UNDERSTANDING YOUNG WOMEN'S MARRIAGE DECISIONS: THE ROLE OF LABOR AND MARRIAGE MARKET CONDITIONS

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Using the 1970, 1980, and 1990 Censuses, the authors investigate the impact of labor and marriage market conditions on the incidence of marriage of young women (age 16-24). They first estimate the effects on marriage of personal characteristics and Metropolitan Statistical Area (MSA) indicators, separately by race and education group. They then regress the first-stage MSA effects on MSA-level labor and marriage market conditions and welfare benefits, taking account of fixed effects and time trends specific to each MSA. Better female labor markets, worse female marriage markets, and worse male labor markets are found to lower marriage rates for whites in all education groups. Results for these variables for blacks are sensitive to estimation technique, although stronger results are obtained for an older age group (25-34). While welfare benefits have a negative effect in cross-sectional analyses, the association becomes considerably weaker in fixed effects specifications.

The decline in marriage rates in the United States in the last 30 years has been part of a remarkable set of social changes affecting gender roles in the post–World War II era. For example, the fraction of women age 20–24 who were ever married fell from 64.2% in 1970 to 34% in 1994, and a similar though muted trend was evident for women in their 30s and 40s (Blau, Ferber, and Winkler 1998:273). What

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A data appendix with additional results, and copies of the computer programs used to generate the results presented in the paper, are available from the authors at Cornell University, School of Industrial and Labor Relations, Ithaca, New York 14853.

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was once typical behavior for young women has now become the exception. At the same time that marriage has been on the decline, women's education levels and labor force attachment have been increasing steadily.[1] And the incidence of female-headed families among all families rose from 10.7% in 1970 to 17.6% in 1995 (Blau, Ferber, and Winkler 1998:292). While it may be hard to determine causality among such trends, there is no doubt that, on average, women were both better prepared to support themselves economically and more likely to have to do so by the 1990s than they had been in the 1960s.

The juxtaposition of these trends in marriage, family structure, education, and labor force participation illustrates the two faces of the decline in marriage. On the one hand, the decline in marriage, particularly for young people, is strongly associated with women's longer periods of schooling and increased labor force attachment. The educational and career opportunities that have become available since the 1960s have led many women to delay marriage and childbearing. If the entire decline in marriage for young people were simply an outcome of this delay, most would not view the phenomenon as a social problem.

However, falling marriage rates also have a downside, one that is of increasing concern for public policy—the rising incidence of children growing up in single-parent homes, often falling below the poverty line. While overall teen birth rates have actually declined since 1970, the share of those births that are out-of-wedlock has risen dramatically (Blau, Ferber, and Winkler 1998). The importance of trends in marriage rates for this development is underscored by the fact that the rising incidence of children among young, single women is explained (in an accounting sense) primarily by the rising pool of single women in the "at risk" group rather than by an increase in childbearing among single women (Blank 1995). This second face of the decline in marriage implies that a large number of women and children will live in poverty—an outcome that is especially likely for nonwhite and less-educated women.

In this paper, we seek to better understand the underlying determinants of marriage rates among young women. Given particular concern about the effects of the deteriorating labor market for less skilled workers on the marriage rates of less-educated women, we focus especially on the impact of labor market conditions for both young men and young women, as well as "marriage market" conditions, macroeconomic factors, and welfare policy.[2] We use Census data on individuals primarily from the 1980 and 1990 files, with additional data from 1970 in some of our analyses. While previous research on the determinants of marriage has examined some of the same issues we do, our approach disentangles labor market and marriage market effects in a way that earlier work does not. Moreover, in addition to the traditional macro-level wage and unemployment measures used by other researchers, we employ measures of labor market influences that capture the underlying demand and supply factors affecting the labor market success of particular groups. Given likely differences by education level in the consequences of the decline in marriage for young women, as well as possible differences across education categories in the relative importance of various causes, we disaggregate all of our analyses by education group.

[1]For example, labor force participation rates of married women in the United States rose from 35.4% in 1966 to 60.6% in 1994, while the fraction of new female high school graduates who enrolled in college increased from 48.5% in 1970 to 65.4% in 1994 (Blau, Ferber, and Winkler 1998:95; Ehrenberg and Smith 1997:297).

[2]For evidence on the deterioration in the labor market for less-skilled young men and women, see, for example, Katz and Murphy (1992) and Burtless (1994).

Prior Research on the Determinants of Marriage and Contributions of This Study

A basic framework linking labor market conditions and marriage decisions (Becker 1981) suggests that greater specialization by men in market work and women in nonmarket work raises the gains to marriage. Thus, all else equal, better labor market opportunities for men are expected to increase the incidence of marriage, while better labor market opportunities for women are expected to lower it. An additional prediction from Becker's analysis is that, controlling for men's and women's labor market opportunities, a larger relative supply of potential partners for women will raise their likelihood of marriage (see also Grossbard-Shechtman 1993). The importance of the supply of "marriageable" men has been emphasized by Wilson (1987), Ellwood and Crane (1990), and Darity and Myers (1995).

Consistent with Becker's analysis, several studies have found that men's employment opportunities have a positive effect on marriage for both blacks and whites, although their quantitative effect may be small.[3] Studies focusing on women's labor market prospects have tended to find that better employment opportunities are associated with declines in marriage for white women, but not for blacks (White 1981; Mare and Winship 1991; Schultz 1994; McLanahan and Casper 1995; Wood 1995). One problem with previous work is that it has tended to focus simply on the wages of women and their potential partners, without regard to marriage market availability. When marriage market availability has been considered, the focus has been on the supply of marriageable men only, not taking into account that the supply of women may also vary. Moreover, men's labor market success and marriage market availability are generally combined into one variable, for example, the supply of single men who are employed or earn more than a particular amount. In our work, we extend these analyses by more carefully distinguishing labor market success from marriage market availability.

This study also differs from previous work in using a richer set of measures of labor market conditions, some of which are disaggregated by education and race groups. Disaggregating by education and race is particularly important given the increase in labor market inequality that has occurred over the past few decades. In addition, rather than use actual earnings and employment of women and their potential partners as explanatory variables, we use estimates of the underlying supply and demand conditions that determine these wage and employment opportunities. Our approach is less likely to be contaminated by reverse causality biases than much of the previous literature.[4] Moreover, studies using area levels of family formation outcomes tend to use average marriage rates as the dependent variable, raising the possibility that observed correlations between marriage rates and the explanatory variables reflect compositional factors, for example, a highly educated population. We account in a very detailed way for composition differences across areas.

Another distinctive feature of our research design is its focus on young women—those aged 16–24. This means that we are measuring labor market conditions at roughly the time when these women are making their family formation decisions. Including older age groups, as many previous studies have done, brings in people

[3]See, for example, Mare and Winship (1991); Lichter, McLaughlin, Kephart, and Landry (1992); South and Lloyd (1992); Schultz (1994); McLanahan and Casper (1995); Ellwood and Crane (1990); Wood (1995).

[4]Schultz (1994) used a woman's predicted wage and the predicted wage of her potential male partner as explanatory variables in a marriage equation. While this approach does not suffer from the kind of reverse causality bias discussed above, it does not include a measure of the likelihood of employment or the overall availability of partners.

who made their family formation decisions at widely varying times, hence possibly under widely differing labor market conditions. However, our focus on a young age group may have its own drawbacks, particularly in the interpretation of results for highly educated women. Given the low marriage rates of young college-educated women, one may reasonably wonder whether the relevant decision "window" for them, that is, the age range during which they are most actively considering marriage, is indeed higher than 16–24. In addition, young women currently enrolled in college may have moved in order to attend school and thus may not be strongly influenced by the labor and marriage market conditions in the MSA where they currently reside. To test the robustness of our findings, we perform a supplementary analysis of women aged 25–34; such results should be of interest for all education groups but most especially for college-educated women.

In analyzing the impact of labor and marriage market conditions on marriage decisions, we follow a methodology similar to that of recent labor market studies that have exploited cross-sectional variation among labor markets in changes in wages, wage inequality, and employment over the 1970s and 1980s to test hypotheses about their causes (for example, Freeman 1991; Bound and Holzer 1993, 2000). As discussed in greater detail below, cross-sectional estimates of these effects may be biased if MSA-level variables are correlated with unobserved MSA fixed effects or an unobserved MSA-level time trend. For this reason, we estimate first- and second-difference specifications that can eliminate these effects. Our second-difference estimates constitute a particularly distinctive feature of this study. Another methodological issue that has been identified in these types of studies is that migration between metropolitan areas can complicate the interpretation of results based on these units of analysis (Bound and Holzer 2000). In the work described below, we also consider this issue.

There is also a considerable literature investigating the impact of welfare on women's family formation decisions. In a recent review, Moffitt (1998) concluded that, more often than not, welfare benefits are found to have a negative effect on marriage, although frequently these effects are small, many studies find no statistically significant effects at all, and others provide mixed results. As in the case of the impact of labor market conditions, an important methodological issue is the possibility of biases in cross-sectional estimation caused by unobserved MSA-level fixed effects and time trends (for example, Ellwood and Bane 1985; Hoynes 1997). Hoynes's (1997) study of single headship is one of the few to take account of the latter by including individual as well as state fixed effects. However, the inclusion of individual fixed effects means that the impact of welfare is identified from migrants only. An advantage of our use of a second difference specification, as an alternative method of addressing this problem, is that it does not place the entire burden of identification on migrants. An additional advantage of our study is that our improved controls for labor market conditions provide a sharper test of the impact of welfare on marriage decisions.

Analytical Framework, Data, and Methodology

This study exploits differences across metropolitan areas in labor and marriage market conditions and welfare policy to estimate the impact of these factors on the incidence of marriage for young women. The analytical framework is based on the assumption that substitution in the labor market between groups such as high school dropouts or college graduates is imperfect. Thus, changes in relative supply or demand for such groups will, in general, produce changes in relative wage offers (Katz and Murphy 1992), which will in turn affect family formation decisions in the ways discussed above.

We exploit variation across local labor markets in supply and demand to test this framework. Our maintained hypothesis is that supply and demand adjustments across

regions are partially limited by mobility costs. These costs imply that the nature of local labor markets lies between two extremes. At one extreme, if mobility were costless, all inter-area wage differences (not compensated for by amenities or cost of living differences) would be quickly arbitraged by migration. At the other extreme, if mobility costs were infinite, each local labor market could be treated as an island. The full effects of local labor market demand and supply shifts would be reflected in area wages and employment-to-population ratios. If, as is likely, local labor markets lie between these two extremes,[5] we may reach some qualitative conclusions about the relationship between findings based on inter-area differences in supply or demand shifts and the ultimate goal of explaining young women's marriage outcomes in the United States in general. However, due to migration, the effects of inter-area demand and supply changes on family formation decisions are expected to be smaller than the effects of similar shifts in the nation as a whole. Migration will also change the composition of an area's population, if those moving to a new location differ in some characteristics from those already there. Thus, we briefly examine the implications of migration for our conclusions.

We primarily use microdata on women age 16–24 from the 5% samples of the 1980 and 1990 Censuses, additionally using the 2% sample of the 1970 Census in some supplementary analyses. These are the largest available samples in each year and contain sufficient observations to stratify analyses by race-education group and to identify local labor market effects within each of these categories. Since it is possible that the effects of area differences in the impact of labor market conditions on marriage are sensitive to overall economic conditions, it is fortunate that macroeconomic conditions were similar in 1980 and 1990. We distinguish two race groups: non-Hispanic whites and non-Hispanic blacks.[6] We also divide our samples of young women into three education groups based on years of schooling completed: those with less than a high school education (ED < 12); those who have completed high school but have no further education (ED = 12); and those who have completed some education beyond high school, including both those with some college and those with a college degree or more (ED > 12).

Our local labor markets are "metropolitan statistical areas" (MSAs). Where boundaries for MSAs change over time, we use a consistent set of definitions so that comparable areas are defined in 1980 and 1990. When MSAs were consolidated in such a way that we could not uniquely assign an individual to one MSA or be sure that the person was in any of our MSAs, we gave that individual the weight corresponding to his or her probability of inclusion in each MSA. Thus, in the computation of means across individuals and in regression analyses based on individual data, affected individuals may be fractionally included in more than one MSA, fractionally included in the MSA subsample, or both.[7] Our sample includes

[5]For a fuller consideration of these issues, see Topel (1986); Bound and Holzer (1993, 2000); and Bartik (1993).

[6]In the 1970 Census, it is not possible to reliably identify Hispanic origin, so analyses using 1970 data include all blacks and all whites regardless of Hispanic ethnicity. Even when Hispanics are identified separately (in the 1980 and 1990 Census), sample sizes in many MSAs are too small to allow us to analyze Hispanics separately for a large number of cities.

[7]In matching MSAs across the 1980 and 1990 metropolitan areas as defined by the Census, we were guided by Bound and Holzer's (2000) original breakdown of these areas. We departed from Bound and Holzer in our treatment of cases where MSAs were consolidated so that it was not possible to uniquely allocate an individual to one MSA. As noted in the text, rather than arbitrarily allocate all affected individuals to one MSA (for example, the one where the majority of people in their area reside), we took advantage of published information on the proportion of the population in the individual's "Public Use Microdata Area" (PUMA) or County Group residing in each MSA to impute the probability that the indi-

the 111 MSAs that had more than 20 young women in each race-education group. While any particular cut-off is arbitrary, this should provide sufficient observations to compute the levels of the labor market variables (described below) for each MSA. Although the analysis necessarily excludes people who do not live in MSAs, as well as those who live in MSAs with insufficient sample sizes, our sample nevertheless includes the majority of young women: 52–64% of whites and 74–81% of blacks.[8]

The analysis proceeds in two stages. In stage 1, estimated across individuals, we estimate MSA effects in linear probability models for the incidence of marriage within education-race groups in the 1980 and 1990 Censuses. In stage 2, estimated across MSAs, we use the first-stage MSA effects as dependent variables in the analysis of the impact of the labor and marriage market conditions and welfare variables.

In the first-stage linear probability models, we include as explanatory variables dummy variables for age (in individual years); years of schooling; whether the young woman is an immigrant and how well she speaks English (measured as a dummy variable for speaking English not well or not at all); and individual MSA. For the less than high school group, we include controls for the following educational categories: 1–4 years, 5–8 years, 9 years, 10 years, and 11 years. For those with exactly twelve years completed, no control is needed, and for those with some college, we include a dummy for completing at least 16 years.[9] We include those enrolled as well as those not enrolled in school because schooling decisions are made in the same context as marriage decisions. Thus, in effect, we estimate reduced form models for the marriage decision. Since our samples are young and include the enrolled, the within-group control for age is important: the meaning of having less than a high school education, for instance, is not the same for someone age 16 (who may be continuing on) as it is for someone age 22 (who has likely completed her education). Our inclusion of individual age dummy variables controls for cross-MSA differences in the age composition of the population and thus allows for an appropriate interpretation of the MSA effects.

The first-stage models thus have the following form:

$$(1) \qquad Y_{it} = V_{it}b_t + \Sigma_j C_{ijt}w_{jt} + e_{it},$$

where for person i and year t (t = 1980 or 1990), Y is an indicator variable for marriage, V is a vector of individual-level variables including age dummies (in years), schooling dummies (where relevant), and immigrant status and language ability, and C is a vector of n MSA indicator variables, indexed by j.[10] Equation (1) was estimated separately for each of the six race-education groups for 1980 and 1990, with Huber-White corrections for heteroskedasticity.[11]

This first-stage analysis produces a set of estimated MSA effects for each education-race group in 1980 and 1990. In specifying the second stage, we begin with the following MSA model for each year t within schooling-race groups:

$$(2) \qquad w_{jt} = M_{jt}G + a_j + d_t + c_j t + v_{jt}$$

vidual resided within a particular MSA. A similar approach was used to ensure comparability across the 1970, 1980, and 1990 Censuses when all three were used. A more complete explanation is provided in a data appendix that is available from the authors upon request.

[8]A comparison of means indicates that the characteristics of our sample are very similar to those for the entire U.S. population.

[9]In calculating years of education, we follow Jaeger (1997) to deal with the changes that were made to the education questions beginning in the 1990 Census.

[10]As noted above, in some cases the MSA indicator variable is a fraction, denoting the probability that an individual is in MSA j. Since some individuals have a positive probability of falling outside the MSA sample, we can include n = 111 MSA variables and a constant term even though there are 111 included MSAs.

[11]Selected results from these regressions are available from the authors upon request.

where j refers to MSA; M is a vector of MSA-level variables (described in greater detail below), including the adult male unemployment rate, the log adult male average wage level in the labor market, an index of labor market net supply (supply relative to demand) for women in this race-education group, the analogous index of labor market net supply for young men of the same race-education group, an index of supply of women in the indicated group relative to supply of men in the same group, and a measure of welfare generosity; G is a vector of coefficients; a_j is an area fixed effect; d_t is a time effect common to all areas; c_j is a time trend for area j; and v_{jt} is an error term. The variables in M are measured in the same year as is marriage.

Direct estimation of equation (2) could result in biased estimates of the coefficients on the MSA-level variables if they are correlated with the unobserved MSA fixed effects (a_j) or the unobserved MSA time trends (c_j). For example, community norms may be especially tolerant of unmarried adults and value a strong safety net of public support for those living in poverty, producing a spurious negative correlation between welfare benefit levels and marriage rates due to unobserved MSA fixed effects. Also, different MSAs may have different trends in these omitted variables (that is, the c_j). For example, norms in one community may become more conservative at a more rapid pace than those in another. In the former, we might then observe a faster rise in marriage and fall in real welfare benefit levels, but with no causal relationship between the two.

As may be seen in equation (3), first differencing of (2) can eliminate the bias due to the area-specific fixed effects (a_j), but it will not eliminate all omitted variable biases if there are also area-specific time trends (c_j) that are correlated with the explanatory variables:[12]

$$(3) \qquad w_{jt} - w_{jt-1} = G(M_{jt} - M_{jt-1}) + (d_t - d_{t-1}) + c_j + (v_{jt} - v_{jt-1}).$$

However, taking the second difference of (2) can eliminate biases due to area-specific time trends as well as area-specific fixed effects:[13]

$$(4) \qquad [(w_{jt} - w_{jt-1}) - (w_{jt-1} - w_{jt-2})] = G[(M_{jt} - M_{jt-1}) - (M_{jt-1} - M_{jt-2})] + [(d_t - d_{t-1}) - (d_{t-1} - d_{t-2})] + [(v_{jt} - v_{jt-1}) - (v_{jt-1} - v_{jt-2})].$$

Estimation of equation (4) requires us to employ the 1970 Census as well as the 1980 and 1990 Censuses. Because of the smaller sample size of the 1970 Census, for the second difference specification we used a cut-off of 10 people in each race-education-gender group in an MSA, rather than the 20-person cut-off we employed in the analyses including 1980 and 1990 only. In addition, English language ability was not available in the 1970 data and immigration status was not available for the full sample, so these variables were omitted from the first-stage regressions when 1970 was included. Our basic 1980–90 results were unchanged when the 1980–90 analyses were repeated on the 1980 and 1990 samples created for the matched 1970, 1980, and 1990 models.

Each second-stage levels equation was estimated using weighted least squares, with the weights being the inverse of the estimated (heteroskedasticity-robust) variances of the first-stage regression coefficients. When (2) was estimated in first difference form, the weights were $1/(V_{80} + V_{90})$, where V_{80} and V_{90} are, respectively, the variances for the 1980 and 1990 MSA coefficients. And when we implemented second differences, the weights were $1/(V_{70} + 4V_{80} + V_{90})$.

[12]The changes in the overall time effect ($d_t - d_{t-1}$) are included in the constant term of equation (3).

[13]Again, including a constant term in (4) accounts for the second difference in the overall time effect. Borjas, Freeman, and Katz (1997) used such a second difference methodology to analyze the impact of immigration on local labor markets. Of course, biases could still remain if there were changes in area-specific time trends that differed across areas and were correlated with the explanatory variables.

The MSA-level variables are constructed as follows. First, the net labor market and marriage market supply indices are defined as

$$(5)\quad \text{Net Female Labor Market Supply}_{ktjf} = \ln(S_{ktjf}) - \ln(D_{ktjf})$$

$$(6)\quad \text{Net Male Labor Market Supply}_{ktjm} = \ln(S_{ktjm}) - \ln(D_{ktjm})$$

$$(7)\quad \text{Net Female Marriage Market Supply}_{ktjf} = \ln(S_{ktjf}) - \ln(S_{ktjm}),$$

where k stands for education-race group of 16–24 year-olds, t for year, j for MSA, f for women, and m for men; S_{ktjf} and S_{ktjm} are the fractions of the total MSA population that are in the indicated race-education-gender group and aged 16–24; and D_{ktjf} and D_{ktjm} are demand indexes for women and men in the indicated race-education-gender group and aged 16–24. The demand indexes are similar to those constructed by Katz and Murphy (1992) and are defined (using female demand as an illustration) as

$$(8)\quad D_{ktjf} = \Sigma_o(s_{okt} * E_{otj}/E_{tj}),$$

where o indexes industry-occupation category (14 industries crossed with 3 occupations),[14] k indexes race-education group (of women in this case), and t stands for year; s_{okt} is the share of total U.S. employment in industry-occupation cell o in year t represented by group k; and E_{otj} and E_{tj} are, respectively, total MSA employment in industry-occupation cell o and total MSA employment.

The demand index is essentially a predicted employment share for group k in MSA j, where we weight the relative employment of industry-occupation group o in area j by the national importance of group k in the industry-occupation cell. Since the same weights (s_{ok}) are used for each MSA in a given year, the demand index is driven by area differences in overall industry-occupation composition of employment. Net labor market supply, then, is the relative excess of actual supply (in the population) over this predicted relative employment. As Katz and Murphy (1992) showed in a simple equilibrium model, a group's relative wage offers will be negatively related to its net labor market supply.

A difficulty in using such variables to understand changes in wage rates for various groups over time is that they do not capture within–industry-occupation shifts in demand. Such shifts, generally attributed to technological change, appear to be an important component of recent changes in relative wages for various skill groups. So, for example, Katz and Murphy (1992) found that relative wages have been increasing for skilled (that is, college-educated) workers despite their rising measured net supply; they attributed this to within–industry-occupation increases in demand for this group that are not captured by the demand variable as defined. Interestingly, our use of these measures in a cross-section context may have more validity in that, at a point in time, technology is likely to be fairly fixed and measures like these, which are driven by MSA differences in employment composition, may indeed capture much of the true inter-city difference in group demand.[15] Similarly, while the overall 1980–90 change in the net supply measure may not accurately capture the true temporal changes for a particular group due to unmeasured changes in

[14]The industry categories are Agriculture, Forestry, and Fisheries; Mining; Construction; Manufacturing (Durable Goods); Manufacturing (Nondurable Goods); Transportation, Communications, and Other Public Utilities; Wholesale Trade; Retail Trade; Finance, Insurance, and Real Estate; Business and Repair Services; Personal Services Including Private Households; Entertainment, and Recreation Services; Professional and Related Services; and Public Administration. The three occupation groups are Professional, Technical, and Managerial; Clerical and Sales; and Craft, Operative, Laborer, and Service.

[15]Our measure may, of course, miss some heterogeneity across MSAs within our fairly broad industry-occupation groupings.

within–industry-occupation demand, intercity differences in the magnitude of the measured changes, which implicitly net out a fixed component due to technological change, may be quite informative.

These demand and supply indexes suffer from the well-known problem that they may be affected by relative wages and therefore are not precisely the same as the desired notion of the placement of the local relative demand and supply curves (Katz and Murphy 1992). But since the demand index is based on national shares for the group and overall local employment in industry-occupation cells, it is not likely to be greatly affected by changes in our focal groups' local wage levels. And the supply index refers to *population* rather than employment shares, again providing a more convincing source of exogenous variation, although even the population of a given race-gender-education group may be affected by relative wages through migration and schooling decisions. These issues of exogeneity will be considered further below.[16]

Once we control for the underlying determinants of labor market prospects (net supply) for a given race-education group of young women and the corresponding group of young men, our further control for "Net Female Marriage Market Supply" is also expected to influence the marriage decisions of young women. We measure marriage market prospects by comparing the relative representation of the focal race-education group of young women to that of the corresponding race-education group of young men. We thus implicitly assume marital sorting by race and education group, an empirically valid assumption (for example, Becker 1981; Tucker and Mitchell-Kernan 1990). Note that what has been identified in the literature as the supply of "marriageable men" is here incorporated into two variables—Net Male Labor Market Supply (also defined for the corresponding race-education group of young men) and Net Female Marriage Market Supply—which, taken together, comprise exogenous indicators of this concept. That is, they reflect both labor market conditions for and relative quantity of the young men whom these women would be likely to marry.

The other explanatory variables in equation (2) include the log of the sum of the maximum AFDC plus food stamp benefits available for a family of four in the state in which the MSA is located in 1980 dollars; the log of the average hourly wage for men age 25–54 in the MSA in 1980 dollars; and the MSA unemployment rate for men age 25–54.[17] Wages were computed as annual earnings last year divided by the product of weeks worked and average weekly work hours among the non–self-employed. The interpretation of welfare benefits is straightforward. Adult male average hourly wages and unemployment serve as overall labor market indicators. Moreover, controlling for wage levels puts a sharper interpretation on the welfare variable, since average hourly wages are likely to be closely correlated with local living costs.

As noted above, the rationale for the estimation of fixed effects models, either in first or second difference form, is to eliminate the omitted variables biases caused by unobserved MSA effects. While these procedures can indeed eliminate these biases under some circumstances, it must be acknowledged that there are also some reasons to be guarded in evaluating fixed effects results, here and elsewhere.

[16]The demand index as defined above uses employment shares and current year national employment share weights. Our results were the same when we used shares of work hours or 1980 national employment share weights for both years.

[17]Actual values for the AFDC levels are reduced by 30% in light of the fact that food stamps were reduced by 30% of the AFDC benefit level; see Moffitt (1990). In some cases, an MSA spanned more than one state. In such cases, the welfare variable was a population-weighted average of the benefit levels in each state. Those with computed hourly wages less than $1 or greater than $250 in 1980 dollars were excluded from the calculation of average hourly wages.

First, there may be reverse causation such that changes in the explanatory variable influence changes in the dependent variable (Besley and Case 1994). For example, in states with rapidly declining marriage rates and growing welfare caseloads, benefit levels may be changed in response, although the expected direction of such a change is uncertain. On the one hand, a larger welfare constituency may be able to lobby for higher benefit levels. On the other hand, greater strains on the state treasury may limit increases in welfare benefit generosity. In either case, we may observe a correlation between changes in welfare benefits and changes in family formation decisions that does not reflect a true impact of welfare benefits on behavior. Even a second difference equation may not eliminate this bias if the acceleration of caseloads varies by MSA. Of course, a similar objection applies to cross-sectional models, and they, moreover, do not remove any truly fixed unobserved MSA effects (or trends) that could bias the estimated coefficients on the observed explanatory variables.

A second difficulty with fixed effects estimation, noted by Hamermesh (2000), is that the effect of interest is identified solely through *changes* in the key explanatory variables within units, in our case MSAs. As Hamermesh pointed out, fixed effects methods may lose their ability to detect true effects if most of the variance in the explanatory variables is cross-sectional. For example, pooling the 1980 and 1990 samples of MSAs in our data, we find that about 94% of the total variance (unweighted by MSA size) in the log of real welfare benefits is due to variation between MSAs, while the other 6% is due to differential changes in welfare benefits within MSAs.[18] And, in fixed effects models, our estimates of the impact of welfare are based on this 6%. A similar pattern characterizes our labor market net supply variables: 82–97% of the total variance in female and male net labor market supply occurs between MSAs. Only in the case of the female marriage market net supply variable does an appreciable portion of the total variance occur *within* MSAs (20–56%). Thus, while fixed effects models solve some problems, they may also reduce the power associated with statistical tests.

This consideration of the econometric issues involved in fixed effects estimation thus leads us to affirm the uncontroversial conclusion that one should put more faith in results that hold up under a variety of statistical techniques than in results that are empirically fragile.

Results

Overall Trends

Table 1 shows mean values for our subsample of 111 MSAs in 1980 and 1990.[19] The means are shown separately for the entire population (Panel A) and for the non-enrolled (Panel B). For the purposes of describing overall trends by education group, the figures for the non-enrolled may be more informative, since years of schooling eventually completed will likely exceed the current level among the enrolled. Among those who have completed less than 12 years of schooling, 60–74% are currently enrolled.[20] Thus, we focus much of our discussion here on the non-enrolled. However, for the reasons discussed above, in our regression analyses, we use the full sample including those enrolled in school.

[18]Hoynes (1997) also noted that "a permanent state component is by far the largest contributor to the variance of AFDC benefits."

[19]In addition to the MSA weights (described above), for 1990, observations are weighted by the sampling weights provided by the Census; no weights are provided for other years.

[20]Of course, even the non-enrolled can return to school later. But educational attainment among those currently not in school must surely be closer to eventual completed levels than among those currently in school.

Table 1. Selected Means by Education and Race for Women 16-24 Years Old, 111 MSA Regression Subsample.

	White (non-Hispanic)			*Black (non-Hispanic)*		
Explanatory Variable	*ED < 12*	*ED = 12*	*ED > 12*	*ED < 12*	*ED = 12*	*ED > 12*
A. Entire Population						
1980						
Married	0.162	0.367	0.247	0.080	0.207	0.178
Children (1 = yes)	0.150	0.220	0.073	0.253	0.369	0.223
Enrolled	0.681	0.189	0.487	0.604	0.213	0.506
Migrated in Last 5 Years	0.099	0.130	0.204	0.063	0.104	0.142
1990						
Married	0.093	0.264	0.181	0.039	0.112	0.121
Children (1 = yes)	0.117	0.209	0.081	0.244	0.343	0.211
Enrolled	0.744	0.277	0.574	0.663	0.312	0.580
Migrated in Last 5 Years	0.102	0.143	0.202	0.075	0.100	0.162
B. Non-Enrolled Only						
1980						
Married	0.474	0.435	0.387	0.176	0.245	0.275
Children (1 = yes)	0.447	0.263	0.122	0.519	0.429	0.336
Migrated in Last 5 Years	0.144	0.122	0.210	0.076	0.099	0.145
1990						
Married	0.327	0.346	0.313	0.087	0.144	0.198
Children (1 = yes)	0.395	0.270	0.142	0.490	0.422	0.322
Migrated in Last 5 Years	0.135	0.139	0.217	0.071	0.095	0.154

Note: Individual observations are weighted by the individual's probability of being included in the MSA; observations for 1990 are weighted by the Census sampling weights.

Consider first the patterns of marriage and fertility by education level among the non-enrolled. The relationship between marriage and education differs by race. Among whites, marriage was modestly negatively related to education level in 1980 but not strongly related to education in 1990; among blacks, there is a positive relationship between marriage and education level in both years. In contrast, the incidence of children is strongly negatively related to education for both whites and blacks, a finding that, together with the marriage patterns by education, is consistent with the well-known negative relationship between single-parenthood and education (Blau 1998).

A final pattern related to education is recent migration. Those with some college are substantially more likely to have migrated from another state or country in the last five years. This may be due to the fact that the labor market for the college-educated is geographically wider than that for the less educated (Bound and Holzer 2000), and it may also reflect a decision to attend college in a state different from the one where one attended high school. In light of the concern raised earlier that migration to attend college could dilute the estimated effect of MSA labor and marriage market conditions for this group, it is interesting to note that the vast majority of young women with some college (that is, about 80% of whites and over 80% of blacks) have *not* moved, at least from a different state, in the last five years.

There are also important racial differences in demographic outcomes. Within each educational category, black women are considerably less likely than white women to be married but are more likely to have children present. Since, due to their lower income levels, black women are more likely to be eligible for welfare benefits, these differences in marriage rates are con-

sistent with an effect of welfare benefits on these decisions. Our regression analyses presented below will shed light on this issue. However, we may note here that the considerable race differences in marriage that exist among more highly educated women strongly suggest that welfare is not the only explanation. A further racial difference in demographic behavior is whites' substantially higher migration rates; this implies that local labor market conditions have a potentially greater effect on black outcomes.

Our descriptive statistics also shed some light on changes in young women's behavior over time. The most striking trend in Table 1 is the sharp decline in marriage rates for all race-education groups. Focusing on the non-enrolled, we see that marriage rates fell 19.2–31.0% (7.4–14.7 percentage points) among whites and 27.8–50.9% (7.6–10.1 percentage points) among blacks. Further, the absolute and relative declines in marriage tend to decrease as education level rises. These educational patterns could be due to a deteriorating labor market for less-skilled men, and we will investigate this possibility in more detail below. Despite the sharp drop in marriage rates, the incidence of children within race-education groups did not change dramatically between 1980 and 1990. This trend is consistent with a rise in female-headed families.

Regression Results

Basic specification. The weighted regression results for the second-stage models explaining the MSA marriage coefficients from a first-stage linear probability model are presented in Table 2.[21] We consider first the findings for the three net supply variables. These variables generally have the expected effect on marriage for whites in all education groups: all else equal, better labor markets for women and a less favorable gender ratio in the population reduce marriage rates, while better male labor market prospects raise them.[22] Some evidence of these effects is also obtained for young black women, but the findings are sensitive to estimation technique.

Looking first at whites, we find that, in the cross-section, the coefficients on female and male labor market net supply are substantial in magnitude and are always statistically significant. The results for female marriage market net supply are somewhat weaker but are correctly signed in all but one case (high school graduates in 1980, for whom the coefficient is small and insignificant) and statistically significant in all but one of the remaining cases. These cross-sectional findings hold up strongly in the first difference specification. Perhaps surprisingly in light of the greater likelihood of geographic mobility among more educated women, the impact of these variables does not tend to be larger for the less educated (who are less mobile), and indeed the largest estimated coefficients are for women with some college. Finally, the effects of the net supply variables continue to be strong and statistically significant in each education group when we implement the second difference specification.

Among blacks, the labor and marriage market variables are correctly signed in the cross-section and usually statistically sig-

[21] As explained above, the second-stage regressions were weighted by the inverse of the estimated variance of the first-stage regression coefficient. The results were very similar when we did not use weights and when we weighted by the MSA population of the indicated group.

[22] These three net supply variables are linear combinations of the four underlying supply and demand variables for young women and young men of the indicated education-race group. Thus, the regressions in effect restrict the effects of these four variables to work through the three created net supply measures. We tested these restrictions for each specification for each race-education group. There were 24 regressions in all: 4 time periods (1980, 1990, 1980–90 first differences, and [[80–90]–[70–80]] second differences) × 3 education groups × 2 race groups. Based on F-tests, the restrictions on the four supply and demand variables were accepted at the 5% significance level in 14 out of 24 cases; the cases where the restrictions failed did not show a strong pattern.

Table 2. Weighted Regression Results for Marriage Incidence: Women 16-24 Years Old.

	Education Group					
	ED < 12		*ED = 12*		*ED > 12*	
Explanatory Variable	*Coeff.*	*S. E.*	*Coeff.*	*S. E.*	*Coeff.*	*S. E.*
A. White (non-Hispanic)						
1980						
Female Net Supply (labor market)	0.218	0.044	0.295	0.047	0.326	0.076
Female Net Supply (marriage market)	-0.102	0.069	0.018	0.083	-0.310	0.083
Male Net Supply (labor market)	-0.223	0.047	-0.266	0.051	-0.378	0.068
Log Welfare Benefits	-0.123	0.012	-0.176	0.024	-0.116	0.023
Log Average Male Wage (25-54 years)	0.008	0.028	-0.026	0.053	-0.089	0.053
Male Unemployment Rate (25-54 years)	-0.058	0.137	-0.239	0.279	-0.049	0.243
1990						
Female Net Supply (labor market)	0.213	0.047	0.205	0.072	0.325	0.106
Female Net Supply (marriage market)	-0.209	0.058	-0.192	0.091	-0.258	0.113
Male Net Supply (labor market)	-0.206	0.048	-0.208	0.075	-0.376	0.100
Log Welfare Benefits	-0.097	0.015	-0.214	0.036	-0.101	0.030
Log Average Male Wage (25-54 years)	-0.037	0.025	-0.203	0.066	-0.232	0.053
Male Unemployment Rate (25-54 years)	-0.341	0.162	-0.300	0.410	-0.404	0.354
First Differences (90-80)						
Female Net Supply (labor market)	0.126	0.065	0.204	0.075	0.294	0.099
Female Net Supply (marriage market)	-0.173	0.065	-0.231	0.073	-0.298	0.097
Male Net Supply (labor market)	-0.145	0.058	-0.138	0.068	-0.292	0.091
Log Welfare Benefits	-0.070	0.033	0.032	0.054	-0.044	0.048
Log Average Male Wage (25-54 years)	0.129	0.031	-0.101	0.057	0.025	0.047
Male Unemployment Rate (25-54 years)	-0.172	0.174	0.258	0.279	0.033	0.275
Second Differences ((90-80)-(80-70))						
Female Net Supply (labor market)	0.248	0.122	0.263	0.125	0.546	0.186
Female Net Supply (marriage market)	-0.213	0.119	-0.335	0.152	-0.537	0.199
Male Net Supply (labor market)	-0.203	0.120	-0.311	0.138	-0.609	0.189
Log Welfare Benefits	-0.023	0.031	-0.033	0.047	-0.022	0.045
Log Average Male Wage (25-54 years)	0.144	0.046	0.150	0.081	0.073	0.060
Male Unemployment Rate (25-54 years)	-0.110	0.181	0.619	0.299	0.407	0.325

Continued

nificant for all education groups in 1980 and larger than their standard errors for those with less than a high school degree (ED < 12) in 1990.[23] However, these variables perform poorly in 1990 for the other two education groups. When area fixed effects are removed for blacks (that is, in the first difference specification), the coefficients on the three labor and marriage market variables become small and insignificant for the ED < 12 group, but substantial and statistically significant effects are obtained for high school graduates, and the estimated coefficients are correctly signed for blacks with some college. Finally, in the second difference specification for blacks, the labor and marriage market variables are never statistically significant but are correctly signed for those with at least a high school degree.

Turning to the effect of welfare benefits on marriage, the results are sensitive to specification. We see for 1980 strong, statistically significant negative coefficients for each race-education group. And these significant effects are also observed in 1990

[23]Taken as a group, the three labor and marriage market variables were statistically significant for blacks with ED < 12 in 1990 at better than the 2% level.

Table 2. Continued.

	Education Group					
	ED < 12		*ED = 12*		*ED > 12*	
Explanatory Variable	*Coeff.*	*S. E.*	*Coeff.*	*S. E.*	*Coeff.*	*S. E.*
B. Black (non-Hispanic)						
1980						
Female Net Supply (labor market)	0.079	0.039	0.152	0.058	0.122	0.075
Female Net Supply (marriage market)	-0.120	0.044	-0.180	0.065	-0.083	0.080
Male Net Supply (labor market)	-0.084	0.038	-0.141	0.054	-0.137	0.070
Log Welfare Benefits	-0.070	0.017	-0.086	0.037	-0.119	0.037
Log Average Male Wage (25-54 years)	0.008	0.029	-0.028	0.058	0.082	0.058
Male Unemployment Rate (25-54 years)	-0.250	0.161	-0.700	0.339	-0.714	0.345
1990						
Female Net Supply (labor market)	0.071	0.049	0.031	0.093	-0.040	0.106
Female Net Supply (marriage market)	-0.078	0.050	-0.016	0.095	0.037	0.108
Male Net Supply (labor market)	-0.081	0.048	-0.024	0.091	0.025	0.102
Log Welfare Benefits	-0.028	0.017	0.041	0.043	-0.046	0.040
Log Average Male Wage (25-54 years)	-0.001	0.023	-0.189	0.060	-0.105	0.058
Male Unemployment Rate (25-54 years)	0.158	0.141	-0.498	0.375	-0.126	0.370
First Differences (90-80)						
Female Net Supply (labor market)	0.007	0.079	0.255	0.118	0.087	0.154
Female Net Supply (marriage market)	-0.023	0.080	-0.274	0.113	-0.090	0.151
Male Net Supply (labor market)	-0.002	0.076	-0.259	0.109	-0.066	0.150
Log Welfare Benefits	-0.095	0.049	-0.039	0.089	-0.030	0.094
Log Average Male Wage (25-54 years)	0.096	0.047	0.161	0.088	0.163	0.091
Male Unemployment Rate (25-54 years)	-0.323	0.242	-0.536	0.413	-1.038	0.430
Second Differences (90-80)-(80-70))						
Female Net Supply (labor market)	-0.087	0.117	0.095	0.205	0.168	0.275
Female Net Supply (marriage market)	0.036	0.114	-0.152	0.210	-0.122	0.278
Male Net Supply (labor market)	0.068	0.109	-0.162	0.207	-0.100	0.281
Log Welfare Benefits	-0.016	0.046	-0.074	0.082	-0.004	0.089
Log Average Male Wage (25-54 years)	0.175	0.067	0.299	0.122	0.382	0.116
Male Unemployment Rate (25-54 years)	-0.123	0.294	-0.613	0.511	-0.533	0.475

Note: Regressions include a constant term. 1980 and 1990 cross-sections and 90-80 first differences are based on the matched 111 MSA 80-90 sample; second differences are based on the matched 67 MSA 70-80-90 sample.

for whites. However, in each of these cases (that is, 1980 black and white cross-sections and 1990 white cross-sections), the absolute value of the estimated effect is at least as large for more highly educated groups as for those with less than a high school degree, the group for whom we expect the largest negative welfare effect. While this pattern does not suggest a welfare impact on marriage, the first difference results do point in this direction: they are statistically significant, or nearly so, only in the case of the less educated, and the largest negative effects are for this group as well. But this pattern disappears when we perform second differences: none of the welfare coefficients are significant and the less educated no longer have the largest estimated negative effects. Only in the perhaps implausible instance in which omitted area-specific factors affecting marriage and welfare benefits are truly fixed can we conclude that welfare benefits affect marriage rates.[24]

Finally, we consider results for the macro-level indicators of adult male average wages

[24]We estimated supplementary models with a dummy variable for AFDC-UP coverage and obtained similar results.

Table 3. Weighted Regression Results for Marriage Incidence: Women 25-34 Years Old.

	Education Group					
	ED < 12		*ED = 12*		*ED > 12*	
Explanatory Variable	*Coeff.*	*S. E.*	*Coeff.*	*S. E.*	*Coeff.*	*S. E.*
A. White (non-Hispanic)						
1980						
Female Net Supply (labor market)	0.120	0.039	0.190	0.031	0.349	0.075
Female Net Supply (marriage market)	-0.058	0.054	-0.015	0.050	-0.273	0.074
Male Net Supply (labor market)	-0.081	0.041	-0.119	0.034	-0.349	0.077
Log Welfare Benefits	-0.174	0.021	-0.128	0.016	-0.127	0.024
Log Average Male Wage (25-54 years)	-0.064	0.045	-0.003	0.034	-0.153	0.049
Male Unemployment Rate (25-54 years)	-0.054	0.228	0.261	0.175	1.250	0.274
1990						
Female Net Supply (labor market)	0.188	0.066	0.122	0.039	0.264	0.058
Female Net Supply (marriage market)	-0.187	0.073	-0.005	0.055	-0.141	0.076
Male Net Supply (labor market)	-0.172	0.071	-0.089	0.042	-0.271	0.059
Log Welfare Benefits	-0.240	0.033	-0.127	0.023	-0.116	0.023
Log Average Male Wage (25-54 years)	-0.094	0.058	-0.020	0.039	-0.094	0.039
Male Unemployment Rate (25-54 years)	0.066	0.382	-0.254	0.251	-0.054	0.277
First Differences (90-80)						
Female Net Supply (labor market)	-0.146	0.088	0.022	0.054	0.146	0.074
Female Net Supply (marriage market)	0.108	0.093	-0.028	0.050	-0.197	0.072
Male Net Supply (labor market)	0.179	0.090	-0.047	0.052	-0.164	0.073
Log Welfare Benefits	-0.004	0.082	-0.074	0.043	0.006	0.034
Log Average Male Wage (25-54 years)	-0.010	0.088	0.060	0.044	-0.001	0.036
Male Unemployment Rate (25-54 years)	-0.328	0.430	0.106	0.216	0.262	0.192
Second Differences ((90-80)-(80-70))						
Female Net Supply (labor market)	0.238	0.171	0.237	0.089	0.212	0.134
Female Net Supply (marriage market)	-0.266	0.198	-0.205	0.094	-0.402	0.132
Male Net Supply (labor market)	-0.154	0.196	-0.210	0.096	-0.422	0.143
Log Welfare Benefits	-0.081	0.068	-0.045	0.041	-0.031	0.044
Log Average Male Wage (25-54 years)	-0.032	0.130	0.036	0.062	0.125	0.062
Male Unemployment Rate (25-54 years)	0.209	0.526	0.342	0.237	0.259	0.275

Continued

and unemployment rates. Unlike the group-specific labor and marriage market variables, the aggregate indicators appear to have more consistent effects for blacks than for whites. For example, in our four specifications in Table 2, Part B, adult male unemployment rates are negatively associated with black marriage rates 11 of 12 times, with a significant coefficient 3 of these 11 times. In the first and second difference specifications, adult male unemployment has a negative effect in each case and is statistically significant once. In the cross-sections, the coefficient on average adult male wages is inconsistently signed for blacks. However, in the first and second difference specifications, average adult male wages have positive effects on black marriage rates, which are statistically significant or nearly so in every case. In contrast to the unemployment results for blacks, the impact of this variable is somewhat unstable for whites. The unemployment rate is found to have a negative effect on marriage for all education groups in the cross-section, though these coefficients are generally insignificant; however, in the first and second difference specifications, the estimated effects are negative for less educated women, but positive for the other

Table 3. Continued.

	Education Group					
	ED < 12		*ED = 12*		*ED > 12*	
Explanatory Variable	*Coeff.*	*S. E.*	*Coeff.*	*S. E.*	*Coeff.*	*S. E.*
B. Black (non-Hispanic)						
1980						
Female Net Supply (labor market)	0.156	0.070	0.120	0.056	0.198	0.093
Female Net Supply (marriage market)	-0.209	0.073	-0.188	0.066	-0.252	0.106
Male Net Supply (labor market)	-0.156	0.067	-0.100	0.052	-0.171	0.088
Log Welfare Benefits	-0.137	0.036	-0.084	0.039	-0.113	0.046
Log Average Male Wage (25-54 years)	-0.111	0.061	-0.154	0.062	-0.173	0.081
Male Unemployment Rate (25-54 years)	-0.332	0.316	-0.603	0.349	-0.499	0.438
1990						
Female Net Supply (labor market)	0.236	0.109	0.217	0.087	0.181	0.108
Female Net Supply (marriage market)	-0.307	0.114	-0.337	0.096	-0.192	0.118
Male Net Supply (labor market)	-0.236	0.108	-0.195	0.086	-0.163	0.103
Log Welfare Benefits	-0.046	0.051	-0.036	0.048	-0.066	0.051
Log Average Male Wage (25-54 years)	-0.146	0.072	-0.189	0.065	-0.161	0.073
Male Unemployment Rate (25-54 years)	-1.149	0.436	-0.880	0.408	-0.998	0.442
First Differences (90-80)						
Female Net Supply (labor market)	0.223	0.141	0.103	0.112	0.257	0.164
Female Net Supply (marriage market)	-0.251	0.136	-0.110	0.109	-0.355	0.159
Male Net Supply (labor market)	-0.204	0.131	-0.086	0.107	-0.237	0.157
Log Welfare Benefits	0.029	0.101	-0.033	0.096	-0.145	0.092
Log Average Male Wage (25-54 years)	0.089	0.097	-0.006	0.093	0.172	0.094
Male Unemployment Rate (25-54 years)	-0.957	0.506	-0.626	0.456	-0.089	0.437
Second Differences ((90-80)-(80-70))						
Female Net Supply (labor market)	0.474	0.232	0.359	0.189	0.570	0.274
Female Net Supply (marriage market)	-0.556	0.236	-0.443	0.186	-0.675	0.272
Male Net Supply (labor market)	-0.553	0.255	-0.327	0.189	-0.553	0.264
Log Welfare Benefits	-0.178	0.122	0.057	0.087	0.003	0.096
Log Average Male Wage (25-54 years)	-0.051	0.203	-0.034	0.152	0.115	0.144
Male Unemployment Rate (25-54 years)	1.503	1.001	0.032	0.503	-0.058	0.501

Note: Regressions include a constant term. 1980 and 1990 cross-sections and 90-80 first differences are based on a matched 102 MSA 80-90 sample; second differences are based on a matched 56 MSA 70-80-90 sample.

education groups. The estimated effect of average wages for whites is generally negative in the cross-section, but positive 5 of 6 times in the first and second difference specifications, although generally not statistically significant in the latter case.

The effects of these aggregate economic indicators for blacks (positive for wages, at least in the first and second difference specifications, and negative for unemployment) are consistent with the idea that male market opportunities are more sensitive to aggregate conditions than are female opportunities. To the extent that men are in more layoff-prone industries (Blau and Kahn 1981), this conclusion makes sense. The weaker effects for whites could be due to less cyclical sensitivity of white men's labor market opportunities relative to women's than black men's.

Results for 25–34-year-olds. As a test of the robustness of these findings, Table 3 presents results for an older age group of 25–34-year-olds.[25] For whites, the findings are

[25]In order to produce an adequate sample of MSAs, we used cut-offs of 15 people in each race-education group per MSA for 1980–90 analyses and 10 people per group for 1970–80–90 analyses. The resulting

quite similar to those obtained for 16–24-year-olds, and for blacks they are considerably stronger. For both blacks and whites, the labor and marriage market variables have the correct sign in all but one case (that is, the first difference specification for white women with less than 12 years of education) and are frequently statistically significant. In particular, for women of both races, the results are strong for the target group for this supplemental analysis: women with some college education. For this group, the labor and marriage market variables are statistically significant in all but one case for whites and in 8 of 12 cases for blacks; the coefficients are larger than their standard errors in all the remaining cases. Moreover, the results for black women in this age group are stronger than those obtained for younger black women in the other educational categories as well. Specifically, the market variables are not only correctly signed in all specifications, they are large relative to their standard errors in all but one case. The stronger and more consistent findings for blacks in the older age group suggest that their decisions may be more influenced by labor and marriage market conditions than are those of their younger counterparts.

As in the case of our findings for younger women, the results for the welfare benefits variable in the analyses for older women are considerably stronger in the cross-section, where it is frequently found to be significantly negatively related to marriage, than in the difference specifications, where it is not generally found to be statistically significant. Also, as in the case of the previous analysis, the strongest evidence of the impact of the adult male unemployment rate on marriage is obtained for blacks, for whom this variable is negatively signed 10 of 12 times, with a significant coefficient in 3 of these cases.

Assessing the quantitative importance of the estimated effects. One issue that arises regarding these findings is their quantitative importance for the various subgroups. The results in Table 4 for our focal group of 16–24-year-olds address this issue. The first two rows of the table show the 75–25 gap in the MSA marriage coefficients in 1980 and in 1990 (that is, the difference between the values of the marriage coefficients at the 75th and 25th percentiles of the MSA distribution of marriage coefficients). The remainder of the table shows, for the first and second difference specifications, the effect on the incidence of marriage of the 75–25 gap in each explanatory variable (that is, the difference between the value of the explanatory variable at the 75th percentile and the 25th percentile of the MSA distribution of that variable in 1990).[26]

The results in the table indicate that the male and female net labor market supply variables tend to have the largest effects and that these effects are substantial compared to the overall 75–25 gap in marriage coefficients. For example, among less educated whites, the 75–25 difference in marriage coefficients was 2.6 to 4.5 percentage points. The second difference specification implies that an increase in the female net labor market supply variable between the 75th and the 25th percentile of the MSA distribution would result in an 11.9 percentage point rise in the incidence of marriage, while a comparable increase in male labor market net supply would result in a 6.8 percentage point decrease in the marriage rate. A note of caution in evaluating the contribution of these two variables: because they are highly positively correlated,[27] their effects tend to be offsetting.

samples included 102 of the original 111 1980–90 comparison MSAs and 56 of the original 67 1970–80–90 comparison MSAs used in Table 2's analysis of 16–24-year-olds. When the models for the 16–24-year-olds were restricted to these subsets, the results were very similar to those in Table 2.

[26]The 75–25 gaps are computed using population-weighted data for each year.

[27]For example, among the least educated, the correlation between male and female net labor market supply was .54 for whites and .50 for blacks in the first-difference specification.

Table 4. Effect of 75-25 Differences in Explanatory Variables on MSA Marriage Coefficients, Women 16-24 Years Old, 111 MSA Regression Subsample.

	White (non-Hispanic)			*Black (non-Hispanic)*		
Description	*ED < 12*	*ED = 12*	*ED > 12*	*ED < 12*	*ED = 12*	*ED > 12*
I. 75-25 Gap in 1980 MSA Marriage Coefficient	0.045	0.085	0.071	0.034	0.078	0.071
II. 75-25 Gap in 1990 MSA Marriage Coefficient	0.026	0.095	0.075	0.016	0.044	0.041
III. Effects of 75-25 Difference in 1990 MSA-Level Explanatory Variables						
A. First Differences (90-80)						
Female Net Supply (labor market)	0.061	0.085	0.095	0.008	0.210	0.070
Female Net Supply (marriage market)	-0.007	-0.018	-0.030	-0.002	-0.037	-0.018
Male Net Supply (labor market)	-0.048	-0.045	-0.086	-0.002	-0.230	-0.042
Log Welfare Benefits	-0.023	0.010	-0.014	-0.030	-0.013	-0.010
Log Average Male Wage (25-54 years)	0.021	-0.016	0.004	0.015	0.026	0.026
Male Unemployment Rate (25-54 years)	-0.002	0.003	0.000	-0.004	-0.007	-0.013
B. Second Differences ((90-80)-(80-70))						
Female Net Supply (labor market)	0.119	0.110	0.176	-0.098	0.079	0.137
Female Net Supply (marriage market)	-0.008	-0.025	-0.054	0.003	-0.021	-0.024
Male Net Supply (labor market)	-0.068	-0.100	-0.180	0.075	-0.144	-0.064
Log Welfare Benefits	-0.007	-0.011	-0.007	-0.005	-0.024	-0.001
Log Average Male Wage (25-54 years)	0.023	0.024	0.012	0.028	0.048	0.061
Male Unemployment Rate (25-54 years)	-0.001	0.008	0.005	-0.002	-0.008	-0.007

Note: Entries are the indicated regression coefficient times the 75-25 gap across MSAs in the 1990 values for the corresponding explanatory variable. 75-25 gaps are computed using population-weighted data for each year.

Though nonetheless often substantial, the effect of a 75–25 percentile difference in female net marriage market supply is generally estimated to be lower than the corresponding estimates for the male and female net labor market supply variables for each specification and each group. For example, among less educated whites in the second difference specification, a 75–25 difference in marriage market net supply is estimated to reduce the incidence of marriage by less than 1 percentage point. Interestingly, in this specification, the impact of this variable tends to increase in absolute value by level of education for both blacks and whites.

The effects of the other variables also tend to be smaller than the effect for male and female net labor market supply. The impact of welfare benefits is generally found to be small in the second difference specification, but some substantial effects are obtained for the least educated women in the first difference specification, where an increase in welfare benefits corresponding to the 75–25 gap in this variable is expected to decrease white marriage rates by 2.3 percentage points and black marriage rates by 3.0 percentage points. The impact of average male wages is larger in the second difference specification, especially for blacks, for whom an increase in average male wages corresponding to the 75–25 gap would increase marriage rates by 2.8 to 6.1 percentage points. For blacks, an increase in the unemployment rate corresponding to the 75–25 gap is estimated to decrease black marriage rates by .7–1.3 percentage points for women with 12 or more years of schooling (that is, ED = 12 and ED > 12); the impact for whites is small and inconsistent in sign.

Implications for trends in marriage rates. It is also of interest to use these results to explain the trends in marriage rates over time. Although, as discussed above, the inability of the underlying demand indexes to detect within–industry-occupation shifts limits the confidence we can place in such an analysis, a review of the estimated contri-

Table 5. Decomposition of 1980-1990 Changes in Marriage Incidence, Women 16-24 years old, 111 MSA Regression Subsample.

	White (non-Hispanic)			*Black (non-Hispanic)*		
Description	*ED < 12*	*ED = 12*	*ED > 12*	*ED < 12*	*ED = 12*	*ED > 12*
II. Unadjusted Change in Marriage Rate	-0.076	-0.108	-0.067	-0.044	-0.098	-0.058
II. Adjusted Change in Marriage Rate[a]						
A. 1980 Composition Weights	-0.053	-0.101	-0.053	-0.038	-0.092	-0.051
B. 1990 Composition Weights	-0.041	-0.100	-0.051	-0.031	-0.088	-0.047
III. Estimated Effects of 1980-1990 Changes in MSA-Level Explanatory Variables						
A. First Differences (90-80)						
Female Net Supply (labor market)	-0.005	0.005	0.006	0.001	0.040	0.005
Female Net Supply (marriage market)	0.008	0.032	-0.016	0.001	0.052	0.002
Male Net Supply (labor market)	-0.012	-0.010	-0.014	-0.001	-0.054	-0.005
Log Welfare Benefits	0.006	-0.003	0.004	0.007	0.003	0.002
Log Average Male Wage (25-54 years)	-0.005	0.003	-0.001	-0.003	-0.005	-0.005
Male Unemployment Rate (25-54 years)	-0.001	0.001	0.000	-0.001	-0.002	-0.005
Total of Net Supply Effects	-0.009	0.027	-0.024	0.002	0.038	0.002
Total Effects of All Variable Changes	-0.009	0.029	-0.021	0.005	0.033	-0.006
B. Second Differences ((90-80)-(80-70))						
Female Net Supply (labor market)	-0.009	0.007	0.012	-0.012	0.015	0.009
Female Net Supply (marriage market)	0.009	0.046	-0.029	-0.002	0.029	0.003
Male Net Supply (labor market)	-0.017	-0.022	-0.029	0.021	-0.034	-0.007
Log Welfare Benefits	0.002	0.003	0.002	0.001	0.006	0.000
Log Average Male Wage (25-54 years)	-0.005	-0.005	-0.002	-0.006	-0.010	-0.012
Male Unemployment Rate (25-54 years)	-0.000	0.002	0.002	-0.001	-0.003	-0.002
Total of Net Supply Effects	-0.017	0.031	-0.047	0.007	0.010	0.005
Total Effects of All Variable Changes	-0.021	0.031	-0.046	0.002	0.003	-0.010

[a]Controls for changes in the composition of the population based on the estimated first stage regression coefficients and the indicated composition weights.

Note: Entries are the indicated regression coefficient multiplied by the change in the weighted value of the corresponding explanatory variable. Weights are the sum of the 1980 and 1990 MSA populations for the indicated age-education group of women.

bution of 1980–90 changes in the means of our explanatory variables to the trends in marriage rates is nonetheless instructive. This decomposition is shown in Table 5. We first present the unadjusted change in the marriage rate for each group followed by two estimates of changes in marriage rates adjusted for shifts in the composition of the population based on the estimated first-stage regression coefficients and 1980 and 1990 composition weights, respectively. A comparison of the unadjusted and adjusted changes in marriage rates for each education group shows that changes in the composition of the population by age, education (within broader educational categories), and immigrant status do not explain much of the trend in marriage rates. The extent to which the variables included in our second-stage analysis can explain the remaining trends is examined in Part III of the table using the first difference (Panel A) and second difference (Panel B) regressions.

One reason an examination of these estimates may be of value is suggested by a consideration of the changes in the means of the labor and marriage market variables in our sample shown in Table A1. Based on our net supply variable, it appears that the male labor market has deteriorated the most for less-skilled men, both relative to other men and relative to women; these changes have been particularly pronounced

among blacks.[28] Taking into account within–industry-occupation demand shifts would likely reinforce this conclusion. What does our decomposition suggest about the impact of these trends?

Table 5 indicates that the changes over time in male net supply contributed to a decline in the marriage rate for all race and education groups, with the exception of blacks with less than 12 years of education.[29] The negative effect of this variable on marriage rates was particularly large among black high school graduates. However, with the exception of whites with some college education, the total effect of the three net supply variables (that is, the sum of the effects for female and male net labor market supply and female net marriage market supply) is estimated to explain only a small portion of the decline in the marriage rate or even to contribute to an increase. This finding is due to two factors that offset the negative effect of adverse male labor market trends on marriage. First, and quantitatively of considerable importance, results for the female marriage market net supply variable indicate that, for all but whites with some college education, the relative availability of men actually rose, increasing particularly sharply for high school graduates.[30] This marriage market availability factor, which reflects rising educational attainment among young women, contributes to an *increase* in marriage rates for all but white college-educated women. Second, Table A1 indicates that, by our measure, female net labor market supply increased for all but white women with less than 12 years of schooling. Thus, Table 5 shows a positive contribution to marriage rates of this variable for the other race-education groups, with the exception of black women with less than high school education in the second difference specification (the latter is due to a perverse result on the sign of this variable in the regression). This result could very well reflect our inability to detect increases in the within–industry-occupation demand for women workers.[31] Had we been able to detect such increases, we might have found that the labor market for some or all of the education groups of women actually improved over the 1980s, or at least did not deteriorate to the extent indicated by our measure.

Turning to results for the other variables, we see that changes in welfare benefits, a popular alternative explanation for the rising incidence of single parenthood, actually had a modest *positive* effect on marriage trends. This is because welfare benefits declined by about 9–10% in real terms on average in our sample during the 1980–90 period. Similarly, since there was little change in adult male unemployment rates, this factor was not found to have played a role in explaining the trends. Adult male wages did fall somewhat. While the impact of changes in this variable on trends was generally not found to be large, for black women in the ED = 12 and ED > 12 groups, the second difference results indicate that real wage changes could explain a 1.0–1.2 percentage point decline in marriage; this corresponds to 11.4–25.5% of the adjusted change in marriage rates for women in these education groups using 1990 composition weights.

[28]Blau and Kahn (1997) also found that during the 1979–88 period labor market supply and demand conditions changed least favorably for men relative to women among those with low skill levels.

[29]This finding for blacks reflects the weak results for blacks in the first and second difference specifications, rather than trends in means, which, as we have seen, were quite adverse for black men in this education category.

[30]The weighted changes in female marriage market net supply for blacks (Table A1) are negative for all education groups. This is possible to the extent that there were movements into and out of the noninstitutional population of the 111 MSAs on which the table is based.

[31]Increasing relative wages of women over the 1980s as well as the higher representation of women in white-collar and service jobs suggest this may well have been the case (see Katz and Murphy 1992; Blau and Kahn 1997).

While there appear to have been some offsetting changes in the impact of the explanatory variables, our analysis suggests that of the factors considered, trends in male labor market net supply and adult male real wages are those most likely to have contributed to the decline in marriage rates. Another factor that could have played a role but that we could not measure is an improvement in within–industry-occupation demand for female labor.

Possible Endogeneity Biases

We have found strong evidence, particularly for whites, that labor and marriage markets are related to differences in the incidence of marriage in both cross-section and fixed effects models. Nonetheless, even accounting for MSA fixed effects (first difference regressions) and MSA specific time trends (second difference regressions), there may be endogeneity biases. Decisions about marriage may influence educational attainment or there may be omitted variables that cause changes in both family formation decisions and educational attainment. For example, getting married as a teenager might lead a young woman to drop out of school, thus raising our measure of female labor market supply for the less educated and correspondingly lowering the measured supply of the more highly educated.[32] Moreover, changes in the labor market or welfare variables can influence migration. If migration is affected, then observed changes in the incidence of marriage may reflect the preexisting behavior of migrants rather than changes in the behavior of the current population. We now consider these two possible sources of bias.

First, on the issue of reverse causality going from decisions about marriage to decisions about schooling, note that in every case where the female labor and marriage market variables had statistically significant effects, they had opposite signs. For example, consider the results for less educated white women. For this education group, as for the others, better female labor markets tended to lower marriage while better female marriage markets tended to raise it. If reverse causality from marriage to educational decisions were the only underlying behavior our results were measuring, we would expect the coefficients on these two variables to have the same sign. The possible bias due to reverse causality could help to account for the positive coefficient on the female labor market net supply variable for the less educated: when a young woman drops out of school to marry, the net supply of the less educated and their marriage rate are both increased. However, the reverse causality mechanism also implies an upward bias on the female marriage market net supply variable for those with lower levels of schooling, but we predict and find negative effects of this variable on marriage. Looking at women with some college education leads to predictions about reverse causality bias opposite to our predictions for the less educated, since marriage may *lower* the supply of college-educated women. But where the results are statistically significant, we obtain the *same* signs on the labor market and marriage market variables for college-educated women as for those with less education. If reverse causality were the only factor driving our results, then we should have obtained opposite signs on a given supply variable for the high and low education groups.

Second, to what extent do our results reflect alterations in the composition of the population due to migration rather than true behavioral effects? To examine this question, we estimated the impact of our explanatory variables on migration based on second-stage regression equations similar to those employed for marital sta-

[32]Our demand variable could also be affected by schooling decisions, but since the demand measure is based on total MSA employment shares, it is not likely to be greatly influenced by the decisions of young people in our age group, who constitute a relatively small share of the total MSA population.

tus.[33] We found that, for whites, better female labor markets, worse female marriage markets, and worse male labor markets in the past are significantly positively associated with migration into the area. Similar findings are obtained for blacks in the cross-sections, but these do not hold up in the first difference models, where the signs on the net supply variables for blacks become unstable and the coefficients are usually not statistically insignificant. While unemployment, wages, and welfare benefits sometimes have statistically significant migration effects in the cross-sections, they do not hold up in the first difference equations. Inspection of the means of the variables for migrants and nonmigrants separately, within race and education groups, indicates that migrants are more likely than non-migrants to be married. This pattern implies that, whatever the causes of the relationships between past labor and marriage market conditions and migration, migrants are not driving the regression results in Table 2. If this were the case for whites, we would expect better female labor markets, worse female marriage markets, and worse male labor markets to *raise* the incidence of marriage, because each is positively associated with migration and, within race and education groups, migrants are on average more likely to be married. Of course, our findings for these variables are precisely the opposite.

[33]Results available upon request. The dependent variable is the MSA coefficient from a 1990 (1980) first-stage regression similar to equation (1) for the determinants of migration from another state or country in the last 5 years. This information is available only for a subset of our sample; when migration is analyzed, our sample of microdata on individuals is reduced by 50%. In the second-stage 1990 and 1980 cross-sections, we use 1980 (1970) levels of the explanatory variables, and in the 1980–90 first difference analyses, we use 1970–80 changes in the explanatory variables, so as to assure the causal ordering of the dependent variable. Since we do not have data to compute 1960–70 changes in the MSA-level explanatory variables, we approximate the second difference analysis by re-estimating the first difference migration equations and adding the 1965–70 MSA migration coefficient from the 1970 first-stage regression.

Conclusions

We have used 1970, 1980, and 1990 Census data to estimate the impact of local labor and marriage market conditions and welfare benefits on the incidence of marriage among young women (age 16–24). Our most robust findings are for the labor and marriage market variables for whites, which were found to have a strong impact on their marriage incidence in all education groups: better female labor markets, worse female marriage markets, and worse male labor markets were found to lower marriage rates. We also found some evidence of these effects for young black women, but the findings were sensitive to estimation technique. Interestingly, when the model is estimated for an older age group (25–34-year-olds), the results are similar for whites, but considerably stronger for blacks.

We additionally found an impact of overall labor market conditions, particularly for blacks: higher adult male unemployment rates and lower adult male average wage rates tended to reduce marriage rates. The results for welfare benefits tended to be sensitive to specification. In cross-sectional analyses, there is a negative association between welfare benefits and marriage. However, this association becomes weaker when we control for fixed effects, a common theme in research on the effects of welfare on family formation decisions.

While our findings provide strong evidence that labor and marriage market conditions influence marriage rates, the absence of a measure of within–industry-occupation shifts in demand makes it difficult for us to evaluate their quantitative impact on time trends. However, to the extent that economic variables are important in explaining the decline in marriage for young women, our results suggest that adverse trends in demand and supply conditions for young men and declining adult male real wages are the most likely factors contributing to this trend.

Is the decline in marriage a cause for concern? While it is possible that falling marriage rates among young women merely represent a delay in marriage, the incidence of children among this group hardly changed over the 1980s. This has meant that a greater share of children are growing up in single parent families. Among the non-enrolled, the rise in single parenthood has been particularly pronounced among the least educated. The major forces that have produced a deterioration in the labor market for less-skilled men—technological change and international trade—give no sign of abating in strength. Our results imply that such forces will continue to inhibit marriage for white women with a high school degree or less education (who would traditionally marry men in the affected groups) and perhaps for less educated black women as well.

Table A1
1980-1990 Changes in Weighted Means of Explanatory Variables for Women 16-24 Years Old, 111 MSA Regression Subsample

	White (non-Hispanic)			*Black (non-Hispanic)*		
Description	*ED < 12*	*ED = 12*	*ED > 12*	*ED < 12*	*ED = 12*	*ED > 12*
Female Net Supply (labor market)	-0.038	0.027	0.021	0.143	0.157	0.053
Female Net Supply (marriage market)	-0.044	-0.138	0.055	-0.055	-0.190	-0.022
Male Net Supply (labor market)	0.083	0.071	0.048	0.316	0.209	0.071
Log Welfare Benefits	-0.099	-0.100	-0.096	-0.096	-0.092	-0.093
Log Average Male Wage (25-54 years)	-0.035	-0.034	-0.026	-0.033	-0.032	-0.032
Male Unemployment Rate (25-54 years)	0.004	0.004	0.004	0.004	0.004	0.004

Note: Means are weighted by the sum of the 1980 and 1990 population of women in the indicated age-race-education group.

REFERENCES

Bartik, Timothy J. 1993. "Who Benefits from Local Job Growth: Migrants or the Original Residents?" *Regional Studies,* Vol. 27, No. 4, pp. 297-311.

Becker, Gary S. 1981. *A Treatise on the Family.* Cambridge, Mass.: Harvard University Press.

Besley, T., and A. Case. 1994. "Unnatural Experiments? Estimating the Incidence of Endogenous Policies." NBER Working Paper 4956 (December).

Blank, Rebecca. 1995. "Teen Pregnancy: Government Programs Are Not the Cause." *Feminist Economics,* Vol. 1, No. 2 (Summer), pp. 47-58.

Blau, Francine D. 1998. "Trends in the Economic Well-Being of Women, 1970-1995." *Journal of Economic Literature,* Vol. 36, No. 1 (March), pp. 112-65.

Blau, Francine D., Marianne A. Ferber, and Anne E. Winkler. 1998. *The Economics of Women, Men, and Work,* 3rd ed. Upper Saddle River, N.J.: Prentice-Hall.

Blau, Francine D., and Lawrence M. Kahn. 1981. "Causes and Consequences of Layoffs." *Economic Inquiry,* Vol. 20, No. 2 (April), pp. 270-96.

____. 1997. "Swimming Upstream: Trends in the Gender Wage Differential in the 1980s." *Journal of Labor Economics,* Vol. 15, No. 1 (January), pp. 1-42.

Borjas, George J., Richard B. Freeman, and Lawrence F. Katz. 1997. "How Much Do Immigration and Trade Affect Labor Market Outcomes?" *Brookings Papers on Economic Activity,* No. 1, pp. 1-67.

Bound, John, and Harry Holzer. 1993. "Industrial Shifts, Skills Levels, and the Labor Market for White and Black Males." *Review of Economics and Statistics,* Vol. 75, No. 3 (August), pp. 387-96.

____. 2000. "Demand Shifts, Population Adjustments, and Labor Market Outcomes during the 1980s." *Journal of Labor Economics,* Vol. 18, No. 1 (January), pp. 20–54.

Burtless, Gary. 1994. "The Employment Prospects of Welfare Recipients." Working Paper, Brookings Institution (August).

Darity, William A., Jr., and Samuel L. Myers. 1995. "Family Structure and the Marginalization of Black Men: Policy Implications." In M. Belinda Tucker and Claudia Mitchell-Kernan, eds., *The Decline in Marriage among African Americans.* New York: Russell

Sage Foundation, pp. 263-308.

Ehrenberg, Ronald G., and Robert S. Smith. 1997. *Modern Labor Economics: Theory and Public Policy*, 6th ed. New York: Addison-Wesley.

Ellwood, David, and Mary Jo Bane. 1985. "The Impact of AFDC on Family Structure and Living Arrangements." In Ronald Ehrenberg, ed., *Research in Labor Economics*. Greenwich, Conn.: JAI Press, pp. 137-207.

Ellwood, David, and Jonathan Crane. 1990. "Family Change among Black Americans: What Do We Know?" *Journal of Economic Perspectives*, Vol. 4, No. 4 (Fall), pp. 65-84.

Freeman, Richard B. 1991. "Employment and Earnings of Disadvantaged Young Men in a Labor Shortage Economy." In Christopher Jencks and Paul Peterson, eds., *The Urban Underclass*. Washington, D.C.: Brookings, pp. 103-21.

Grossbard-Shechtman, Shoshana. 1993. *On the Economics of Marriage: A Theory of Marriage, Labor, and Divorce*. Boulder, Colo.: Westview.

Hamermesh, Daniel S. 2000. "The Craft of Labormetrics." *Industrial and Labor Relations Review*, Vol. 53, No. 3 (April), pp. 363–80.

Hoynes, Hilary Williamson. 1997. "Does Welfare Play Any Role in Female Headship Decisions?" *Journal of Public Economics*, Vol. 65, No. 2, pp. 89-117.

Jaeger, David. 1997. "Reconciling the Old and New Census Bureau Education Questions: Recommendations for Researchers." *Journal of Business and Economic Statistics*, Vol. 15, No. 3 (July), pp. 300-309.

Katz, Lawrence F., and Kevin M. Murphy. 1992. "Changes in Relative Wages, 1963-1987: Supply and Demand Factors." *Quarterly Journal of Economics*, Vol. 107, No. 1 (February), pp. 35-78.

Korenman, Sanders, and David Neumark. 1991. "Does Marriage Really Make Men More Productive?" *Journal of Human Resources*, Vol. 26, No. 2 (Spring), pp. 282-307.

Lichter, Daniel T., Diane K. McLaughlin, George Kephart, and David J. Landry. 1992. "Race and the Retreat from Marriage: A Shortage of Marriageable Men?" *American Sociological Review*, Vol. 57, No. 6 (December), pp. 781-99.

London, Rebecca. 1998. "Trends in Single Mothers' Living Arrangements from 1970 to 1995: Correcting the Current Population Survey." *Demography*, Vol. 35, No. 1 (February), pp. 125-31.

Mare, Robert D., and Christopher Winship. 1991. "Socioeconomic Change and the Decline of Marriage for Blacks and Whites." In Christopher Jencks and Paul E. Peterson, eds., *The Urban Underclass*. Washington, D.C.: Brookings Institution, pp. 175-202.

McLanahan, Sara, and Lynne Casper. 1995. "Growing Diversity and Inequality in the American Family." In Reynolds Farley, ed., *State of the Union: America in the 1990s*, Vol. 2. New York: Russell Sage Foundation, pp. 1-45.

Moffitt, Robert. 1990. "The Effect of the U.S. Welfare System on Marital Status." *Journal of Public Economics*, Vol. 41, No. 1 (February), pp. 101-24.

____. 1998. "The Effect of Welfare on Marriage and Fertility: What Do We Know and What Do We Need to Know?" In Robert Moffitt, ed., *The Effect of Welfare on the Family and Reproductive Behavior*. Washington, D.C.: National Research Council, pp. 50-97.

Schultz, T. Paul 1994. "Marital Status and Fertility in the United States: Welfare and Labor and in the Market Effects." *Journal of Human Resources*, Vol. 29, No. 2 (Spring), pp. 636-69.

South, Scott J., and Kim M. Lloyd. 1992. "Marriage Markets and Nonmarital Fertility in the United States." *Demography*, Vol. 29, No. 2 (May), pp. 247-64.

Topel, Robert. 1986. "Local Labor Markets." *Journal of Political Economy*, Vol. 94, No. 3 (June, Part 2), pp. S111–S143.

Tucker, Belinda, and Claudia Mitchell-Kernan. 1990. "New Trends in Black American Interracial Marriage: The Social Structural Context." *Journal of Marriage and the Family*, Vol. 52, No. 1 (February), pp. 209-18.

White, Lynn. 1981. "A Note on Racial Differences in the Effect of Female Economic Opportunity on Marriage Rates." *Demography*, Vol. 18, No. 3 (August), pp. 349-54.

Wilson, William Julius. 1987. *The Truly Disadvantaged*. Chicago: University of Chicago Press.

Wood, Robert G. 1995. "Marriage Rates and Marriageable Men: A Test of the Wilson Hypothesis." *Journal of Human Resources*, Vol. 30, No. 1 (Winter), pp. 163-93.