

**Marrying in a Growing Unequal Society: The Impact of Wage
Structure Changes on Marriage Trends 1976-2002**

Lijun Yang
Department of Sociology
University of Pennsylvania
3718 Locust Walk
McNeil Building
Philadelphia, PA 19104-6299
lijunyg@sas.upenn.edu
267-972-2893

**This paper was presented at University of Pennsylvania. It is also accepted for
presentation at 2009 American Sociological Association session on Gender, the
Economy, and Work.**

**This paper benefited greatly from the thoughtful comments and critiques on earlier
drafts by Paul Allison, Frank Furstenberg, Janice Madden, Hyunjoon Park, Kristen
Harknett, and Herbert Smith. I greatly acknowledge financial support from the
Pollak Summer Research Fellowship at the University of Pennsylvania.**

Abstract

American men have increasingly delayed their first marriage over the past four decades. The retreat from marriage that is characterized by both later and less frequent marriage, coupled with increases in the single-mother family, have attracted substantial theoretical and policy debates on both its structural causes and directions of future change. The current study draws data from the Cumulative Files of Current Population Survey June Surveys and examines how changes in labor market rewards to schooling relates to the trend toward lower marriage rates among less educated men, especially less educated black men. Based on the economic model of marriage formation, this study extends Wilson and Neckerman's (1986) thesis on "the pool of marriageable men", showing that economy-wide wage structure changes and the consequent real wage losses among the noncollege educated partly explain marriage disparity by education and changes over time for black and white men. Labor market bias toward skills results in a more precipitous decline in marriage for noncollege educated men relative to college educated men. The impact of wage structure changes on educational differentials in marriage trends is greater for black men than for white men. Further, an increased labor market "bias" towards schooling results in a divergence in marriage rates between college educated and noncollege educated black men, but a convergence in marriage rates between college educated and noncollege educated white men since the late 1970s. For both black and white men, the relationship between the adverse shift in wage structure and the greater marriage decline among noncollege educated men is the economic consequence of sectoral shift between goods production and services, which results in a decline of relatively well-paid manufacturing employment where unskilled men used to be disproportionately represented.

American men have increasingly delayed their first marriage over the past four decades. Between 1970 and 2003, the median age at first marriage has increased from 23 years to 27 years (U.S. Bureau of Census 2003). Although all schooling and racial groups have delayed marriage, the trend is greater among the less educated and blacks. For a segment of the black population, marriage delays are essentially nonmarriage. For example, based on the experiences of women who come of age between 1945 and 1964, Goldstein and Kenny (2001) predict that the proportion who eventually marry declines moderately for college educated non-Hispanic white women, but declines by over twenty percentage points for noncollege educated black women. Marriage delays also influence other family patterns such as divorce, family size, birth timing, and birth spacing (Booth and Edwards 1985; Coale 1989; Marini 1981; Anderson 1986). More importantly, marriage delays, coupled with a high level of nonmarital fertility, have yielded large increases in the number of female-headed families with dependent children, the type of family that is most susceptible to poverty (McLanahan and Sandefur 1994; Levy 1995).

Social scientists have offered several explanations of this marital behavior change (Espenshade 1985), among which the economic perspective has received the most attention.¹ It is argued that marriage delays since the early 1970s are due to the wage effect of young men's deteriorating labor market position, which simultaneously decreases men's marriage incentive and the supply of marriageable men (Becker 1981; Oppenheimer 1988; Wilson 1987). This economic explanation has received strong empirical support in individual-level models and meso-level models that emphasize the marriage timing effects of men's socioeconomic characteristics and the economic opportunities in the local marriage market, respectively. However, few studies are

designed to examine temporal change in the relationship between men's socioeconomic characteristics and marriage formation, and how the pattern of temporal change relates to macro economic context, thus limiting our understanding of the structural and institutional roots of the trend toward lower marriage rates and its likely direction of ongoing change in the future.

In the past four decades, changes in labor market institutions and in economic conditions worked jointly to create a historic shift in how the U.S. labor market allocates its rewards among workers (Borjas 2003). The current study examines how changes in labor market rewards to schooling relate to the trend toward lower marriage rates among men, especially less educated black men.

ECONOMIC OPPORTUNITIES AND MEN'S AGE AT FIRST MARRIAGE

According to the economic theory of marriage, men having a favorable labor market position are more likely to marry, because they are more attractive on the marriage market and have greater ability to set up independent households and to perform conventional breadwinner roles (Hajnal 1965; Easterlin 1978). Support for this hypothesis is fairly robust, using a wide range of measures of men's socioeconomic characteristics including employment status, earnings, career development, occupational prestige, and the level of educational attainment, and multiple data sources (Oppenheimer, Kalmijn, and Lim 1997; Sassler and Goldscheider 2004; Bennett, Bloom, and Craig 1989; Clarkberg 1999; Hogan 1978; Mare and Winship 1991). Local marriage markets that provide men greater economic opportunities are also found to promote marriage formation (Lichter et al. 1992). Black-white differentials in economic

opportunities play an important role in black-white differences in marriage rates. For Wilson (1987), a shortage of economically attractive men is a serious structural impediment for black women to marry. Subsequent study by Lichter et al. (1992) provides additional evidence showing that compared to other covariates, indicators of the relative supply of economically attractive males account for the largest proportion of black-white differences in marriage rates. Racial differences in the pace of transition to steady employment are also found to relate to black-white differences in marriage timing (Oppenheimer, Kalmijn, and Lim 1997).

Despite these consistent findings on the relationship between socioeconomic status and marriage formation for men, their implications for the trend toward lower marriage rates as well as the underlying structural explanations vary. This arises because changes in labor market structures and labor market rewards to skills have changed the attributes that affect a man's economic fortunes over time. As a consequence, the relationship between men's socioeconomic characteristics and marriage formation not only depends upon the economic circumstances, but also the historical periods of interest. For instance, although having a job has been consistently shown to promote marriage, the increase in "lousy jobs" which do not allow men to support a family of four by themselves (Burtless 1990) has raised the concern whether being employed could adequately capture a man's relative and absolute socioeconomic standing over time. Moreover, unemployment is closely related to business cycle, and thus often fails to provide information about longer time underemployed and discouraged workers (Blau, Ferber, and Winkler 2002), the demographic groups who have experienced the sharpest marriage decline since the early 1970s.

Studies attempting to use employment status to explain marriage trends provide mixed results. In a cohort-specific analysis, Testa and Krogh (1995) find an increase in the importance of employment status on men's likelihood of marriage over time. But since their study is based on a rather small sample of black men living in Chicago high poverty census tracts, it may not reflect the causes of the national trend toward lower marriage rates. In fact, a number of studies using national samples show the relationship between employment status and men's likelihood of marriage remains unchanged (Jencks 1989; Lerman 1989; Mare and Winship 1991; Ellwood and Rodda 1990; Wilson and Neckerman 1987; Testa 1991). A most recent study by Sweeney (2002) even finds a moderate decline in the effect of employment status on marriage formation for white men. Given that both employed and unemployed men have experienced noticeable marriage declines since the early 1970s, changes in employment opportunities will not be the driving forces for the trend toward lower marriage rates. Indeed, although the overall national unemployment rate was at its lowest level in 30 years in the longest economic expansion of the early 1990s, the trend toward lower marriage rates continued. Therefore, as Mare and Winship (1991) concluded in their study that changes in employment status cannot be driving force underlying the trends towards lower marriage rates since the early 1970s.

Earnings and career maturity are less ambiguous as a measure of men's current socioeconomic standing than employment status. However, as schooling is prolonged, such data are not observed for an increasing proportion of young men who have not entered the labor force. Although school enrollment delays marrying, a number of marriages are contracted when young men are still students. The combining of the

student role with spouse role is more often observed among men pursuing higher education (Rindfuss, Swicegood, and Rosenfeld 1987), indicating young adult men probably plan their marriages on the basis of prospective socioeconomic standing rather than their current one. Indeed, both Becker (1981) and Oppenheimer (1988) argue that men's economic potential could also play an important role when they first enter marriage. For Oppenheimer, marriage delays principally arise from uncertainties of young men's labor market positions, which inhibits assortative mating.

In contemporary society, schooling is an important indicator of men's economic potential. It reflects not only what a man's future economic prospects are likely to be but also when he might achieve it. Since the early 1970s, changes in the structure of the determinants of labor market success have led to an increase in the effects of schooling on men's economic prospects. This is reflected not only in the widening wage gaps between schooling groups (Levy 1995; Murphy and Welch 1992; Katz and Autor 1999), but more seriously, the divergence in the economic fortunes between college educated and noncollege educated men. This arises because wage growth has been greater for higher wage groups. So when wage growth stagnated in the 1980s, the decade that marriage declined the most, less educated male workers whose wages were below the median experienced significant real-wage losses (Smith 2000).

Widening wage gaps by education reflect structural changes in labor demand which adversely affected the less educated and minorities, especially less educated black men. For example, although both less educated black men and white men are adversely affected by the shifts from goods production to services industries, from blue-collar jobs to white collar jobs within sectors, the economic consequences are greater for less

educated black men. Compared to their white counterparts, less educated black men are more vulnerable to the widening wage inequality.² This arises partly because less educated black men are more likely than less educated white men to be at the lower end of wage distributions, and partly because the shift in labor market demand for skills has been accompanied by other labor market changes that worked against less educated black men. For example, sectoral shifts between goods production and services industries are often accompanied by a decline in unionism, which used to disproportionately benefit less educated black men both in employment opportunities and wage gains (Leonard 1985).³ The suburbanization of work, in conjunction with persisting residential segregation, creates additional employment barriers for poor black men (Freeman and Medoff 1984). Furthermore, although affirmative action has greatly improved the employment opportunities of black men, less-skilled black men still have great difficulty in finding and holding jobs (Leonard 1984), and the wage effect of affirmative action is weak (Leonard 1996). As federal enforcement of affirmative action and antidiscrimination laws and regulations weakened since the 1980s, the battle against employment discrimination has not yet progressed far enough to outweigh the adverse labor demand across industry and occupation with respect to minorities (Juhn, Murphy, and Pierce 1991). Rodger and Spriggs (1996) show that racial differentials in the market returns to test scores remain. Employers continue to be reluctant to hire blacks for jobs that require significant cognitive skills and credentials (Holzer 1996). Also, on the supply side, the recent increase in Hispanic immigrants, coupled with some employers' preference for hiring less educated Hispanics in low-level positions, poses another barrier to the socioeconomic advancement of less educated black men (Orfield 1992).

Consequently, although the U.S. economy overall has been strong in the past twenty-five years, less educated men, especially less educated black men, appear to benefit less from this economic growth. Between 1963 and 1997, the median incomes for college educated men increased by 22%, whereas noncollege educated men experienced considerable erosion in incomes. By 2001, for example, male college graduates earn 90% more than male high school graduates, compared to 47% in 1979 (Autor, Katz, and Schettini 2003).

The economic consequences of wage structure changes have important implications for marriage rates. Although changes in women's labor market behavior and the subsequent small increases in gender equity in the household division of labor have probably led to an increasing importance for women's socioeconomic status in marrying (Cherlin 2000), there is no evidence indicative of a decline in the importance of men's socioeconomic status in marrying. To the contrary, contemporaneous shifts in consumption patterns and increases in perceived economic requirements of supporting a family imply an increase in the importance of men's socioeconomic characteristics for marriage (Sweeney 2002; Lloyd and South 1996; Sassler and Schoen 1999). Indeed, Sweeney's (2002) study of two birth cohorts of men who come of age in the late 1960s and the early 1980s finds a growth over time in the strength of the relationship between schooling and marriage formation. Despite contradictory findings on the effect of the decline in men's economic opportunities on marriage declines among whites (McLanahan and Casper 1995), for low-income blacks, men's deteriorating labor market prospects has been found to be one of the biggest barriers to marriage (Moffitt 2000),⁴

and account for a larger portion of marriage declines between 1970 and 1990 than those factors reflecting women's economic independence (McLanahan and Casper 1995).

Compared to white men, the marital behavior of black men is more subject to the adverse shift in wage structures. Blacks not only earn less than whites, but also are more sensitive to the economic underpinning of marriage than whites because their greater economic deprivation heightens the saliency of economic readiness for marriage (Bulcroft and Bulcroft 1993; Oppenheimer, Kalmijn, and Lim 1997; Barich and Bielby 1996). Compared to white women, black women place greater emphasis on economic stability in making their marital timing decision and are less willing to marry a man with fewer resources than themselves (Bulcroft and Bulcroft 1993). They are also more concerned with the economic benefit of marriage (Tucker 2000), and regard marriage as an important channel of upward socioeconomic mobility (Edin 2000). Thus, in spite of a high value placed on marriage (Bulcroft and Bulcroft 1993), the relatively smaller male-female wage differences for blacks, greater availability of financial support from extended kin in black families and government welfare programs allow low-income black women to avoid marrying low-income men (Moffitt, Reville, and Winkler 1998). For some of them, the costs of marrying simply exceed the economic benefit.⁵ Also, although black men are more liberal than white men on women's employment outside home (Blee and Tickamyer 1995), they hold more traditional attitudes toward the gender division of labor within the household (Taylor 1998), and place greater emphasis on the economic viability of marriage (Bulcroft and Bulcroft 1993). Because black men have a weak labor market position, their greater expectations for wives' household work are more likely to create tension within the family, which coupled with the negative

psychological effects of failing to fulfill the breadwinner role of manhood (Hatchett, Veroff, and Douvan 1995), lead many poor black men to postpone marriage or forgo it completely.

Although schooling delays marriage (Thornton et al. 1995; Goldscheider and Waite 1986), the delaying effect does not lead to lower ultimate marriage rates and also only occurs to people in their early twenties. For college educated men, the economic prospects that a college degree guarantees either encourage them to marry at a later stage of their educational career (Bennett, Bloom, and Craig 1989), or accelerate their transition to marriage after they start working (Oppenheimer 2000). For educated men, marriage delays have not resulted in a reduction in the proportion of ever marrying. This marriage timing effect of educational attainment does not account for less marriage among less educated men. Their longer-term economic hardship not only delays marriage but also leads a large proportion of them to forgo marriage. Given that cohabitation, a state that resembles singlehood more than marriage, requires less economic resources than marriage (Clarkberg 1999) and is found to be more prevalent among the less educated, the retreat from marriage among the less educated has led several scholars (e.g., Cherlin 1992) to argue that cohabitation probably is adopted by poor men to substitute for traditional marriage.

I propose three hypotheses: First, rises in the labor market bias toward skills exacerbates the economic position of less educated men, resulting in a faster marriage decline among them. In another words, the increasing effects of schooling on earnings account for the changes in marriage gap between college educated and noncollege educated men over time. Second, the effect of the adverse shift in labor market demand

for skills on the timing of marriage is larger for less educated blacks than for less educated white men, because men's socioeconomic standing plays a greater role in marriage formation for blacks than for whites, on the one hand, and noncollege educated black men experienced larger real-wage losses than their white counterpart due to wage structure changes, on the other hand. Third, the economic consequence of the adverse shift in labor market returns to schooling is a sector shift from manufacturing to services, reducing the representation of noncollege educated men in relatively well-paid manufacturing jobs and their economic prospects of marrying.

The current study differs from previous research on the economic causes of marriage declines in three ways. First, most previous studies emphasize the secular trend of marriage declines experienced by all schooling groups, especially by women (e.g., Qian and Preston 1993; Raymo and Iwasawa 2005). The current study concentrates on the marriage gap between college educated and noncollege educated men, examining how changes in the marriage gap between college educated and noncollege educated men relate to the shifts in the wage structures. This focus on the marriage gap between college educated and noncollege educated men arises from two considerations: (1) Although educational differences in the timing of marriage are less important than the "cross-the board" declines in marriage (Oppenheimer, Blossfeld, and Wackerow 1995; Raymo 2003), the decline in marriage has been so great among the less educated that causes many social problems. (2) The baseline against which marriage delay should be measured itself changes with the secular trend of marriage decline. As such, the marriage gap between college educated and noncollege educated rather than their respective levels of marriage rates is a good measure of marriage delay. Second, most previous studies on

the economic causes of marriage declines assume a time invariant relationship between men's socioeconomic characteristics and marriage,⁶ and marriage declines arise from a downward shift in the average male's socioeconomic characteristics (e.g., McLanahan and Casper 1995). These assumptions ignore the widening inequality across schooling groups and the diversity in the pathways toward lower marriage rates, as both the college educated, a group that did not experience wage loss, and the noncollege educated, a group whose labor market positions have been greatly eroded, have significantly delayed marriage. In contrast, the current study examines how marriage declines arise from both the change in the effect of socioeconomic characteristics on marriage as well as the change in their levels across schooling groups. Third, although some studies using schooling to study marriage trend allow for a time variant relationship between schooling and marriage (Raymo 2003), they often fail to include measures of labor market structures, important structural mechanisms which determine the rate of labor market returns to schooling, undermining the proposed economic explanation of marriage declines. The current study, in contrast, explicitly includes measures of labor market returns to schooling, and examines how changes in labor market rewards to schooling change the economic prospects of men of each schooling group, resulting in various paces of marriage declines across schooling groups since the 1970s.

DATA

I use data set from the Cumulative Files of Current Population Survey June Surveys (CPSJ), a national representative sample of civilian noninstitutionalized persons living in households. The June surveys contain the core labor force data included in the monthly

CPS, plus a special series of variables on fertility, child rearing, and marital history. They allow study of the relationships between schooling and marriage formation, and how the relationships change in response to changes in labor market returns to schooling, resulting either a divergence or a convergence in marriage rates between the college educated and the noncollege educated. I use twenty single year time periods from 1976 to 2002, during which marriage declines correspond to a rise in labor market returns to schooling.⁷ The sample includes 30,650 black men and 251,649 non-Hispanic white men age 24-33 who are more likely to have completed formal schooling and are in the transition to marriage.

The dependent variable is a binary measure of men's marital status at the time of survey, with 1=ever married and 0=never married. The independent variables include schooling, the rate of returns to schooling, and the percentage of noncollege educated males employed in manufacturing industries. Following the practice of previous studies on marriage formation (e.g., Xie et al. 2003; Raymo 2003), schooling is coded as a four-category variable: a college degree or above, some college education, high school diploma, and less than high school. The rate of returns to schooling is measured as the percentage median male weekly wage differentials between the college educated and the noncollege educated age 18-65 who reported weekly wages. This results in four measures: between college graduates and high school dropouts, between college graduates and high school graduates, between those with some college education and high school dropouts, and between those with some college education and high school graduates. The rate of returns to schooling is measured using the Current Population Survey March Surveys (CPSM), because unlike the June surveys, the March surveys are

an annual survey and measure men's weekly wages since 1962. Following Lichter, McLaughlin and Ribar (2002) who assume that marriage behavior may respond to long run rather than short run changes in economic conditions, the rate of returns to schooling for each single year time period is the five-year average rate of returns to schooling. For example, the rate of returns to schooling for the year of 1976 is the average rate of returns to schooling from 1972 to 1976. Because there is no evidence on racial differences in the rate of returns to schooling as defined above, the rate of returns to schooling is measured by pooling blacks and whites together. The third independent variable measures the sectoral shift between goods production and services industries. It is defined as the percentage of male workers age 18-65 currently employed in manufacturing industries. Similar to way the rate of return to schooling is measured, the percentage of male workers age 18-65 currently employed in manufacturing industries is also measured using CPSM. For each single year time period, it is defined as the five-year average percentage of male workers age 18-65 currently employed in manufacturing industries. It is measured separately for blacks and whites.

There are five control variables, including age, employment status, whether the respondent lives in the South, veteran status, and the time period. The single year time period is an interval variable, with 1=1976, 2=1977, 4=1979, ..., 27=2002.

In the following four sections, the trend of marriage declines and wage structure changes are first described, followed by model specifications. The third section reports regression results, and the forth section are conclusion and discussion.

MARRIAGE TRENDS AND WAGE STRUCTURE CHANGES: 1976-2002

Figure 1 shows an upward trend for three of the four measures of the rate of returns to schooling. In 1979, for example, a college man earns about 1.8 times as much as a male high school dropout, but by 2002 this earnings differential reaches to 3.0 times. When comparison is made between high school dropouts and those with some college education, the trend is less dramatic but a similar pattern emerges. High school graduates also experienced wage losses relative to the college educated, though the magnitude is smaller. In 1979, a college man earns 47% more than a high school male worker; this figure rises to nearly 110% by 2002. The earnings disparity between high school graduates and those with some college education did not change significantly since 1979. On average, men with some college education earn about 7% more than high school graduates.

The observed secular trend of increases in college premiums reflects a labor market dominated over the studied period by a relative labor market demand favoring more educated workers. Because there have been a long-run growth in the relative supply of more educated workers and a long-run decrease in the relative supply of less educated workers, the trend of increases in college premiums implies that the relative demand changes favoring more educated workers are dominant and necessary to explain the trend of college premiums. In the language of supply and demand, the labor market advantage of less educated males arising from the long-run decrease in the relative supply of noncollege educated workers is largely offset by the adverse shift in labor demand with respect to less educated workers. In addition, although young men of recent cohorts who did not go to college probably have a lower level of skills than young men of older

cohorts, a demographic change that tends to inflate the trend of college premiums, this compositional change is unlikely to bias the observed trend of college premiums. This is because inequality within more educated workers has increased. In another words, educational expansion has enabled some lower-level skilled persons to enter college, which may bias down the trend of college premiums. In fact, because within-group inequality, a proxy of unmeasured skills, started to expand in the early 1970s while the rise of college premium started in the late 1970s, Katz and Murphy (1992) argued that returns to skills and returns to education probably are two distinct economic phenomena. Moreover, because CPS tends to undercount high school dropouts who are not in the labor force, as male labor force participation rates declined over time, an increasing number of least skilled high school dropouts is not counted in the CPS data, reducing the problem of positive selection on the trend of college premiums.

[Figure 1 is inserted here]

As shown in Figure 2, corresponding to the rising trend of college premiums is a sharp decline in the proportion of noncollege educated men employed in relatively well-paid manufacturing jobs since 1976. Between 1976 and 2002, the proportion of white high school dropouts working in the manufacturing industries drops 12 percentage points from 28% to 16%; the proportion of white high school graduates working in the manufacturing industries drops 10 percentage points from 29% to 19%. Black high school graduates and high school dropouts experienced the same magnitude of decline in the employment in manufacturing industries. For both groups, the proportion of black men working in manufacturing industries drops 16 percentage points between 1976 and

2002, from 32% to 16% for high school graduates and from 26% to 10% for high school dropouts, respectively.

[Figure 2 is inserted here]

Corresponding to the changing wage structures and the divergence of the economic fates between the college educated and the noncollege educated is the differential pace of marriage declines across schooling groups. As shown in Table 1, although all schooling groups have retreated from marriage since the early 1970s, the degree of marriage declines is more severe for the noncollege educated, especially noncollege educated black men. Between 1976 and 2002, for example, the proportion of black men age 24-33 who have ever married drops 34 percentage points for both high school dropouts and high school graduates, compared to 18 percentage points for college graduates and 25 percentage points for black men with some college education, respectively. As a result, although black high school dropouts are more likely to marry between ages 24-33 than college black men in the late 1970s, their faster rates of marriage decline thereafter lead them to be the least likely to marry across all schooling groups by the early 2000s. For example, in the early 1970s, 66% black high school dropouts age 24-33, compared to 63% college black males, have married at least once, but the proportion drops to only one-third by the early 2000s, 12% less than that for college black males. For black high school graduates, marriage declines are less severe than black high school dropouts, but still far exceed the college educated. Between 1976 and 1979, nearly 74% high school graduates age 24-33 married at least once. By the early 2000s, however, this proportion drops to 40%.

Although noncollege educated white men experienced a faster rate of marriage declines than college white men, the differences are smaller than for their black counterparts. Between 1976 and the early 2000s, marriage rates for white high school dropouts dropped 24 percentage points, compared to 17 percentage points for college white men. In contrast to noncollege educated black men who are less likely to marry than college educated black men, noncollege educated white men age 24-33 have been consistently found to be more likely to marry than college white men of the same age range. This black-white difference in marriage formation across schooling groups is partly due to a weaker effect of schooling on marriage formation for whites, and partly due to the wide age range considered here so that some college white men just entered the labor market and had not yet made the transition to marriage. Nevertheless the gap has narrowed over time due to a faster rate of marriage decline for noncollege educated white men. By the early 2000s, marriage differentials between schooling groups have disappeared for white men. For both the college educated and the noncollege educated, nearly 60% white men age 24-33 has married at least once.

[Table 1 is inserted here]

MODEL

The repeated cross-sectional CPSJ data permit an estimation of models in which the relationship between schooling and the likelihood of marriage is allowed to vary depending on labor market returns to schooling. The model is estimated using the method of the generalized least squares (EGLS). It takes the form:

$$\text{Log} [P_{it}/(1-P_{it})] = \beta_0 + \beta_1 T + \beta_2 Z_t + \beta_3 X_{1it} + \beta_4 (Z_t \times X_{it}), \quad (1)$$

Here, the dependent variable is the logit transformation of the binary measure of marital status. The independent variables and control variables are linear in $\text{Log} [P_{it}/(1-P_{it})]$, the log-odds of marriage for the i th man who comes of age at time period t (i.e., P is the probability of marriage). The independent variables and control variables include T =the time period one comes of age, Z_t =the rate of returns to schooling for time period t , X_{it} =schooling, and the interaction term between schooling and the rate of returns to schooling $Z_t \times X_{it}$. The subscripts i, t , refer to individuals and the time period, respectively, where $i=1, 2, \dots, T_i$ and $T=1, 2, \dots, 27$.

Following the way of measuring the rate of returns to schooling, the relationship between the rate of returns to schooling and the trend of marriage across schooling groups is examined through four regression equations that compare college graduates and high school dropouts, those with some college education and high school dropouts, college graduates and high school graduates, and those with some college education and high school graduates, respectively. For each regression equation, schooling is specified as a binary variable with the college educated being coded as one and the noncollege educated as zero. If the coefficient for the interaction term between schooling and the rate of returns to schooling β_4 is positive and statistically significant, then hypothesis one is supported. That is, rises in the labor market bias toward skills exacerbates the economic position of less educated men, resulting in a faster marriage decline among them. The analysis is conducted separately for blacks and whites. If β_4 is larger for blacks than for whites, then hypothesis two is supported, that is, the effect of the adverse shift in labor market demand for skills on the timing of marriage is larger for less educated blacks than for less educated white men.

In model (2), men's sociodemographic characteristics are added to model (1). It is expected that part of the reason for the faster marriage declines of noncollege educated men relative to college educated men is due to their differences in sociodemographic characteristics. Model (2) has the form:

$$\text{Log} [P_{it}/(1-P_{it})] = \beta_0 + \beta_1 T + \beta_2 Z_t + \beta_3 X_{1it} + \beta_4 (Z_t \times X_{it}) + \mathbf{X}'_{it} \mathbf{B}, \quad (2)$$

Here, \mathbf{X}_{it} = a vector of control variables (i.e., age, employment status, whether the respondent lives in the South, veteran status), other variables and subscripts are defined the same as in model (1).

To test whether the effects of the adverse shift in labor market returns to schooling on marriage trends are the consequence of the sectoral shift between goods-production to services industries, I break down the level of educational attainment into three categories, assuming that noncollege educated men employed in manufacturing industries have a degree that differs from that of noncollege educated men employed in other industries in terms of labor market rewards. Two dummy variables are created. The first dummy variable (X_{2it}) represents noncollege educated men employed in the manufacturing industries (1=yes), and the second dummy variable (X_{3it}) represents noncollege educated men who are not employed in the manufacturing industries (1=yes). The reference group is the college educated. Two interaction terms between noncollege educated men employed in the manufacturing industries and the rate of returns to schooling ($X_{2it} \times Z_t$), between noncollege educated men who are not employed in the manufacturing industries and the rate of returns to schooling ($X_{3it} \times Z_t$) are added to equation (2) to replace the interaction term between schooling and the rate of returns to schooling $Z_t \times X_{1it}$. This specification allows the differences in the rate of marriage

declines between the noncollege educated and the college educated to vary depending on whether noncollege educated men are employed in the manufacturing industries or not. The main effect of schooling, however, does not depend on whether noncollege educated men are employed in the manufacturing industries or not. The model has the form:

$$\text{Log} [P_{it}/(1-P_{it})] = \beta_0 + \beta_1 T + \beta_2 Z_t + \beta_3 X_{1it} + \beta_4 (Z_t \times X_{2it}) + \beta_5 (Z_t \times X_{3it}) + \mathbf{X}'_{it} \boldsymbol{\beta}, \quad (3)$$

where T =the time period one comes of age, Z_t =the rate of returns to schooling for time period t , X_{1it} =schooling, $Z_t \times X_{2it}$ is the interaction term between noncollege educated men employed in manufacturing and the rate of returns to schooling, $Z_t \times X_{3it}$ is the interaction term between noncollege educated men who are not employed in manufacturing industries and the rate of returns to schooling, and \mathbf{X}_{it} =a vector of control variables (i.e., age, employment status, whether the respondent lives in the South, and veteran status). The subscripts i, t , are defined the same as above.

If $\beta_5 < \beta_4 < 0$, then hypothesis three is supported, that is, although noncollege educated men have a faster rate of marriage declines than college educated men, noncollege educated men who are not employed in manufacturing industries have the fastest rate of marriage declines. Model (3) is also estimated separately for blacks and whites.

RESULTS

How much of the differences in the trend toward lower marriage rates across schooling groups can be attributable to the rises in labor market returns to schooling? The first column of Table 2 to Table 5 reports the regression results of model (1) which compares the marriage trends between noncollege educated men and college educated men by race.

For both blacks and whites, three pairs of comparison show a positive and statistically significant effect for the interaction term between schooling and the rate of returns to schooling, evidence that supports hypothesis one. That is, the sharpest marriage declines for the noncollege educated relative to the college educated reflect the rises of labor market bias towards skills. For example, in 1979 when the median weekly wage of college graduates is about 1.76 times that of high school dropouts, white high school dropouts are 0.05 point more than white college graduates in the log odds of marrying at age 24-33. When the wage differentials between college graduates and high school dropouts rise to 2.02 in 1986, there is no difference in the likelihood of marrying between white high school dropouts and white college graduates at age 24-33. However, when the wage differentials between college graduates and high school dropouts rise to 3.09 in 2002, white college graduates are 0.35 point more than white high school dropouts in the log odds of marrying.

For blacks, men's education plays a larger role in marriage formation. College graduates are about 0.72 point more than high school dropouts in the log odds of marrying in 1979. With the rises of labor market returns to schooling over time, differences in the log odds of marriage between black college graduates and black high school dropouts rise to 0.83 in 1986 and 1.29 in 2002, respectively. When the comparison of marriage trends is made between those with some college education and high school dropouts, between those with some college education and high school graduates, respectively, a positive and statistically significant coefficient for the interaction term between schooling and the rate of returns to schooling is also observed, evidence that is consistent with hypothesis one. However, for both blacks and whites, the

coefficient for the interaction term between schooling and the rate of returns to schooling is not statistically significant when the comparison is made between college graduates and high school graduates.

Do white males differ from black males in delaying marrying in response to the adverse shift in labor market returns to schooling? Consistent with hypothesis two, the adverse shift in labor market demand for skills has a smaller effect on white males than for black males. In two pairs of comparison, the coefficients for the interaction term are found to be larger for blacks than for whites. For example, in the comparison between men with some college education and high school dropouts ($z=2.01$, $P<0.05$, one-tailed test), between men with some college education and high school graduates ($z=1.79$, $P<0.05$, one-tailed test), the coefficients for the interaction term are larger for blacks than for whites and differences of the coefficients are statistically significant, evidence that supports hypothesis two. Although black-white differences in the coefficient for the interaction term are not statistically different from zero when the comparison is made between college graduates and high school graduates, between college graduates and high school dropouts, the sign of the differences is consistent with hypothesis two. That is, shift in labor market demand for skills affects noncollege educated blacks more than their white counterparts because blacks not only earn less than whites, but also are more sensitive to economic factors in marriage formation. Moreover, because the main effect of schooling is negative, the smaller interaction effects between schooling and the rate of returns to schooling for white men mean the crossover in marriage trends between college educated and noncollege educated white men occur much later compared to black men. In fact, as shown in Table 1, rises in labor market returns to schooling result in a

convergence in marriage trends between college educated and noncollege educated white men, but a divergence in marriage trends between college educated and noncollege educated black men. If labor market returns to schooling keeps on increasing, it is expected that the gap in marriage rates between college educated and noncollege educated white men will grow in the direction as for black men.

The second column of Table 2 to Table 5 reports the regression results of model (2). As expected, for both blacks and whites, controlling for men's sociodemographic characteristics reduces the interaction effect between schooling and the rate of returns to schooling. This reduction in the interaction effect reflects that part of the reason for the faster marriage declines for the noncollege relative to the college educated is due to changes in their sociodemographic characteristics. In addition, because men's socioeconomic characteristics play a larger role in marriage formation for blacks than for whites, the reduction in the interaction effect is larger for blacks than for whites. As a result, black-white differences in the interaction effect between schooling and the rate of returns to schooling are not statistically significant for all pairs of comparison between the college educated and the noncollege educated. Interestingly, although the interaction effect between schooling and the rate of returns to schooling is not statistically significant when the comparison is made between college graduates and high school graduates in model (1), when accounting for men's sociodemographic characteristics in model (2), the coefficient for the interaction term becomes statistically significant for both races.

To what extent the economic consequences of the adverse shift in labor market returns to schooling on educational differentials in marriage trends are a sectoral shift from manufacturing to services? Column 3 of Table 2 to Table 5 presents the regression

results of model (3). Consistent with hypothesis three, although both interaction effects are negative and statistically significant, evidence that is consistent with hypothesis one, the magnitude of the interaction effect is larger for noncollege educated men employed in industries other than manufacturing industries. Noncollege educated men employed in industries other than manufacturing industries have the fastest rate of marriage declines from 1976 to 2002, followed by noncollege educated men employed in manufacturing industries and college educated men. This pattern is observed for both blacks and whites. In fact, black high school dropouts employed in manufacturing industries seem to be more likely to marry than black college graduates at age 24-33; there is no statistically significant difference in the likelihood of marrying between black college graduates and black high school graduates employed in manufacturing industries at age 24-33.

[Table 2 is inserted here]

[Table 3 is inserted here]

[Table 4 is inserted here]

[Table 5 is inserted here]

Finally, most of the regression results for control variables are consistent with previous findings. Due to greater normative pressures on marriage, for both black men and white men, growing up in older times, living in the South, and age are positively associated with the likelihood of marrying. Probably reflecting a steady, dependable income plus other benefits enjoyed by veterans which makes marriage more affordable (Modell and Steffey 1988), veterans are more likely to marry at young adulthood. Compared to employed men, unemployed men and men out of the labor force are less

likely to marry either because of financial constraints or role conflicts as men out of the labor force are more likely to be enrolled in school.

CONCLUSION AND DISCUSSION

Not being married is positively correlated with poverty status in America (McLanahan and Casper 1995). The retreat from marriage that is characterized by both later and less frequent marriage, coupled with increases in the single-mother family, have attracted substantial theoretical and policy debates on both its structural causes and directions of future change. This study extends Wilson and Neckerman's (1986) thesis on "the pool of marriageable men", showing that economy-wide wage structure changes and the consequent real wage losses among the noncollege educated partly explain marriage disparity by education and changes over time for black and white men. Labor market bias toward skills results in a more precipitous decline in marriage for noncollege educated men relative to college educated men. The impact of wage structure changes on educational differentials in marriage trends is greater for black men than for white men. Further, an increased labor market "bias" towards schooling results in a divergence in marriage rates between college educated and noncollege educated black men, but a convergence in marriage rates between college educated and noncollege educated white men. For both black and white men, the relationship between the adverse shift in wage structure and the greater marriage decline among noncollege educated men is the economic consequence of sectoral shift between goods production and services, which results in a decline of relatively well-paid manufacturing employment where unskilled men used to be disproportionately represented.

Marriage formation is an important stratification process. It is not only closely linked to structures of social inequality, but also reproduces social inequality (Haller 1981). The differences in marriage formation by schooling and how educational differentials in marriage rates change in response to wage structure shift as well as the racial differences reveal several important structural properties of American society. Most important, in an era of rising returns to a college degree, it points to the insurmountable structural barriers for the economically disadvantaged and blacks to make educational advancement.

Americans believe in equal opportunity in education. In a time of widening inequality in earnings by education and slowdown of productivity growth in the 1970s and 1980s, a high-quality education system that provides equality of opportunity and ensures a large fraction of the population go to college were considered effective ways of reducing the impacts of unfavorable shifts in wage structure and loss of international competition. Despite the fact that blacks have made considerable progress in educational achievement, educational inequality between blacks and whites remains large. In the 1980s when marriage declines most for the less educated, especially less educated blacks, growth in the college enrollment of black men has actually slowed down relative to white men (Smith 2000). For instance, between 1985 and 2007, the percentage of white men age 25 or above who had completed four years of college or more has increased by 24 percentage points, while the percentage of black men age 25 or above who have completed four years of college or more had only increased 7 percentage points from 11% to 18% (U.S. Bureau of Census 2007). The slowdown of college enrollment of black men is not only unable to overcome the impact of unfavorable shifts in wage

structure, but as productivity growth slowed down and wages stagnate, the economic status of the less educated is weakened.

Thus, in an economy that for a long time period has been dominated by demand shifts for skills and other economy wide forces, including technological innovation, increasing international trade, the decline in unionism, and the falling real value of the minimum wage, it is unlikely that a decrease in wage inequality by education will occur in the near future. The less educated will face increasing problems of securing a job to support a family. Compared to white men, the economic prospects of less educated black men will be more difficult to predict because in the eyes of employers, less educated black men are a more marginal component of labor supply. Even in the growth sectors of the economy, black male unemployment rates are higher and wages are considerably lower than those of white men, and they experience a higher level of job insecurity (Manski and Straub 2000). As pointed out by Orfield and Ashkinaze (1991), for less well educated black men, the business cycle is one of long cycles of recessions interrupted only by brief periods of growing access to what often turn out to be marginal low-mobility jobs.

Looking toward the future of American marriage, without some fundamental changes in existing social structures such as unequal access to education, to jobs and job information, and labor market discrimination, the faster rate of decline in marriage among the noncollege educated compared to the college educated is not likely to slowdown, especially for blacks. Hence, despite a persistently high level value placed on the institution of marriage (Thornton 1989; Tucker 2000), marriage, an increasingly voluntary choice, appears increasingly tied to an individual's position in the wage

structure. For low-income people, marriage becomes an increasingly unaffordable luxury consumer item (Furstenberg and Ten 1996). In an era of growing diversity in family and living arrangements and the deinstitutionalization of American marriage (Cherlin 2002), it remains to be seen whether or not, and to what extent, cohabitation and other nonmarital forms of living arrangement may fill the gap between individual desires for marriage and structural impediments to marriage. It is not clear whether cohabitation will serve as an alternative union form of organizing individual lives for love, companionship and self-development.

Finally, this study uses wage structure changes to explain the marriage gap between college educated and noncollege educated men and how it changes over time. Because both groups have experienced a decline in marriage since the early 1970s and the magnitude of the decline is rather large, future study on the labor market causes of marriage declines might benefit from including other labor market forces which work jointly with the adverse shift in the wage structure.⁸ For example, women's economic characteristics have been found to account for a great deal of marriage declines between 1970 and 1990 (McLanahan and Casper 1995). Because women's economic independence is a function of both the economic prospects of their potential mates and their own earnings power, as educational homogamy prevails in mate selections (Shoen 1989), future study on the trend toward lower marriage rates might consider combining the Becker thesis and the Wilson and Neckerman thesis and disaggregate the analysis by education. As pointed out by McLanahan and Casper (1995), in spite of the same trend in independence, the source of women's economic independence varies across schooling

groups and between blacks and whites, resulting in different pathways toward lower marriage rates.⁹

LIMITATIONS

There are two limitations with this study. The first limitation is a lack of control for other temporal trends which may be correlated with the trends of labor market returns to schooling and interact with schooling, resulting in a faster rate of marriage declines for noncollege educated men. For instance, because noncollege educated men have experienced either wage erosion or stagnation for a long time period between 1976 and 2002, in spite of wage stagnation for noncollege educated women, the relative economic position of noncollege educated women has improved over time. According to Becker (1981), women's economic independence relative to men reduces their economic incentives to marry and is largely responsible for the trend toward lower marriage rates since the 1970s. Although empirical evidence for the independence thesis is weak (Oppenheimer 1994), the debate continues today and therefore requires cautions when interpreting the interaction effects between schooling and the rate of returns to schooling as measures of women's economic independence are not controlled for in this study.

The second limitation arises from the wide age range I used to define the sample for each single year period. I assume young adults men age 24-33 in each single year period are in the transition to marriage. Their timing of marriage is affected by current labor market conditions as well as the labor market conditions five years ago. This assumption may not hold for some young adults men. For example, a 28-year old man in 2002 may get married when he was age 24. The labor market conditions that affect his

marriage formation are those of 1998 or before rather than the labor market conditions of 1998-2002. Although controlling for age may partly reduce this problem, it does not really eliminate it. The validity of the results is unlikely to be affected, however, if the mismatch between the timing of marriage and labor market conditions is random, which I think is likely true.

Notes:

1. Other demographic and social changes that have also been identified as important factors underlying the trend toward lower marriage rates include women's labor force participation and improvement of socioeconomic standing relative to men, reductions in the normative imperative on people to marry and traditional gender role, and increasing tolerance of premarital sex, nonmarital cohabitation, unmarried childbearing and childrearing, and other factors diminishing the motives of marrying.
2. Wage structure refers to the returns that the labor market offers for various skills and for employment in higher-paying industries or occupations (Blau, Ferber, and Winkler 2005).
3. Seniority provisions are not necessarily in conflict with affirmative actions. Black males are more likely to be employed in the union sectors than the nonunion sectors of manufacturing industries, because black males prefer for unionized employment due to the relative freedom from discrimination afforded to them and other protected groups by unions' egalitarian policies, and more important, the union wage effect, which was estimated at 10-20 percent in the manufacturing

- industries (Lewis 1963). The greater concentration of black males in the union sectors of manufacturing industries also reflects the more formalized personnel procedures of the union sectors, which coupled with Title VII's success, lessen racial discrimination and help effectuate black males' preferences for unionized employment (Leonard 1985). For black males employed in California manufacturing industries, for example, the employment effect of union was comparable to the impact of affirmative action (Leonard 1985).
4. According to Moffitt (2000), marriage declines among whites are more a function of the shift in the values from family and relationship commitment to individual freedom and self-development, whereas for blacks marriage declines are largely due to economy-wide factors which undermine young black men's labor market positions.
 5. Although welfare benefits declined nearly twenty-six percentage points across all states between 1970 and 1990, the earnings of poorly educated men declined much faster (McLanahan 1994), leading the costs of marriage to exceed its benefits for many poorly educated women.
 6. Several studies have suggested that the assumption of time invariance in the relationship between socioeconomic characteristics and marriage is unlikely to hold in the United States (Mare 1991; Qian and Preston 1993; Sweeney 2002). Raymo's (2003) most recent study of the trend toward later and less marriage among Japanese women shows an increasing negative effect of schooling on marriage account for why the large decline in the risk of marriage across cohorts has been the greatest for the most highly educated Japanese women.

7. There are no June surveys for the following years: 1978, 1989, 1993, 1996, 1997, 1999, and 2001. This is why there are only 20 single year time periods between 1976 and 2002.
8. Despite the importance of the general trend of marriage decline experienced by all schooling-race groups, it is very difficult to pin down the factors that affect marriage trends because in spite of consistent findings on the effects of attitudes, values and beliefs on marriage, the past four decades have not seen noticeable declines in the importance Americans placed on marriage (Thornton 1989; Tucker 2000). Instead, what has changed is a reduction in the normative imperative on people to marry and in traditional gender role differentiation. Americans become increasingly tolerant to premarital sex, nonmarital cohabitation, unmarried childbearing and childrearing, which diminish the motives of marrying. But since these changes could be both the causes and consequences of marital behavior changes (England and Farkas 1986), it is inappropriate to use them to predict marriage trends. In addition, although women's improving labor market position relative to men may reduce their marriage incentives, Americans have grown less likely than before to believe that men should achieve in the workplace while women care for the home and family (Axinn and Thornton 2000). So although the rising female-male wage ratio corresponds to the trend of marriage declines, it is questionable whether this economic reality is enacted in marital behavior, therefore contributing to marriage declines since the early 1970s.
9. For the college educated, reduced marriage incentive due to women's improving labor market position relative to college educated men is partly offset by the

income effect of college educated men's real wage gain. For the noncollege educated, increases in women's economic position relative to noncollege educated men mainly arise from the real-wage loss of noncollege educated men, because in contrast to college educated women, noncollege educated women experienced wage stagnation (Bianchi and Spain 1996). As Moffitt (2000) noted, for the noncollege educated, marriage declines reflect the erosion of men's labor market position; whereas for the college educated, the relative improvement of women's labor market position appeared to increase their bargaining power in marriage, rather than lead them to buy out marriage.

References

- Anderson, Douglas L. 1986. "Urbanization, Secularization, and Birth Spacing: A Case Study of an Historical Fertility Transition." *Sociological Quarterly* 27:43-62.
- Autor, David H., Lawrence F. Katz, and Melissa S. Schettini. 2008. "Inequality in the 1990s: Revising the Revisionists." *The Review of Economics and Statistics* 90:300-323.
- Axinn, William G. and Arland Thornton. 2000. "The Transformation of the Meaning of Marriage." Pp. 147-165 in *The Ties That Bind: Perspectives on Marriage and Cohabitation*, edited by Linda Waite, Christine Bachrach, Michelle Hindin, Elizabeth Thomson, and Arland Thornton. New York: Aldine De Gruyter.
- Barich, Rachel R. and Denise D. Bielby. 1996. "Rethinking Marriage: Change and Stability in Expectations, 1967-1994." *Journal of Family Issues* 17:139-169.
- Becker, Gary S. 1981. "A Treatise on the Family." Cambridge: Harvard University Press.
- Bennett, Neil G., David E. Bloom, and Patricia H. Craig. 1989. "The Divergence of Black and White Marriage Patterns." *American Journal of Sociology* 95:692-722.
- Bianchi, Suzanne and Daphne Spain. 1996. "American Women in Transition." New York: Russell Sage Foundation.
- Blau, Francine D., Marianne A. Ferber, and Anne E. Winkler. 2005. *Economics of Women, Men, and Work*. Prentice Hall
- Blee, Kathleen M. and Ann R. Tickamyer. 1995. "Racial Differences in Men's Attitudes About Women's Gender Roles." *Journal of Marriage and the Family* 57:21-30.
- Booth, Alan and John N. Edwards. 1985. "Age at Marriage and Marriage Instability." *Journal of Marriage and the Family* 47:67-75.

- Borjas, George J. 2003. "Labor Economics." New York, NY: McGraw-Hill Irwin.
- Bulcroft, Richard A., and Kris A. Bulcroft. 1993. "Race Differences in Attitudinal and Motivational Factors in the Decision to Marry." *Journal of Marriage and the Family* 55:338-355.
- Burtless, Gary T. 1990. "A Future of Lousy Jobs? The Changing Structure of U.S. Wages." Washington, DC: The Brookings Institutions.
- Cherlin, Andrew J. 1981. "Marriage, Divorce, and Remarriage." Cambridge, MA: Harvard University Press.
- , 2000. "Toward A New Home Socioeconomics of Union Formation." Pp. 126-146 in *The Ties That Bind: Perspectives on Marriage and Cohabitation*, edited by Linda Waite, Christine Bachrach, Michelle Hindin, Elizabeth Thomson, and Arland Thornton. New York: Aldine De Gruyter.
- Clarkberg, Marin. 1999. "The Price of Partnering: The Role of Economic Well-being in Young Adults' First Union Experiences." *Social Forces* 77:945-968.
- Coale, Ansley J. 1989. "Marriage and Childbearing in China Since 1940." *Social Forces* 67:833-850.
- DiPrete, Thomas A. and David B. Grusky. 1990. "The Multilevel Analysis of Trends with Repeated Cross-Sectional Data." *Sociological Methodology* 20:337-368.
- Dixon, Ruth B. 1978. "Late Marriage and Non-Marriage as Demographic Responses: Are They Similar?" *Population Studies* 32:449-466.
- Easternlin, Richard A. 1978. "What Will 1984 Be Like? Socioeconomic Implications of Recent Twists in Age Structure." *Demography* 15:397-432.

- Edin, Kathryn. "What Do Low-Income Single Mothers say about Marriage?" *Social Problems* 47:112-133.
- Ellwood, David T. and David T. Rodda. 1990. "The Hazards of Work and Marriage: The Influence of Employment on Marriage." Unpublished paper, Harvard University.
- England, Paula and George Farkas. 1986. "Households, Employment, and Gender: A Social, Economic, and Demographic View." Aldine Transaction.
- Espenshade, Thomas J. 1985. "Marriage Trends in America: Estimates, Implications, and Underlying Causes." *Population and Development Review* 11:193-245.
- Freeman, Richard and James Medoff. 1984. "What Do Unions Do?" New York: Basic Books.
- Furstenberg, Frank F., Jr. and Nancy Ten. 1996. "The Future of Marriage." *American Demographics* June:34-40.
- Goldscheider, Frances K. and Linda J. Waite. 1986. "Sex Differences in the Entry Into Marriage." *American Journal of Sociology* 92:91-109.
- Goldscheider, Joshua R. and Catherine T. Kenney. 2001. "Marriage Delayed or Marriage Forgone? New Cohort Forecasts of First Marriage for U.S. Women." *American Sociological Review* 66:506-519.
- Hajnal, John. 1965. "European Marriage Patterns in Perspective." Pp. 101-138 in *Population in History*, edited by D.V. Glass and D.E.C. Eversley. Chicago: Aldine.
- Haller, Max. 1981. "Marriage, Women, and Social Stratification: A Theoretical Critique." *American Journal of Sociology* 86:766-795.
- Hatchett, Shirley, Joseph Veroff, and Elizabeth Douvan. 1995. "Marital Instability Among Black and White Couples in Early Marriage." Pp. 177-218 in *The Decline*

in Marriage among African Americans: Causes, Consequences and Policy

Implications, edited by M.B. Tucker and C. Mitchell-Kernan. New York: Russell Sage Foundation.

Hedeker, Donald and Robert D. Gibbons. 2006. "Longitudinal Data Analysis." New Jersey: Wiley.

Hogan, Dennis P. 1978. "The Effects of Demographic Factors, Family Background, and Early Job Achievement on Age at Marriage." *Demography* 15:161-175.

Holzer, Harry. 1996. "What Employers Want: Job Prospects for Less-Educated Workers." New York: Russell Sage.

Jencks, Christopher. 1989. "What Is the Underclass and Is It Growing?" *Focus* 12:12-26.

Juhn, Chinhui, Kevin M. Murphy and Brooks Pierce. 1991. "Accounting for the Slowdown in Black-White Convergence." Pp. 107-143 in *Workers and Their Wages*, edited by M. Koster. Washington, DC: AEI Press.

Katz, Lawrence F. and Kevin M. Murphy. 1992. "Changes in Relative Wages, 1963-1987: Supply and demand factors." *Quarterly Journal of Economics* 107:35-78.

Katz, Lawrence F. and David H. Autor. 1999. "Changes in Wage Structure and Earnings Inequality." Pp. 1463-1555 in *Handbook of Labor Economics, Volume 3A*, edited by Orley Ashenfelter and David Card. Amsterdam: Elsevier.

Kreft, Ita and Jan De Leeuw. 1998. *Introducing Multilevel Modeling*. New York: Russell Sage.

Leonard, Jonathan S. 1984. "The Impact of Affirmative Action on Employment." *Journal of Labor Economics* 2:439-463.

- , 1985. "The Effect of Unions on the Employment of Blacks, Hispanics, and Women." *Industrial and Labor Relations Review* 39:115-132.
- , 1996. "Wage Disparities and Affirmative Actions in the 1980's." *American Economic Review* 86:285-289.
- Lerman, Robert I. 1989. "Employment Opportunities of Young Men and Family Formation." *American Economic Review Papers and Proceedings* 79:62-66.
- Lewis, H. Gregg. 1963. *Unionism and Relative Wages in the United States*. Chicago: University of Chicago Press.
- Levy, Frank. 1995. "Incomes and Income Inequality." Pp.1-58 in *State of the Union: America in the 1990s: Economic Trends*, edited by R. Farley. New York: Russell Sage Foundation.
- Lichter, Daniel T., Diane K. McLaughlin, George Kephart, and David J. Landry. 1992. "Race and the Retreat from Marriageable Men?" *American Sociological Review* 57:781-799.
- Lichter, Daniel T., Diane K. McLaughlin, and David C. Ribar. 2002. "Economic Restructuring and the Retreat from Marriage" *Social Science Research* 31:230-256.
- Lloyd, Kim M. and Scott J. South. 1996. "Contextual Influences on Young Men's Transition to First Marriage." *Social Forces* 74:1097-1119.
- Manski, Charles F. and John D. Straub. 2000. "Worker Perceptions of Job Insecurity in the Mid-1990s." *Journal of Human Resources* 35:447-479.
- Mare, Robert D. and Christopher Winship. 1991. "Socioeconomic Change and the Decline of Marriage for Blacks and Whites." Pp. 175-202 in *The Urban*

- Underclass*, edited by C. Jencks and P. Peterson. Washington, DC: Brookings Institution.
- Mare, Robert D. 1991. "Five Decades of Educational Assortative Mating." *American Sociological Review* 56:15-32.
- Marini, Mooney M. 1981. "Measuring the Effects of the Timing of Marriage and First Birth." *Journal of Marriage and the Family* 43:19-26.
- McLanahan, Sara and Gary Sandefur. 1994. *Growing Up With a Single Parent: What Hurts, What Helps*. Cambridge, MA: Harvard University Press.
- McLanahan, Sara. 1994. "The Consequences of Single Motherhood." *American Prospect* 18:48-58.
- McLanahan, Sara and Lynne Casper. 1995. "Growing Diversity and Inequality in the American Family." Pp. 1-45 in *State of the Union*, edited by R. Farley. New York: Russell Sage Foundation.
- Modell, John and Duane Steffey. 1988. "Waging War and Marriage: Military service and family formation, 1940-1950." *Journal of Family History* 13:195-218.
- Moffitt, Robert A., Robert T. Reville, and Anne E. Winkler. 1998. "Beyond Single Mothers: Cohabitation and Marriage in the AFDC Program." *Demography* 35: 259-78.
- Moffitt, Robert. 2000. "Female Wages, Male Wages, and the Economic Model of Marriage: The Basic Evidence." Pp. 302-319 in *The Ties That Bind: Perspectives on Marriage and Cohabitation*, edited by Linda Waite, Christine Bachrach, Michelle Hindin, Elizabeth Thomson, and Arland Thornton. New York: Aldine De Gruyter.

- Murphy, Kevin M. and Finis Welch. 1992. "The Structure of Wages." *Quarterly Journal of Economics* 107:285-326.
- Oppenheimer, Valerie K. 1988. "A Theory of Marriage Timing." *American Journal of Sociology* 94:563-91.
- . 1997. "Women's Employment and the Gain to Marriage: The Specialization and Trading Model." *Annual Review of Sociology* 23:431-453.
- . 2000. "The Continuing Importance of Men's Economic Position in Marriage Formation." Pp. 283-301 in *The Ties That Bind: Perspectives on Marriage and Cohabitation*, edited by Linda Waite, Christine Bachrach, Michelle Hindin, Elizabeth Thomson, and Arland Thornton. New York: Aldine De Gruyter.
- . 2003. "Cohabiting and Marriage During Young Men's Career-Development Process." *Demography* 40:127-149.
- Oppenheimer, Valerie K., H-P. Blossfeld, and A. Wackerow. 1995. "New Developments in Family Formation and Women's Improvement in Educational Attainment in the United States." Pp. 150-73 in *The New Role of Women: Family Formation in Modern Societies*, edited by H-P. Blossfeld. Boulder: Westview Press.
- Oppenheimer, Valerie K., Matthijs Kalmijn, and Nelson Lim. 1997. "Men's Career Development and Marriage Timing during a Period of Rising Inequality." *Demography* 34:311-330.
- Orfield, Gary. 1992. "Urban Schooling and the Perpetuation of Job Inequality in Metropolitan Chicago." Pp. 161-191 in *Urban Labor Markets and Job Opportunity*, edited by George E. Peterson and Wayne Vroman. Washington, D.C.: The Urban Institute Press.

- Orfield, Gary and Carole Ashkinaze. 1991. *The Closing Door: Conservative Policy and Black Opportunity*. Chicago, IL: University of Chicago Press.
- Qian, Zhenchao and Samuel H. Preston. 1993. "Changes in American Marriage, 1972 to 1987: Availability and Forces of Attraction by Age and Education." *American Sociological Review* 58:482-495.
- Raymo, James M. 2003. "Educational Attainment and the Transition to First Marriage among Japanese Women." *Demography* 40: 83-103.
- Raymo, James M. and Miho Iwasawa. 2005. "Marriage Market Mismatches in Japan: An Alternative View of the Relationship between Women's Education and Marriage." *American Sociological Review* 70:801-822.
- Rindfuss, Ronald R., C. Gray Swicegood, and Rachel A. Rosenfeld. 1987. "Disorder in the Life Course: How Common Does It Matter?" *American Sociological Review* 52:785-801.
- Roders, William M. and William E. Spriggs. 1996. "What Does AFQT Really Measure? Race, Wages, Schooling and the AFQT Score." *Review of Black Political Economy* 24:13-46.
- Sassler, Sharon and Robert Schoen. 1999. "The Effect of Attitudes and Economic Activity on Marriage." *Journal of Marriage and Family* 61:147-59.
- Sassler, Sharon and Frances Goldscheider. 2004. "Revisiting Jane Austen's Theory of Marriage Timing: Changes in Union Formation among American Men in the Late 20th century." *Journal of Family Issues* 25:139-166.
- Smith, James P. 2000. "Race and Ethnicity in the Labor Market: Trends Over the Short and Long Term." In *America Becoming: Racial Trends and Their Consequences*

Volume II, Neil J. Smelser, William J. Wilson, and Faith Mitchell, ed. National Research Council.

Sweeney, Megan M. 2002. "Two Decades of Family Change: The Shifting Economic Foundations of Marriage." *American Sociological Review* 67:132-147.

Taylor, Pamela L. 1998. "Attitudes toward Marriage among African American Singles: A Test of Four Perspectives." Ph.D. Dissertation, Department of Psychology, University of California, Los Angeles, Los Angeles, CA.

Testa, Mark. 1991. "Male Joblessness, Nonmarital Parenthood, and Marriage." Paper presented at the Chicago Urban Poverty and Family Life Conference, Chicago, IL.

Testa, Mark and Marilyn Krogh. 1995. "The Effect of Employment on Marriage among Black Males in Inner-city Chicago." Pp. 59-95 in *The Decline in Marriage among African American: Causes, Consequences, and Policy Implications*, edited by M. Belinda Tucker and Claudia Mitchell-Kernan. New York: Russell Sage Foundation.

Thornton, Arland. 1989. "Changing Attitudes toward Family Issues in the United States." *Journal of Marriage and the Family* 51:873-893.

Thornton, Arland, William G. Axinn, and Jay D. Teachman. 1995. "The Influence of School Enrollment and Accumulation on Cohabitation and Marriage in Early Adulthood." *American Sociological Review* 60:762-774.

Tucker, Belinda. 2000. "Marital Values and Expectations in Context: Results from a 21-city Survey." Pp.166-187 in *The Ties That Bind: Perspectives on Marriage and Cohabitation*, edited by Linda Waite, Christine Bachrach, Michelle Hindin, Elizabeth Thomson, and Arland Thornton. New York: Aldine De Gruyter.

U.S. Bureau of the Census. 2003. Families and Living Arrangements, Current Population Survey (CPS) Reports, March 2003. Washington, DC: U.S. Government Printing Office.

U.S. Bureau of the Census. 2007. Washington, DC: U.S. Government Printing Office.

Wilson, William J. and Kathryn M. Neckerman. 1986. "Poverty and Family Structure: The Widening Gap between Evidence and Public Policy Issues." Pp. 232-259 in *Fighting Poverty: What Works and What Doesn't*, edited by S.H. Danziger and D.H. Weinberg. Cambridge, MA: Harvard University Press.

Wilson, William J. 1987. "The Truly Disadvantaged: The Inner City, the Underclass, and Public Policy." The University of Chicago Press.

Xie, Yu, James M. Raymo, Kimberley Goyette, and Arland Thornton. 2003. "Economic Potential and Entry Into Marriage and Cohabitation." *Demography* 40:351-367.