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# Marriage Market Mismatches in Japan: An Alternative View of the Relationship between Women's Education and Marriage

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*In Japan, unlike in most other industrialized societies, the decline in marriage rates has been most pronounced among highly educated women. Theoretical interpretations of this distinctive pattern of change have typically emphasized increasing economic independence for women and reductions in the gains to marriage. In this paper, the authors develop and evaluate an alternative explanation that emphasizes women's continued dependence on men's economic resources and decline in the relative supply of highly educated men. Using data from four rounds of the Japanese National Fertility Survey, the authors decompose the observed decline in marriage rates into changes in the propensity to marry and changes in the educational composition of the marriage market. Results indicate that change in the availability of potential spouses accounts for one-fourth of the decline in marriage among university-educated women and explains a substantial proportion of the growing educational differences in marriage. The conclusion is that the relatively large decline in marriage among highly educated Japanese women likely reflects both increasing economic independence and continued economic dependence on men.*

The trend toward later marriage in industrialized countries (e.g., Kiernan 2000; Raley 2000) is particularly pronounced in Japan (Raymo 2003; Retherford, Ogawa, and Matsukura 2001). With mean age at first marriage reaching 27.6 for women and 29.4 for men in 2003, Japan is currently one of the latest marrying societies in the world (National

Institute for Population and Social Security Research, NIPSSR hereafter, 2005). Not only is first marriage taking place at later ages, the proportions of Japanese men and women who never marry are also projected to increase substantially (NIPSSR 2002; Retherford et al. 2001).

Consistent with sociological and economic theories of marriage that emphasize concepts of specialization and exchange (e.g., Becker 1991; Parsons 1949), the trend toward later and less marriage in Japan is most pronounced among highly educated women (Raymo 2003). The standard theoretical explanation for this pattern of change suggests that the gains to marriage derived from spousal pooling of complementary specializations are lower for Japanese women whose economic prospects most resemble those of their potential mates. Interestingly, however, this "economic independence hypothesis" has received little empirical support in most other countries. Recent studies of the United States and other industri-

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alized societies have consistently found women's educational attainment to be positively or insignificantly related to marriage (e.g., Blossfeld and Huinink 1991; Bracher and Santow 1998; Goldstein and Kenney 2001; Sweeney 2002; Thornton, Axinn, and Teachman 1995). A similar pattern of cross-national variation is observed with respect to other indicators of women's economic resources such as earnings and employment. Women's economic resources are positively or insignificantly associated with marriage in the United States (e.g., Sweeney 2002; Xie et al. 2003), Sweden (Ono 2003), and Australia (Santow and Bracher 1994), but negatively associated with marriage in Japan (Ono 2003). Italy is one of the few other industrialized countries in which an inverse relationship between women's educational attainment and marriage has been documented (Pinelli and De Rose 1995).

Sociologists have attributed these cross-national differences in the relationship between women's education and marriage to gender context, arguing that women's economic independence may be most relevant for understanding changing marriage behavior in societies where gender asymmetry in the division of domestic labor makes it difficult for women to balance work and family (e.g., Blossfeld 1995). For women in societies such as Japan, where gender specialization remains a basic feature of marriage (Tsuya et al. 2005; Tsuya and Mason 1995), marriage typically entails either a reduction in market employment or a burdensome "second shift." As women's educational attainment and associated economic opportunities increase, both of these alternatives may become progressively less attractive.

In most other industrialized societies, however, convergence in husbands' and wives' economic roles (Gershuny 2000) is thought to increase the importance of women's economic potential as a spouse selection criterion (Sweeney and Cancian 2004), thus contributing to an increasingly positive relationship between women's educational attainment and rates of marriage (e.g., Goldstein and Kenney 2001). Although women continue to perform the majority of domestic work (Shelton and John 1996), the terms of marriage have shifted such that American families are no longer characterized by the gender-asymmetric division of

labor upon which neoclassical economic and functionalist theories of marriage are predicated (Oppenheimer 1997). This view of the "shifting economic foundations of marriage" (Sweeney 2002) suggests that the association between women's educational attainment and marriage is most likely to be negative when relative improvements in women's economic opportunities are not accompanied by convergence in men's and women's economic roles within the family.

This is an intuitively appealing interpretation of the empirical evidence, but it is important to recognize the limitations of the research upon which it is based. To date, most relevant work has focused either explicitly or implicitly on the relationship between women's educational attainment and the economic desirability of marriage, paying little or no attention to potential changes in the demographic feasibility of marriage. If, however, relative improvements in women's educational attainment are not accompanied by convergence in the criteria that men and women use to evaluate the educational attainment of potential spouses, the demographic feasibility of marriage is expected to decline for highly educated women. More specifically, if women's desire to marry men of higher socioeconomic status than themselves (female status hypergamy) remains strong, convergence in the educational attainment of men and women will decrease the relative size of the pool of "attractive" partners for highly educated women (and for less educated men).<sup>1</sup> Because gender asymmetry in spouse pairing patterns (i.e., female status hypergamy) is thought to reflect gender differences in work and family roles, with men's role as primary economic provider generating competition in the marriage market for economically "attractive" men (Kalmijn 1994), it is reasonable to expect that gender convergence in spouse pairing preferences is least likely to occur in societies where gender differences in work and family roles remain most pronounced.

This "marriage market mismatch hypothesis" thus predicts a pattern of change identical to that

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<sup>1</sup> We focus on women's preferences for the sake of convenience. The same logic applies to men's desire to marry women with lower socioeconomic status than themselves (male status hypogamy).

of the economic independence hypothesis—relatively large decline in the marriage rates of highly educated women. The observed negative relationship between women's educational attainment and marriage in relatively gender-inegalitarian societies such as Japan may therefore reflect reductions in either the economic gains to marriage or the availability of suitable spouses, or some combination of both. Although both theoretical scenarios are consistent with relatively large decline in the rates of marriage for highly educated women, they imply very different processes of social change. The basic theoretical premise underlying the economic independence hypothesis is that the gains accruing to marriages based on gender specialization decline as women's economic opportunities improve relative to those of men. In this scenario, later marriage among highly educated women reflects their active avoidance of marriages characterized by gender specialization. The marriage market mismatch hypothesis, in contrast, suggests that relative improvements in women's economic resources reduce the pool of attractive partners for highly educated women because strong preferences for female status hypergamy (male status hypogamy) persist when economic roles within the family remain sharply differentiated by gender. Simply stated, growing educational differences in women's marriage rates reflect increasing economic independence from men in the first scenario and continued economic dependence on husbands in the second scenario. Interpretation of the observed negative relationship between women's educational attainment and marriage thus hinges on the ability to distinguish between these two theoretical scenarios. Unfortunately, however, previous studies have not produced the empirical evidence needed to make this distinction.

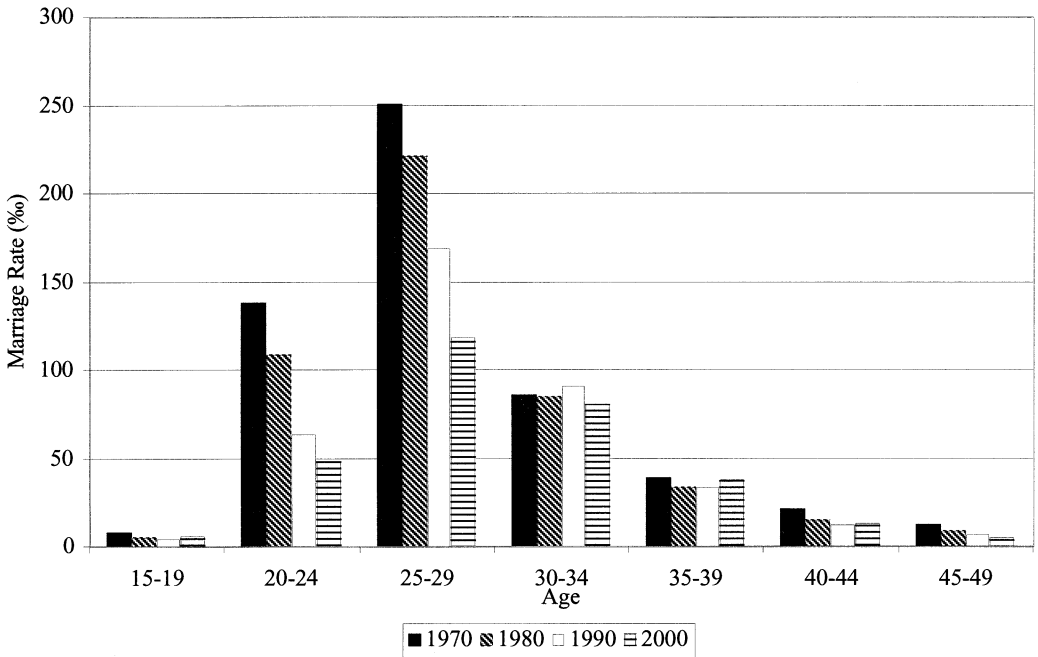
We begin to fill this gap in the literature by examining the extent to which changes in the educational composition of the marriage market have contributed to later marriage among highly educated women in Japan, one of the most gender-inegalitarian industrialized countries (Brinton 1988, 1989; Fuwa 2004). We do this by employing the methodology used in Qian and Preston's (1993) influential study of U.S. marriage behavior to analyze a unique source of data on the marriage behavior of men and women born between 1942 and 1979. This

approach allows us to decompose changes in education-specific marriage rates into (a) changes in the propensity to marry and (b) changes in marriage market composition. According to the economic independence hypothesis, relatively large declines in the marriage rates of highly educated women are due primarily to changes in their propensity to marry. In contrast, the marriage market mismatch hypothesis suggests that growing educational differentials in marriage are largely due to changes in marriage market composition. Before describing these analyses, we briefly summarize recent trends in marriage and educational attainment in Japan and further discuss the relevance of the two alternative theoretical explanations for understanding the inverse relationship between women's educational attainment and marriage.

## WOMEN'S EDUCATIONAL ATTAINMENT AND MARRIAGE IN JAPAN

### *TRENDS IN MARRIAGE AND EDUCATIONAL ATTAINMENT*

Age-specific first marriage rates presented in Figure 1 clearly show the trend toward later marriage among Japanese women. At ages 20–29, marriage rates in the year 2000 were less than half of their 1970 values. Small increases in marriage rates at ages 30–39 reflect the shift in women's mean age at first marriage from 24.2 in 1970 to 27.0 in 2000. The very low marriage rates among teenagers have remained relatively stable over time, whereas the low marriage rates of women in their forties appear to have declined somewhat. Table 1 provides further evidence of changes in marriage timing over the past 30 years by showing trends in the proportions of 25–29 and 35–39 year-old women who have never married. Between 1970 and 2000, the proportion yet to marry tripled from .18 to .54 at ages 25–29 and doubled from .07 to .14 at ages 35–39. Education-specific figures show that the proportion never married at ages 25–29 increased by at least 25 percentage points for all educational groups over this 30-year period, with the largest increase (33 percentage points) observed among university graduates. The proportion never married at ages 35–39 increased by only a few percentage points among women with at least a high school degree



**Figure 1.** Trends in Age-Specific First Marriage Rates of Japanese Women, 1970–2000

Source: National Institute of Population and Social Security Research. 2005. *Latest Demographic Statistics*. Tokyo, Japan: author.

but more than doubled among those with less than a high school education. By 2000, nearly 20 percent of both the most highly educated and the least educated 35–39 year-old women had yet to marry. Because census publications do not provide tabulations of men’s marital status by age and education before 1990, it is not possible to examine trends in men’s marriage in the same way. We can, however, use the survey data described below to estimate age-education-specific proportions of men never married

in 1980 and 1995. These figures (not shown) indicate that decline in marriage has been most pronounced among less educated men, with the proportion of 35–39 year-old men never married increasing by 29 percentage points among junior high school graduates, by 13 percentage points among high school and junior college/vocational school graduates, and by 7 percentage points among university graduates.

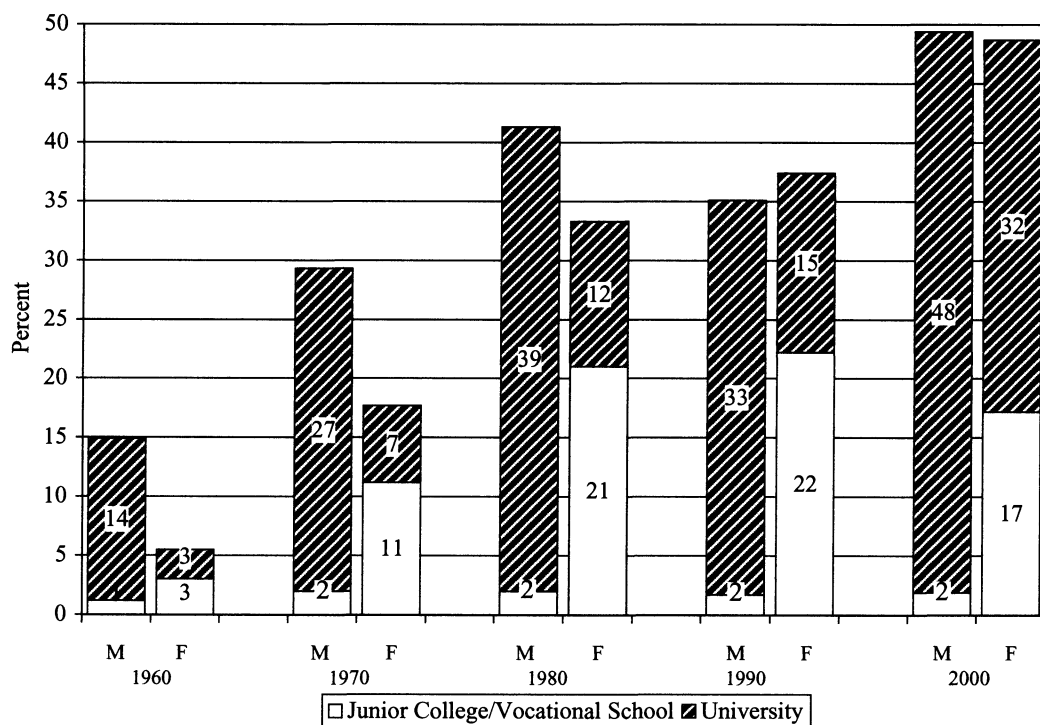
Figure 2 depicts trends in the progression from high school to higher education. Through

**Table 1.** Education-Specific Proportions of Women Never Married at Ages 25–29 and 35–39 in the 1970 and 2000 Censuses

	Ages 25–29		Ages 35–39	
	1970	2000	1970	2000
Total <sup>a</sup>	.18	.54	.07	.14
Junior High School	.15	.42	.07	.19
High School	.20	.45	.08	.12
Junior College/Vocational School	.29	.57	.11	.14
University	.36	.69	.15	.18

Source: 1970 and 2000 Population Census of Japan (Statistics Bureau—Management and Coordination Agency).

<sup>a</sup> Total includes those still in school.



**Figure 2.** Trends in Progression from High School to Higher Education, 1960–2000

Source: National Institute of Population and Social Security Research. 2005. *Latest Demographic Statistics*. Tokyo: author. Note: M = male, F = female.

1980, women were less likely than men to continue their education beyond high school and the nature of higher education differed sharply by gender. Throughout the forty-year period, nearly all men entering post-secondary education attended four-year universities, whereas the majority of women, until very recently, attended two-year junior colleges. With curricula emphasizing education, home economics, literature, music, and arts, junior colleges have been known less for serious academic or vocational training than for producing “good wives and wise mothers” (Brinton 1988, 1993). These gender differences in the function of higher education reflect the fact that university education has typically not provided women with access to better jobs (Brinton and Lee 2001) and has been viewed as a potential handicap in the marriage market (Brinton 1993).

This two-tiered system of higher education is changing rapidly, however, with the proportion of women entering four-year uni-

versities increasing nearly three-fold between 1980 and 2000. Perhaps reflecting declining family size, improved occupational opportunities for women, and increasing parental aspirations for daughters’ education, the proportion of female high school graduates entering four-year universities reached 32 percent in 2000. Because university education is associated with substantially higher earnings potential across women’s life course in Japan (Ogawa and Clark 1995; Raymo 2003), the educational trends depicted in Figure 2 suggest an increase in women’s economic independence. Although pervasive gender discrimination in the labor market continues to limit women’s occupational opportunities (Brinton and Lee 2001), passage of the Equal Employment Opportunity Law in 1986 also suggests growing opportunities for economic independence among Japanese women.

*THE ECONOMIC INDEPENDENCE HYPOTHESIS*

While other industrialized countries have experienced similar changes in marriage and the educational and occupational opportunities of women, Japan is one of the few societies in which the relationship between women's educational attainment and marriage is negative. Theoretical interpretations of this distinctive relationship emphasize gender-asymmetry in the division of domestic labor, arguing that women's economic resources reduce the benefits (either perceived or real) of marriage when it is difficult for women to balance work and family (Blossfeld 1995; Ono 2003; Raymo 2003). This explanation is intuitively appealing in the Japanese context, where married men spend significantly less time on domestic labor than their counterparts in most other industrialized countries (Kamo 1994; Tsuya and Mason 1995). In 1994, for example, Japanese husbands spent an average of 2.5 hours per week on housework—less than 10 percent of total housework hours (Tsuya et al. 2005). The corresponding figure in 2000 was 2.8 hours, suggesting that the highly asymmetric division of domestic labor characterizing Japanese marriages has changed very little in recent years.

This asymmetric division of domestic labor limits women's ability to remain in full-time employment after marriage, with only 18 percent of women with children under the age of three in the labor force in 1995 (Shirahase 2003). Because continuous job tenure and work experience are heavily rewarded in the labor market (e.g., Brinton and Ngo 1993), and because opportunities to reenter the labor force are largely confined to low-paying jobs in small companies or part-time work (Tsuya et al. 2005), career interruptions associated with marriage and childbearing have profound implications for women's earnings potential in Japan. For married women who do return to the labor force, tax policies also provide a strong incentive to work part-time and limit earnings in order to qualify for dependent status (Ogawa and Ermisch 1996). In this context, the economic independence hypothesis suggests that the difficulty of remaining in full-time employment should lead highly educated women to postpone or avoid entering "the onerous status of the Japanese wife and mother" (Tsuya and Mason 1995:156).

*THE MARRIAGE MARKET MISMATCH HYPOTHESIS*

It is not difficult, however, to describe a very different theoretical scenario linking these same contextual characteristics to the observed negative relationship between women's educational attainment and marriage. Although increasing economic independence surely allows some highly educated women to avoid marriages characterized by gender specialization, it is important to recognize that career interruptions and part-time employment increase economic dependence on husbands for the large majority of women who do marry (Hobson 1990; Sørensen and McLanahan 1987). Assuming a desire to maintain or improve socioeconomic status via marriage (Yamada 1996), Japanese women thus have a strong incentive to marry men of similar or higher status than themselves. Conversely, the difficulty that women face in combining career and family provides men with little incentive to emphasize the earnings capacity of potential wives. These gender-asymmetric spouse-selection criteria, in combination with rapid improvements in women's educational attainment, have potentially important implications for marriage behavior.

Just as a baby boom (bust) will result in a female (male) marriage squeeze if there is a persistent tendency for women to marry men older than themselves (e.g., Akers 1967), convergence in men's and women's socioeconomic status will, all else being equal, result in marriage market mismatches for higher-status women and lower-status men if there is a persistent tendency for women to marry up (hypergamously) and men to marry down (hypogamously) with respect to characteristics such as education and occupation (Lichter, Anderson, and Hayward 1995; Lichter et al. 1992; Wilson and Neckerman 1987).<sup>2</sup> Although "marriage squeeze" and "marriage market mismatch" refer to the same phenomenon, the term "marriage squeeze" is typically used in discussion of changes in the age composition of the

<sup>2</sup> Here, we are referring to the tendency for women to marry men of higher status, net of marginal distributions. That is, women are more likely to marry up with respect to indicators of socioeconomic status, net of their lower levels of socioeconomic status relative to men.

marriage market. Research on age-based marriage squeezes has shown that fluctuations in fertility during the second half of the twentieth century have actually had relatively little impact on the availability of potential mates (Schoen and Baj 1985) and that the demographic feasibility of marriage is more strongly impacted by excess male mortality associated with wars (see Anzo 1985 on Japan) and sex-selective migration (Goodkind 1997).

There are several reasons to treat this focus on marriage market mismatches as a compelling theoretical alternative to the economic independence explanation for the inverse relationship between women's educational attainment and the transition to marriage in Japan. For example, attitudinal survey data highlight large gender differences in the criteria by which potential spouses are evaluated. Among unmarried respondents to the 11th National Fertility Survey (conducted in 1997), women were twice as likely (50 percent) as men (24 percent) to cite educational attainment as either "important" or "a consideration" in choosing a spouse. Gender asymmetry in the importance of "earnings potential" is even more striking, with 91 percent of women but only 31 percent of men, citing this as a spouse selection criterion (NIPSSR 1999). More detailed measures of the criteria by which women evaluate potential spouses are not available from scientific surveys, but informal surveys and anecdotal evidence highlight the strong emphasis on men's earnings capacity. In the late 1980s, for example, the mass media popularized an explanation for delayed marriage that emphasized women's desire for marriage to a man with "three highs"—a salary of more than 10 million yen (roughly \$80,000), graduation from a prestigious university, and over 5'7" tall (Yamada 1996).

It is therefore not surprising that analyses of assortative mating have shown educational attainment to be the most important socioeconomic dimension of spouse selection in Japan.<sup>3</sup> Net of gender differences in educational attain-

ment, both junior-college- and university-educated women are most likely to marry men with a university degree (Suzuki 1991). The tendency for university graduates to marry homogeneously not only reflects the role of education as a signal of men's earnings potential but also points to the effectiveness of universities as marriage markets (Kalmijn 1991) and the importance of family background as a spouse-selection criterion (Brinton 1993). To the extent that women's educational attainment is positively correlated with family class background, highly educated men will tend to marry similarly educated women even if women's educational attainment itself is not highly valued in the marriage market. Although the association between husbands' and wives' educational attainment appears to have weakened over time in Japan (Raymo and Xie 2000), it is not clear that such changes have been large enough to offset the rapid convergence in men's and women's educational attainment.

The impact of relative improvements in women's educational attainment on marriage market composition is clear from the education-specific sex ratios at ages 25–29 and 35–39 presented in Table 2. Over the past thirty years, the ratio of men to women increased at the lower end of the educational spectrum for both age groups, with men in the lowest category (junior high school) outnumbering similarly educated women by 2000. A similar pattern holds for 25–29 year-old high school graduates, with 109 men for every 100 women in 2000. Over the same period, the representation of highly educated women increased dramatically. While 25–29 year-old male university graduates outnumbered their female counterparts by nearly five to one in 1970, this ratio was less than two to one in 2000. Decline in the sex ratio for university graduates is even more pronounced at ages 35–39, with men outnumbering women by more than eight to one in 1970 and by less than three to one in 2000.

Among junior college/vocational school graduates, women outnumbered men by a substantial margin at both points in time. Because, however, a large proportion of female junior college graduates marry university graduates (Suzuki 1991), the marriage-market opportunities of highly educated women are more appropriately measured by sex-ratios that combine both types of post-secondary education.

<sup>3</sup> Previous analyses using the same data that we examine in this paper have shown the association between spouses' educational attainment to be stronger than the association between spouses' premarital occupations or between the occupations of the husband and the wife's father (Raymo 2000).



**Table 2.** Education-Specific Sex Ratios at Ages 25–29 and 35–39 in the 1970 and 2000 Censuses

	Ages 25–29		Ages 35–39	
	1970	2000	1970	2000
Total <sup>a</sup>	99	103	101	102
Junior High School	91	145	93	148
High School	84	109	84	92
Junior College/Vocational School	42	41	76	32
University	487	186	859	277
All Postsecondary education	198	88	321	106

Source: 1970 and 2000 Population Census of Japan (Statistics Bureau—Management and Coordination Agency).

<sup>a</sup> Total includes those still in school.

This combined measure, presented in the last row, shows that there were two 25–29 year-old men for every similarly aged woman with higher education in 1970 but women actually outnumbered men by 2000. In other words, for each 25–29 year-old woman with post-secondary education, there was one fewer man of similar age and education in 2000 than there was in 1970. For 35–39 year-old women with post-secondary education, the ratio of over three men for every woman of similar age and education in 1970 declined to a ratio of roughly one-to-one by 2000. The marriage market mismatch argument suggests that this marked decline in the relative supply of economically “attractive” men has made it more difficult for highly educated women to locate a suitably educated partner.

## DATA

To provide the first rigorous empirical evaluation of the marriage market mismatch hypothesis, we use pooled data from the Japanese National Fertility Surveys (JNFS) conducted in 1982, 1987, 1992, and 1997. These surveys provide information on age, educational attainment, and age at marriage for nationally representative samples of married women and unmarried men and women age 18–34 in 1982 and 1987 and age 18–49 in 1992 and 1997. Dropping observations with missing data and pooling data from the four surveys results in a total sample of 24,860 married women, 13,749 unmarried women, and 16,181 unmarried men born between 1942 and 1979.<sup>4</sup> These

individual-level survey data are essential for our analyses because the necessary information is not available from any other source. Vital statistics data provide cross-tabulations of spouses' ages for all marriages occurring in a given year, but they do not contain information on brides' and grooms' educational attainment. The most likely source of data for defining the population at risk of marriage by educational attainment, the national census, does not provide age-specific tabulations of marital status and educational attainment for men prior to 1990.

In the absence of appropriate data from the census or administrative records, we use the large sample of pooled JNFS data to reconstruct the population at risk of marriage, classified by educational attainment and five-year age group, for each year between 1957 and 1997. We accomplish this in three steps. First, we generate observations for married men based on the responses provided by married women about their husbands' educational attainment, birth date, and date of marriage. Second, we merge the data for the married and unmarried samples of each sex. Third, we expand these merged data into person-year record form, creating one observation for each year that a respondent was between the ages of 15 and 49 during the period 1957–1997.<sup>5</sup> Using these person-year data, we examine change over time by limiting our focus to two five-year periods,

7,884 in 1997. Sample sizes for surveys of unmarried men and women are 4,958 in 1982, 6,038 in 1987, 9,576 in 1992, and 9,358 in 1997.

<sup>5</sup> The oldest respondents (born in 1942) were 15 years old in 1957 and 1997 is the year of the most recent survey.

<sup>4</sup> Sample sizes for surveys of married women are 3,806 in 1982, 3,506 in 1987, 9,664 in 1992, and

1978–82 and 1993–97.<sup>6</sup> Several considerations motivate the choice of these two time periods. A practical consideration is the need to aggregate data over a period of years in order to limit the number of empty cells for uncommon pairings. A methodological consideration is that, by using periods whose midpoints correspond to census years, we can compare marriage rates constructed from these survey data with marriage rates based on aggregate data from the vital statistics and the census. A substantive consideration is that the most dramatic changes in marriage timing have occurred since the 1980s. For the sake of simplicity, we refer to these two periods by their midpoints (i.e., 1980 and 1995).

Although these pooled JNFS data are the most appropriate for our purposes, they are not without limitations. Because we are using sample survey data rather than registration data, we must assume that our calculations are not affected by differential nonresponse and differential mortality with respect to sex, age, marital status, and educational attainment to an extent that alters substantive interpretations. A similar assumption must be made with respect to the absence of information on first marriages for the 6 percent of men and women in our sample who were previously married. Assuming that differences in marriage timing and spouse selection with respect to marital history are negligible, we impute first-marriage characteristics for these respondents using mean ages at marriage and modal educational pairings for observed first marriages.<sup>7</sup> Our concern about the impact of these assumptions is mitigated by the similarity of age-specific marriage rates based on our data with corresponding marriage rates constructed from vital statistics and census data collected in 1980 and 1995.<sup>8</sup> A second limitation is that we have neither the sample size nor the residential history information required to construct region-specific rates. We are thus forced to make the simplifying assump-

tion of a national marriage market. This is obviously not a realistic portrayal of marriage markets in Japan (or elsewhere), and it is possible that results would differ if we were able to calculate marriage rates at a lower level of regional aggregation. Unfortunately, however, there is no available information that would allow us to evaluate the potential impact of this assumption.

We assess the extent to which changes in marriage market composition and spouse-pairing patterns have contributed to declining marriage rates by analyzing these data in two different ways. First, we replicate Qian and Preston's (1993) analysis to provide a general picture of changes in marriage rates by age and educational attainment. By comparing changes in observed marriage rates with changes in counterfactual marriage rates calculated by holding either marriage market composition or the propensity to marry constant over time, we are able to evaluate the relative importance of changes in the availability of spouses for understanding educational differences in the trend toward later and less marriage. These figures also facilitate comparisons with changing patterns of marriage in the United States over a similar period of time. Next, we use life-table methods to re-express observed and counterfactual marriage rates in a way that provides a clear visual representation of the substantive importance of changes in marriage market composition and marriage propensities. By describing educational differences in observed and counterfactual marriage trajectories, we are also able to assess the extent to which explicit consideration of changes in marriage market composition may alter conclusions based on standard techniques for evaluating the economic independence hypothesis.

## CHANGES IN MARRIAGE RATES, 1980–1995

### METHODS

The harmonic mean function proposed by Schoen (1988) allows us to assess the importance of marriage market mismatches in Japan by decomposing changes in marriage rates into changes in marriage market composition and changes in a composition-independent measure of the likelihood of marriage. Previous applications of this approach using data from the United States have examined the relevance of changing marriage-market composition for understanding racial differences in marriage

<sup>6</sup> The number of person-year observations is 70,700 for 1978–82 and 22,317 for 1993–97.

<sup>7</sup> Results do not change when all formerly married respondents and formerly married spouses are removed from the analyses. Results from these supplemental analyses are available from the corresponding author upon request.

<sup>8</sup> These comparisons are available from the corresponding author upon request.

rates (Schoen and Kluegel 1988) and changes in the relationship between educational attainment and marriage (Qian and Preston 1993). The harmonic mean model is expressed as

$$N_{ijkl}^t = a_{ijk}^t \frac{F_{ik}^t M_{jl}^t}{F_{ik}^t + M_{jl}^t}, \quad (1)$$

where  $N_{ijkl}^t$  is the number of marriages between women age  $i$  with educational attainment  $k$  and men age  $j$  with educational attainment  $l$  in period  $t$  ( $i, j = 15-19, 20-24, 25-29, 30-34, 35-39$ ), ( $k, l =$  less than high school, high school, junior college, university), ( $t = 1980, 1995$ ).<sup>9</sup>  $F_{ik}^t$  is the number of women age  $i$  with educational attainment  $k$  at risk of marriage in period  $t$ , and  $M_{jl}^t$  is the corresponding number of men age  $j$  with educational attainment  $l$ . For each of the two five-year periods, the age-education-specific population at risk of first marriage is defined as the sum of the never married mid-year populations in each of the five years (i.e.,

$F_{ik}^t = \sum_{t^*=1}^5 F_{ik}^{t^*}$ ) where  $F_{ik}^{t^*}$  is the number of unmarried women of age  $i$  and educational attainment  $k$  at the middle of year  $t^*$  ( $t^* = 1978, '79, '80, '81, '82, '93, '94, '95, '96, '97$ ). The other component of equation (1),  $a_{ijk}^t$ , is the "force of attraction" between women age  $i$  with education  $k$  and men age  $j$  with education  $l$  in period  $t$ . As described by Qian and Preston (1993:483), the force of attraction is a composition-independent measure of marriage propensity reflecting both the rate of encounters in the marriage market and the proportion of such encounters that lead to marriage. It thus reflects multiple influences on the desirability of marriage, including women's economic circumstances, men's economic circumstances, attitudes toward marriage, and preferences for particular spousal pairings.

To calculate marriage rates for women age  $i$  with education  $k$  to men age  $j$  with education  $l$ , we divide both sides of equation (1) by  $F_{ik}^t$ .

$$\text{Marriage rates} \left( MR_{ijkl}^t = \frac{N_{ijkl}^t}{F_{ik}^t} = a_{ijk}^t \frac{M_{jl}^t}{F_{ik}^t + M_{jl}^t} \right)$$

<sup>9</sup> We adopt the conventional approach of combining junior college graduates and vocational school graduates into one category. Because the former are far more numerous than the latter, we refer to this group as junior college graduates.

are thus expressed as the product of the force of attraction and an "availability ratio" (i.e.,  $\frac{M_{jl}^t}{F_{ik}^t + M_{jl}^t}$ ). If the distribution of men's educational attainment is relatively stable over time, changes in these availability ratios will be largely determined by changes in women's educational distribution, with spouse availability decreasing for groups that grow in relative size (i.e., highly educated women) and increasing for groups that decline in relative size (i.e., less-educated women). With five age groups ( $j$ ) and four educational categories ( $l$ ) used to classify potential spouses, we calculate 20 separate marriage rates for women in each of the 20 age-education combinations in each five-year period (i.e., a total of  $20 \times 20 = 400$  marriage rates for each time period).

Because age-education-specific marriage rates are the product of two components, we can examine the relative importance of change in each component by calculating counterfactual marriage rates for women of a given age and education level. For example, by replacing measures of availability from 1995  $\left( \frac{M_{jl}^{95}}{F_{ik}^{95} + M_{jl}^{95}} \right)$  with those from 1980  $\left( \frac{M_{jl}^{80}}{F_{ik}^{80} + M_{jl}^{80}} \right)$  and by summing marriage rates across values of  $j$  and  $l$ , we are able to answer the counterfactual question, "What would women's age-education-specific marriage rates be in 1995 if marriage market composition had not changed since 1980?" Similarly, we can replace forces of attraction from the later period ( $a_{ijk}^{95}$ ) with corresponding values from the earlier period ( $a_{ijk}^{80}$ ) to examine what women's age-education-specific marriage rates would be in 1995 if these composition-independent measures of the propensity to marry had not changed since 1980.

## RESULTS

Table 3 compares observed and counterfactual age-specific marriage rates for women at each level of educational attainment. These age-education-specific rates are calculated by summing marriage rates ( $MR_{ijkl}^t$ ) across all combinations of men's age ( $j$ ) and educational attainment ( $l$ ).<sup>10</sup> Ratios of observed marriage rates in 1995

<sup>10</sup> These age-education-specific marriage rates are slightly lower than actual marriage rates because we

**Table 3.** Comparison of Observed and Counterfactual Marriage Rates, by Educational Attainment and Age

Educational Attainment and Age	Observed (MR <sup>95</sup> /MR <sup>80</sup> )	Counterfactual 1 <sup>a</sup>	Counterfactual 2 <sup>b</sup>
<b>Junior High School</b>			
15-19	1.43	1.28	1.08
20-24	.49	.44	1.03
25-29	.33	.29	1.10
30-34	.66	.54	1.10
35-39	3.57	3.33	.94
<b>High School</b>			
15-19	1.61	1.14	1.48
20-24	.51	.46	1.19
25-29	.58	.63	.94
30-34	.90	.89	.99
35-39	1.49	1.55	.95
<b>Junior College</b>			
15-19	.60	.68	1.37
20-24	.41	.44	1.01
25-29	.58	.75	.80
30-34	.65	.78	.82
35-39	1.77	2.48	.77
<b>University</b>			
15-19	.00	.00	.90
20-24	.27	.32	.88
25-29	.43	.52	.87
30-34	.88	1.00	.87
35-39	.11	.12	.87

<sup>a</sup> Availability ratios held constant at 1980 values.

<sup>b</sup> Forces of attraction held constant at 1980 values.

to observed rates in 1980 in column 1 describe the age pattern of decline in marriage rates and allow for comparison across educational levels and comparison with Qian and Preston's (1993) figures for the United States. The second column presents ratios of counterfactual rates for 1995 calculated by holding the availability of potential mates  $\left(\frac{M_{jl}^t}{F_{ik}^t + M_{jl}^t}\right)$  constant at 1980 values to the corresponding observed rates for 1980. Here, counterfactual ratios of less than one indicate that decline in marriage propensities (independent of changes in marriage market composition) has contributed to lower rates of marriage. Conversely, ratios greater than one indicate that change in the composition-independent propensities to marry has contributed to higher rates of marriage. The third column presents ratios of counterfactual rates for 1995 calculated by holding the forces of attraction ( $a_{ijkl}^t$ ) constant at 1980 values to the corre-

sponding observed rates for 1980. Here, ratios less (greater) than one indicate that change in marriage market composition has contributed to lower (higher) rates of marriage.

Ratios of observed rates in the first column show the trend toward later marriage very clearly. For all educational groups, marriage rates at ages 20-24 and 25-29 declined by at least 42 percent between 1980 and 1995. Consistent with previous studies of marriage in Japan (e.g., Raymo 2003), declines in the marriage rates of women in their late twenties have been greatest among the most highly educated. Marriage rates of university graduates declined by 73 percent at ages 20-24 and by 57 percent at ages 25-29. The corresponding declines in the marriage rates of high school graduates were 49 and 42 percent, respectively.

In contrast to the United States, there is little evidence that marriage rates of highly educated women in Japan have increased at older ages. In 1995, the marriage rates of junior college and university graduates are lower than in 1980 through ages 30-34. The large apparent decline in the marriage rate for 35-39 year-old university graduates (ratio of 0.11) should not

are unable to include the small number of marriages to men age 40 and above.

be given too much emphasis as marriage rates for these women were based on a very small number of marriages.<sup>11</sup> The same is true of the very large increase in the marriage rate of 35–39 year-old junior high school graduates (ratio of 3.57). Although these irregularities in the very low rates of marriage at ages 35–39 have relatively little impact on the life-table analyses discussed in the following section, results beyond age 35 should be interpreted cautiously.

In general, the ratios of observed marriage rates in column 1 indicate that university graduates have experienced relatively large declines in marriage rates at younger ages and no increases in marriage rates at older ages. This pattern of change contrasts with Qian and Preston's (1993) description of changes in American marriage and is ostensibly consistent with the hypothesis that increasing economic opportunities (as proxied by educational attainment) should be associated with later and less marriage in societies such as Japan, where gender asymmetry in the division of labor makes it difficult for women to combine work and family.

Ratios in the second column are, not surprisingly, similar to those in the first column. For all age-education groups, decline in the force of attraction is the primary reason for declining marriage rates. At the same time, however, the counterfactual ratios in the second and third columns suggest a somewhat more complex story. For example, ratios in the second column are, in most cases, greater than the observed ratios in the first column for more highly educated women but lower for women with a high school education or less. This pattern indicates that changes in spouse availability have contributed to lower rates of marriage among highly educated women while partially offsetting decline in the forces of attraction among less-educated women.

This pattern of change is more immediately evident in the third column. Because the counterfactual rates used to calculate the numerator assume no change in forces of attraction, these ratios describe the effect of changing marriage

market composition on marriage rates. These ratios are less than one at all ages for university graduates and beyond ages 25–29 for junior college graduates, indicating that decline in the supply of suitable mates has contributed to lower rates of marriage for women with postsecondary education. In contrast, the counterfactual rates calculated by holding marriage propensities constant at their 1980 values are either higher than or very similar to the observed rates for 1980 at all ages for women with a high school education or less. For example, at ages 30–34, the marriage rate of high school graduates in 1995 would have been no different than the observed marriage rate in 1980 if forces of attraction had not changed (i.e., the ratio of counterfactual to observed rates is 0.99). For women in the lowest educational category, the corresponding rate would have been 10 percent higher than observed. The observed declines in the marriage rates of less-educated women in their twenties and early thirties are thus due entirely to changes in the propensity to marry.

### OBSERVED AND COUNTERFACTUAL MARRIAGE TRAJECTORIES FOR SYNTHETIC COHORTS

To describe the impact of changes in market composition on marriage timing and the likelihood of marrying by age 40, we use the observed and counterfactual marriage rates summarized in Table 3 to construct synthetic cohort first-marriage trajectories for women at each level of educational attainment. We first use standard procedures to convert the rates into probabilities (see, e.g., Preston, Heuveline, and Guillot 2001:76) necessary for the construction of multiple-decrement marriage tables. We then construct a total of 16 marriage tables—eight tables based on observed rates (i.e., four levels of education multiplied by two time periods) and eight tables based on the counterfactual rates calculated by holding marriage market composition and forces of attraction constant at their 1980 levels. In each of these marriage tables there are 20 possible decrements representing husbands' age and educational attainment (i.e., four levels of education multiplied by five age groups). We ignore mortality in all marriage table calculations.

Calculation of cumulative first marriage probabilities based on both observed and coun-

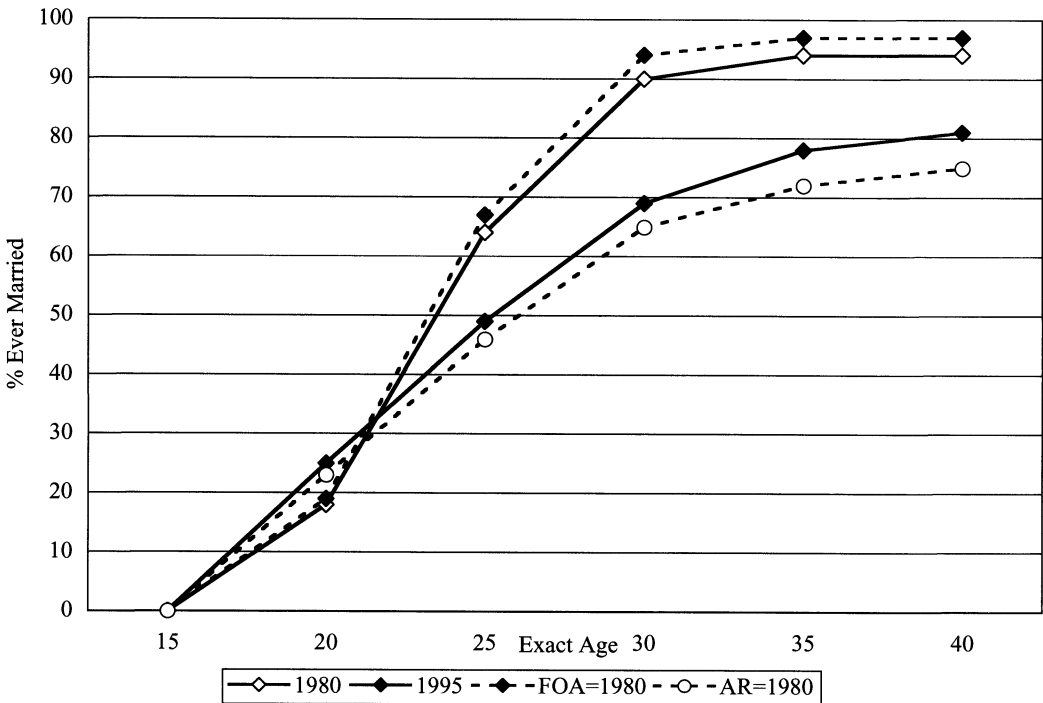
<sup>11</sup> The only women in our sample ages 35–39 in 1978–82 were 45–49 year old respondents to the 1992 survey. This group contained very few university graduates.

terfactual marriage rates produces visibly intuitive descriptions of the extent to which increases in the age-specific proportions of Japanese women who have never married reflect changes in marriage market composition—as suggested by our theoretical emphasis on changes in the demographic feasibility of marriage. This comparison of marriage trajectories across levels of educational attainment also allows us to assess the extent to which standard methods for evaluating the economic independence hypothesis may generate misleading conclusions by ignoring the impact of changes in the availability of potential mates.

Figures 3–6 present the four cumulative first-marriage curves for each educational group. Because we have calculated marriage probabilities for five-year age groups, the points on these marriage trajectories represent the proportion ever married at the beginning of the five-year age group (i.e., at exact age 15, 20, . . . , 40). We use solid, bold lines to depict cumulative first-marriage curves based on observed marriage probabilities for 1980 (marked with  $\diamond$ ) and 1995 (marked with  $\blacklozenge$ ).

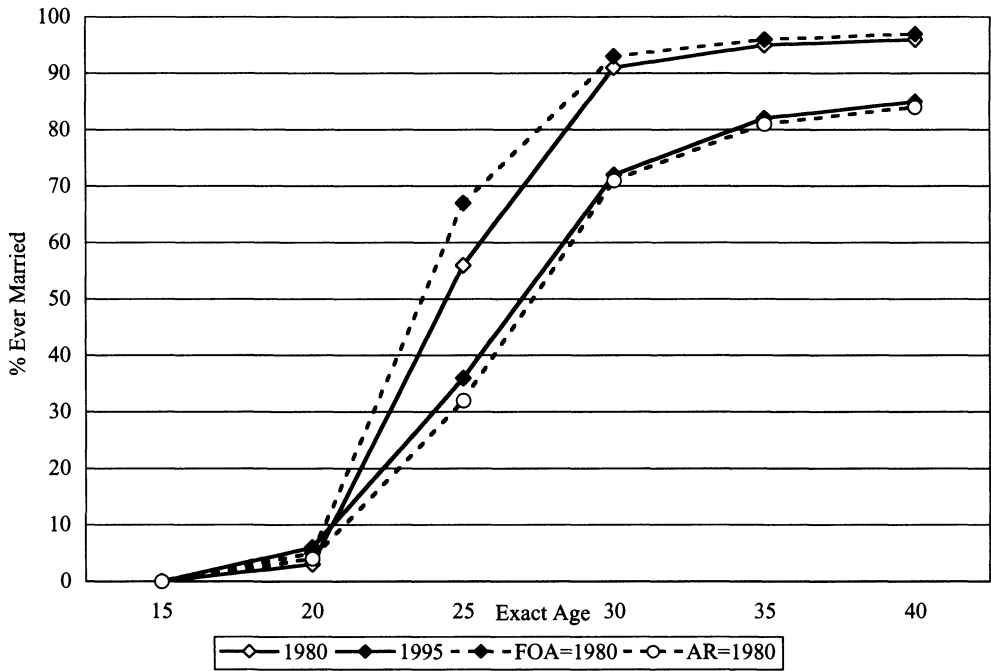
These two marriage curves clearly demonstrate the trend toward later marriage. At each level of educational attainment, the synthetic cohort proportions ever married beyond age 25 declined substantially between 1980 and 1995. The largest observed change is the 36-point decline in the synthetic cohort proportion of university graduates married by age 30 (Figure 6). Large declines in life table proportions ever married by age 40 suggest increases across the educational spectrum in the proportion of women who will never marry. Whereas the proportion never married at age 40 in 1980 ranged from 3 percent among university graduates to 7 percent among junior college graduates, roughly 20 percent of women with a two-year college degree or less and 27 percent of university graduates had yet to marry by age 40 in 1995.

The dashed lines marked with  $\circ$  represent counterfactual cumulative first marriage curves calculated by holding availability ratios (i.e.,  $\frac{M_{jl}^t}{F_{ik}^t + M_{jl}^t}$ ) constant at their 1980 values. These curves thus indicate what the synthetic cohort



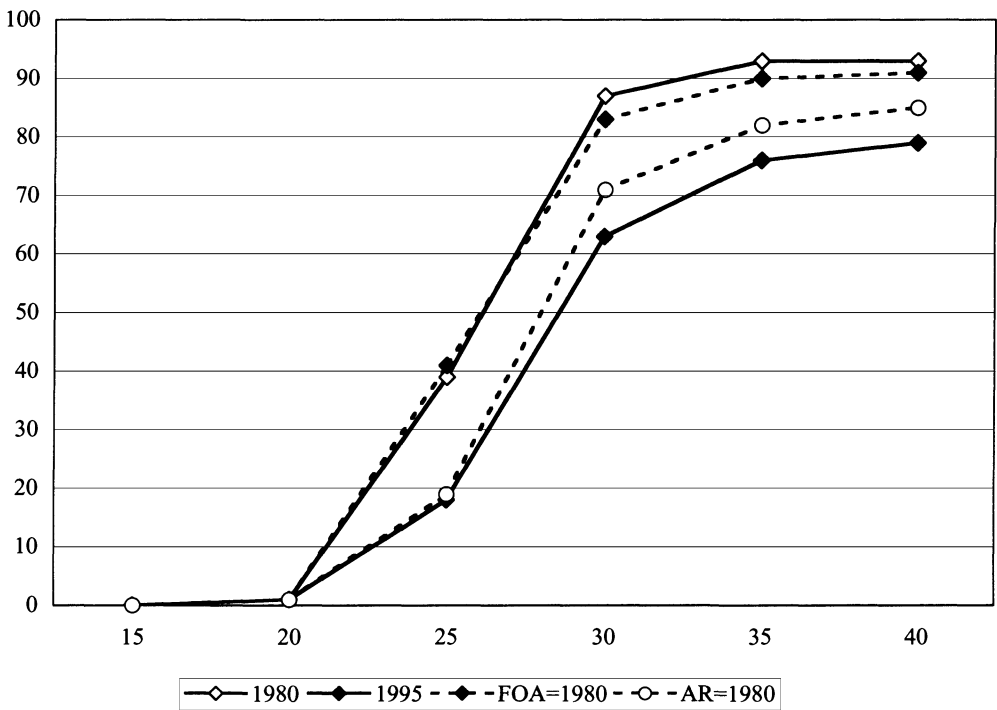
**Figure 3.** Observed and Counterfactual Marriage Trajectories for Junior High School Graduates

Note: FOA = force of attraction; AR = availability ratio.



**Figure 4.** Observed and Counterfactual Marriage Trajectories for High School Graduates

Note: FOA = force of attraction; AR = availability ratio.



**Figure 5.** Observed and Counterfactual Marriage Trajectories for Junior College Graduates

Note: FOA = force of attraction; AR = availability ratio.

marriage trajectories would have looked like in 1995 if marriage market composition had not changed. The dashed lines marked with ♦ represent the counterfactual marriage patterns calculated by holding forces of attraction (i.e.,  $a_{ijkl}^t$ ) constant at their 1980 values. These curves thus indicate what the synthetic cohort marriage trajectories would have looked like in 1995 if propensities to marry men of a given age and educational attainment had not changed over time.

For women with less than a high school education (Figure 3), the marriage-promoting effect of changes in marriage market composition described earlier is clear. The counterfactual marriage curve calculated by holding availability ratios constant at their 1980 values falls below the observed 1995 curve at all ages, indicating that age-specific proportions married would have been even lower than observed had marriage market composition not changed over time. Beyond age 25, the cumulative proportion married would have been four to six percentage points lower for these women had marriage market composition remained unchanged from 1980. Examination of individual availability ratios (not shown) suggests that this is largely due to the increasing prevalence of older unmarried men, especially in the two lowest educational categories. For high school graduates (Figure 4), a similar, but less distinct, pattern is observed at younger ages. At older ages, however, the decline in marriage is due entirely to changes in the force of attraction. There is no evidence that changes in marriage market composition have affected the marriage behavior of high school graduates beyond age 30. To a large extent, this is due to the relatively small decline in the availability of high school graduates (see Table 2). It also reflects relatively high rates of educational heterogamy among high school graduates and the fact that declines in the relative availability of junior high school graduates have been offset by increases in the relative availability of men with postsecondary education.

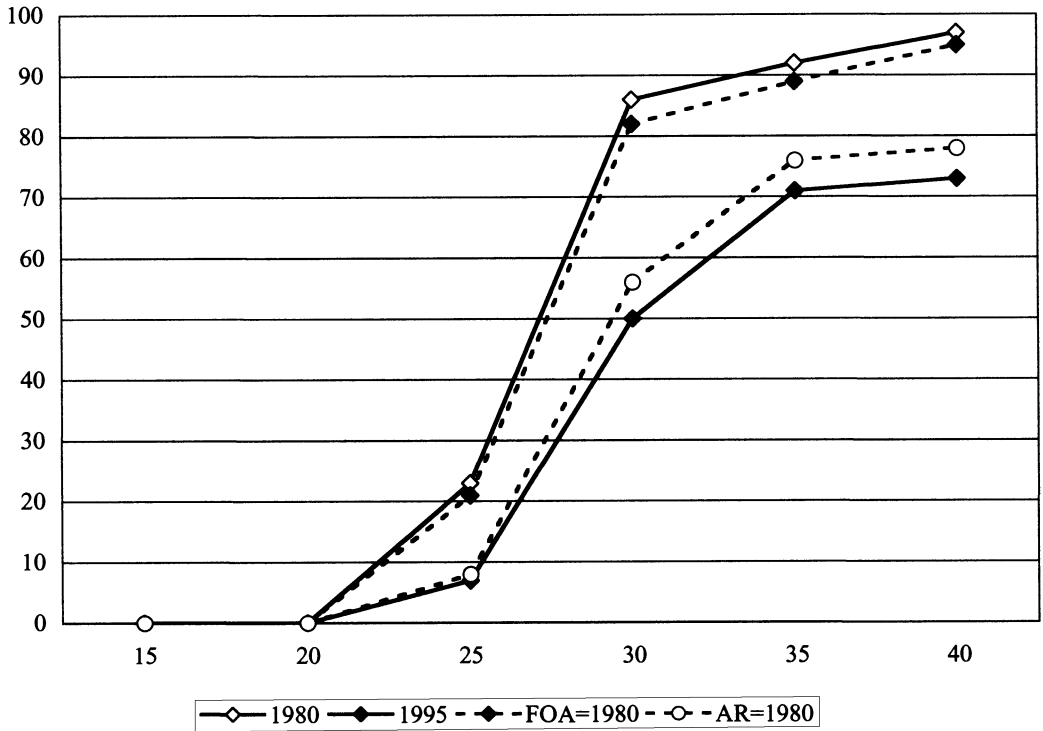
A very different pattern of change is observed among women with higher levels of education. Figures 5 and 6 indicate that changes in marriage market composition have contributed to later marriage among junior col-

lege graduates and university graduates, respectively. For both groups, changes in the availability of potential partners are responsible for a nontrivial proportion of the overall decline in the synthetic cohort proportion ever married. This is particularly true for junior college graduates beyond age 30, for whom the counterfactual curve calculated by holding availability ratios constant at their 1980 levels is roughly seven percentage points above the observed curve for 1995. In other words, if marriage market composition had not changed over the 15-year period, the decline in the synthetic cohort proportion of two-year college graduates yet to marry would have been seven percentage points less than was actually observed. For university graduates, the difference between the observed and counterfactual curves is five percentage points beyond age 30. These differences represent approximately one-third of the total decline in the synthetic cohort proportion of two-year college graduates unmarried beyond age 30 and one-fourth of the observed decline for university graduates.<sup>12</sup>

Overall, it is clear that changes in the availability of potential mates account for a significant proportion of the decline in marriage among highly educated women but have had little effect on the transition to marriage among high school graduates. Conclusions regarding the relevance of the economic independence hypothesis may therefore depend upon the treatment of changes in marriage market composition. We demonstrate this in Figure 7 by presenting ratios of the synthetic cohort proportions of junior college and university graduates ever married by a given age to the corresponding proportions for high school graduates. Age-specific figures for 1980 (striped bars) and 1995 (black bars) indicate that the likelihood of marriage for junior college graduates (left) and university graduates (right) relative to high school graduates has declined at all ages. For example, at ages 30–34, the ratio

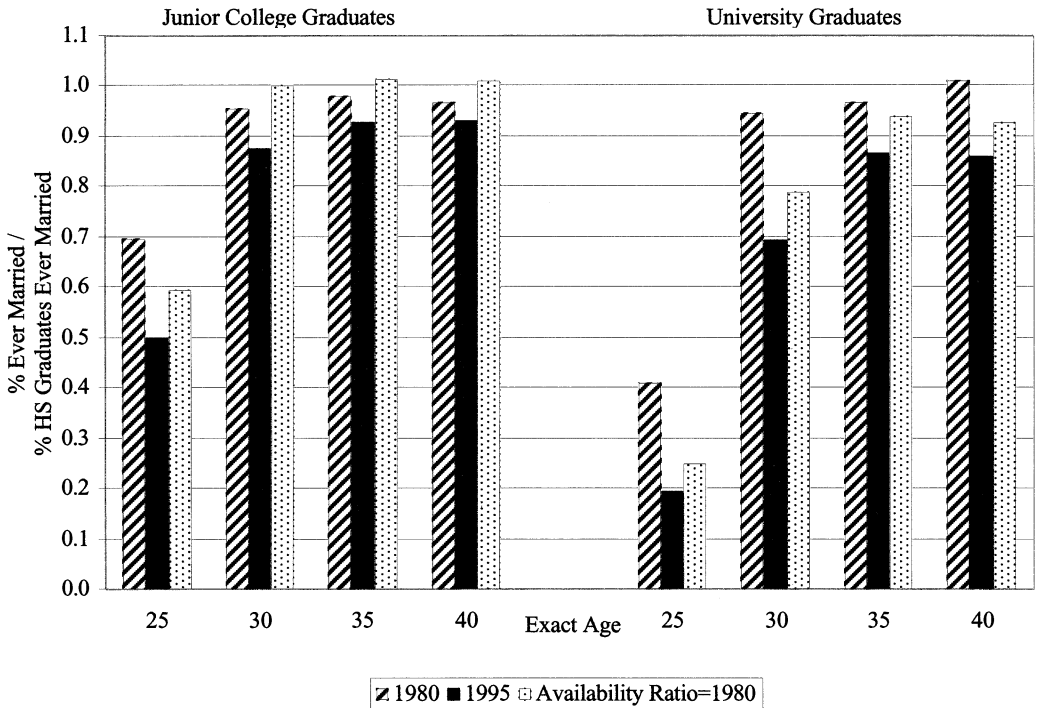
<sup>12</sup> We calculated the percentage contribution of changing marriage market composition as  $(P_{ik}^{95(Ar=80)} - P_{ik}^{80}) \div (P_{ik}^{80} - P_{ik}^{95})$ , where  $P_{ik}^t$  is the proportion of women with education  $k$  ever married by age  $i$  in period  $t$  and  $P_{ik}^{95(Ar=80)}$  is the counterfactual proportion calculated by holding availability ratios constant at their 1980 levels.





**Figure 6.** Observed and Counterfactual Marriage Trajectories for University Graduates

Note: FOA = force of attraction; AR = availability ratio.



**Figure 7.** Observed and Counterfactual Proportions Ever Married, Relative to High School Graduates

of the synthetic cohort proportion of university graduates ever married to that of high school graduates was .95 in 1980 and .69 in 1995. This increasing educational differential in marriage has typically been interpreted as evidence of an independence effect, that is, highly educated women have become less dependent upon men's economic resources and thus marry at increasingly lower rates.

A rather different picture emerges, however, when we look at counterfactual marriage trajectories calculated by holding marriage market composition constant at its 1980 values (dotted bars). These ratios indicate that the growing differential between university graduates and high school graduates is due, in part, to changes in marriage market composition. For example, the relative likelihood of marrying by age 35 declined from .97 to .87 using observed rates but from .97 to .94 using counterfactual rates. Beyond age 30, differential decline in the proportion of university graduates ever married would have been 40 to 70 percent lower than observed had marriage market composition not changed over the 15-year period. This counterfactual pattern of change suggests that, to a large extent, apparent support for the economic independence hypothesis in Japan (Ono 2003; Raymo 2003) actually reflects differential changes in the availability of potential mates. It also suggests that mechanisms of change may vary by age, with economic independence more relevant for university graduates at younger ages (20–29) and marriage market mismatches more relevant at older ages (30–39).

The impact of shifts in marriage market composition is even more striking in the corresponding figures for junior college graduates. For these women, counterfactual ratios are higher than the observed ratios for 1980 beyond age 30, indicating that the decline in the marriage rates of junior college graduates would have been less than that of high school graduates if there had been no changes in the availability of potential partners. Indeed, marriage trajectories of junior college graduates are identical to those of high school graduates beyond age 30 under this counterfactual scenario. The increasing differential between the proportions of junior college graduates and high school graduates ever married beyond age 30 is thus due entirely to changes in marriage market composition.

## SUMMARY AND DISCUSSION

We have shown that changes in marriage market composition account for one-fourth to one-third of the decline in the synthetic cohort proportion ever married among Japanese women with post-secondary education. This is a substantial contribution and is consistent with the hypothesis motivating this study. At the same time, however, it is important to recognize that the majority of change in marriage timing at all levels of education is due to change in the propensity to marry. Large declines in the propensity to marry presumably reflect a variety of mechanisms including reductions in the gains to marriage and changing attitudes toward marriage and family formation.

At the same time, our results highlight a fundamental limitation with the conventional approach of interpreting relatively large decline in the marriage rates of highly educated women in relatively gender-inegalitarian societies as evidence of increasing economic independence. We find that roughly half of the "excess" decline in marriage observed among female university graduates (typically interpreted as support for the economic independence hypothesis) is explained by changes in marriage market composition. Changes in the supply of potential partners brought about by relative improvements in women's educational attainment have contributed to lower rates of marriage among highly educated women and somewhat higher rates of marriage among women with a high school education or less. Shifting marriage market composition accounts for all of the change in the relative proportions of two-year college graduates and high school graduates ever married by a given age. The composition-independent propensity to marry among junior college graduates has actually increased relative to that of high school graduates.

Our findings do not imply that economic independence is unimportant for understanding the trend toward later marriage in societies such as Japan, where asymmetric gender relations make it difficult for women to combine work and family. Indeed, our results are consistent with predictions of the economic independence hypothesis in that changes in the composition-independent forces of attraction account for roughly half of the differential decline in marriage of university graduates relative to high school graduates. At the same time, however, the

strong marriage-inhibiting effect of shifts in marriage market composition points to the importance of women's continued economic dependence on men.

These contrasting influences on the marriage behavior of highly educated women in Japan are consistent with earlier emphases on attitudinal heterogeneity (Tsuya and Mason 1995). Marriages characterized by a highly asymmetric gender division of labor may indeed be increasingly unattractive to highly educated women with higher levels of career investment or career ambitions while other similarly educated women with less commitment to work and a gender-egalitarian division of labor between spouses may be marrying later (and less) as a result of the increasing numerical difficulty of locating a suitably educated spouse. This focus on attitudinal heterogeneity also suggests a compelling interpretation for the striking impact of shifting marriage-market composition on the behavior of junior college graduates. As more women choose to attend four-year universities, those enrolling in junior colleges may be an increasingly self-selected group with respect to career ambition and attitudes toward a "traditional" division of household labor. To the extent possible, subsequent analyses of the relationship between women's educational attainment and the transition to marriage should attempt to incorporate measures of family attitudes and career aspirations.

Our results contrast with those of Qian and Preston (1993) and other studies of changing marriage patterns in the United States. We find no evidence of relatively large increases in marriage rates at older ages among highly educated women in Japan. Studies of marriage in the United States have suggested that relative improvements in women's economic opportunities may facilitate marriage by enabling couples to pool resources or by enabling women to marry men who do not yet have the financial resources to marry but are otherwise attractive (Oppenheimer 1988). This marriage-facilitating effect of women's economic resources may be less relevant in societies such as Japan, where the highly asymmetric gender-division of work and family roles reinforces highly educated women's desire for status-homogamous or status-hypergamous marriages.

If these asymmetric spouse-pairing preferences remain strong while the relative supply of

highly educated men continues to decline, it is likely that increasing proportions of highly educated women (and less-educated men) will marry at later ages or not at all. The plausibility of this scenario is suggested by evidence that highly educated women in the United States appear to prefer to remain single rather than marry a man with less education than themselves (Lichter et al. 1995).<sup>13</sup> Although there is some evidence that the association between spouses' educational attainment in Japan has weakened over time (Raymo and Xie 2000; Suzuki 1991), this change has clearly not been sufficient to offset the large changes in marriage market composition. In fact, supplemental log-linear analyses of our data (results not shown) indicate no change in educational pairing patterns between 1980 and 1995.<sup>14</sup> It is conceivable, however, that changes in men's contribution to housework and the implementation of policies designed to facilitate work-family balance may result in more symmetric spouse-pairing preferences that offset declines in the relative supply of highly educated men. In the absence of such changes, however, continued improvements in women's economic opportunities may actually strengthen the role of men's economic resources as a spouse-selection criterion (i.e., because the opportunity costs of career interruption would increase), thus exacerbating the marriage market mismatches that we have described here.

It is also important to consider the theoretical implications of economic changes characterizing the "lost decade" (Kelly and White 2005) of the 1990s. During this period, the proportion of young men and women unemployed or employed temporarily or part-time on fixed-term contracts (popularly referred to as *freeters*) increased across the educational spectrum (Kosugi 2001; Ōishi 2004). The fact that these trends have been more pronounced for women than for men at higher levels of education (Genda and Kurosawa 2001) calls into question the relevance of theoretical emphasis on increasing economic independence for highly educat-

<sup>13</sup> See Lewis and Oppenheimer (2000), however, for evidence that women adjust their spouse-selection criteria in response to limited mate availability.

<sup>14</sup> Results of these supplemental analyses are available from the corresponding author upon request.

ed women. A more compelling economic explanation for the relatively large decline in the marriage rates of highly educated women might focus on the very limited economic opportunities for women with a high school education or less (Kosugi 2001). It is possible, for example, that increasing economic dependence among women with lower levels of education has limited decline in their marriage rates to a greater degree than increasing economic independence has accelerated the trend toward later marriage among more highly educated women. Alternatively, the fact that the 1990s recession has had relatively limited impact on the economic circumstances of highly educated men (Genda and Kurosawa 2001) points to the potential relevance of theoretical emphasis on shifting marriage market composition. If women respond to the combination of growing economic uncertainty and unchanging family roles by placing greater emphasis on the earnings power of potential spouses, increasing competition for highly educated men should contribute to delays in marriage for the women most likely to marry these men (Yamada 1996).

We believe that the results of this study highlight an important gap in cross-national research on the relationship between women's increasing educational attainment and marriage, and we hope that subsequent research will provide a fuller understanding of this relationship by addressing several important limitations of this study. The most obvious limitation is the nature of the data that we use. In the absence of registration data, we have relied upon retrospective data pooled across multiple cross-sectional surveys. Such data not only preclude examination of change in marriages that were rare in one or both time periods (e.g., marriages involving 35–39 year-old women with post-secondary education), but they also cannot be used to examine more than two dimensions of spouse pairing. The number of observations is not sufficient to examine pairing with respect to a wider range of characteristics (e.g., parental background). It is unlikely that subsequent research will be able to address these limitations by using registration data from Japan. It is both feasible and important, however, that our findings from Japan be evaluated in other settings where a negative relationship between women's educational attainment and marriage has been observed. Finding that changes in marriage

market composition, in conjunction with relatively stable spouse-pairing patterns, have played an important role in declining rates of marriage among highly educated women in countries such as Italy, Spain, Korea, and Taiwan would provide further reason to question the conventional interpretation that women's economic independence is the primary reason for declining rates of marriage in societies where asymmetric gender-relations within the family make it difficult for women to combine work and family.

At the same time, such findings would suggest the general relevance of a scenario in which highly educated women in societies characterized by structural and normative impediments to successful work-family balance face increasing numerical difficulty in locating a spouse upon whom they can be economically dependent. With women's educational attainment increasing rapidly in many developing countries (United Nations 2000), the potential relevance of such a scenario is broad. If the time lag between growth in women's educational and occupational opportunities and convergence in the gender division of household labor observed in Western industrialized countries (McDonald 2000) is a relatively universal pattern of social change, shifting marriage market composition may be particularly relevant for understanding changes in the marriage rates of highly educated women in rapidly developing Asian and Latin American countries. Indeed, preferences for female hypergamy and associated marriage market mismatches have been offered as an explanation for relatively low rates of marriage among highly educated women in Thailand and Indonesia (Jones 1997). Because the process of social change implied by the marriage market mismatch hypothesis contrasts fundamentally with the notion that women's increasing economic independence enables them to "buy out" of marriages characterized by gender specialization, there is clear sociological relevance in developing a better understanding of how the relationship between women's economic resources and marriage may depend upon gender context.

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