

The Changing Role of Women's Earnings in Marriage Formation in Japan

By
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Japan is one of a few developed countries in which marriage and higher earning potential among women are negatively associated. Previous studies have suggested that a traditional gender division of labor is at the root of this negative relationship, but this study suggests that the relationship is changing. In this article, I examine the latest marriage behavior among Japanese women from 1993 to 2008, focusing on the relationship between women's economic emancipation and marriage in a gender-traditional society. Using the longest panel survey available in Japan, this study first demonstrates that the effects of women's earnings have reversed, and are now in fact positive in the 1970s cohort. This suggests that Japanese marriage behaviors now resemble more than in the past those of Western countries, where wives' economic contributions to the family are considered important. I argue that changes in young adults' gender ideology have been the major force in facilitating this shift.

Keywords: marriage; mate selection; social change; women's emancipation

The trends of fewer and later marriages have progressed significantly since the 1970s in Japan. Women's mean age at first marriage rapidly increased from 24.2 in 1970 to 28.8 in 2010, which makes Japan one of the latest marrying societies in the world. The proportion of young adults in Japan who are never-married has also noticeably risen. For example, the proportion of never-married women in the age group of 25–29 increased from 18.1 percent in 1970 to 60.3 percent in 2010. Moreover, this expansion of the never-married population has been shifting to older ages in recent years: in females aged 35–39, this proportion increased from 5.8 percent to 23.1 percent during the

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same period. This shift possibly implies that the tendency to marry later is now leading to lifetime nonmarriage among recent cohorts. What is remarkable about the increasing share of the never-married young adults in Japan is that they have neither cohabited with a partner nor committed to nonmarital childbearing. For both men and women, the proportion of young adults who ever experienced cohabitation until age of 30–34 was around 10 percent in 2010 (National Institute of Population and Social Security Research [NIPSSR] 2012b). Proportions of births out of wedlock are also low at around 2 percent in total number of births in 2010 (Ministry of Health, Labour and Welfare 2011). Therefore, marriage plays a central role in women's decisions to have children and, if they do have children, when to have a first birth.

In many Western nations, it is well documented that not only marriage but the whole process of the transition to adulthood is being delayed. A growing body of research shows that young people, particularly in the United States and Southern European countries, are taking a longer time to leave home, attain economic independence, and form families of their own than their peers did half a century ago (e.g., Billari, Philipov, and Baizan 2001; Fokkema and Liefbroer 2008; Furstenberg 2010). Furstenberg (2010) points out that while the shifts to an insecure youth labor market and greater demands for higher education are responsible for the delay in attaining other adulthood statuses, their deterring effects are particularly evident in countries where the availability of state support for youths is relatively undeveloped. Recent studies on the transition to adulthood in the United States have also found that gender differences in the timing of adult transitions have virtually disappeared due to growing gender equality, while social class differences have grown as education has become an important source of social stratification (Settersten, Furstenberg, and Rumbaut 2005).

In Japan, young adults' economic context and the consequences of this context on their transition to adulthood much resemble those in the United States or Southern European countries, where support for young adults is, in general, considered to be the responsibility of their families. Due to the economic recession during the 1990s, young adults in Japan have been similarly facing increased labor market insecurity and shrinking opportunities for well-paid jobs. This is especially true for women and young adults without postsecondary education (Genda and Kurosawa 2001; Kosugi 2001). As a result, enrollment rates in postsecondary education have been rising rapidly since the early 1990s. During this same period, home-leaving (Suzuki 2002; Fukuda 2009a), marriage, and onset of childbearing (Ministry of Health, Labour and Welfare 2011) have taken place at later ages in successive cohorts. However, there is a growing body of research that argues that the relative improvement in the economic standing of Japanese women is one of the major causes of the rapid decline and delay of marriages.

Women's earnings potential in terms of education and wage is often seen as an important factor in explaining the marriage trend in Japan. In previous studies of Japanese marriage, women's economic well-being measured by educational attainment or income was shown to lead to later and less marriage (Tsuya and Mason

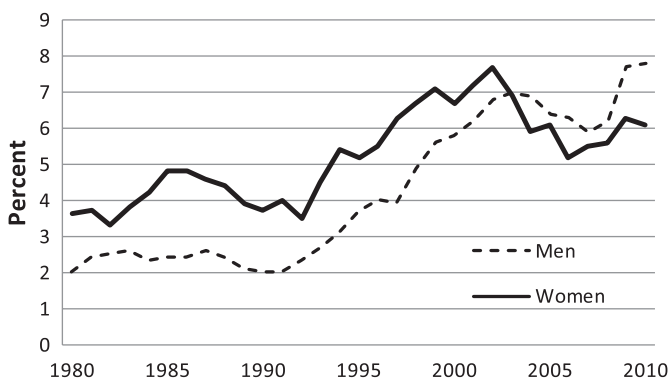
1995; Higuchi and Abe 1999; Retherford, Ogawa, and Matsukura 2001; Ono 2003; Raymo 2003; Raymo and Iwasawa 2005; Tsuya 2006, 2009; Sakai 2009). In Japan, where gender division of labor is highly asymmetrical (Fuwa 2004; Tsuya et al. 2005), sociological studies have hypothesized that women with high earnings potential tend not to marry to avoid a married life that will likely be based on traditional gender role divisions (Tsuya and Mason 1995). Similarly, demographic studies of the marriage market indicate that women with high levels of education are more likely than before to face difficulties in meeting a potential husband who has similar or even higher educational qualifications than themselves due to the existing trend of female hypergamy and women's rapid educational upgrading (Raymo and Iwasawa 2005). The most common interpretation in other studies (Ono 2003; Raymo 2003; Sakai 2009), on the other hand, refers to Becker's economic theory of marriage (1981), which predicts that women's economic independence hinders gains from marriage and reduces the desirability of marriage. According to Becker, marriage utility is maximized by pooling outcomes from husband's market production and wife's domestic production by division of labor. By showing results supportive of Becker's theory, previous studies either implicitly or explicitly assume that married life in Japan is based on the traditional gender role division, which follows statements such as "a husband works outside home and a wife takes care of household chores and childrearing."

However, how persistent is the tenet of specialized gender roles in marriage among young adults in modern-day Japan? As I show in the next section, there is a good reason to suspect that specialized gender roles no longer prevail. There is considerable support for the fact that young Japanese couples are increasingly more likely to form dual-earner households rather than male-breadwinner households. This article examines how a shift in the household economy affects the mate-seeking patterns of Japanese women in relation to their economic qualifications. By applying event-history analysis to the sixteen waves of the Japanese Panel Survey of Consumers (JPSC), this article is the first to demonstrate that women's economic ability, such as earnings and education, is, in fact, positively related to marriage formation since the 1970s in Japan. Explaining such a change is important to understand recent marriage behaviors and to foresee future marriage trends. At the end of the article, I summarize the findings and discuss what this seemingly new marriage pattern implies for marriage and family life in Japan.

Changing Socioeconomic Contexts of Young Adults in Japan

Young adults' socioeconomic conditions have changed rapidly since the 1990s in Japan. These changes can be summarized as (1) youth labor market instability, (2) women's rapid educational improvement, (3) increase in dual-earner couples, and (4) value changes on gender role divisions. All these changes are interrelated.

FIGURE 1
Unemployment Rates of Men and Women, Aged 25–29



SOURCE: Statistics Bureau (2011).

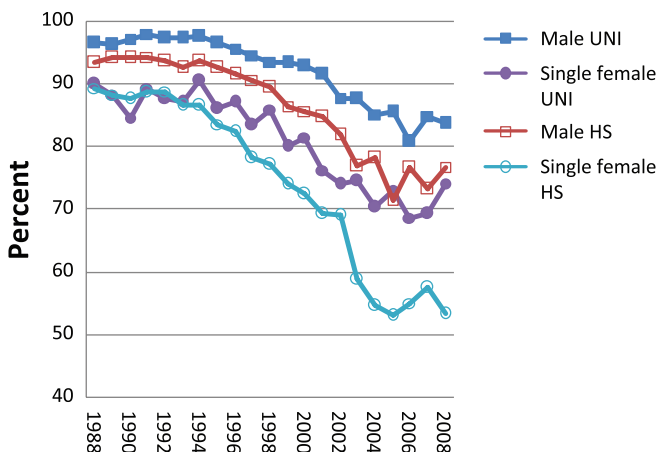
First, the transition in the labor market is greatly affected by the macroeconomic situation, such as business cycles or supply and demand in the labor market. Periodic changes in the labor market can affect a large number of young adults at the same time. For this reason, the labor market experience of young adults can vary dramatically from one cohort to another. In addition, whether a young adult is able to get a stable job should certainly affect the individual's values, prospects, and economic status, thus affecting the timing and occurrence of other transitions in the life course, such as marriage and childbearing.

During the boom of the Bubble economy¹ in Japan (1986–1991), private companies employed as many new recruits as possible to increase their productivity to catch up with rapidly increasing demands. As a result, the active job-openings-to-applicant ratio reached 1.4 in 1991, which meant that job vacancies were in a 40 percent surplus to the number of applicants. This ratio was recorded as high as 2.86 for university graduates in the same year (RECRUIT Works Institute 2008). Therefore, young adults in the Bubble economy, mainly those born in the 1960s, could easily make a transition from school to work.

Contrary to the 1960s cohort, more recent cohorts have suffered from the economic recession of the 1990s, which is often called Japan's "lost decade." The employment market for young adults became increasingly insecure during the 1990s. As shown in Figure 1, the unemployment rates among young adults rose steeply after the collapse of the Bubble economy in 1991. Although the rise in youth unemployment waned between 2003 and 2008, it has shown a steep rise again since 2009 due to the global economic crisis in late 2008.

The economic slump during the 1990s caused structural changes in the employment of young adults as well. Since the 1990s, young adults across the educational spectrum have been more likely to be employed in nonregular

FIGURE 2
 Proportion of Young Adults Who Work as Regular Employees, by Gender and Education



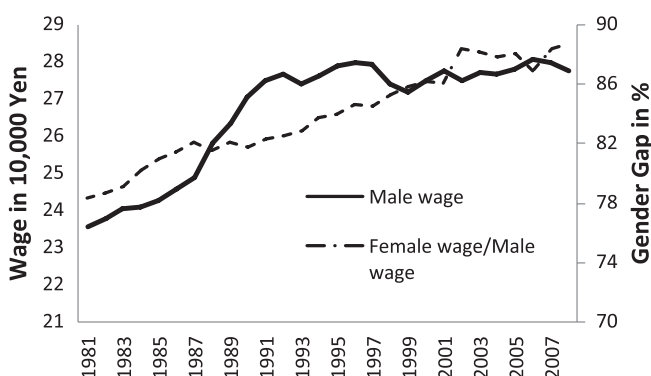
SOURCE: Nagase, Nawata, and Mizuochi (2011).

NOTE: Data for men and single women, aged 34 and younger. Anyone who is not employed as a regular employee is either a nonregular employee, self-employed, family worker, or unemployed. UNI = university; HS = high school.

positions, such as part-time work, temporary work, and contract employment, popularly referred to as *fretters* (Genda and Kurosawa 2001; Kosugi 2001). Those who work on a nonregular basis typically face several disadvantages compared to regular employees, such as lower wages, lack of bonuses or retirement allowances, insecure employment, and lack of promotion and human capital development opportunities. Figure 2 shows the proportion of young adults who worked as regular employees between 1988 and 2008, by gender and educational attainment, derived from the Labour Force Survey (Nagase, Nawata, and Mizuochi 2011). Figure 2 shows that some 50 to 80 percent of young adults were employed as regular employees in 2008, compared to 90 percent and above in 1988–1992. Among them, women and high school graduates were less likely to be employed as regular employees. It is worth noting, however, that even women with university educations had lower percentages of regular employment than high school-graduated men. While these figures certainly include young adults who voluntarily took up temporary jobs for such reasons as maintaining a moratorium and waiting for better job prospects, smooth transitions from school to work were no longer assured since the last decade of the twentieth century in Japan.

In addition, young men’s wages have been stagnant since the 1990s. Figure 3 shows that wages of employed young men aged 25–29 started to stagnate in the early 1990s, while the gender gap in the wages of the same age group has been continuously narrowing. According to the Family Income and Expenditure

FIGURE 3
Wages for 25- to 29-Year-Old Men and the Gender Gap: 1981–2008



SOURCE: Ministry of Health, Labour and Welfare (various years), “Basic Survey on Wage Structure.”

NOTE: Wages are adjusted by Consumer Price Index (CPI) in each year.

Survey conducted by the Statistical Bureau in 2009, women have higher disposable incomes than men when the sample is restricted to those who are employed, under age 30, and live in a single household. Therefore, women’s economic situations are rapidly and steadily catching up with those of men, at least among employed young adults.

The rapid catch-up of women’s to men’s wage is, to a large extent, due to the steep increase in women’s enrollment in tertiary education, especially in universities. The official statistics of the School Basic Survey, conducted each year by the Ministry of Education, Culture, Sports, Science and Technology, indicates that the progression rate from high school to universities was 33.4 percent for men and 15.2 percent for women in 1990. These figures rose to 56.4 percent for men and 45.2 percent for women in 2010. As a result of women’s faster progression to university education, the gender gap in enrollment in university education is rapidly narrowing.

In accordance with the narrowing gender gaps in wages, young adults’ values on gender role division in family life is also showing a significant transformation. There has been a continuous drop in the proportion of young men and women who agree with the traditional division of gender roles. In a multiple cross-section survey titled “Men’s and Women’s Attitudes toward Lifestyle” (Cabinet Office 2009), proportions of women in their 20s who agreed with the following statement: “A husband should work outside, while a wife should take care of household,” was 41.6 percent in 1997, 34.8 percent in 2004, and 27.8 percent in 2009. Men in the same age group who agreed with the same statement were 52.4 percent in 1997, 40.7 percent in

2004, and 34.3 percent in 2009. Although men tended to agree more with the traditional gender role division than did women, the survey shows a change in values among Japanese young adults in general and a narrowing gap in the values of men and women in recent cohorts.

Furthermore, both single men and women are increasingly more likely to desire a dual-earner household. The multiple rounds of the Japanese National Fertility Survey, a nationally representative large scale survey on causes of fertility and nuptiality, repeatedly measures single women's ideal and planned life course. The measure indicates that, in the period from 1987 to 2010, increasingly more Japanese single women expected to continue employment until retirement age while being married and having children (15.3 percent in 1987 and 24.7 percent in 2010) (NIPSSR 2012b). Interestingly, the survey also indicates that in the same period, single men became much more willing to form a dual-earner family than they were before. Increasing shares of men desired their prospective wife to work continuously while having children (10.5 percent in 1987 and 32.7 percent in 2010) (NIPSSR 2012b). While a majority of single women and men still expected a wife to be unemployed while rearing children, those who planned to or desired their prospective wife to continue her employment through her entire life course became the second largest group among Japanese young adults. These figures show that young adults' gender ideologies, in particular preferences about a wife's economic role, have undergone salient changes.

Reflecting these value changes among young adults, proportions of dual-earner households are increasing among married couples in younger cohorts. Among couples in which the women were aged 25–34, proportions of households where both a husband and wife were employed increased from 32.4 percent in 2000 to 42.8 percent in 2009 (Cabinet Office 2010). Therefore, it is expected that in younger generations, potential conflicts regarding role divisions within married life may arise at a lesser extent for women with high earning potential than before.

Due to the recent changes in socioeconomic conditions, married life based on traditional gender roles seems to be a luxury for young adults in recent cohorts. How do these changes affect marriage timing in recent Japan? While Japanese marriage has undergone an enormous transition, our knowledge of spousal choices in recent marriage is very limited. In the next section, I provide a theoretical framework to explain the relationship between women's economic ability and marriage formation.

Theory

Both sociological and economic theories of marriage emphasize the concept of specialization and exchange between spouses (e.g., Becker 1981; Parsons 1949). In his economic theory of marriage, Becker (1981) claims that the benefits of marriage are maximized when a man and woman are each specialized in either market labor or household activities and pool their individual gains. In modern society, in which men

typically have a better position than women do in the labor market and women tend to enjoy advantages relative to men in domestic labor due to a normative socialization process; benefits from marriage are maximized when the husband is specialized in market production and the wife in household tasks (Becker 1981). Thus, the growth of women's economic independence, seen in women's increased levels of participation in higher education and the labor force, reduces the desirability of marriage by minimizing the respective gains of each partner. Becker argues that women's economic independence is a major cause of later and less frequent marriage in today's developed countries. This is known as the economic independence hypothesis.

As an alternative to Becker's theory, Oppenheimer (1988) has suggested using a spouse-search model to explain marriage timing. Oppenheimer (1988, 1994, 1997) applied the job-search theory to the mate-selection process. In the spouse-search model, a woman's greater economic resources increase her incentives and capacity to prolong her spouse-search processes to find a more precise match. The spouse-search model assumes, however, that a woman's high earnings potentially relates positively rather than negatively to her attractiveness as a marriage partner. It is easily understood in a society in which the dual-earner family type is widely accepted that a woman with higher earnings is in a favorable marriage-market position. However, even in gender-traditional societies, in which a family's economy is heavily dependent on a husband's earnings, a wife's earnings can contribute to early marriage by supplementing the often low earnings of young men (Oppenheimer 1988). Therefore, a woman's high earnings potential can have a positive effect on marriage formation by offsetting the presumed negative effects of a woman's greater economic independence (Oppenheimer and Lew 1995). In this article, I call this the spouse-search hypothesis.

As women's economic resources become more positively associated with marriage, the spouse-search hypothesis has been gaining support in recent studies of marriage in Western countries (Blossfeld and Huinink 1991; Santow and Bracher 1994; Bracher and Santow 1998; Oppenheimer and Lew 1995; Thornton, Axinn, and Teachman 1995; Goldstein and Kenney 2001; Sweeney 2002). However, comparative studies suggest that the magnitude of the relationship between women's economic positions and marriage differs according to the gender context in a given society (Blossfeld 1995; Ono 2003). Blossfeld (1995) used women's educational attainment as a proxy for earnings potential and examined its effects on hazards of first marriage and first birth in a cross-national comparative framework. His study found that women's high level of education has a delaying effect on marriage in every country, mainly because of the greater time spent in school. However, how educational attainment affects women's after-school marriage timing differs by country. He argues that high educational level negatively affects women's marriage timing only in Italy, where traditional gender role division is presumably more widely practiced within marriage than in other Western countries in comparison (Blossfeld 1995). Ono (2003) also reached similar conclusions in her study, which examined the effects of women's income on marriage formation by using panel data from the United States, Sweden, and Japan. The study

found that women's income facilitates first marriage in the United States and Sweden, where the degree of gender role division is relatively weak, while women with high incomes are found to retreat from marriages in Japan, where marriages are more heavily based on traditional gender role division than in the United States and Sweden (Ono 2003).

In sum, couples' asymmetric division of gender roles is fundamental to the theoretical basis of Becker's theory. Therefore, the economic independence hypothesis loses its validity in societies where degrees of gender role division, especially in economic roles, are weak, while it still demonstrates face validity in explaining marriage formation where the economic role falls on the husband. In the spouse-search hypothesis, it is assumed that the effect of women's earnings potential on marriage manifests into marriage as a sum of presumably negative and expectedly positive forces (Oppenheimer and Lew 1995). Whether its effects turn out to be positive or negative depends on the couples' preferences for the wife's economic role, which, in turn, reflects couples' expectations regarding the spousal division of the economic role.

The empirical test of the two competing hypotheses has significance in explaining mate-selection patterns in contemporary Japan. As shown in the previous section, rapid changes have taken place in young adults' socioeconomic contexts since the 1990s. A test of the two competing hypotheses gives us a chance to examine whether these socioeconomic changes affect young adults' marriage behaviors by increasing expectations about the wife's economic role in marriage. If the economic independence hypothesis is supported, it is assumed that Japanese young couples are, in general, still opting for the male-breadwinner family type. On the other hand, it is expected that the dual-earner family type is becoming the norm if the spouse-search hypothesis is supported in recent Japanese marriages. Therefore, the test of the two competing hypotheses will give us a certain prospect for how the economic foundation of Japanese families will change in the future.

Previous Research

Previous studies show that Japan has been one of only a few developed countries in which women's economic well-being, as indicated by postsecondary education and high income levels, was negatively associated with marriage hazards or lifetime marriage rates. While earlier studies show that marriage risks among female Japanese university graduates steeply increase when they reach their mid-20s (Tsuya and Mason 1995), more recent studies show that their lifetime probabilities of never marrying are estimated as being the highest among all educational levels (Retherford, Ogawa, and Matsukura 2001; Raymo 2003; Raymo and Iwasawa 2005; Tsuya 2006, 2009). Panel studies of marriage further show that women with higher incomes are less likely to marry (Higuchi 2001; Ono 2003; Sakai 2009). These results are considered here as a confirmation of the economic independence hypothesis; that is, women with high earnings potential do not fit

in the traditional form of marriage (Tsuya and Mason 1995; Raymo and Iwasawa 2005; Ono 2003; Raymo 2003).

These results should be attributed to the relatively high degree of gender division between spouses in Japan. In fact, several studies show that individuals tend to favor traditional values of gender role division in Japan (Tsuya and Mason 1995; Tsuya et al. 2005) and spousal shares of domestic labor are heavily skewed toward women compared to that in Western countries (Fuwa 2004). The cross-national measures of gender equality also confirm Japan's lagged gender situation. Gender equality measures such as the Gender Empowerment Measure (UNDP 2009) and the Global Gender Gap (Hausmann, Tyson, and Zahidi 2010) show that Japan lagged far behind not only high income nations but also some low- to middle-income nations because of its greater gaps in the political and economic positions of men and women.² Therefore, the existing gender gap in society may make Japan one of the few developed countries in which the economic independence hypothesis is supported.

On the other hand, empirical evidence of the spouse-search hypothesis is relatively scarce and rather mixed in Japan. Raymo and Iwasawa (2005) found no evidence of an increase in marriage rates at older ages among highly educated women in the period 1980 to 1995. They concluded that the spouse-search theory did not apply to Japanese marriages. Other studies show that women who are unemployed, in part-time jobs, or employed on fixed-term contracts have lower rates of marriage than those in regular full-time employment (Nagase 2002; Sakai and Higuchi 2005). Seeking to explain these findings, the authors of both studies speculated that the workplace may function as a marriage market for women who work full-time. However, there is no evidence, so far, that matching processes at the workplace differ by women's employment statuses. Kato's (2004) study examined the effects of first job on marriage formations among men and women born between 1931 and 1970. He found strong positive gradients in the effects of men's first occupations on marriage hazards; for example, a man who works for a large company has the highest hazard of marriage among all occupational groups. However, among women, he found no occupational differences in marriage hazards. Kato (2004) concluded that in Japan, where the family economy is heavily based on the male-breadwinner model, women's marriage timing is decisively affected by men's marriage timing.

Fukuda's (2009b) recent study examined the effects of women's economic variables, such as income, education, and occupation, on first marriage using the latest and largest panel data collected between 2002 and 2006 in Japan. The study found that women's high economic well-being, indicated by high education, high income, and skilled jobs, has positive impacts on marriage hazard, especially at age 26 and older. Thus, his study is the first to show support for the spouse-search hypothesis in recent marriages in Japan. Fukuda's (2009b) study analyzed marriage formation during the recent period using a relatively young female cohort (1968–1982 birth cohorts) compared to other studies whose samples mainly consist of cohorts up to the 1960s. Therefore, it seems that in Japan, the relationship between women's economic ability and marriage formation has been reversed in

recent cohorts. His findings are, however, based on only four years of observation. Therefore, it is not possible to generalize its pattern as cohort behaviors. Also, his analyses are unable to show the “change” in the effects of women’s economic variables due to the left-censoring in the sample. In sum, there is no clear evidence that patterns of mate-selection have been changing as of late in Japan.

This study aims to close the existing gap in previous studies by using the richest, longest panel survey conducted in Japan. Using sixteen waves of the panel data, this study seeks to verify the hypothesis that the relationship between women’s economic standing and the marriage hazard has changed from negative to positive in recent birth cohorts. I propose this hypothesis based on the ongoing changes in the trends of tertiary education and youth labor market conditions as well as the theoretical considerations postulated in the previous section.

Data

The data are from sixteen waves of the Japanese Panel Survey of Consumers (JPSC), provided by the Institute for Research on Household Economics in Tokyo. The JPSC is an ongoing annual panel survey that began in September 1993. The survey is a nationally representative survey that is designed to capture the changes in marital status, family compositions, employment, and income and consumption among Japanese women. The survey is carried out with a self-administered questionnaire using a drop-off and pick-up method, which is a standard survey procedure in Japan.

The survey staff interviewed 1,500 women aged 24–34 in the first wave (Cohort A). Five hundred women aged 24–27 (Cohort B) and 836 women aged 24–29 (Cohort C) are added to the fifth and eleventh waves of the survey, respectively. In sum, sample coverage in my data includes Japanese women born between 1959 and 1979 who were observed in the 1993 through 2008 surveys. JPSC retains its sample very well by having only small rates of attrition in each wave.³ Sampling weights are not used in the analysis as they are not provided in the JPSC.

JPSC has a distinct advantage over other panel or retrospective surveys. The survey covers marriages of the exact cohorts and periods that this study intends to analyze. As mentioned, JPSC covers marriage behaviors of the 1960s and 1970s cohorts, which are observed from the early 1990s to nearly the first decade of the 2000s. As mentioned earlier, rapid socioeconomic changes have taken place since the early 1990s in Japan. Affected by those changes, the 1960s cohorts are considered to be the Bubble cohorts—those who entered into both the labor and marriage markets during the time of the Bubble economy in the late 1980s. On the other hand, the 1970s cohorts are the post-Bubble cohorts, who made transitions into the labor and marriage markets during the recession of the 1990s. These two cohorts made transitions to adulthood in distinctly different conditions. JPSC is the only currently available survey that contains up-to-date marriage data for these two prime cohorts.

In the analysis, never-married women are followed up until they (1) are married, (2) drop out of the survey, or (3) reach 40 years old or the sixteenth wave without marrying. The last two cases are treated as right censoring.⁴ Hazards of first marriage are examined in relation to women's economic variables as well as their cohort changes. The analytical sample is 1,224 never-married women from Cohorts A, B, and C. Among them, I deleted samples with missing values in any variables during the risk period. As a result, the final sample includes 1,205 women.⁵ I observed only one case where the woman married after age 40. Therefore, never-married women who have reached age 40 are treated as right censoring.

Methods and Variables

A discrete-time hazard model is used to analyze correlates of the first marriage hazard of Japanese women aged 24–40. A discrete-time model is used because month of marriage is not obtained in the survey. Instead of a conventional logit model, a complementary log-log (CLL) model is applied to person-age data for first marriage risks. The model equation is expressed as follows:

$$\ln[-\ln(1 - P_t)] = a_t + b_1X_1 + b_2X_2(t) + \dots + b_kX_k(t), \quad (1)$$

where P_t is the hazard probability, a_t is the baseline hazard function, and b_k is the coefficient of X_k .

As explained in Allison (1982), one of the advantages of using the CLL in the discrete-time hazard model is that the exponential of the coefficient, $\exp(b_k)$ can be directly interpreted as a hazard ratio, instead of hazard odds ratio in the discrete-time logit model. Aside from this, both logit and CLL models give qualitatively identical estimation results by providing estimated coefficients with the same directions and statistical significance levels (Allison 1982).

A linear spline function of age is used as a baseline hazard. After several experimental analyses, it is found that the model is most parsimonious when risk duration is divided into two periods at a boundary of age 27. In my model, therefore, it is assumed that hazard of marriage exponentially increases between age 24 and 27 and exponentially decreases after age 27.

Previous studies (Tsuya and Mason 1995; Raymo 2003) show that age patterns of marriage differ by women's education levels in Japan. Therefore, the models allow education-specific baseline hazard functions by taking interactions between age linear splines and education levels. Education levels are classified as (1) junior high school (JHS) and high school (HS), (2) vocational school (VS) and junior college (JC), and (3) university and higher (UNI). As the youngest sample is 24 years old, almost the entire sample is not enrolled in school. Therefore, I eventually model the baseline hazards of postgraduation periods for each education level.

The explanatory variable is women's earnings. I use annual wage income from the previous year as a measurement for women's current earnings. While different types of income sources can be identified, only annual wage income is used

for the analysis to be specific to the amount of the labor income.⁶ In practice, one-year lag wage income, which is measured in the previous wave, is used to explain first marriage hazard between age_{*t*} and age_{*t+1*}. JPSC collects their questionnaires in October of each year. Therefore, in my specification, for example, marriages that occurred between November 2001 and September 2002 are explained by women's wages in the calendar year 2000, and so on.

It is important to note that previous studies using JPSC for marriage analysis seem not to take into account this one-year lag in the specification of wage or income (Higuchi and Abe 1999; Ono 2003; Sakai 2009). Therefore, when marriage takes place in either November or December in a year, though this is not identifiable in the survey, their income variable cannot presume time precedence over marriage occurrences. One can also assume that marriage-related job resignations are likely to take place several months before the wedding or cohabitation. In fact, some 30 percent of women quit their jobs at the time of marriage in Japan (NIPSSR 2012a). Therefore, when a woman's previous-year income is affected by her marriage, the specifications of income variables that are made in the previous studies are likely to suffer from reversed causation; for example, income negatively affects marriage hazard because women who marry tend to have lower annual income due to job resignation for marriage. My model specification avoids this problem by using one-year lagged wage data.

Although annual income is widely used in empirical work on marriage, it is often criticized as a poor measure of earning capacity, especially in a young sample (Xie et al. 2003; Burgess, Propper, and Aassve 2003). Typically, current income of young people does not reflect their long-run earning ability because wages are, in general, low at the beginning of a career. To measure an individual's long-run earning capacity, I constructed an alternative measure of earnings, following Burgess, Propper, and Aassve (2003). The individual's fixed effects are estimated from a panel regression of annual wages on work experience, migration, and employment status for the at-risk sample of marriage analysis. The regression from which the fixed effects are generated is given in the appendix. An individual's estimated fixed effects indicate average wage, net of the effects of explanatory variables in the regression, and is thus attributed to an individual's time-constant unobserved characteristics. Therefore, one can interpret the individual's fixed effects as a pool of the individual's earnings capacity irrespective of work experience, migration, and employment status.

One of the advantages of using the individual's fixed effects is that it takes on a constant value over the risk period. Therefore, the time lag issue is no longer a concern for the specification of earnings capacity. Also, its values are considered to reflect individuals' subjective understanding of economic well-being, which is based on past income experience. While Burgess, Propper, and Aassve (2003) used a whole survey period that includes the sample's post-marital period, to estimate an individual's fixed effects, my method uses only women's wages in their singlehood. This is done to make my measure of an individual's earnings capacity comparable to that of wages by attaching both measures to the economic well-being of single women.

In this article, I examine whether the effects of women's earnings on marriage change over birth cohorts. First, birth cohorts are divided into two decadal cohort groups: the 1960s cohort and the 1970s cohorts. The 1960s cohort corresponds with Cohort A (born between 1959 and 1969) sample, while the 1970s cohorts comprise a merged sample of Cohort B (born between 1970 and 1973) and C (born between 1974 and 1979). As discussed, they also correspond with the Bubble economy cohort and the post-Bubble economy cohort. Next, both wage and individual earnings capacity are standardized to make their effects on marriage hazards comparable. In this way, the hazard ratio of either wage income or earnings capacity is interpreted as a net percentage increase in marriage hazard by holding other covariates constant when these earnings variables increase in value by one standard deviation. The models include an interaction term between women's earnings and birth cohorts to test whether women's earnings have different effects in the two decadal cohorts.

Finally, some control variables are used in the models, including two time-varying covariates—city size and coresidence status with parents. I take one-year lag data and use values for these covariates, which are measured in the previous wave. The descriptive statistics used in the models are displayed in Table 1.

Results

The hazard ratios of first marriage among Japanese women are displayed in Table 2. These hazard ratios are estimated by the multivariate discrete-time CLL model. Annual wage is used in model 1, while the fixed-effect of an individual's earnings capacity is used in model 2.

First, the effects of wage and earnings capacity are examined in each model. Both effects are investigated by taking interactions with birth cohorts. Cohort is indicated as a dichotomized variable that takes 0 for the 1960s cohort and 1 for the 1970s cohorts. Model 1 shows that in the 1960s cohort, the first marriage hazard multiplicatively decreases by 12 percent ($= 0.88 - 1$) as standardized women's wages increase by one standard deviation. Contrary to the 1960s cohort, first marriage hazard increases multiplicatively by 27 percent ($= 0.88 \times 1.44 - 1$) as standardized women's wages increase one standard deviation in the 1970s cohorts. The negative effects of women's wage on first marriage is only significant at the 10 percent level in Cohort A, while the positive effects of wage are statistically significant at the 0.1 percent level.⁷ Similarly, model 2 indicates that a one standard deviation increase in women's earnings capacity decreases marriage hazard by 23 percent ($= 0.77 - 1$) in the 1960s cohort, while it does not affect marriage hazard of the 1970s cohorts ($\exp[b] = 0.77 \times 1.33 - 1$).

The effects of wage and earnings capacity on first marriage hazards are displayed in Figures 4 and 5, respectively. These results clearly show that women's earnings, which have a negative effect on marriage hazard in the 1960s cohort, turn to be a positive factor associated with marriage in the 1970s cohorts. This finding supports my hypothesis of the change in the effects of women's earnings on recent marriage formation in Japan.

TABLE 1
Descriptive Statistics for Covariates

	Average	SD
First marriage		
No	.91	.28
Yes	.09	
Age		
24–29	.60	.49
30–34	.29	.46
35–40	.11	.31
Education attainment		
JHS/HS	.33	.47
VS/JC	.42	.49
UNI	.25	.43
Cohort		
Cohort A (1959–1969)	.45	.50
Cohort B (1970–1973)	.26	.44
Cohort C (1974–1979)	.29	.45
Living arrangement		
With parent(s)	.81	.39
Away from parent(s)	.19	
City size		
14 biggest cities	.32	.47
Other cities/towns	.68	
Wage (in 10,000 yen)	263.581	141.257
Earnings capacity	-0.062	100.927
<i>n</i> (person-age)	5,443	

NOTE: JHS/HS = junior high school or high school; VS/JC = vocational school or junior college; UNI = university or higher.

It is worth noting, however, that among these two cohort groups, the average nuptiality is lower in the 1970s cohorts. This can be seen in both models 1 and 2, where marriage hazards for the 1970s cohorts are 26 to 29 percent lower than those for the 1960s cohort when wage or earnings capacity are fixed at the average (with a mean of 0). More precisely, marriage hazards for the 1960s and 1970s cohorts have a crossing point when wage or earnings capacity move away from the mean for a unit of 0.70 standard deviations (see Figure 4), or 1.00 standard deviations (see Figure 5), respectively. However, women who have an earnings capacity above this level in the 1970s cohorts account for only 15 or 12 percent of the sample, respectively. In sum, the confirmed change in the relationship between women's economic standing and marriage is not increasing overall nuptiality in the 1970s cohorts.

TABLE 2
Hazard Ratio of First Marriage

Variable	exp(<i>b</i>)	exp(<i>b</i>)
Wage	0.88*	—
Wage × Cohort	1.44***	—
Earnings capacity	—	0.77***
Earnings capacity × Cohort	—	1.33***
Cohort		
Cohort A	1	1
Cohort B & C	0.77***	0.75***
Age spline × Education		
Age 24–27		
JH/HS	1.31**	1.30**
VS/JC	1.32***	1.37***
UNI	1.12	1.19
Age 27–40		
JHS/HS	0.86***	0.86***
VS/JC	0.90***	0.89***
UNI	0.97	0.97
Living arrangements		
With parent(s)	1	1
Away from parent(s)	0.96	1.01
City size		
14 largest cities	0.81**	0.80**
Other cities/towns	1	1
Constant	0.10***	0.10***
<i>n</i> (person-age)	5,443	5,443
Log-likelihood	-1,582.23	-1,584.18
Chi-square	73.7185	69.8272
Degrees of freedom	11	11

NOTE: A model with the main effects of age and education was estimated. Results, available on request, do not differ qualitatively.

* $p < .1$. ** $p < .05$. *** $p < .01$.

Discussion

Japan used to be one of a few developed countries where Becker's economic independence hypothesis gained support by showing negative associations between women's economic prospects and marriage (Higuchi 2001; Retherford, Ogawa, and Matsukura 2001; Ono 2003; Raymo 2003; Raymo and Iwasawa 2005; Tsuya 2006, 2009). In contrast, in Western countries, women's earnings relate positively, if at all, to marriage (Blossfeld and Huinink 1991; Santow and Bracher 1994; Bracher and Santow 1998; Oppenheimer and Lew 1995; Thornton, Axinn, and Teachman 1995;

FIGURE 4
Effects of Women's Wage on First Marriage Hazard

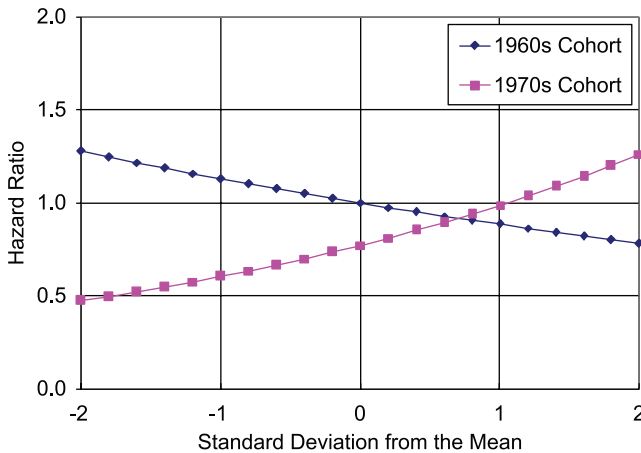
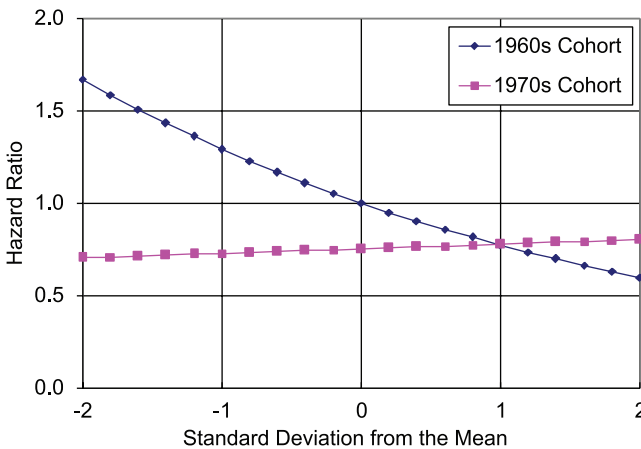


FIGURE 5
Effects of Women's Earnings Capacity on First Marriage Hazard



Goldstein and Kenney 2001; Sweeney 2002). Such studies imply support for Oppenheimer's spouse-search theory, which emphasizes a more direct and positive impact of women's earnings on marriage formation. Comparative studies of marriage suggest that women's earnings are negatively correlated with marriage in societies where marriage is, in general, based on the male-breadwinner family type, while women's earnings have positive or no effects on marriage in societies where economic roles are more equally shared between spouses (Blossfeld 1995; Ono 2003).

Similar to young adults in other developed nations, Japanese young adults also have been facing rapid changes in socioeconomic contexts since the 1990s. These changes have resulted in stagnations in young men's economic prospects and improvements in those of women, which may have changed young adults' views toward more egalitarian gender roles. This article examines how such social and economic changes affect women's marriage market positions in relation to their economic standings.

The results clearly show that both women's wages and earnings capacity are negatively associated with marriage in the 1960s cohort, while their effects become either positive or nonsignificant in the 1970s cohorts. The findings suggest that preferences regarding a wife's economic qualifications not only differ by country but also change across time (Goldstein and Kenney 2001; Sweeney 2002). In the 1960s cohort, women's high earnings hinder marriage, while it is considered more positively as a qualification of a potential wife in the 1970s cohorts. It should be noted, however, that this crossover of women's income effects on marriage has not led to an increase in the overall nuptiality of the 1970s cohorts. Therefore, marriage in recent years has become a more selective event, more likely to occur for women who are economically independent and do not adhere to the gender role-specialized marriage. It is worth noting that this distinct change occurred at the boundary between the Bubble economy cohort of the 1960s and the post-Bubble economy cohort of the 1970s. This suggests that these two neighboring cohorts had internalized different expectations of marriage through their labor market experiences.

It is, however, too early to conclude that Japanese marriage is becoming more gender-egalitarian than before. Blossfeld and Drobnic (2001) point out that women's emancipation in the economic area has taken place at a much faster rate than men's commitment to household tasks and childrearing in Western countries. In Japan, although there is some evidence that married men in recent marriage cohorts spend more time on household chores than their older counterparts did (Fukuda 2007), data also show that Japanese married men on average spend significantly less time on those tasks than married men in Western countries (Cabinet Office 2010). Furthermore, women's work and childbearing are still, to a large extent, in a trade-off relationship in Japan. It is shown in the latest survey that less than 30 percent of women continued employment after first birth between 2000 and 2009 (NIPSSR 2012a). Therefore, it is necessary to explore further how the new pattern of marriage relates to a wife's employment strategy and how it affects a couple's fertility decisions.

Finally, further research is called for to examine how this new pattern of marriage affects the social stratification of young adults. Marriage can be seen as a place where spousal incomes are pooled and used for joint consumption for the couple. Therefore, a couple's total earnings determine the household's standard of living, the social class to which the household belongs. Studies on the transition to adulthood in the United States reveal that social class differences have increased among young adults due to increasing potentials of education (Berlin, Furstenberg, and Waters 2010). Whether the shift to dual-earner marriage leads to smaller or larger social class differences among young adults is an important question to ask when one examines the consequences of the changing patterns of transitioning to adulthood in Japan.

Appendix

Fixed-Effects Model of Single Women's Wages

Variables	<i>b</i>
Years since first job	12.82***
Sq (years since first job)	-0.31***
City size	
14 biggest cities	34.52***
Other cities	0.00
Rural towns	5.00
Employment status	
Standard job	0.00
Nonstandard job	-78.18***
No job	-172.19***
Intercept	201.02***
N × T	6,426
N	1,208
Within <i>R</i> -squared	.273
Between <i>R</i> -squared	.357
Overall <i>R</i> -squared	.366

*** $p < .01$.

Notes

1. Japan's Bubble economy, also known as the "Japanese asset price bubble," lasted from 1986 to 1991. During this time, real estate and stock prices were greatly inflated. The bubble's collapse began with stock prices bottoming in 2003 and lasted for more than a decade.

2. Japan is ranked 57th out of 109 countries in the 2009 GEM (UNDP 2009). In the ranking of the 2009 GEM, Japan lagged behind most of the European countries, including those in southern and eastern regions; and many South American countries, such as Argentina, Ecuador, and Honduras. In the 2010 GEM, Japan is ranked 94th out of 134 countries (Hausmann, Tyson, and Zahidi 2010). Here, Japan's ranking is even lower than some other Asian countries, namely, Thailand, China, and Vietnam; and several African countries, such as Uganda, Mozambique, and Zimbabwe.

3. Average annual attrition rates up to the 16th wave are 4.0 percent, 5.9 percent, and 8.4 percent for Cohorts A, B, and C, respectively.

4. Right censoring occurs when observation is terminated before the subject experiences the event to study. Hazard models, one of which used in this article, can treat right censoring cases in an unbiased way under the assumption of random censoring (Allison 1982).

5. To retain the sample size, missing values are imputed from the previous or later waves wherever reasonably predicted. Also the missing values on wage are imputed by assigning linearly predicted values from neighboring waves.

6. I also expect that some other income sources, such as business income, asset income, and social security income, might suffer from more severe degrees of measurement errors than wage income might.

7. The *p*-value for the effects of wage in the 1970s cohorts is obtained by rerunning the model with a reversed specification of the cohort dummy variable.

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