregnancy	-0.043	-0.025	0.051**	0.039
Years After 1st Pregnancy	0.032***	0.170	-0.097***	-0.658
Black	-0.275***	-0.164	0.143***	0.112
Hispanic	-0.074	-0.033	0.017	0.010
Age of 1st Pregnancy	0.027*	0.123	-0.077***	-0.457
Unemployment Rate Before 1st Pregnancy	-0.012	-0.018	0.010	0.020
Urban Area Before 1st Pregnancy	-0.031	-0.017	0.147***	0.104
Poverty Status Before 1st Pregnancy	-0.307***	-0.184	0.061	0.048
Weeks Worked Before 1st Pregnancy	0.006***	0.166	-0.003***	-0.120
Family Size Before 1st Pregnancy	-0.030**	-0.089	-0.003	-0.011
Grade Completed Before 1st Pregnancy	0.067***	0.151	-0.026	-0.076
Enrolled in School Before 1st Pregnancy	-0.006	-0.009	-0.069***	-0.148
Constant	-1.245	.	4.097	.
Observations	700		695	
R^2	.30		.30	

Note: ***, **, and * represent significance at the 1%, 5%, and 10% level, respectively.

Source: OLS regressions based on NLSY79.

Table 10: Effects of Shotgun Marriages on the Average and Coefficient of Variation of Welfare Ratios in Years After 1st Pregnancy Among Women with a Premarital Pregnancy

	Women , Ages 14-18 in 1979 Who Became Mothers Before 1995 and After 1978			
	Natural Log of Average Welfare Ratio		Coefficient of Variation of Welfare Ratio	
Independent Variables	Coefficient	Beta Coefficient	Coefficient	Beta Coefficient
Married Between First Pregnancy and Birth	0.301***	0.213	-0.155***	-0.145
AFQT	0.007***	0.240	-0.002***	-0.101
Years After 1st Pregnancy	0.026***	0.142	-0.093***	-0.654
Black	-0.153***	-0.101	0.095**	0.082
Hispanic	-0.078	-0.030	-0.094	-0.047
Age of 1st Pregnancy	0.035**	0.152	-0.079***	-0.457
Unemployment Rate Before 1st Pregnancy	-0.048***	-0.081	0.001	0.002
Urban Area Before 1st Pregnancy	-0.051	-0.028	0.200***	0.147
Poverty Status Before 1st Pregnancy	-0.206***	-0.132	0.111***	0.094
Weeks Worked Before 1st Pregnancy	0.005***	0.144	-0.003***	-0.117
Family Size Before 1st Pregnancy	-0.001	-0.002	-0.001	-0.004
Grade Completed Before 1st Pregnancy	0.029	0.070	-0.012	-0.037
Enrolled in School Before 1st Pregnancy	0.016	0.026	-0.062***	-0.129
Constant	-1.186***	.	3.935	.
Observations				
R^2				

Note: ***, **, and * represent significance at the 1%, 5%, and 10% level, respectively.

Source: OLS regressions based on NLSY79.

Table 11: Effect of Early Family Status on Subsequent Levels And Variability of the Welfare Ratio, by Race

Race, Initial Marital Status Variables	Women , Ages 14-18 in 1979 Who Became Mothers Before 1995 and After 1978 Natural Log of Average Welfare Ratio	Coefficient of Variation of Welfare Ratio
Hispanic		
Married in Year After First Pregnancy	0.149*	-0.106
Cohabitation in Year After First Pregnancy	0.139	0.072
Single Parent, with Other Adult Year After Pregnancy	-0.157	0.081
Black, Non-Hispanic		
Married in Year After First Pregnancy	0.165*	-0.191**
Cohabitation in Year After First Pregnancy	0.127	-0.250**
Single Parent, with Other Adult Year After Pregnancy	-0.103	0.002
White, Non-Hispanic		
Married in Year After First Pregnancy	0.214***	-0.232***
Cohabitation in Year After First Pregnancy	-0.122	-0.278***
Single Parent, with Other Adult Year After Pregnancy	-0.075	-0.095
Women Who Have a Non-Marital Pregnancy Leading to a Birth		
Hispanic		
Marriage Before Birth	0.296***	-0.141*
Black, Non Hispanic		
Marriage Before Birth	0.215**	-0.176**
White, Non-Hispanic		
Marriage Before Birth	0.329***	-0.165***

Note: ***, **, and * represent significance at the 1%, 5%, and 10% level, respectively.

Source: OLS regressions based on NLSY79.

Table 12: Effect of Marriage Before 1st Birth on Chronic Poverty, Conditional On a 1st Premarital Pregnancy Leading to a Birth, by Race and AFQT Score

Women Whose First Birth Involved a Premarital Pregnancy	All	Black, Non-Hispanic	Low AFQT Scores
Marriage Before 1st Birth	-0.252***	-0.281***	-0.355***
Years After 1st Pregnancy	0.036***	0.066***	0.057***
AFQT	-0.004***	-0.008***	
Black	-0.026		0.021
Hispanic	-0.078		-0.071
Mother's Education	-0.021***	-0.015	-0.029***
Lived with Mother and Father	-0.061*	-0.076	-0.024
Frequent Religious Attendance	-0.009	-0.009	-0.035**
Catholic	-0.018	-0.253**	-0.016
Age of First Pregnancy	-0.007	0.018	0.003
Local Unemployment Rate	0.062***	0.111***	0.048**
Unemployment Rate Missing	-0.061	0.254	-0.099
Urban year before 1st Pregnancy	0.007	0.143*	0.029
Poor year before 1st Pregnancy	0.060*	0.183***	0.096*
Weeks Worked Before 1st Pregnancy	-0.003***	-0.004**	-0.007***
Family Size Before 1st Pregnancy	-0.001	-0.013	-0.013
Grade Completed Before 1st Pregnancy	0.005	-0.090**	-0.031
Enrolled Year Before 1st Pregnancy'	-0.030	-0.035	0.008
Observed Probability	.31	.42	.45
Predicted Probability (at means)	.20	.33	.41
Pseudo R2	.32	.39	.28
Observations	822	388	498

Source: Probit equations derived from NLSY79

Table 13: Differences in Economic Outcomes between Women in Shotgun Marriages and Women Not Marrying Within 6 Months of the Birth of a First Child, by a Woman's Propensity to Marry, Conditional on Having a Premarital Pregnancy

Outcome by Quartile of Propensity Score	No Marriage within 6 Months After First Birth	Marriage Between Pregnancy and 6 Months After First Birth	Absolute or Percentage Point Differences	Percentage Difference
Family Income Five Years After Birth of First Child				
Lowest Propensity Quartile	$14,834	$20,465	($5,632)	-32
Second Quartile	18,179	24,537	(6,358)	-30
Third Quartile	23,717	23,266	451	2
Highest Propensity Quartile	20,207	27,232	(7,025)	-30
Poverty Rate Five Years After Birth				
Lowest Propensity Quartile	59.8	33.3	26	58
Second Quartile	42.7	24.7	18	55
Third Quartile	36.5	21.9	15	51
Highest Propensity Quartile	28.6	15.7	13	60
Poverty Rate Ten Years After Birth				
Lowest Propensity Quartile	54.6	44.4	10	21
Second Quartile	42.7	36.8	6	15
Third Quartile	40.4	24.3	16	51
Highest Propensity Quartile	31.7	21.0	11	41
Average Welfare Ratio In Years After Birth				
Lowest Propensity Quartile	1.05	1.36	-0.31	-26
Second Quartile	1.19	1.75	-0.56	-38
Third Quartile	1.34	1.60	-0.25	-17
Highest Propensity Quartile	1.50	2.18	-0.69	-38

Source: Propensity score matching results performed by author on NLSY79.

Table 14: Differences in Economic Outcomes between Women in Shotgun Marriages and Women Who Are Married Before the Birth of a First Child, by Propensity to be in a Shotgun Marriage

Outcome by Quartile of Propensity Score	Marriage before First Pregnancy	Marriage Between Pregnancy and 6 Months After First Birth	Absolute Differences	Percent Difference
Family Income Five Years After Birth of First Child				
Lowest Propensity Quartile	$62,303	$41,598	$20,705	40
Second Quartile	50,276	29,623	20,653	53
Third Quartile	26,569	21,968	4,601	19
Highest Propensity Quartile	17,752	16,193	1,559	9
Poverty in More Than Four Years After Pregnancy				
Lowest Propensity Quartile	1%	3%	-2%	-110
Second Quartile	4%	6%	-2%	-41
Third Quartile	9%	17%	-8%	-64
Highest Propensity Quartile	24%	33%	-9%	-32
Poverty Rate Five Years After Birth				
Lowest Propensity Quartile	6%	13%	-7%	-77
Second Quartile	8%	12%	-4%	-41
Third Quartile	21%	18%	3%	15
Highest Propensity Quartile	29%	34%	-5%	-16
Poverty Rate Ten Years After Birth				
Lowest Propensity Quartile	3%	8%	-5%	-98
Second Quartile	7%	18%	-11%	-94
Third Quartile	13%	27%	-14%	-73
Highest Propensity Quartile	26%	40%	-14%	-43
Average Welfare Ratio In Years After Birth				
Lowest Propensity Quartile	4.76	2.71	2.03	56
Second Quartile	2.77	2.15	0.70	25
Third Quartile	2.13	1.65	0.35	26
Highest Propensity Quartile	1.59	1.56	0.09	2

Note: All differences greater than 4 percent were statistically significant.
Source: Propensity score matching results performed by author on NLSY79.

Table 15: Random Effects Estimates of the Impact of Marital and Family Status On a Mother's Economic Well-Being in the Years After 1st Pregnancy

	Effects on Natural Log of Welfare Ratios in Each of the Years After 1st Pregnancy						
Independent Variables	All	Blacks	Hispanic	Whites	Low AFQT	Mid AFQT	Unwed 1st Pregnancy
Married	0.651***	0.597***	0.609***	0.735***	0.648***	0.685***	0.598***
Cohabiting	0.350***	0.261***	0.319***	0.461***	0.283***	0.412***	0.320***
Single Parent, 1+ Other Adults	0.122***	0.008	0.073**	0.334***	0.043**	0.248***	0.101***
Age of Woman	0.029***	-0.010	-0.013	0.064***	-0.011	0.061***	0.016
Age squared	0.000	0.001*	0.001*	-0.001***	0.001**	-0.001*	0.000
AFQT Score	0.005***	0.010***	0.008***	0.004***	0.021***	0.004**	0.007***
Black, Non-Hispanic	-0.113***				-0.067**	-0.041	-0.091***
Hispanic	0.022				0.026	0.075*	0.036
Northeast	0.019	-0.044	-0.042	0.061**	-0.031	0.141***	0.000
North Central	-0.075***	-0.110*	-0.046	-0.071***	-0.038	-0.047	-0.060*
South	-0.064***	-0.146***	-0.039	-0.036	-0.111***	0.005	-0.063**
1st Child Is a Boy	-0.010	0.009	-0.029	-0.012	0.018	-0.026	0.004
Highest Grade Completed	0.064***	0.076***	0.058***	0.059***	0.047***	0.049***	0.059***
Urban Area	0.080***	0.108***	0.003	0.072***	0.075***	0.090***	0.070***
Expect to Marry in 5 Yrs	-0.042**	-0.018	-0.064	-0.064**	-0.029	-0.055	0.006
Expected Marriage Age	-0.021*	0.016	-0.029	-0.059***	-0.013	-0.025	0.001
Number of Siblings	-0.016***	-0.015***	-0.015**	-0.014***	-0.015***	-0.009***	-0.019***
Mother's Education	0.015***	0.010	0.017***	0.014***	0.015***	0.019***	0.016***
Lived with Mom and Dad at Age 14	0.057***	0.093***	0.012	0.053**	0.056***	0.068**	0.070***
Unemployment Rate	-0.042***	-0.055***	-0.034***	-0.042***	-0.056**	-0.035**	-0.045***
Age of Motherhood	0.021***	0.015***	0.022***	0.026***	0.019***	0.023***	-0.005
Constant	-1.921***	-1.544***	-1.294***	-2.376***	-1.366***	-2.272***	-1.520***
Observations	33,335	9,814	6,060	17,461	15,081	8,855	16,633
Number of persons	4,365	1,152	773	2,440	1,819	1,109	1,869
Overall R^2	0.381	0.334	0.333	0.334	0.297	0.257	0.301

Note: * significant at 10% level; ** significant at 5% level; and *** significant at the 1% level. Includes only women who became mothers and only the periods at least one year after 1st pregnancy

Source: Random effects models estimated on NLSY79 data.

Table 16: Fixed Effects Estimates of the Impact of Marital and Family Status On a Mother's Economic Well-Being in the Years After 1st Pregnancy

	Effects on Natural Log of Welfare Ratio in Each of the Years After 1st Pregnancy						
	All	Blacks	Hispanic	Whites	Low AFQT	Mid AFQT	Unwed 1st Pregnancy
Married	0.620***	0.556***	0.572***	0.717***	0.603***	0.684***	0.576***
Cohabiting	0.352***	0.246***	0.317***	0.479***	0.280***	0.415***	0.308***
Single Parent, with 1+ Other Adult	0.127***	0.002	0.083**	0.352***	0.042*	0.249***	0.096***
Age of Woman	0.040***	-0.005	0.006	0.073***	-0.002	0.067***	0.023*
Age Squared	0.000*	0.001	0.000	-0.001***	0.000*	0.001***	0.000
Northeast	-0.011	-0.098	-0.172	0.086	-0.084	0.096	0.004
North Central	-0.069*	-0.057	-0.114	-0.059	-0.002	-0.059	-0.038
South	-0.070**	-0.138*	-0.066	-0.023	-0.111*	0.010	-0.079
Highest Grade Completed	0.035***	0.041***	0.016	0.038***	0.009	0.037***	0.032***
Urban Area	0.050***	0.143***	-0.026	0.023	0.076**	0.057**	0.056**
Local Unemployment Rate	-0.035***	-0.047***	-0.015	-0.039***	-0.048***	0.027***	-0.037***
Constant	-1.065***	-0.659**	-0.441	-1.465***	-0.403	1.461***	-0.948***
Observations	33,390	9,845	6,074	17,471	15,048	8,878	16,664
Number of persons	4,371	1,156	774	2,441	1,822	1,111	1,873
Overall R^2	0.323	0.271	0.210	0.290	0.234	0.229	0.241

Note: * significant at 10% level; ** significant at 5% level; and *** significant at the 1% level. Includes only women who became mothers and only the periods at least one year after 1st pregnancy

Source: Fixed effects models estimated on NLSY79 data.