How Do Marriage Market Conditions Affect

Entrance into Cohabitation vs. Marriage?

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Abstract

Widening racial and socioeconomic gaps in marriage rates have received a great deal of attention in recent years, focusing on the availability of marriageable men in the local marriage market. At the same time, cohabitation has increased in prevalence and has played a role in declining marriage rates. This paper extends marriage market arguments to the formation of both cohabiting and marital unions and the choice between union types, using contextual data at the Labor Market Area (LMA) level linked to the 1995 National Survey of Family Growth (NSFG). I find that the best measure of availability is a broad but still age-restricted sex ratio adjusted for marital status. The sex ratio is only weakly related to overall union formation, but it is significantly and positively related to the likelihood of marrying over either remaining single or cohabiting. Cohabitation and marriage do not appear to be substitutable.

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There has been extensive investigation into group differences in marriage rates based on local marriage markets, with the decline in marriage among minority and low-income populations linked to changes in the numeric availability and the social and economic acceptability of potential mates (Bennett, Bloom, & Craig 1989; Brien 1999; Fossett & Kiecolt 1991, 1993; Lichter, LeClere, & McLaughlin 1991; Lichter, McLaughlin, Kephart, & Landry 1992; Lloyd & South 1996; Raley 1996; Schoen & Weinick 1993; South & Lloyd 1992a; Spanier & Glick 1980; Teachman, Polonko, & Leigh 1987; Wilson & Neckerman 1986; Wood 1995). The shortage of men, especially economically stable men, is particularly acute among African American and low-income populations and is thought to play a significant role in widening racial and socioeconomic differences in marriage rates and family structure.

At the same time, the rise of cohabitation over the past few decades has spurred considerable research addressing who cohabits and why, as well as studying the relationship between cohabitation and marriage. Cohabitation has accounted for much more of the decline in marriage among less educated persons than those with more education (Bumpass, Sweet, & Cherlin 1991), although less educated persons are actually less approving of cohabitation and more likely to believe that marriage is the preferable family form (Carter 1993). African Americans place greater emphasis on financial stability in deciding when to marry than whites (Bulcroft & Bulcroft 1993), which may affect the formation of marital unions but not necessarily other union types. Including cohabitation in measures of unions reduces the black-white gap in unions significantly compared to marriages (Raley 1996), and racial differences in the timing of first union are much smaller than racial differences in the timing of first marriage (Bumpass et al

1991). Moreover, cohabitation is increasingly common as a first union among African Americans. Taken together, these findings suggest that cohabitation for many persons, especially minorities, may arise not out of preferences for an informal union but from other constraints, such a lack of available or acceptable men. Financial motivations may also play a role, as individuals in economic crises may see cohabitation as a way to share expenses and benefit from economies of scale as well as have the personal and social benefits of coresidence without the legal obligations of marriage. Economic conditions, therefore, may play a role among individuals union decision-making process.

Group differences in marriage rates are the product of group differences in the timing of first unions, the type of first union, and the duration from first union to first marriage (Raley 1996). I suggest that local marriage market and economic conditions may influence the type of first union and thus are an important factor in the prevalence of cohabitation, especially among lower socioeconomic groups. The arguments here focus on whether local marriage market conditions and related macro factors affect the likelihood of remaining single, cohabiting, or marrying among women. Previous research has demonstrated a relationship between the local availability of men, particularly economically secure men, and female marriage rates. The research here seeks to expand upon previous work to include cohabitation as well as marriage to determine if local characteristics affect overall union formation.

MARRIAGE MARKET THEORIES

Marriage market arguments have essentially followed one of two lines: a demographic approach based on sex ratios (Becker 1981; Guttentag & Secord 1983; Oppenheimer 1988) and an economic approach based on the marriageability of males (Wilson & Neckerman 1986; Wilson 1987). Both approaches predict identical behaviors for women under similar marriage

market conditions. In general, there are two main explanations that fall into the demographic approach to studying how the numeric supply of potential mates affects union formation. One explanation focuses on *marital search models* (Becker 1981; Oppenheimer 1988), where individuals search for suitable mates in a defined area. This explanation is primarily demographic and does not distinguish between men and women. Although Becker grounds his marital search model in rational choice theory and Oppenheimer grounds her model in job search theory, both assert that the probability of marriage is highest when the number of potential mates is greatest. There are different theoretical backgrounds in these models, but each has common predictions for how the numeric supply of potential partners affects the probability of forming a marital union, regardless of sex.

The second explanation concerns *imbalanced sex ratios* (Guttentag & Secord 1983) and has a more sociological orientation, focusing on power relations between men and women. This explanation assumes men and women have conflicting familial goals. On the one hand, men always have more *structural* power, preferring more sexually permissive unions, and are reluctant to enter long-term and monogamous relationships. Women, on the other hand, prefer more stable, committed, and secure relationships. Under this explanation, though, the gender which is in short supply has greater *dyadic* power. When there is a shortage of men, men have both greater structural and dyadic power and can fulfill their preferences for sexual permissiveness and delay marriage and family formation. A surplus of women is thought to weaken traditional roles for women. With a low sex ratio, then, women are less likely to marry than when the sex ratio is balanced. However, when there is a shortage of women, women benefit from greater dyadic power but not greater structural power. Under this scenario, women can fulfill their preferences for monogamy. Men, who have greater structural power, seek to limit female sexuality and

constrain women s roles to marriage so that they can secure access to an intimate female relationship. Men and women are *more* likely to marry when there is a shortage of women and a surplus of men than when the sex ratio is balanced.

Both the marital search and the imbalanced sex ratio explanations predict identical behavior for women   women are more likely to marry when they have more choices in the market. But whether women are more likely to form any union when there is greater mate availability remains to be seen, as these explanations have not yet been applied to nonmarital union formation and the choice between union types. Because of the complexities of examining the effects of sex ratios on marriage among men combined with the wider scope of unions to be studied here, this research focuses solely on women. Nonetheless, some arguments are made about the preferences men have for potential mates, as these preferences affect the likelihood of union formation among women in the marriage market.

There is another approach to marriage market research that focuses less on the numeric supply of mates and more on the acceptability and desirability of potential mates. Wilson (1987) proposed that it is the *quality*, not the *quantity*, of potential spouses that affect union formation among women. The deficit of men with desirable socioeconomic characteristics (i.e., steady full-time employment, high wages) reduces women s gains to marriage and thus lowers their marriage rate. Men with low levels of education, especially minorities, have been hard hit by the shift away from manufacturing and industrial work and by declines in the economy. Thus, as men in these populations become more marginalized, they become less attractive as potential husbands since they are increasingly constrained in their ability to play the provider role in marriage. If women still desire to be in relationships, they may be reluctant to enter into a long-term, legally binding relationship with someone who is unable to consistently contribute financially. The inference,

then, is that women in low socioeconomic populations have lower marriage rates because the economic benefits of marriage are lower than for other groups (McLanahan & Casper 1995). Wilson s arguments have primarily been applied to declining marriage rates among African Americans, though, so it remains to be seen if such arguments can be applied to nonminority, nonpoor women. Nonetheless, Wilson s arguments about marriageable males, combined with consideration of the numeric availability of men, has spurred fruitful research into changing marriage patterns.

Marriage markets arguments have found empirical support, although the findings have been mixed. Purely demographic research has demonstrated that although black females have a more restricted field of potential mates than white females (Spanier & Glick 1980) and that the sex ratio is positively related to marriage rates for black women (Fossett & Kiecolt 1990; Fossett & Kiecolt 1991; Fossett & Kiecolt 1993), the numeric supply of potential mates does not fully explain different marriage rates among black and white women (Schoen & Kluegel 1988). Indicators that include aspects of the economic acceptability of potential mates, such as employment, earnings, and education, have also been shown to significantly affect the likelihood of marriage as well as marriage timing, nonmarital fertility, the proportion of single parent families, and the likelihood of divorce (Bennett et al 1989; Lichter et al 1991; Fossett & Kiecolt 1991; Lichter et al 1992; South & Lloyd 1992b; Fossett & Kiecolt 1993). For women, then, the local supply of economically attractive men significantly affects the probability of marriage. That said, inclusion of measures of the supply of economicly acceptable mates do not completely explain black-white differences in U.S. marriage rates (Lichter et al 1991; Lichter et al 1992; Wood 1995). Moreover, the degree to which the quantity and quality of available mates influences the likelihood of marriage is highly dependent on the level of aggregation (national,

state, county, etc.) as well as estimation technique (Brien 1997; Blau, Kahn, & Waldfogel 2000).

This analysis takes marriage market arguments and expands their application to cohabiting unions as well as marriages, which has not been done in previous research (see Raley 1996 for an exception). It further uses marriage market arguments to determine not only *if* women form unions but *how* the type of union formed is influenced by the availability and acceptability of potential mates.

MARRIAGE MARKETS AND COHABITATION

The majority of people still want to and actually do marry; almost 90% of whites and about 70-75% of African Americans eventually marry (Cherlin 1992). Although there are lower rates of marriage among African Americans, especially at young ages, marriage seems the preferred family form. Controlling for socioeconomic factors, blacks are less approving of cohabitation than whites (Carter 1993). However, according to Furstenberg (1996), who has conducted extensive interviews among low-income blacks, marriage seems to be a luxury consumer item, and cohabitation is the budget way to start a family. Furstenberg was specifically referring to African Americans, but it is plausible that other low-income groups may view cohabitation similarly. This may be because, as Cherlin (2000) argues, it is culturally required that men have the capacity to provide steady earnings to marry, and he believes it is the difficulty of fulfilling this cultural requirement...that underlies the sharp decline in marriage among African Americans (p. 135). This argument is partially supported by findings that African Americans place greater emphasis on economic resources when making decisions regarding union formation compared to other racial and ethnic groups (Bulcroft & Bulcroft 1993; Tucker 2000). African Americans, particularly men, have been especially hard hit by economic downturns and changes in the economy (Juhn 1992; Bound & Holzer 1993), which may partially explain why

marriage rates have fallen and other family structures emerged despite a preference for marriage.

Hispanics, particularly the foreign-born, have also experienced many of the same economic difficulties. However, Hispanics have not demonstrated declining marriage rates to the extent experienced by African Americans; in fact, Hispanics more resemble non-Hispanic whites in terms of marital behavior than African Americans (South 1993). It appears that union formation among Hispanics may be influenced by different factors than those among African Americans (Oropesa, Lichter, & Anderson 1994; Oropesa 1996; Oropesa & Gorman 2000; Lloyd 2001). In addition, the relationship between economic circumstances and union formation may differ based on nativity among Hispanics (Oropesa & Gorman 2000).

As suggested in marriage market arguments, local demographic and economic conditions may affect whether unions are formed and what kind of unions are formed among women. A deficit of marriageable men or local economic hardship can deter all union formation. Although a numerical lack of men may simply mean there just are not enough men, it may be that there are not enough good men if marriageability is defined in economic terms. Edin (2000), who has studied low-income women, notes that they place great emphasis on financial stability and respectability when evaluating potential mates. Similarly, African American women accord greater importance to male economic characteristics when evaluating potential mates compared to white women (South 1991; Bulcroft & Bulcroft 1993), which may exacerbate adverse marriage market conditions. Faced with men who lack desirable qualities, women may avoid forming marital unions or form more casual relationships.

When unions do form under such circumstances, again, local conditions can take their toll. On the one hand, women may want to marry but are afraid to place pressure on their mates if men are in short supply; women may thus be settling for a relationship that is semi-permanent rather than risk the relationship ending. Perhaps these women are competing for the limited supply of

men by offering the benefits of coresidence created by cohabitation but without making the fidelity and financial demands associated with marriage. In low-income couples, cohabitation appears similar to marriage in terms of pooling financial resources and childbearing. For many women, cohabiting with men of low economic status seems to present a viable family structure, given that the men in their lives are unable to meet standards of marriage (financial stability, upward mobility, respectable employment, fidelity). As Landale & Forste (p. 603, 1991) suggest, in highly disadvantaged groups, informal coupling may be an adaptive family formation strategy: it allows for union formation in the face of economic uncertainty because it makes fewer clear-cut demands on the male. Thus, if men are able to make minimal financial contributions to the household, cohabitation may function as a semi-permanent option and perhaps offers the best hope for a long-term union.

Conversely, it is possible that women, particularly those with children, may be reluctant to form any coresidential unions (either cohabitation or marriage) with non- or under-employed men because of the fear of additional financial strains with little male economic contribution. Edin (2000) reports that among low-income single mothers, many of the women reported a pay and stay rule in which the men must either contribute to household finances or eventually lose the right to co-reside; women fear they may end up supporting their partners, stretching meager resources even further. Under such circumstances, decisions about forming coresidential unions may be more economic than emotional without an economic contribution, many low-income women simply cannot afford another person in the household, especially for extended periods of time. If this is the case, cohabitation is less likely to occur than remaining single. Further, low-income women report that they hold marriage in very high esteem but would only marry if marriage would improve their current standard of living, and many men with whom they come into contact are unable to provide upward mobility (Edin 2000). As such, marriage is also less

likely to occur than remaining single.

MARRIAGE MARKETS AND WOMEN S ECONOMIC INDEPENDENCE

Aggregate Level Arguments

Most of the preceding arguments focus on union formation among low-income women, and although cohabitation is more prevalent among low-income and less-educated persons, it has also risen among those with more education and income. Marriage market arguments have been primarily used to explain lower rates of marriage among racial and ethnic minorities and lower socioeconomic groups, and the applicability of such arguments to union formation among well-educated and higher-earning women is unclear. It seems less likely that economic circumstances play as large and as significant a role in the rise of cohabitation among those with more resources than those of lower socioeconomic status. Although well-educated individuals often experience financial constraints while they are enrolled in school or in the early career stages, they are aware that such periods are usually temporary and that their financial situation will probably improve in the foreseeable future. Such individuals likely consider themselves to be of a higher socioeconomic status (and act accordingly) than their income alone would suggest, and so their union formation behaviors may be influenced by different factors than those of lower socioeconomic status. Marriage market conditions, especially those concerning the economic viability of potential mates, are perhaps becoming less relevant as women s economic opportunities expand (Brien 1997).

Arguments about the relationship between marriage and the economic situation of women are typically expressed in terms of women s rising economic independence. As women become more educated and enter the labor force, they become more financially independent. Their economic incentives to marry lessen, and the balance of power between men and women changes. Much of how marriage is viewed is based on the complementary nature of men and women in

marriage   men provide financial support while women specialize in the home and in childrearing (Becker 1981). However, as women have become more financially independent, traditional gender roles have changed, and the gains to marriage for women have decreased. The centrality and importance of the marital union in women s lives has been dramatically reduced, albeit not equally across socioeconomic groups.

The structural power of men, based on economic, political, and legal advantages, has eroded over the past few decades. Opportunities for women have arisen in new realms previously unavailable. Thus, the increase in roles available to women and the ability of women to be financially independent means that marriage is no longer a financial necessity for many women, and men can no longer expect women to segregate themselves solely into domestic work. Employment subsidizes the search for mates, widens the pool of potential mates, and likely raises the minimum quality of acceptable mate (Oppenheimer 1988), and the economic independence provided by employment allows women to delay or even forgo marriage. The availability of public assistance has also been hypothesized to be negatively related to marriage, as it too provides women with economic resources outside of marriage. Overall, aggregate level changes in women s economic independence (variously measured as educational attainment, labor force participation, weekly earnings and wages, and average welfare payments, among other indicators) have been demonstrated to be significantly and negatively related to marriage rates and perhaps to other types of union formation (Lichter et al 1991; Fossett & Kiecolt 1993; Wood 1995; Lloyd & South 1996; Cready, Fossett, & Kiecolt 1997; Blau et al 2000; Lloyd 2001).

It should be noted, though, that the female economic independence hypothesis has its detractors, most notably Oppenheimer. Oppenheimer (1988, 1994) argues that the female economic independence argument is essentially an argument about *nonmarriage,* but marriage patterns reveal *delayed* marriage. Furthermore, she suggests that the patterns of delayed marriage

have more to do with the changing economic circumstances of prospective male spouses than with women s improving economic circumstances, a suggestion which is more in line with marriage market arguments.

Individual Level Arguments

Evidence against the female economic independence hypothesis has been found in individual level research in recent work. Contrary to expectations suggested by the hypothesis, women with higher levels of education are *more* likely to marry than those with less education (Lichter et al 1992; Oppenheimer, Kalmijn, & Lim 1997). Although women place more emphasis on the economic characteristics of potential mates than men, men *do* value steady employment in mates (Goldscheider & Waite 1986; South 1991; James 1998), and there is some evidence that women who are steadily employed or well-educated may be more marriageable to men (Lloyd & South 1996). In areas with a deficit of marriageable men, where men have more choices than women for mates, well-educated and employed women may have an advantage in forming a union, particularly marriage. Raley (1996) reports that although school enrollment reduces union formation, having just finished school is associated with a large increase in the rate of union formation, and women with a college education have a greater chance of marriage than cohabiting. Nonetheless, though it appears that well-educated women are more likely to marry than cohabit, they are forming cohabiting unions. For well-educated women, marriage is often delayed until their careers are established, but other unions, such as cohabitations, are not necessarily delayed. As these women become more established, cohabiting unions may make the transition to marriage. Because higher-education women usually follow an upward career trajectory and anticipate higher incomes in the future, it is unlikely that their union formation is influenced by the same factors as lower-educated women, whose financial situations are more precarious.

Cohabitation may also serve specific (but very different) purposes among well-educated women compared to less-educated women. Cherlin (2000) argues that as women improve their financial situation, they search for mates who not only have high earning potential but who also will share more equitably in housework and childcare. Cohabitation thus becomes an important opportunity to observe and assess men s skills and preferences for home production. Overall, it may be that high female socioeconomic status simultaneously reduces women s financial incentives to marry as it increases their attractiveness to potential mates; female education and employment may also expand the number of contacts with potential marriage partners (Oropesa et al 1994).

The relationship between female socioeconomic status and union formation may vary across races. Highly educated black women, compared to their white counterparts, face especially poor marriage prospects (South & Lloyd 1992a); they may widen their pool of acceptable males in response (Teachman et al 1987). There is evidence that although well-educated black women have a greater likelihood of marriage compared to poor blacks, they have a lower likelihood of marriage compared to well-educated white women (Bennett et al 1989). Financial resources, measured in terms of educational attainment and weekly earnings, quicken African American women s entry into marriage (Mare & Winship 1991). There is some indication that racial differences in marital behaviors are more evident in the nonpoor population and that male marriage market indicators affect only the probability of marriage among the poor, suggesting poverty is a strong deterrent to marriage (McLaughlin & Lichter 1997).

Hypotheses

There are a number of related hypotheses concerning women s union formation:

Hypothesis 1: As the numeric availability of men, particularly economically attractive men,

relative to women increases, union formation (both cohabitation and marriage) among

women is likely to increase. A lack of men inhibits union formation, whereas a surplus of men facilitates it. Sex ratios that are adjusted for employment may be more strongly related to union formation that unadjusted sex ratios, though this may not be the case in the presence of other controls for general male economic indicators.

Hypothesis 2: Coresidential unions are more likely to occur as the aggregate economic situation of men improves. Women who reside in areas with a low proportion of economically acceptable men may be reluctant to form a cohabitation or marriage due to general concerns over financial stability. As the proportion of economically attractive men increases, financial concerns may lessen and coresidential unions are more likely to occur.

Hypothesis 3: Of unions that do form in areas with a lack of men, couples are more likely to cohabit than marry. Conversely, as the supply of men increases, marriage is more likely than cohabitation. Cohabitation may be likely in the face of economic constraints as a means to pool financial resources and reduce expenses over maintaining separate residences, especially when couples often spend large amounts of time together anyway. The shortage of men available for a union may also force women to settle for a less permanent, less committed relationship. Because men would have more opportunities to enter another relationship than women, women may have to make concessions in the type of union formed to entice a mate into or maintain a relationship. Even if they prefer marriage over cohabitation, women may enter into a cohabiting union because of the fear that potential partners could find another woman willing to settle for a less permanent union. As the availability of economically attractive men increases, the degree to which women have to bargain to entice men into a union, by settling for cohabitation, will decrease, and men will have to increasingly compete for women by offering marriage.

Hypothesis 4: Women s individual economic characteristics may affect the significance of male

marriage market characteristics. For well-educated women or those with independent

sources of income, the effect of marriage market characteristics on the choice between

cohabitation and marriage may be insignificant. If women are financially independent, then

men s economic circumstances are perhaps less important. Additionally, women with

higher levels of education or who are employed, because they have greater bargaining

power in a restricted marriage market, may be more likely to form unions than women

with lower levels of education or who are not employed, and these unions are more likely

to be marriages than cohabitations. Women currently enrolled in school are unlikely to be

strongly influenced by male marriage market characteristics, as previous research has

demonstrated that current enrollment in school strongly deters union formation of any

kind (Raley 1996).

Hypothesis 5: In the presence of control for women s aggregate economic opportunities,

including the availability of welfare support [Aid to Families with Dependent Children

(AFDC)], men s aggregate characteristics are less likely to significantly affect union

formation. Additionally, women s aggregate economic characteristics may exert an

independent effect on union formation. Aggregate level indicators of women s

socioeconomic status may prove important, as greater employment opportunities for

women may improve their overall bargaining position within the marriage market and

change conceptualizations of appropriate sex roles for women. In line with previous

findings, it is hypothesized that higher aggregate female socioeconomic indicators (i.e.,

indicators of the female marriage market) would discourage overall union formation.

However, if a union is formed, it is hypothesized that higher aggregate female

socioeconomic status (as measured by female employment opportunities) would

encourage marriage over cohabitation. Conversely, the availability and generosity of

welfare may provide financial support and act as an incentive for cohabitation over marriage.

Data and Methods

To test these hypotheses requires information about individuals and their union formation, as well as aggregate level information. Cycle 5 of the National Survey of Family Growth (NSFG), a nationally representative sample of 10,847 persons conducted in 1995, meets both these requirements. Cycle 5 is the only wave of the NSFG to collect retrospective union formation histories. In addition, there is a restricted-access aggregate level file based primarily on the 1990 Census Summary Tape Files, located at the National Center for Health Statistics (NCHS) Research Data Center (RDC). Information is generally available at the state, county, tract, and block group levels in this contextual data file.

However, standard administrative boundaries (i.e., states or counties) are too rigidly bounded and defined; individuals do not decide not to date someone simply because he or she lives across a state border. As such, the preferable unit of analysis is the Labor Market Area (LMA) (Tolbert & Killian 1987; Tolbert & Sizer 1996). LMAs are the preferable geographic unit for the analysis of union formation because they are less rigidly defined than other geographic units, as they cross state and county lines. LMAs need not include an urban center and encompass all counties and county equivalents in the United States. As South (p. 438, 1995) notes, it is believed that LMAs constitute the spatial boundaries within which daily social interaction takes place and within which most potential spouses (or intimate partners more generally) are selected. LMAs have been used extensively in previous marriage market research (Lichter et al 1991; Lichter et al 1992; Lichter, Anderson, & Hayward 1995; South 1995; Lloyd & South 1996; Raley 1996; South 1996; McLaughlin & Lichter 1997; Lloyd 2001). There were 394 LMAs in 1990, based on journey-to-work patterns constructed from the 1990 Census, and

each LMA has a population of at least 100,000 persons. Because information at the LMA level is not readily available in the NSFG Contextual Data, I provided LMA level data to the NCHS RDC that was merged with the NSFG on the Federal Information Processing Standard (FIPS) county code. The LMA data were derived from the 1990 Summary Tape Files and the 1990 Public Use Microdata Sample L (PUMS-L). The 1990 PUMS-L file was created by Tolbert & Sizer (1996) solely for the analysis of LMAs.

The sample analyzed here is restricted to the first union of never married, never cohabited women aged 18-44 (n=2,145). Because the NSFG does not contain a complete migration history, only women s county of residence at time of interview and when they moved to that residence, women enter the analyis during the year they moved to their 1995 residence. The sample is also restricted to women 18 and older, since few coresidential unions occur among younger women.

Analyses begin in 1985. Because the analyses select women based on residence, going back further and further means there is increased selectivity of non-migrants over time. Using 1985 as a beginning point allows up to ten years of union formation and also allows an equal extension of the 1990 LMA variables five years forwards and backwards. Thus, some women will enter the analysis in 1985 if they were 18 prior to 1985 and lived in their 1995 county of residence prior to 1985 (n=421), or if they moved to their 1995 county during 1985 (n=49), turned 18 during 1985 (n=44), or both (n=3). Other women enter the year they turn 18 (n=630), the year they move to their 1995 county of residence (n=821), or both (n=177). Alternative analyses (not shown here) using 1990 as a beginning point (which would arguably be less selective) yielded substantively similar results; using 1985 as a starting point allows more women and more years of union formation in the analysis.

The analyses employ event-history methodology to determine how the explanatory variables affect the likelihood of remaining single, forming a cohabiting union, or marrying. Event

history techniques permit the use of both fixed and time-varying covariates (Allison 1982, 1984). Analyses are based on person-year of observation; because all the LMA variables are time-invariant, smaller units (i.e., person-months) would not add much. The dependent variable is whether never married, never cohabited women transition to a first cohabiting union (n=600) or to a first marriage (n=450) within the year. Individuals are coded 0 on the dependent variable if they remained single during the year, 1 if they entered a cohabiting union, and 2 if they formed a marriage. Because there are two routes of leaving the single state, multinomial logistic regression is the method of analysis. Individuals are censored after experiencing either a cohabiting union or a marriage. Multilevel models were also considered, given that the analysis uses both individual and aggregate level variables. However, because of the difficulty of incorporating time-varying individual variables into such models combined with the lack of time-varying aggregate variables here, complex multilevel event history models with a multiple-category dependent variable were deemed unnecessary and inappropriate.

The indicators of the marriage market are primarily demographic and economic variables related to the marriageability of males in the market and the more general economic conditions in the Labor Market Area. In addition, variables related to the aggregate situation of women in the market and the sociodemographic composition of the market are included. The independent variables at the aggregate level can be grouped into four sets of indicators, as measured at the LMA level in 1990 (unless otherwise indicated).

The sex ratio is defined as the proportion of unmarried men 16-49 to unmarried women 18-44. Unmarried persons includes separated, divorced, and never married individuals; only unmarried persons are included in sex ratios as only they are eligible for unions. Additionally, those with more desirable characteristics may have already been selected into marriage. Though the age ranges of this sex ratio are unorthodox, they are grounded in empirical evidence. Male

partners tend to be 2-3 years older than their female partners, but there is substantial diversion around the mean age difference between spouses (Fossett & Kiecolt 1991). Approximately one-third of women form unions with men 2-5 years older than they are, and another one-tenth form unions with men 2-5 years younger than they are (Fields & Casper 2001); the sex ratio here captures some of the age disparity.

More narrow age ranges, specific to smaller age groups (i.e., ratios specific just to women 20-24, 25-29, etc.), may be too restrictive and ignore competition between adjacent cohorts. For these reasons, Fossett & Kiecolt (1991) suggest that a broad but still age restricted sex ratio is preferable. Previous marriage market research has used similar age ranges (Kiecolt & Fossett 1991; Raley 1996) to that used here. Nonetheless, I explored sex ratios restricted to smaller age ranges on age-restricted samples (18-24, 25-29, 30-34, 35-39, 40-44) as well as balanced sex ratios (i.e., same age ranges of men to women), but model fit was better (with little change in coefficient magnitude or significance) with the wider, unbalanced age range than in models restricted to smaller age or balanced age groups.

In addition, I tested sex ratios adjusting for employment to account for the availability of economically attractive potential mates. Not surprisingly, employment-adjusted and unadjusted sex ratios of unmarried individuals are highly correlated. As with age-restricted models, models with an employment-adjusted sex ratio had poorer model fit than those with sex ratios not adjusted for employment, though the significance, direction, and magnitude of coefficients were similar. It should also be noted that adjusting for census undercount, which disproportionately affects African Americans, is unnecessary. As Fossett & Kiecolt (1991) note, unadjusted sex ratios and sex ratios adjusted for undercount are extremely highly correlated, and adjusting for undercount in analyses yields virtually identical results.

The male economic situation is measured by the proportion of unmarried men aged 16-49

who are currently employed (civilian or military, excluding the unemployed and those not in the labor force). This measure captures the desirability of available men in the market in terms of labor force status and to some extent reflects economic opportunities in the LMA. The proportion of unmarried men with a high school diploma or higher is also included to reflect the socioeconomic status of the available men in the LMA. The proportion of men with high school diplomas or higher was chosen rather than the proportion of men with college degrees or higher because the latter is fairly low (the national proportion is about 20%) and demonstrated less variability across LMAs.

Two indicators of aggregate female economic position are included as well. First, a measure of economic opportunities for women, the female labor force opportunity index, is included to reflect women s possible economic independence (Nakamura, Nakamura, & Cullen 1979). This measure indicates the expected number of jobs for female workers relative to the potential supply of female workers aged 16 or older, taking into account the sex-segregated nature of the labor market and is defined below

$$\frac{p_i w_i}{F}$$

where the expected number of jobs for women in the LMA is expressed as w_i, the number of workers in the LMA in the 3-digit census occupation category i, weighted by p_i, the national proportion of workers in occupation category i who are female, summed over all occupations; and F is the potential supply of women workers, expressed as the number of women in the LMA aged 16 and older. If women have opportunities to financially support themselves without the assistance of men, union formation may be discouraged. The use of the female labor force opportunity index has been used extensively across a variety of topics analyses of female labor force participation in various countries (Cameron, Dowling, & Worswick 2001), labor force participation across racial groups (Kahn & Whittington 1996) and across marital statuses (Lehrer 1995), and social context and sexual activity (Brewster, Billy, & Grady 1993), just to give a few

examples. Second, an indicator of available public support, the maximum AFDC payment for a family of 3 (measured at the state level), is included. This reflects another alternative for women to be financially independent, and it may be that in states with fairly high AFDC payments, there are incentives for cohabitation over marriage.

Aggregate economic and demographic characteristics of the LMA are also included as covariates. The proportion of families with incomes below the poverty level in 1989 reflects the local economy. The proportion of female-headed families is included to suggest the degree to which female-headed families are accepted as a viable family form. If there is a high proportion of such families, there may be less social pressure to marry in order to have a family. Degree of urbanization may also be an important characteristic, as it has been argued that the level of urbanization is a proxy for traditional family values (Lichter et al 1991). To measure this, a variable indicating whether the LMA is rural or urban is included, and the logged LMA population size is included; these two variables are only weakly correlated. Additionally, following the lead of previous marriage market research (Tanfer 1987; South & Lloyd 1992a; South & Lloyd 1992b; Lichter et al 1992; McLaughlin et al 1993; Lichter et al 1995; Wood 1995; Raley 1996), a control for region will be used, as marriage patterns and economic conditions vary by region (Goldscheider & Waite 1986).

In addition to marriage market indicators, there are individual level variables that affect the likelihood and type of union formation. Age is entered as a linear, time-varying covariate[1]. Cohabitors are generally younger (Nock 1995), but it may also be the case that older, never married persons are consciously avoiding marriage or have characteristics that make them

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[1] Alternative specifications of age (age squared, square root of age) were tested to see if age was not linearly related to union formation. However, the alternative specifications did not yield substantively different results.

undesirable mates. Religious affiliation (Catholic or other) reflects value orientation, as it has been shown to significantly affect union formation (Tanfer 1987; Thornton, Axinn, & Hill 1992). Catholics are expected to be more likely to marry than cohabit. Race and ethnicity have been strongly linked to the likelihood and type of union formation (Bumpass & Sweet 1989a; Landale & Forste 1991; Manning 1993; Landale 1994; Manning & Smock 1995; Manning & Landale 1996; Raley 1996; Manning 1999a; Manning 1999b), and it is measured as non-Hispanic white, non-Hispanic Black, and Hispanic. School enrollment status is included because it has been shown to discourage union formation of any kind (Raley 1996). Enrollment is a time-varying variable defined as having spent six or more months enrolled full- or part-time in college during the year. Employment is a time-varying variable defined as working full- or part-time for six or more months during the year. If a woman is financially independent, she may have less incentive to marry and more bargaining power to secure the type of relationship she desires. Whether the woman experienced a pregnancy or birth during the year is included, as a pregnancy may encourage coresidence. A time-varying variable is also included for whether the woman experienced a birth prior to the current year; because the analysis looks at the first union, all prior births are nonmarital. The presence of children has been shown to affect the likelihood of first marriage (Bennett et al 1989); children likely increase the marital search costs and reduce women s attractiveness in the marriage market.

  With person-years as the unit of analysis, causality during the year is not determined. For instance, women forming a union and having a child in the same year could form the union either before or after having the child, but the data structure does not discern order. Additionally, causality between the LMA characteristics and union formation are difficult to determine. Because women enter the analysis during the year they moved to their 1995 residence, if a woman both moves and forms a union during the same year, it is technically possible she formed the union

prior to moving to the area, though this happened rarely (less than 3% of the sample). It is also possible that women purposively move to areas with more favorable marriage market prospects. Thus, this analysis does not decisively prove causality between LMA characteristics and union formation, merely association.

<u>Results</u>

Descriptive Statistics

Table 3.1 here

Table 3.1 displays descriptive information on the analytical NSFG sample of never married, never cohabited women. More than one-fourth of the woman had a child during the period, and over half were enrolled in school at some point during the ten-year period. Women contributed, on average, nearly 4 years to the analysis.

Table 3.2 here

Table 3.2 contains descriptive information on the Labor Market Areas in which the NSFG subsample reside. The LMAs analyzed are fairly large in population size, with an average of nearly three and a half million persons; in the analyses, the population size is logged. The average sex ratio of unmarried men 16-49 to unmarried women 18-44 is 1.29, indicating that there are generally more available men than women. One would expect this number to be greater than one because of the wider age range of men included than women. Both the average proportion of female headed households and the average proportion of families living below poverty are fairly low. The fairly low proportion of these last two variables resulted in very small coefficients in multivariate analyses, which made interpretation difficult. To deal with this, I recoded them into dummy variables indicating whether the LMA had a high proportion, defined as greater than the mean plus one standard deviation. Doing so also has intuitive appeal it that instead of interpreting the effect of an increase, this reveals the effect union formation of living in either an area of high

poverty and/or living in an area with a large percentage of female-headed households. Approximately fifteen percent of LMAs have a high proportion of female headed households, and twelve percent have a high proportion of families living below the poverty level.

Multivariate Results

<div align="center">*Table 3.3 here*</div>

I first grouped together cohabitation and marriage to determine if the individual level and aggregate level variables affect overall union formation. Results from the logistic regression of Labor Market Area and sociodemographic characteristics on any union (both cohabitation and marriage) are presented in Table 3.3. Only three time-invariant individual variables are significant. Blacks are significantly less likely to form a union than whites. Foreign born individuals and those who reside in a rural area are more likely to form a union than stay single; both of these groups may be people who hold more traditional values and who place a high value on family. Additionally, foreign born individuals may be marrying for legal reasons. Nearly all of the time-varying individual variables are significant. Union formation is less likely to occur as age increases, likely demonstrating selection into unions with age as women cohabit and marry. As expected, enrollment in college is also associated with a decreased likelihood of both cohabiting and marrying. Having a child is positively related to union formation, either because people who are already in relationship decide to coreside when they become pregnant or because after forming a coresidential union, their sexual activity and thus their exposure to pregnancy increases. However, because the units of analysis are years and pregnancies take nine months, the former possibility seems more likely. Employment also encourages union formation; women who have a means of financial support are perhaps more attractive to partners. Finally, as education increases, the likelihood of union formation among women increases, again perhaps because they are increasingly attractive as mates.

Of the LMA variables, only the female labor force opportunity index is significant at conventional levels. As opportunities for women increase, the likelihood of union formation decreases. Greater opportunities for women to participate in the labor force increases the ability of women to be financially self-sufficient and reduces the need for union formation as a means of financial support among women. It also alters the bargaining position of women in the marriage market and perhaps changes conceptualizations of appropriate sex roles. The sex ratio of unmarried men aged 16-49 to unmarried women aged 18-44 misses significance with a p-value of 0.067, suggesting a weak positive effect of increase in the sex ratio on union formation.

Table 3.4 here

The prior model examined the formation of any union, but many of the arguments in this paper focus on cohabitation and marriage as distinct unions. Odds ratios from multinomial logistic models regressing individual level and LMA characteristics on cohabitation and marriage relative to remaining single are presented in Table 3.4. Several models are shown, beginning with Model 1 that regresses cohabitation and marriage solely on the sex ratio. In a simple model, the sex ratio significantly predicts both unions, with a much larger effect on marriage. As the sex ratio increases   as there are more men relative to women   the likelihood of forming a union, particularly marriage, increases.

Model 2 is a base model that includes time-invariant individual characteristics and general characteristics of the LMA. In predicting cohabitation relative to remaining single, only the log of the 1990 population is significant; as the population increases, the likelihood of cohabitation decreases. Three time-invariant variables are significant in predicting marriage (but not cohabitation) relative to remaining single. Blacks are less likely to marry than whites, consistent with prior research. Foreign born individuals are more likely to marry than remain single; they may perhaps retain conservative values from their homeland or are influenced by family members,

or they may be marrying for legal reasons. Finally, living in a rural area encourages marriage. A rural area is a proxy for a more conservative social environment in which marriage might be more socially acceptable.

Model 3 adds individual time-varying variables to the base model. In the presence of time-varying variables, blacks are now significantly less likely to either cohabit or marry than remain single. Being foreign born and living in a rural area are still significantly associated with greater odds of marrying. Population remains a significant predictor of cohabitation. Of the time-varying variables, the likelihood of both cohabitation and marriage decrease with age. Individuals with more desirable characteristics and who have more favorable attitudes toward unions may be increasingly selected into unions with age. Having a child during the year is significantly, strongly, and positively associated with union formation, and the effect is larger on cohabitation than marriage. A previous nonmarital birth, though, discourages marriage; this is perhaps because women with children are undesirable as potential spouses and/or have a weaker bargaining position. College enrollment during the year discourages cohabiting and marrying relative to forming no union. During college, it can be difficult to combine the student and spousal/partner roles. Additionally, the impermanence of college   it is a finite experience and often requires residential mobility   may hinder union formation. Working during the year encourages cohabiting and marrying. Finally, as education increases, the likelihood of marrying significantly increases, with no effect on cohabitation. Both working and having higher levels of education may make a woman more marriageable.

The next two models add indicators of the female and male economic situation of the LMA. In both models, being black, foreign born, and living in a rural area remain significant predictors of marriage. Population is no longer significant in the model including female economic indicators but does significantly and negatively affect both cohabitation and marriage in

the male economic indicator model. Of the female economic indicators in Model 4, only the female labor force opportunity index is significant. Though it has no effect on the likelihood of cohabitation, as opportunities for women increase, the likelihood of marriage decreases slightly as the employment opportunities for women increase. The ability for women to be financially independent lessens the need for marriage for financial security. Greater opportunities for women in the aggregate may also alter the balance of power between men and women and affect relationship processes. Similarly, no male economic indicators in Model 5 affect the likelihood of cohabiting relative to staying single, though the proportion of unmarried males aged 16-49 who are at least high school graduates in the LMA has a significant relationship with marriage. The direction of the relationship, though, is unexpected   as the proportion increases, the likelihood of marriage slightly decreases, and I have no explanation for this finding.

Model 6 adds the sex ratio to the base model. As in prior models, virtually nothing, except population, influences cohabitation, though the same base covariates significant in prior models remain significant here in predicting the likelihood of marriage. Most importantly, the sex ratio has a significant effect on the likelihood of marriage   as the sex ratio increases (i.e, as there are more men available for unions) the odds of marriage increases. This supports demographic arguments that the sheer quantity of men affects marriage formation, where more potential spouses translates into higher odds of marriage.

Finally, the Model 7 includes individual level time-invariant and time-varying variables as well as the measures at the LMA level. In this model, being black discourages both cohabitation and marriage relative to whites, with a much stronger negative effect on marriage. Foreign born individuals and those living in a rural area have higher odds of marrying relative to remaining single. Of the time-varying individual variables, the same variables remain significant and virtually unchanged in magnitude from the earlier model. The female labor force opportunity index is also

significant, decreasing the likelihood of marriage. Even in the presence of other indicators of the male marriage market, the sex ratio has a significant and positive effect on the likelihood of marriage, with higher ratios of men to women increasing the odds of marriage. As in the previous model, the proportion of men with a high school degree or higher is negatively associated with the likelihood of marriage.

Because many of the arguments made here concern the effect of marriage market factors on the choice between cohabitation and marriage, the final column of Table 3.4 shows the contrast of marriage relative to cohabitation. Though African Americans are less likely to form a union than whites, when they do form a union they are more likely to cohabit than marry. Foreign born women, conversely, are more likely to marry than cohabit, perhaps for reasons related to immigration. Women who live in rural areas, which are often more conservative than urban areas, are also more likely to marry than cohabit.

Some of the time-varying variables also influence the choice between marriage and cohabitation. As hypothesized, women who had a nonmarital birth in the past are more likely to cohabit than marry. This may reflect their lower bargaining position in the marriage market, or it may reflect a reluctance among both partners to form a permanent and legally binding union. As women age, they are more likely to marry than cohabit as a first union. Similarly, increasing levels of education are associated with greater odds of marrying than cohabiting. Women with higher levels of education may have greater bargaining power in a relationship to form the type of union they prefer. Additionally, women with higher education levels may also be more attractive to potential mates, who may desire marriage as a union to secure a more permanent relationship.

Finally, despite that only one marriage market indicator is significant in predicting marriage over cohabitation, it is the one of greatest interest   the sex ratio. As the sex ratio increases   as there are more men available relative to women   women are more likely to marry

than cohabit, which suggests that cohabitation and marriage are not viewed interchangeably. This supports the arguments made in this paper that a more favorable demographic situation for women translates into a greater likelihood that women will marry rather than cohabit. With more men available, women do not have to settle for a more impermanent, less secure relationship like cohabitation. With higher sex ratios, men may desire marriage as a stronger, more concrete union in which to guarantee access to an intimate female relationship while women are able to fulfill their preferences for monogamy in the legally codified, socially sanctioned union of marriage. There is no support for arguments that quality of potential mates (marriageability) is more important than quantity.

In analyses not shown here which were run separately by racial group, the significance and direction of the individual level variables are consistent with earlier models. In particular, increasing levels of education are associated with a greater likelihood of marriage, with somewhat larger effects for blacks and Hispanics. Minorities may benefit more from education into terms of their desirability as potential mates because far fewer minorities achieve high levels of education, so well-educated minorities are a select and attractive group. The sex ratio was only significant for whites, though this may be because the sex ratio is not broken down by race or ethnicity. As in other models, as the sex ratio increases, the odds of marriage increase, with no effect on cohabitation relative to staying single. No LMA variables are significant predictors of union formation for blacks. For Hispanics, increases in the female labor force opportunity index discourage marriage. Male marriage market indicators are significant for Hispanics as well, with increasing proportions of employed men increasing the odds that Hispanic women will cohabit or marry and increases in the proportion of unmarried men with at least a high school diploma slightly discouraging cohabitation.

Discussion and Conclusion

This study examines how the availability of potential mates in the local marriage market is related to union formation, particularly the choice between cohabitation and marriage, among women. The use of sex ratios in models of marriage formation has a long history in sociological and demographic research, stemming from attempts to explain declines and differences in marriage rates. Theoretically, increasing sex ratios would translate into a greater likelihood of marriage among women, while decreasing sex ratios would inhibit marriage. Although arguments about the availability of potential mates have found some empirical support, they have not been able to fully explain different marriage rates across groups. One explanation as to why the use of sex ratios may not completely explain marriage differentials is that differences in marriage rates are related to differences in the timing of first unions, the type of first union, and the duration from first union to first marriage (Raley 1996); if sex ratio research ignores differences in the type of first union, then it may be missing an important part of the story. I argue that one reason the use of sex ratios in past research has not fully explained differences in union formation is because nearly all prior work focused only on marriage, ignoring cohabitation. Cohabitation has quickly become a common first union, and as such, the availability of potential mates may influence the likelihood not only of marriage but of cohabitation and perhaps the choice between union types.

If sex ratios influence the likelihood of both cohabitation and marriage, do they do so in the same manner? That is, are cohabitations and marriages equally more likely to occur as the sex ratio increases? This would suggest that cohabitation and marriage are in some ways substitutable. Conversely, though, the sex ratio may affect the choice between union types. If there is a lack of available and acceptable mates, women may still form unions but may choose unions that have fewer demands on either mate. In our society, marriage has implications of financial stability and independence, particularly for men. If the men who are potential mates are financially unstable, women may still want to form relationships but are reluctant to form a long-

term and legally binding relationship like marriage. Instead, they might cohabit, which is ended relatively easily and has far fewer normative and legal obligations. Cohabitation may also be a bargaining response to a low sex ratio. If there are more women than men available, women (even if they would prefer marriage as a union type) may entice men into cohabitation by offering the sexual intimacy and economies of scale it provides without making the fidelity and financial demands also associated with marriage.

Financial constraints may also play a stronger role in the union-forming process of women with children. They may be unwilling to invite a man into their home via marriage or cohabitation who cannot financially contribute on a regular basis to the household, as they have the financial well-being of not only themselves but of their children to consider. It may also be the case that women with children do not form coresidential unions because they are unattractive as potential mates and have a lower bargaining position. If women do decide to form a union, cohabitation may be more appealing than marriage for both partners, as it can provide economies of scale but carries far fewer legal and financial constraints and can be easily ended. They may also suggest cohabitation as a way to attract men who may be reluctant to form a union with a women who has children.

The theoretical arguments concern both demographic and economic factors. I use sex ratios which are adjusted for marital status but not employment status and two indicators of the male economic position. This is done because the sex ratios unadjusted for employment have better model fit in the presence of controls for male economic position (the proportion of unmarried employed males and the proportion of unmarried males with at least a high school degree), though the significance and direction of the odds ratios for both employment and marital status adjusted are similar to that adjusted only for marital status. This suggests that for women the availability of employed males is less important the sheer numeric availability of mates. The

sex ratio of unmarried men to unmarried women just misses significance in predicting overall union formation when cohabitation and marriage is grouped together, suggesting that it may have an effect, albeit limited, on overall union formation.

When broken down by union type, however, the sex ratio is significant in predicting the likelihood of marriage. As the sex ratio increases, women are more likely to marry than either stay single or cohabit. By inference, lower sex ratios would discourage marriage over either being single or cohabiting. Cohabitation and marriage, then, do not appear to be substitutable. This implies that part of the response among women to low sex ratios would be to either not form any union or to cohabit. These results are partially consistent with the first three hypotheses. The availability of potential mates does encourage union formation but only marriage. As the ratio of unmarried men to unmarried women increases, women are more likely to marry, while declines in the sex ratio increase the likelihood of not marrying. Thus, only the odds of marriage (relative to not forming a union or cohabiting) are significantly influenced by the sex ratio. Controlling for the sex ratio, only one indicator of the male economic position, the proportion of men with at least a high school diploma, is significant but in an unexpected direction a higher proportion of men with at least a high school diploma is associated with a decreased likelihood of marriage relative to staying single among women. Overall, though, this suggests that better economic characteristics of potential mates do not encourage union formation more strongly than a favorable demographic situation.

Of the other indicators of the economic condition of the Labor Market Area, only the female labor force opportunity index is significant. As the ability of women to find employment and by extension become financially independent improves, the likelihood of marrying relative to remaining single decreases. Greater opportunities for women generally reduce the financial incentive to marry and affect the way men and women relate to each other. Aggregate female

economic indicators have no effect on the choice between cohabitation and marriage. There is no evidence that the availability of welfare has a significant impact on union formation. Additionally, as hypothesized, in the presence of aggregate indicators of the economic position of women, no male economic indicators significantly affect the choice between cohabitation and marriage.

Finally, the individual level time-varying variables appear to be highly significant in influencing union formation. College enrollment inhibits union formation of both types. Both having a child and being employed during the year have the opposite relationship by encouraging union formation. Although there is an effect of aggregate level indicators on union formation, the effect of individual level variables is much greater. Not surprisingly, what is occurring in a woman s life is the most important factor in her union formation   whether she is both willing and able to be in a relationship and whether she is an appealing potential mate. Aggregate factors do affect the context through which women make union decisions and form the market in which they search for potential mates. Nonetheless, the relative impact of conditions at the aggregate level have a far weaker impact on union formation than individual level characteristics.

The research here is far from conclusive, though. Ideally, one would want time-varying characteristics at the aggregate level to determine how sensitive union formation is to changes in demographic and economic conditions. Better indicators of economic acceptability, such as wages and employment type (full- or part-time, occupation, etc.), might have a stronger effect on union formation. Such indicators might better reflect whether a man has a good job that would make him desirable as a mate and whether he would be able to support a family. Sex ratios that are broken down by race and ethnicity might also better capture racial differences in the marriage market. However, time-varying measures, including sex ratios, that are separated by race and ethnicity and adjusted for marital status and multiple economic factors are difficult to find. It may also be that Labor Market Areas do not accurately reflect a realistic marriage market. Though the

LMA is preferred over standard units because it crosses state and county boundaries   people do not decide not to date someone who lives within a few miles but across a county line   it can comprise a fairly large geographical area when population is sparse.

Endogeneity is also a concern. While it is somewhat unlikely (though not at all impossible) that women who are looking for a potential mate would have enough information to move to an area in which men are more numerous, they may certainly move to areas that are known to be economically thriving, increasing the chances of meeting a man who is more economically secure. By necessity, this analysis only included women when they moved to their 1995 county; it could not control for the factors that may influence a decision to move.

This study demonstrated that although the numeric availability of men affects the likelihood of first marriage among young women, indicators of the overall male economic position have little effect. At the aggregate level, better female labor force opportunities discourage marriage but at the individual level, higher education and employment encourage marriage. Most importantly, though, individual level time-varying characteristics play the largest part in union formation. Future marriage market research should consider that what may influence union formation most strongly is whether an individual is ready and willing to form a union. Once a person is actively looking for a mate, they then do so in the context of the marriage market, where their own characteristics affect *their* marriageability as well.

Table 3.1 Descriptive Statistics (weighted)

Average age in 1995	26.0
Catholic	31.3%
Race	
White	72.1%
Black	14.4%
Hispanic	13.5%
Foreign Born	12.2%
Lived in a rural area	10.9%
Region	
Northeast	18.9%
Midwest	24.2%
South	33.2%
West	23.7%
Average years of education in 1995	14.1
Had a child nonmaritally by 1995	9.5%
Had child between 1985-1995	27.1%
Employed between 1985-1995 period	88.6%
Enrolled in college between 1985-1995 period	57.3%
Average number of years in analysis	3.93
N	2145

Table 3.2 Descriptive Statistics of Labor Market Area Characteristics in 1990 (weighted)

1990 population	3,332,212
	(98,906)
Sex Ratio of Unmarried Men	
16-49 to Unmarried Women 18-44	1.29
	(.004)
Proportion of Employed	
Unmarried Males Aged 16-49	0.6969
	(.0015)
Proportion of Unmarried Males Aged	
16-49 with High School Degrees	0.7023
	(0.0017)
Proportion of Female	
Headed Households	0.1019
	(0.0250)
Proportion of Families Living	
Below 1989 Poverty Level	0.0978
	(0.0009)
Female Labor Force Opportunity Index	0.5397
	(0.0014)
Average 1990 AFDC payment	$409.19
for a family of 3	($3.93)

Standard errors are in parentheses.

Table 3.3. Odds Ratios from Logistic Regression of Labor Market Area Marriage Market and Sociodemographic Variables on Forming Any Union Relative to Not Forming a Union using Person-years of Never Married, Never Cohabiting Individuals aged 18-44 during the years 1985-1995

	Any Union rel. to No Union
Time-Invariant	
Catholic	0.951
	(0.080)
Race (default=white)	
Black	.656***
	(0.065)
Hispanic	0.877
	(0.103)
Foreign Born	1.526***
	(0.172)
Rural	1.402**
	(0.915)
Region (default=Northeast)	
Midwest	0.958
	(0.118)
South	0.899
	(0.138)
West	1.034
	(0.134)
1990 population, logged	0.951
	(0.037)
High proportion of families living below poverty line, 1989	0.963
	(0.137)
Time-Varying, yearly	
Age	.935***
	(0.007)
Had a nonmarital birth prior to current year	0.915
	(0.1050)
Had child during the year	4.132***
	(0.578)
Enrolled in school during the year	.441***
	(0.037)
Employed during the year	2.312***
	(0.233)
Education level	1.135***
	(0.037)
Female Economic Indicators	
Labor Force Opportunity Index	.140*
	(0.136)
High proportion of female headed households	0.894
	(0.105)
1990 Maximum AFDC payment, Family of Three	0.953
	(0.136)

Male Economic Indicators

Prop. Employed Unmarried Males	2.732
	(2.244)
Prop. HS Graduates Unmarried Males	0.500
	(0.354)

Labor Market Area Sex Ratio

Sex Ratio of unmarried males 16-49

to unmarried females 18-44	1.536[#]
	(0.360)

df	22
N (person years)	8420
Subjects	2145
Failures	1050
-2 log likelihood	5915.3582
Pseudo R^2	0.0663

Standard errors in parentheses   *** p .001, ** p .01, * p .05
[#] p=.067

Table 3.4. Odds Ratios from Multinomial Logistic Regression of Labor Market Area Marriage Market and Sociodemographic Variables on Cohabitation and Marriage using person-years of never married, never cohabiting individuals aged 18-44 during the years 1985-1995 (Base Category is No Union)

	Model 1		Model 2		Model 3		Model 4		Model 5	
	Cohabit vs. No Union	Marry vs. No Union	Cohabit vs. No Union	Marry vs. No Union	Cohabit vs. No Union	Marry vs. No Union	Cohabit vs. No Union	Marry vs. No Union	Cohabit vs. No Union	Marry vs. No Union
Variables										
Time-Invariant										
Catholic			0.866	1.091	0.868	1.049	0.866	1.092	0.871	1.112
			(.093)	(.127)	(.096)	(.124)	(.093)	(.127)	(.094)	(.130)
Race (default=white)										
Black			0.845	0.403***	0.772*	0.466***	0.857	0.414***	0.841	0.395***
			(.091)	(.061)	(.092)	(.074)	(.094)	(.063)	(.091)	(.060)
Hispanic			0.932	0.957	0.794	1.026	0.921	0.921	0.923	0.924
			(.139)	(.147)	(.125)	(.165)	(.137)	(.142)	(.139)	(.144)
Foreign Born			1.123	1.901***	1.169	2.074***	1.124	1.889***	1.122	1.896***
			(.166)	(.282)	(.179)	(.321)	(.167)	(.281)	(.166)	(.282)
Rural			1.242	1.806***	1.177	1.965***	1.239	1.762***	1.201	1.621**
			(.197)	(.300)	(.192)	(.338)	(.199)	(.296)	(.194)	(.274)
Region (default=Northeast)										
Midwest			1.014	1.062	0.981	1.040	0.099	1.057	0.982	0.959
			(.138)	(.176)	(.136)	(.173)	(.145)	(.190)	(.136)	(.160)
South			0.906	1.298	0.863	1.192	0.862	1.260	0.844	1.022
			(.122)	(.203)	(.119)	(.189)	(.152)	(.261)	(.124)	(.174)
West			1.053	1.223	1.104	1.269	1.055	1.282	0.982	0.955
			(.142)	(.190)	(.152)	(.201)	(.151)	(.214)	(.145)	(.165)
1990 population, logged			0.905*	0.948	0.911*	0.928	0.935	1.022	0.985**	0.914
			(.035)	(.043)	(.037)	(.043)	(.043)	(.055)	(.037)	(.043)
High proportion of families living below poverty line, 1989			0.958	1.121	0.989	1.154	0.877	0.855	0.947	1.064
			(.144)	(.180)	(.152)	(.189)	(.155)	(.165)	(.164)	(.201)
Time-Varying, yearly										
Age					0.916***	0.955***				
					(.009)	(.010)				
Had a nonmarital birth prior to current year					1.109	0.626*				
					(.152)	(.120)				

Model 6		Model 7			
Cohabit vs. No Union	Marry vs. No Union	Cohabit vs. No Union	Marry vs. No Union	Marry vs. Cohabit	*Variables*
					Time-Invariant
0.869	1.102	0.868	1.076	1.239	Catholic
(.093)	(.128)	(.096)	(.128)	(.192)	
					Race (default=white)
0.845	0.401***	0.785*	0.471***	0.600**	Black
(.091)	(.061)	(.095)	(.076)	(.116)	
0.926	0.933	0.795	0.971	1.222	Hispanic
(.138)	(.143)	(.125)	(.159)	(.265)	
1.122	1.886***	1.177	2.059***	1.749*	Foreign Born
(.166)	(.280)	(.181)	(.318)	(.363)	
1.233	1.749***	1.183	1.782***	1.507	Rural
(.196)	(.291)	(.196)	(.313)	(.341)	
					Region (default=Northeast)
1.001	1.012	0.940	0.951	1.012	Midwest
(.137)	(.168)	(.144)	(.176)	(.233)	
0.902	1.225	0.829	0.960	1.158	South
(.122)	(.198)	(.159)	(.220)	(.323)	
0.996	1.010	1.069	0.975	0.912	West
(.143)	(.166)	(.174)	(.187)	(.220)	
0.912*	0.977	0.930	0.984	1.058	1990 population, logged
(.036)	(.045)	(.046)	(.056)	(.076)	
					High proportion of families living below poverty line, 1989
0.960	1.136	0.982	0.950	0.968	
(.145)	(.184)	(.182)	(.189)	(.249)	
					Time-Varying, yearly
		0.917***	0.958***	1.045**	Age
		(.009)	(.010)	(.015)	
		1.112	0.636*	0.572*	Had a nonmarital birth prior to current year
		(.153)	(.122)	(.131)	

Variable		
Had child during the year	4.225***	3.700***
	(.678)	(.774)
Enrolled in school during the year	0.446***	0.430***
	(.048)	(.054)
Employed during the year	2.088***	2.795***
	(.256)	(.457)
Education level	1.068	1.202***
	(.047)	(.054)
Female Economic Indicators		
Labor Force Opportunity Index	0.271	0.026**
	(.290)	(.032)
High proportion of female headed households	0.887	0.846
	(.123)	(.136)
1990 Maximum AFDC payment, Family of Three	0.928	0.935
	(.161)	(.189)
Male Economic Indicators		
Prop. Employed Unmarried Males	1.943	9.283*
	(1.809)	(9.971)
Prop. HS Graduates Unmarried Males	0.383	.041***
	(.305)	(.037)
Labor Market Area Sex Ratio		
Ratio of Unmarried Males 16-49 to Unmarried Females 18-44	1.6980*	3.7191***
	(.434)	(1.008)

df	2	20	32	26	24
N (person years)	8420	8420	8420	8420	8420
Subjects	2145	2145	2145	2145	2150
Failures	600 450	600 450	600 450	600 450	600 450
-2 log likelihood	7744.260	7645.384	7278.636	7634.416	7631.259
Pseudo R²	0.0032	0.0159	0.0631	0.0173	0.0178

Standard errors in parentheses   *** p .001, ** p .01, * p .05

		4.261*** (.685)	3.679*** (.775)	0.863 (.205)	Had child during the year
		0.448*** (.048)	0.442*** (.055)	0.986 (.157)	Enrolled in school during the year
		2.091*** (.026)	2.796*** (.055)	1.337 (.266)	Employed during the year
		1.067 (.047)	1.223*** (.056)	1.145* (.070)	Education level
					Female Economic Indicators
		0.382 (.480)	.041* (.057)	0.106 (.190)	Labor Force Opportunity Index
					High proportion of female headed households
		0.869 (.130)	0.930 (.160)	1.070 (.233)	
					1990 Maximum AFDC payment, Family of Three
		0.955 (.173)	0.932 (.197)	0.976 (.260)	
					Male Economic Indicators
		1.343 (.141)	7.914 (9.355)	5.892 (8.849)	Prop. Employed Unmarried Males
		1.253 (1.130)	.132* (.136)	0.105 (.137)	Prop. HS Graduates Unmarried Males
					Labor Market Area Sex Ratio
					Sex Ratio of unmarried males 16-49 to unmarried females 18-44
1.382 (.389)	3.023*** (.933)	1.082 (.329)	2.489** (.815)	2.301* (.968)	
22		44			**df**
8420		8420			**N (person years)**
2150		2150			**Subjects**
600	450	600	450		**Failures**
7631.528		7251.912			**- 2 log likelihood**
0.0177		0.0666			**Pseudo R²**