



HHS Public Access

Author manuscript

J Marriage Fam. Author manuscript; available in PMC 2019 August 19.

Published in final edited form as:

J Marriage Fam. 2015 October ; 77(5): 1039–1056. doi:10.1111/jomf.12224.

Contingent Work Rising: Implications for the Timing of Marriage in Japan

Martin Piotrowski, Arne Kalleberg, Ronald R. Rindfuss

Department of Sociology, University of Oklahoma, 780 Van Vleet Oval, 331 Kaufman Hall, Norman, OK 73019.

Department of Sociology, University of North Carolina, Hamilton Hall No. 32, Chapel Hill, NC 27599-3210.

Abstract

Employment has become increasingly precarious in developed countries, meaning that, for many young adults, jobs provide neither benefits nor security, more work is part time, and employers are increasingly hiring workers from temporary help agencies and contract companies rather than as employees of their own company. These changes in employment relations have profound effects on gender roles and on family transitions of young adults, especially young men and in particular in countries such as Japan, where there are rigid family norms and the male-breadwinner tradition still prevails. The authors examined the effects of the experience of non-regular work on the timing of marriage and whether this differs by sex. Using recent life history data from Japan, they found that men working in non-regular jobs are especially likely to postpone marriage. The implications of the growth of precarious work for changes in work and family institutions in Japan are discussed.

Keywords

event history analysis; Japan; marriage; precarious work

Major societal changes, including the spread of globalization; the rise of technology, which has facilitated the offshore outsourcing of work; the weakening of labor unions; and the spread of neoliberal economic doctrines have led to the growth of precarious and non-regular employment in the industrialized countries of Asia, as well as others throughout the world (see Beck, 2000; Kalleberg, 2009, 2011; Kalleberg & Hewison, 2013; Webster, Lambert, & Bezuidenhout, 2008). This structural change is represented by the expansion of *contingent*, or *non-regular*, work arrangements such as temporary, contract, and part-time work characterized by insecure and unstable employment, few opportunities for career advancement, and relatively low earnings and benefits. Non-regular employment has pervasive consequences for the nature of work, workplaces, and peoples' work experiences; for gender roles, for non-work-related individual (e.g., mental stress, ill physical health,

education) and social (e.g., family, community) outcomes; and for political instability (De Witte, 1999; Standing, 2011).

The impacts of the growth of non-regular work have been especially severe for young people, who disproportionately make up the ranks of the unemployed and underemployed (Eurostat, 2013) and are facing considerable hurdles in launching their work careers (Fong & Tsutsui, 2013; Hamaguchi & Ogino, 2011; Shikata, 2012; Yu, 2012). With young adults bearing the brunt of difficult and uncertain labor market conditions, their ability to marry and have children likely is negatively affected. The consequences of the growth of non-regular employment are likely to be especially problematic in countries such as Japan, with its entrenched male-breadwinner–female-homemaker tradition in which men’s and women’s roles are fairly rigidly determined and where the institutional context prescribes well-defined, young adult transitions between social locations, especially those from school to work and work to marriage.

There is growing evidence that Japan, a country now in the third decade of the so-called “lost decade” of economic stagnation resulting from the bursting of the asset price bubble and other economic difficulties in the years following the financial crisis of the 1990s, has been especially affected by the growth of non-regular employment. Japan has experienced not only economic change but also a substantial drop in the proportion of young people marrying and having children (Atoh, Kandiah, & Ivanov, 2004; Jones, 2007; Tsuya, in press), which has serious implications for many facets of the Japanese population, including the future of its labor force and its age structure. Late marriage and low fertility also have negative implications for government social policies, which rely on a supportive family (formerly the de facto welfare system in Japan). With low wages and limited social support, the working poor risk becoming entrenched in poverty (e.g., A. Allison, 2013). The term *freeters* has been applied to those who hold only temporary or part-time jobs; they have become a growing part of the stagnant Japanese economy.

Despite much discussion in the recent literature on the probable impact of experiencing non-regular work on family formation in Japan and elsewhere, behavioral empirical evidence on the hypothesized relationships has been lacking. Modena and Sabatini (2012), using data from Italy, examined fertility intentions (not behavior) for married couples, with an average age of 41 for men and 37 for women (hence late in their childbearing years). They found a negative effect of precarious work on women’s fertility intentions, but not for men’s. Although fertility intentions can be changeable, this Italian study is consistent with the theoretical expectations involving employment.

In this study we addressed this gap by examining whether non-regular work leads to marriage postponement and whether this differs for men and women. Using life history data from Japan, we assessed the impact of working in non-regular jobs on the transition to first marriage for young men and women. We found that men (more so than women) employed in non-regular jobs were more likely to postpone marriage, which is consistent with general theoretical expectations as well as patterns of gender roles and family formation in Japan. We first discuss how structural changes in the Japanese economy and employment relations have affected the timing of marriage and family formation. We then describe our data,

methods, and results. Finally, we discuss the implications of our analyses for a broader understanding of the impacts of work-related economic and social changes on family outcomes.

Non-Regular Work and Its Impacts on Family Formation in Japan

Non-regular employment contrasts with the normative conception of work that was dominant in Japan and other industrial nations in the decades after World War II: a *standard employment relationship* (SER) that involved permanent, full-time work directed by an employer at the employer's place of business and with regular pay and benefits. The SER was most frequently implemented in larger organizations and industrial production and was also the basis of the East Asian Social Welfare Model (Holliday, 2000). In this productivist model, social welfare rights and protections reinforced the productive elements in society; hence, men in the favored core manufacturing industries in Japan received substantial benefits from their employers, including assurances of lifetime employment, a seniority-based wage and promotion system, and extensive benefits to ensure the well-being of workers and their families. Individuals outside the core employment system, in contrast, were forced to depend on other sources of social protection, such as the family.

The viability of the SER was facilitated by the economic growth and relatively young labor forces of the postwar period. Moreover, it was mainly limited to male employees because it was able to function in large part due to a male-breadwinner–female-homemaker model of the family (see Vosko, 2010) that was associated with relatively stable families and higher fertility rates in the post–World War II period (Esping-Andersen, 1999). This system made it difficult for women to reenter the regular job labor market following a period of non-employment in which they gave birth to, and raised, children (Blossfeld & Hofmeister, 2006), since entry into SERs tended to occur at the time of the school-to-work transition.

The growth of non-regular employment in Japan resulted primarily from the adoption by Japanese firms of cost-reduction policies (Keizer, 2009). These were prompted by the increased competition (due to the global shift of manufacturing jobs to low-wage countries) faced by Japanese firms in the early 1990s, a situation reflected in the sharp decline of the Japanese economy in this period. The cost-cutting actions of Japanese companies were supported by political decisions to deregulate labor markets that were promoted by Prime Minister Junichiro Koizumi, following the neoliberal models of Margaret Thatcher and Ronald Reagan, which eased restrictions on the use of non-regular workers. The use of temporary workers was also encouraged by Japanese social policies that mandated social insurance only for regular workers, making it cheaper for businesses to hire non-regular workers (Osawa, Kim, & Kingston, 2013; Yu, 2012).

The percentage of non-regular workers in Japan has been increasing since the 1980s; it has nearly doubled since then and now encompasses over one third of the entire workforce, or more than 20 million workers (Fukuda, 2013; Osawa et al., 2013). Non-regular workers in Japan include both part-time and temporary employees (see Yu, 2002). The dominant form of part-time worker is known as *pato*; although it should be noted that in Japan, “part-time” work does not necessarily entail fewer work hours; instead, it refers to a status, and it is

distinguished by the types of personnel policies applied to the workers (e.g., *nenko* seniority-based policies are rarely applied to part-time workers; Houseman & Osawa, 1995). Other varieties of non-regular workers include *arubaito*, a side job held by those whose primary commitment is to study, or to another full-time position; *rinjikoyo*, which involves temporary work that can vary greatly with respect to work terms and duration; and a number of other temporary positions associated with dispatch employment (e.g., *haken*, *keiyaku*, and *shokutaku*), characterized by fixed short-term contracts, that are exempt from firm subsidies and fringe benefits. The use of non-regular employees differs by industry, with the highest proportions found in relatively low-skilled jobs in the retailing and restaurant/hotel sectors. The major motivation for their use is to cut labor costs, and their expansion has been facilitated by the maintenance of a dual labor market structure whereby regular workers receive broader training in skills than non-regular workers (Keizer, 2009).

Non-regular jobs in Japan are generally low-paid, dead-end jobs that have little job security with few benefits and that provide limited social protections. Yu (2012) and Shikata (2012) found that contingent work in Japan, instead of being a stepping stone to permanent employment as it is in some European countries, has a stigmatizing and negative effect on the acquisition of future employment as a regular worker. Non-regular jobs are thus more than simply associated with current insecurity and low income; they are also an indicator of future insecurity and lowered economic prospects given that only 2% of non-regular workers transition to regular work each year (Devine, 2013). This is strongly related to the preferences of Japanese employers to hire recent graduates from high school or college as appropriate to the job's educational requirements (Inui, 2003; Ishida, 1998; Kerckhoff, 1995).

Along with the rise of non-regular employment has been a shift in the composition of non-regular workers. Whereas part-time workers in the 1980s consisted mainly of students and women working to supplement their family incomes (e.g., *arubaito*), by the 1990s an increasing number of non-regular workers consisted of young and middle-aged male workers. The proportion of young workers (age 15–24) employed in non-regular jobs increased about fourfold between the early 1980s and 2007 (Brinton, 2011, p. 28). Thus, the chances that a young man is now in non-regular work are about the same as that of a married woman working part time in 1980, reflecting what Brinton (2011, p. 30) called the “de-gendering” of irregular employment in postwar Japan.

Although the growth of non-regular or contingent work is a global phenomenon that affects individuals and families in all industrialized countries, the consequences of non-regular work for family formation differ among countries depending on their institutions and cultures. These impacts are likely to be particularly pronounced in countries (e.g., Japan) that are characterized by strong attachments to work organizations and well-defined transitions from full-time student to that of worker or adult, especially for young men. Brinton (2011) underscored the importance in Japan of social locations (or *ba*) that provide people with an identity and sense of security and argued that being attached to a stable workplace (or *ba*) is essential to the psychological as well as the economic well-being of Japanese men in the postwar period. The emergent lack of economic security among a significant portion of the Japanese labor force has had widespread repercussions, especially

for young men, many of whom are now marginalized as non-regular workers. Young men who cannot find regular employment are unable to learn new skills, have difficulty transitioning to regular employment, and may not earn enough money to rent or purchase their own dwelling unit. Young men have been especially affected by the disruption in life plans caused by the breakdown of orderly transitions from school to work and the paucity of orderly career lines from non-regular into regular employment. Brinton showed how these important structural transformations in the institutions that supported movement from school to work and into adulthood have produced a lost generation in the 1990s, as a cohort of young people were unable to get a stable economic base (or *ba*) from which to transition to adulthood.

Japan's strong tradition of the male-breadwinner–female-homemaker model has further exacerbated the problems for young men with regard to family formation. Not having a regular job is apt to make a Japanese man less attractive as a potential marriage partner. Young men who lack such jobs likely are unable to get settled, often living with parents until their late 20s or early 30s, putting off getting married and having children. Indeed, throughout east Asia, one of the main reasons for a delay in the age at marriage is the perceived lack of “suitable” spouses, that is, spouses who fit the male-breadwinner model (Bumpass, Rindfuss, Choe, & Tsuya, 2009; Jones & Gubhaju, 2009).

Given this context, age at marriage has risen, as has the proportion of individuals who never marry (Jones, 2007). To illustrate, in 1975, 18% of women age 25–29 were never married, but by 2010 this number had risen to 60%. For men in the same age group, 48% were never married in 1975, compared to 72% in 2010 (Tsuya, in press). On the whole, the marriage rate has been declining since the 1970s (especially in the decade between 1970 and 1980). The marriage rate dropped from a high of 10 per 1,000 in 1970 to a low of 5.3 per 1,000 in 2013. The average age at marriage has been rising for both sexes, increasing from 25.9 in 1950 to 30.9 in 2013, for men, and, for women, 23 to 29.3, respectively (“Marriages and Divorce,” 2014).

Cohabitation has been increasing in Japan, but its incidence is still low compared to many Western countries (Fukuda, 2013) and as can be seen in Table 1, it is extremely rare for the cohorts we examined in this study. Furthermore, the duration of cohabiting unions is short (Bumpass et al., 2009; Raymo, Iwasawa, & Bumpass, 2009). One reason for this is the strong norm against nonmarital fertility in Japan. Unlike in Europe and North America, where childbearing has increasingly moved outside marriage, nonmarital fertility is still very low in Japan: Approximately 2% of births are out of wedlock. Patrilineal descent is still embedded in the governmental legal residence system (*koseki*) in which children born to unmarried parents are officially referred to as “illegitimate children” (*hi-chakushutsu-shi*), a stigma with negative consequences.

It is important to note that in Japan marriage is part of a “package,” which for women includes numerous roles bundled together and a very gendered, unequal division of household labor (Bumpass et al., 2009; Coleman, 1983; Rindfuss, 2004). When women marry they are expected not only to assume the spouse role but also to have a child as soon as possible, thus assuming the mother role; also, frequently, especially if they marry a first-

born son, they are expected to care for the husband's parents when they need assistance. Household tasks are very gender segregated, with the burden falling overwhelmingly on the wife. Women spend approximately 27 hours per week on household tasks, compared to 3 hours for husbands (Tsuya et al., 2012). Most never-married men and women live with their parents, and typically their mothers do the lion's share of household tasks. Two thirds of never-married women spend less than 10 hours per week on household tasks, and so for them marriage entails a sharp increase in domestic work (Tsuya, in press). For men, the transition to marriage constitutes essentially no change in the number of hours spent on household tasks.

The role of a mother is very demanding in Japan, more so than in many Western societies. The mother is chiefly responsible for the success of her children in an educational system demarcated by a series of contests to gain entrance into the best schools (Brinton, 1990; Hirao, 2001; Tsuya & Choe, 2004; Tsuya, in press). There is also pressure to enroll children in after-school academic programs. These can be costly and consume substantial amounts of the mother's time, as she prepares a meal for the child to take to the after-school program, arranges for the child to get to and from the program, and helps the child with the program's homework. Hence, when men and women consider marriage they do so in the context of this "package." Motherhood comprises a collection of roles that make it especially difficult for a wife to work while her child is young. Indeed, although the relationship between marriage and labor force participation is complex (e.g., it varies by education, with some highly educated women not leaving the labor force at all), Raymo and Lim (2011) described an *M*-shaped employment trajectory over the life course of women: After an initial increase in the transition from school to work, women leave the labor force upon marrying and having children; they return years later, once the children are older, but they usually have difficulty finding employment as regular workers.

To interpret the pressures on wives and mothers it is important to remember that the Japanese work week tends to be quite long—at least by European and North American standards. Not including commuting time and the expectation that one will spend some time socializing with coworkers after work (*tsukiai*), the average employed male works about 51 hours a week (Tsuya et al., 2012).

The central goal of this study was to examine the relationship between precarious or non-regular work and the timing of marriage for Japanese men and women. As we will show, men who have non-regular employment positions are less likely to get married than men in regular employment. Women in non-regular employment are slightly less likely to marry than women in regular employment, although this contrast is not as strong as it is for men, consistent with the argument that having regular employment is less central to the life plans of women in Japan.

Data and Variables

Our data came from two sources: (a) the 2009 longitudinal follow-up of the 2000 National Survey on Family and Economic Conditions (hereafter the *2009 panel*) and (b) a new cross-sectional survey, the 2009 National Survey on Family and Economic Conditions (hereafter

the 2009 cross-section; see <http://www.icpsr.umich.edu/icpsrweb/ICPSR/studies/34647>). The 2000 survey, which is the baseline for the 2009 panel, as well as the 2009 cross-section, used a two-stage, national probability approach. The first stage sampled geographic primary sampling units based on a stratification of census geographies using the 1995 and 2005 censuses, respectively. The second stage sampled from Japan's basic residence registration system (*jumin kihon daicho*) system, which covers the entire population and contains each individual's name, age, sex, and current address. The two surveys (the 2000 survey and the 2009 cross-section) sampled individuals age 20–49, oversampling those age 20–39.

For each survey, the mode of data collection is one that is common in Japan but not typical in other countries; specifically, self-administered questionnaires were distributed by field workers to sampled individuals and subsequently retrieved at a later date. Individuals who agreed to participate were given a token gift; once the questionnaire was completed, field workers picked up the questionnaire. This data collection procedure has been a standard approach used in Japan since World War II, and Yamada and Synodinos (1994) found it to have a slightly higher response rate than face-to-face interviews.

Analytical Sample

For all respondents, a retrospective life history was collected covering the 21 year period from 1988 to 2009. The life history included school attendance, working at a regular job, working at a non-regular/contingent job, and marriage, with annual time units. The format was a matrix, with years as the columns and activities as the rows. The matrix format allowed respondents to see beginning and ending dates for one activity vis-à-vis the others. Cognitive laboratory work when constructing the questionnaire suggested this was the manner in which respondents best retrieve life history data from memory and that respondents had no trouble recalling these events, confirming what has long been known: that data collection structured in this manner produces high-quality results (e.g., Freedman, Thornton, Camburn, Alwin, & Young-DeMarco, 1988).

In choosing which cohorts to include in the analysis, we were faced with two constraints that arose from the structure of the data. The first is *right censoring*. Respondents in the 2009 cross-section were age 20–49, and the interview censored all events that occurred after 2009. So, for example, someone who was never married and age 31 in 2009 might marry at age 37 in 2015. This marriage event does not appear in our data. As noted above, marriage has been postponed increasingly in Japan, as has the transition from school to work. Even though event-history statistical methods effectively control for the statistical issues involved with right-censoring, we sought to minimize this problem by including only cohorts who had passed the ages when appreciable numbers of men and women first marry. In contemporary Japan, this is mid-to-late 30s, with the later ages especially appropriate for men. For example, to include someone age 22 in 2009 would make it appear that we have a larger analysis sample, but because there are so few marriages at this age including that respondent would be misleading. We did not use data for cohorts that had not yet reached age 36 by 2009 (that includes anyone born after 1973).

The second constraint results from the 1988 start of the life history data. This means that we do not know the dates of events that occurred prior to 1988; this is referred to as *left*

censoring. (Regarding left and right censoring, see Wooldridge [2010] for a general econometric discussion of the issues and Teachman [1982, 2008] for a methodological discussion specifically involving family formation and dissolution.) Consider two people born in 1960, one who married at age 20 and the other who married at 27. From the life history calendar all we would know is that they were both married by 1988. Left censoring is especially problematic because it can produce biased results and there are no agreed-on methods to counter its effects (Wooldridge, 2010). We structured our analysis design so that left censoring was avoided completely, by choosing cohorts for whom we had data from an age when, in essence, no one was marrying—that is, age 18. This restriction eliminated all cohorts born prior to 1970. With these two restrictions, we used data for the 1970–1973 birth cohorts and created a person-year data set incorporating records from all ages beginning at 18. Our main analysis used a total of 4,924 and 5,485 person-years, contributed by 504 women and 462 men, respectively. Using listwise deletion, we eliminated from our analysis approximately 2% of records that had missing data on variables used in the analysis.

Measures

Marriage, our dependent variable, was measured as a dichotomous variable equal to 1 in the year that a respondent reported experiencing their first marriage, and 0 otherwise. To capture our main independent variable of interest, we combined work and school enrollment status into a series of time-varying dummy variables for whether, in a given person-year, the respondent was in one of four work–school states: (a) neither working nor in school, (b) working in regular employment, (c) working a non-regular job, and d) enrolled in school. These measures were constructed from yearly data for which respondents indicated whether they were employed in regular work, employed in non-regular work, or were enrolled in school. Respondents who did not indicate being in any of these states were coded as being in the first category (i.e., neither working nor in school). We assume that this category includes unemployed persons, although no direct information about unemployment was collected in the retrospective data. Also, no information was collected about self-employment, so the categorization of these workers depends on their subjective evaluation of their work status. Although numerous transitions could have occurred in a single person-year, and a person could be in more than one state simultaneously (e.g., both a student and part-time worker), such overlaps were numerically rare. Thus, we grouped overlapping states/transitions into a set of mutually exclusive categories to avoid model estimation problems.

We dealt with overlaps according to the following logic. From the perspective of marriage, having a regular job makes men, and possibly women, more attractive in the marriage market; hence, we gave preference to a regular job if it overlapped with any other state in a calendar year. We considered other states (i.e., non-regular work and schooling) supplementary, given that they provide merely extra income or further human capital accumulation (perhaps in the form of technical schooling). Thus, regular work trumped other states. Overlaps involving non-regular work and schooling (less than 0.50% of the person-years) were treated as school enrollment, because such individuals were probably working part time to help pay their way through school. This is appropriate given that our focus was on non-regular work as a primary activity, not as a side job taken to earn additional money while in school or as a paid intern for a business.

We also used a time-varying measure of school attainment. Attainment was constructed on the basis of the reported highest level of attainment in 2009, yearly enrollment measures, and the typical pattern of school attainment by age in the Japanese system. This approach is practical because less than 1% of Japanese men and women return to school after they have stopped their education for 1 or more years (Rindfuss et al., 2010). Japanese students attend senior high between the ages of 15 and 18. If an individual's highest level of education was reported as junior high school, they were coded "junior high attainment" in all person-years. Similarly, if the highest attainment was senior high, they were assigned "senior high attainment" from age 18 onward. Technical training school takes 1 year to complete, junior college or advanced technical school takes 2 years, and university education takes 4 years. One adjustment was made to each respondent's education timing. In Japan, children who have their sixth birthday on or before April 1 enter first grade that calendar year, and hence finish 12th grade at age 17, instead of 18. Thus, using information on the respondent's date of birth, we assigned those who entered the system early with the appropriate level of education for their age.) These standard times to complete post-high school education were used to assign the time-varying attainment measure. Dummy variables used to measure school attainment included 1 = junior high school, 2 = senior high school (omitted category), 3 = technical training school, 4 = junior college or advanced technical school, and 5 = university education or higher.

Year of birth was used to calculate age, which captures the baseline hazard of marriage. An age-squared term allowed for a curvilinear age effect. A series of dummy variables measuring the respondent's birth cohort, 1970–1973, were also included in our model. Because our sample is aging over calendar time, we urge caution in interpreting the age effect, which also captures the unmeasured influence of period factors. In particular, marriages that occurred in the years after the bursting of the price asset bubble (in late 1991) may have been affected by deteriorating economic conditions and slow growth. Although various methods have been developed that attempt to disentangle age/period/cohort effects (see, e.g., Yang & Land, 2006), these methods remain controversial (see Luo, 2013), so we did not use them.

We included a control for cohabitation because it may be a stepping stone to marriage as well as a behavior more readily engaged in by non-regular workers because of their potential financial inability to establish an independent marital household. Cohabitation is a time-varying dummy variable equal to 1 in years the respondent reported cohabiting and 0 otherwise. We constructed this variable from the date cohabitations began and an ordinal measure in the original data set, which collected information on whether a cohabitation (if it occurred at all) lasted less than 3 months, 3–6 months, 7–11 months, 12–23 months, or 2 years or longer. We used the following rules to convert these categories into person-year data. First, we coded all cohabitations of less than 12 months' duration as a cohabitation state in the person-year in which it occurred. Second, cohabitations of 12- to 23-month durations were coded as a cohabitation event in two adjacent person-years, starting with the first year cohabitation was reported. Third, cohabitations of durations spanning 2 or more years were coded in several ways. If the individual was married at the time of the 2009 survey, cohabitation states were coded for all person-years between the start of the cohabitation and either the beginning of another cohabitation spell (and then subsequently

from the beginning of that cohabitation spell to the year of marriage) or the year of marriage (in the event that there was only one cohabitation spell and the respondent married the cohabiting partner). If the individual was cohabiting at the end of the survey (i.e., 2009), all person-years between the start of the cohabitation and this year were coded as cohabitation states (except, as in the previous measure, if a second cohabitation spell occurred, in which case an adjustment was made). If cohabitation ended without marriage or ongoing cohabitation, a random number of person-years between 2 and the number of years until end of the survey year (2009) was assigned, and a corresponding number of person-years were coded accordingly as cohabitation states. This measure could introduce some measurement error, so below we describe results of a sensitivity analysis that excludes the cohabitation measure and note any effect on results.

Finally, a dummy variable for whether the data originated from the 2009 panel or 2009 cross-section was included. In the same fashion that a random effect deals with hierarchical clustering in a multilevel model, this variable accounts for unmeasured factors common to records nested within the two respective surveys (Snidjers, 2005). We also included this measure because we feared that the 2009 panel sample may not be representative of the Japanese population because of selective attrition between the 2000 and 2009 panels.

Analytical Approach

We used discrete-time event-history analysis to model the determinants of the hazard of first marriage. The discrete-time method breaks up individual event histories into a set of units in which the event either occurred or did not. When pooled across individuals, these time units can be used to obtain regression estimates of factors influencing the outcome event. Using pooled person-year data produces results comparable to a continuous time approach while enabling the incorporation of time-varying covariates (P. D. Allison, 1982, 1984). Our model used a probit specification, which has a nearly identical link function to the commonly used logit specification (i.e., logistic distribution vs. normal distribution) and yields comparable results. We adjusted standard errors using a heteroskedastic robust procedure (White, 1980) whereby individuals contributed person-year records until they experienced a first marriage or were censored at the time of the 2009 survey. We conducted separate analyses for men and women because we expected the effects of non-regular employment on marriage to differ by gender.

Results

To show basic descriptive statistics for marriage, our dependent variable, we begin with results from nuptiality life table estimates starting at age 15, presented in Figure 1 as the survival curve of singlehood. (N.B.: A *nuptiality life table estimate* refers to results of a life table approach, originally designed to study mortality, applied to event data on marriage. The nuptiality life table starts at age 15, which is when school to work transitions could first begin [i.e., after junior high school graduation, which for some people represents a termination to their educational career]). Figure 1 shows that few marriages occur before age 18, which is the starting age in our event-history analyses.

Figure 1 shows that the marriage pattern differs somewhat for men and women, with women transitioning to marriage at younger ages, proceeding somewhat steeper, and resulting in a higher proportion married. Note that because Japan has had below-replacement fertility for more than a generation, successive cohorts are smaller. Given the preference for husbands to be older than wives, the inverted-pyramid age structure produces a marriage “squeeze” for men.

Descriptive statistics for variables used in the analysis, presented separately for men and women, are shown in Table 1. Our main results incorporate a 2-year lag for measures of work/school events and other time-varying variables. We used a 2-year lag because once a person’s status changes such that he or she becomes more (or less) desirable in the marriage market, it takes time to decide to marry and make the necessary arrangements (or not marry). Below, we examine the robustness of our results using other lags.

Regular work states are the most prevalent for both men and women (accounting for two-thirds of men’s person-year records, and nearly as many for women). School enrollment is the next most prevalent state, accounting for just under one quarter of event states for both men and women, respectively. The next most common state is non-regular work, which accounts for 11% of women’s person-years and 7% of men’s. States in which the person is neither working nor in school make up the remaining portion of the distribution, and are uncommon for both sexes (about 4%, of each respective distribution).

Because work/school status is central to the theory and our empirical results, we further explored two additional aspects. As noted above, there are different types of non-regular work. The event-history data told us only whether respondents were in a non-regular job that year, but for their employment status at the time of the 2009 interview we could identify the kinds of positions held by non-regular workers. For those not in regular jobs in 2009, two-fifths were employed as *pato/arubaito* (these designations for part-time workers are not distinguished in the data); about one quarter of men and women were employed as temporary dispatch workers (*haken/keiyaku*); the rest were in various miscellaneous categories.

We also note that once Japanese men and women were in a non-regular job they were unlikely to transition to a regular job. At the end of 5 years, only 13% of our respondents who started a non-regular job had made the transition to a regular job; after 15 years, the comparable figure was only 19%.

In terms of school attainment, senior high school was the most prevalent event state, making up over one third of all person-years for men and women, respectively. The next most common educational state differed noticeably for men and women, with men having spent substantially more years with a university degree (34% vs. 18%) and women having a higher prevalence of junior college and advanced technical training (28% vs. 5%). Technical training school was the next most prevalent (about 14%–16% of person-years spent in this state), and it was nearly as common for men as for women. Finally, junior high school made up only a small portion of the distribution for men and women.

The average age for men and women was 26. The distribution of birth cohorts was nearly uniform across the 1970–1973 birth cohorts. Only a small fraction of person-years were spent cohabiting, consistent with the lower prevalence of cohabitation in Japan compared with Europe or North America and with the relatively short duration of Japanese cohabiting unions.

The results of hazard models for first marriage are shown in Table 2. Recall that the work status variables are lagged 2 years, with regular work as the reference category. The results were exactly as we expected theoretically: Having a non-regular job significantly lowered the likelihood of marriage, for both men and women; however, the effect for women was weaker than that for men. That is as anticipated in the Japanese context, where women commonly quit work upon marriage and certainly when the first child is born. We did a Chow test (Chow, 1960) that confirmed the male non-regular work coefficient was significantly more negative than that of the female coefficient. For men, being out of the labor force or being in school also postponed marriage. For women, only being in school postponed marriage. The magnitudes of the effects are substantial. On the basis of predicted probabilities, a man with a regular job has an 8% chance of marrying in any given year. If a man has a non-regular job, this probability is reduced to 3%, if he is not working or in school this is reduced to 2%, and if he is in school this is reduced to 1%. The corresponding probabilities for women are 10% for regular work, 7% for non-regular work, 6% for neither working nor in school, and 4% for school; these are smaller differences than for men.

In separate analyses, we examined the sensitivity of our results to various lags on the work status variables. We did so for two reasons. For women, the longer the lag, the less likely there is an issue of reverse causality, that is, an impending marriage leading to a work status change. Indeed, with no lag, some of the marriages could have occurred earlier in the year, prior to or simultaneously with a job status change. Furthermore, varying the lags also allowed us to examine whether the process tends to “forget” that a person has experienced a spell of non-regular work or of not working. Put differently, does a spell of non-regular work or not working have a permanent effect on the likelihood of marrying, or does its effect go away after a sufficient lag during which a regular job might have been obtained? Although given that few people transition from non-regular to regular jobs, there is a limited possibility that the process will forget its past. We examined lags from 0 to 5 years, and doing so requires a consistent sample size up to the maximum lag length. The longer the lag, the fewer person years are available for analysis. To see this, consider the 1970 birth cohort, who were age 39 in 2009 (the survey year). If there is a 0-year lag, then person-year observations are available through age 39. If the lag is 5 years then, subtracting 5 from 39, person-year observations are available only through age 34. To ensure comparable person-year samples across each of the six lags examined, we restricted each to the person-year sample of the 5-year lag. The results for work status coefficients (full model results available on request) based on varying lag lengths are shown in Table 3. The results for men were very robust across different lags. For all three work status measures (i.e., no work/school events, non-regular work, and school enrollment), coefficient estimates were negative and statistically significant, although they differed in magnitude across lag lengths. This was especially the case for school enrollment (which, with increasing lag length, is really the effect of years since leaving school), the magnitude of which dropped substantially with

longer lags, something is to be expected because everyone eventually leaves school, and the effect of just beginning the work phase of life should fade. For women, having a lag of 0 years showed a positive effect of not being in the labor force on the likelihood of marriage because of the potential reverse-causality issue. Therefore, the effect of not being in the labor force becomes negative as the lag length increases. In general, the results for females were substantially weaker, as would be theoretically expected.

Other factors associated with marriage (see Table 2) include educational attainment, age, cohabitation, and the indicator of data source (i.e., 2009 cross-section or panel). Only one school attainment measure was significant for men and women, respectively. For women, having a junior college/advanced technical school attainment level was associated with a lower hazard of marriage compared to senior high school. The difference between senior high school and university education or higher was not significant. Although the nonsignificant effect of university education for women may seem surprising, it reflects what Brinton and Lee (2001) described as a mismatch between women's human capital and employment in Japan. During the period of expansion in higher education (1955–1975), junior college in Japan became a “female track,” usually providing training for relatively low-level jobs typically occupied by women (e.g., health care workers or professionals in the social welfare field). Given the strong and pervasive sex discrimination within the Japanese labor markets, university-educated women faced great barriers to entering the managerial labor market. This restricted them to working in professional/technical occupations and the government sector, the latter being relatively small in Japan. Those entering clerical work found themselves in a situation in which their educational credentials, although greater than junior-college-educated counterparts, were acquired at the expense of years of full-time work experience. Therefore, relative to university education, junior college is effectively more of a career track for Japanese women, and during the mid-1980s and mid-1990s employment rates for female junior college graduates in Japan were higher than those of female university graduates. This may have led the former to postpone marriage or to never marry. For men, having the lowest education level—junior high school—was associated with a lower marriage hazard compared to the next highest category, senior high school (the reference group).

Age had a curvilinear (inverted-*U* shape) effect on first marriage for both men and women. Cohabitation was positively and significantly related to marriage for men and women. We also found that people in the 2009 cross-section sample had a higher average hazard of marriage compared to the 2009 panel sample. This is because panel attrition rates were higher for those who changed addresses, and marriage is a common time to change dwelling units. Panel attrition (i.e., non-random selection of cases lost between the 2000 and 2009 panels) may have biased our results; below, we examine whether any of the effects of the variables we included in the model differed across the panel and cross-sectional samples.

To examine further the robustness of the main results, we conducted a series of sensitivity analyses (see Appendix Tables A1–A3). First, we estimated separate models for men and women that excluded the cohabitation measure, in order to assess the possibility of endogeneity bias related to simultaneity or measurement error. Coefficient estimates for

work/school status showed only negligible changes as cohabitation was included and, overall, this procedure did not change our basic conclusions (see Table A1).

Given the significant effect of our data source indicator variable (i.e., 2009 cross-section or panel), we estimated a series of separate models in which we included an interaction term between each independent variable and the data source measure. We then conducted likelihood ratio tests of the resulting models against the baseline model that included only additive effects (as shown in Table 2). The results presented in Table A2 show that only the interaction involving age and age square measures significantly improved model fit, and this was true for both men and women. However, with or without the interactions, the results of further analysis (available on request) showed that work/school state variable effects were robust with the inclusion of this interaction effect.

Finally, we also considered how increasing the number of birth cohorts (to capture the experiences of a wider time interval) would affect our results. Including more birth cohorts entails making a trade-off related to the maximum age at which we can observe respondents (recall the earlier discussion of right-censoring). The data in Table A3 show a comparison of the estimates in our final model (in which the maximum age was above 36 years and the sample was limited to the 1970–1973 birth cohorts) to a second model (in which the maximum age was capped at 30 and the sample included the 1970–1979 cohorts).

In general, the results were robust across these models. In each case, non-regular work had a significant negative effect on marriage for both men and women. Chow tests showed that the non-regular coefficient was different for men and women. When one considers that the average age at marriage in Japan is about 30, one sees that the models that allowed us to observe respondents up to that age yielded results that are consistent with our basic argument about marriage and gender expectations in the context of a strong male-breadwinner–female-homemaker tradition.

Discussion

The growth of nonstandard work has had important consequences for both work careers and family life in Japan. Well-established institutional arrangements by which men attend school, establish themselves in the labor force, and form families are being disrupted by the increasing difficulty in obtaining regular jobs. We have demonstrated the theoretically expected relationship between working in non-regular jobs and the timing of marriage, a link that has been the subject of speculation but that has not been shown empirically. Our results indicate that men in both non-regular work and those who do not work at all are less likely to marry, and this result was very robust over a wide variety of sensitivity tests. This finding is consistent with our theoretical expectations for a country with a strong male-breadwinner–female-homemaker model and a highly gendered division of household labor. These results provide empirical confirmation that the growth of precarious work influences non-work outcomes such as family formation. Furthermore, being in school also diminishes the chance of marriage but, as anticipated, this effect fades the longer the lag separating school attendance and potential marriage year.

For women, having a non-regular job has a negative effect on marriage, and that effect is significantly lower than the comparable effect for men. In a strong male-breadwinner–female-housekeeper society this is not surprising. A woman, when she marries, is expected to bear and raise children and to maintain the household. Her prior labor force experience is not as critical. Perhaps what is surprising is that, for women, the non-regular job coefficient was negative and statistically significant. There are at least three possible, and quite different, explanations for this. First, perhaps never-married women with no job or a non-regular job are envious of their contemporaries who have a regular job with all the income and related shopping and travel perks that come with the status of a regular job. As a result, they delay marriage in the hopes of obtaining a regular job. However, given the general awareness that transitioning from non-regular to regular employment is rare, this possibility seems unlikely. Second, it may be that, given the increase in the labor force participation of married women, which presumably is partially driven by the perceived need for a higher family income (Fukuda, 2013; Tsuya, in press), young never-married men might view never-married women with regular jobs as more desirable marriage partners. This would be consistent with Oppenheimer’s (1988) theoretical arguments in regard to the United States. However, the fact that we found higher education among women (at least junior college, which is presumably associated with better earnings prospects) to be negatively associated with marriage contradicts this view. A third possibility is that marriage market dynamics work against women who hold non-standard jobs because they are more likely to encounter men in similar situations and thus lack the opportunity to meet more attractive or suitable marriage partners.

In Japan, gender values (as measured by attitudes) related to the male-breadwinner–female-homemaker marriage model have changed quite slowly (Choe, Bumpass, Tsuya, & Rindfuss, 2014, Yoshida, 2010). There might exist pressure for these values to change. Given the reality that young men cannot easily find regular and stable employment yet need to be the primary provider, while women enjoy greater opportunities for education and employment than previously, this allows women to forgo marriage altogether. It remains to be seen whether, and in what manner, Japanese society deals with an entrenched male-breadwinner–female-homemaker model of marriage and rigid gender norms with an employment structure that can no longer support it because of its increased reliance on precarious and contingent labor. This is also an employment structure that requires employees, especially those in regular jobs, to work very long hours, making it difficult to combine mother and work roles and providing a convenient excuse for husbands to contribute little to household tasks. Furthermore, the educational system requires considerable parental financial and maternal time inputs, more than in countries outside east Asia.

Hints of future change are on the horizon. Oppenheimer (1988), for example, argued that the breakdown of the specialization model of marriage (i.e., breadwinner–homemaker) should make women’s earning potential a more attractive characteristic to bring to a marriage. Perhaps portending Oppenheimer’s vision, Prime Minister Shinzo Abe announced in April 2013 his desire to allow women to “shine” in the economy as a part of his “Abenomics” growth strategy. Such a statement is a radical departure from the earlier views of his conservative Liberal Democratic Party, which at one time encouraged the nation’s “baby-

making machines” to stay at home rather than participating in the paid workforce (“Holding Back,” 2014). However, the dramatic postponement of marriage in Japan suggests that the initial realignment has been in the family rather than work sphere; in other words, Japanese efforts to create more family-friendly workplaces (through the provision of amenities such as day care or parental leave, as well as companies promoting shorter work hours) have been either too slow to materialize or altogether ineffective. The reduced availability of regular jobs has further led to marriage postponement, as we have shown here, and is contributing to the realignment in the family sphere.

At this point it is worth considering some possible limitations in our analyses. First, we used retrospective data rather than prospective longitudinal data, and hence the data may be susceptible to recall error (e.g., people forget, or misreport, the timing of events). Recall error may introduce measurement error, which could bias our model coefficients (if such error is systematic) or reduce the efficiency of estimates (if it is unsystematic). Fortunately, the timing of major life events such as marriage, school attendance, and job changes are easier for individuals to remember than other, more peripheral life events. Furthermore, research suggests that the use of the retrospective life history calendar approach we used in this study aids in improving research participants’ recollection of the relative timing of life events (e.g., Axinn, Pearce, & Ghimire, 1999; Freedman et al., 1988).

Second, retrospective data on income were not available, and some might argue that part of the effect of non-regular work may be capturing the impact of unmeasured factors such as low income. In considering this possibility, we note that it is potential income that probably matters more than actual income. Non-regular jobs tend to have a flat age–income profile. In contrast, regular jobs, with the tradition of seniority-based wage increases, have upward-sloping age–income profiles. Because a transition from regular to non-regular work is very rare, being in a non-regular job probably signals future low earnings potential and not just low earnings or job insecurity at a given point in time. Therefore, it is potentially stigmatizing for young, unmarried men, who might be perceived as inadequate providers in a culture that maintains the importance of a male-breadwinner status, and we do not think our results would be markedly different if there had been a control on time-varying income.

Third, it may be that factors leading to non-regular work for women also lead to delayed marriage, resulting in endogeneity bias. Although we did not have justifiable instrumental variables needed to address this potential problem, lagging the work measures in our model to some extent addressed this issue.

Limitations aside, in the first empirical test of the effect of precarious work on marriage, our results underscore the close relations between work and family institutions, especially in countries such as Japan that have a male-breadwinner–female-homemaker model coupled with a social welfare system that depends heavily on the family rather than the state. The disruption in male careers hampers family formation, which in turn has contributed to the declining fertility rate, which at a total fertility rate of 1.41 in 2012 (World Bank, 2014) is one of the lowest in the world. This has important implications for the future of Japanese society, especially when combined with Japan’s low immigration rate; the tendency for the Japanese to not have children out of wedlock; and the rapid aging of the Japanese

population, which, with 22% of the population over age 65, is also the oldest in the world (“Japan’s Demography,” 2014). We speculate that similar processes are underway in other countries that have experienced simultaneous increases in non-regular work and low fertility, such as South Korea, Spain, and Italy. A better understanding of the linkages among employment relations, gender norms, and family formation is likely to take on added importance in the coming years as employers rely increasingly on non-regular work arrangements.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

Acknowledgments

The data used in this article were collected partially supported by a grant from the National Institute of Child Health and Human Development (5R01HD042474) to the East–West Center, Minja Kim Choe, Principal Investigator, with Noriko O. Tsuya, Larry L. Bumpass and Ronald R. Rindfuss comprising the remainder of the research team. An earlier version of this article was presented at the 2014 European Population Conference, in Budapest, Hungary. Martin Piotrowski’s efforts on this research were supported in part by a Faculty Enrichment Grant from the University of Oklahoma. He thanks the Carolina Population Center and the East–West Center for providing office space and other resources during the writing of this article. We also thank James Raymo for helpful comments.

References

- Allison A (2013). *Precarious Japan*. Durham, NC: Duke University Press.
- Allison PD (1982). Discrete-time methods for the analysis of event histories In Leinhardt S (Ed.), *Sociological methodology* (Vol., 13, pp. 61–98). Washington, DC: American Sociological Association.
- Allison PD (1984). *Event history analysis: Regression for longitudinal event data*. Beverly Hills, CA: Sage.
- Atoh M, Kandiah V, & Ivanov S (2004). The Second Demographic Transition in Asia? Comparative analysis of the low fertility situation in east Asia and south-east Asian countries. *The Japanese Journal of Population*, 2, 42–75.
- Axinn WG, Pearce LD, & Ghimire D (1999). Innovations in life history calendar applications. *Social Science Research*, 28, 243–264. doi:10.1006/ssre.1998.0641
- Beck U (2000). *The brave new world of work*. Malden, MA: Blackwell.
- Blossfeld H, & Hofmeister HA (2006). *Globalization, uncertainty and women’s careers: An international comparison*. Cheltenham, UK: Elgar.
- Brinton MC (1990). Intrafamilial markets for education in Japan In Hechter M, Opp K, & Wippler R (Eds.), *Social institutions: Their emergence, maintenance and effects* (pp. 307–330). New York, NY: Aldine de Gruyter.
- Brinton MC (2011). *Lost in transition: Youth, work, and instability in postindustrial Japan*. New York, NY: Cambridge University Press.
- Brinton MC, & Lee S (2001). Women’s education and the labor market in Japan and South Korea In Brinton MC. (Ed.), *Women’s working lives in east Asia* (pp. 125–150). Stanford, CA: Stanford University Press.
- Bumpass LL, Rindfuss RR, Choe MK, & Tsuya NO (2009). The institutional context of low fertility. *Asian Population Studies*, 5, 215–235.
- Choe MK, Bumpass LL, Tsuya NO, & Rindfuss RR (2014). Nontraditional family-related attitudes in Japan: Macro and micro determinants. *Population and Development Review*, 40, 241–271. doi: 10.1111/j.1728-4457.2014.00672.x [PubMed: 25221370]
- Chow GC (1960). Tests of equality between sets of coefficients in two linear regressions. *Econometrica*, 28, 591–605. doi:10.2307/1910133

- Coleman S (1983). *Family planning in Japanese society: Traditional birth control in a modern urban culture*. Princeton, NJ: Princeton University Press.
- Devine E (2013, 5). The slacker trap. *The Atlantic*, 20, 22, 24–25.
- De Witte H (1999). Job insecurity and psychological well-being: Review of the literature and exploration of some unresolved issues. *European Journal of Work and Organizational Psychology*, 8, 155–177. doi:10.1080/135943299398302
- Esping-Andersen G (1999). *Social foundations of postindustrial economies*. Oxford, UK: Oxford University Press.
- Eurostat. (2013). Unemployment statistics. Retrieved from http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Unemployment_statistics#Youth_unemployment_trends
- Fong E, & Tsutsui J (2013, 4). “No one left behind”? Youth employment in Japan. Paper presented at the Annual Meeting of the Population Association of America, New Orleans, LA.
- Freedman D, Thornton A, Camburn D, Alwin D, & Young-DeMarco L (1988). The life history calendar: A technique for collecting retrospective data. *Sociological Methodology*, 18, 37–68. [PubMed: 12282712]
- Fukuda S (2013). The changing role of women’s earnings in marriage formation in Japan. *Annals of the American Academy of Political and Social Science*, 646, 107–128. doi: 10.1177/0002716212464472
- Hamaguchi K, & Ogino N (2011). Non-regular work: Trends, labour law policy, and industrial relations developments—the case of Japan Industrial and Employment Relations Department Working Paper No. 29, International Labour Organization, Geneva, Switzerland.
- Hirao K (2001). Mothers as the best teachers: Japanese motherhood and early childhood education In Brinton MC (Ed.), *Women’s working lives in east Asia* (pp. 180–203). Stanford, CA: Stanford University Press.
- Holding back half the nation. (2014, 3 29). *The Economist*. Retrieved from <http://www.economist.com/news/briefing/21599763-womens-lowly-status-japanese-workplace-has-barely-improved-decades-and-country>
- Holliday I (2000). Productivist welfare capitalism: Social policy in east Asia. *Political Studies*, 48, 706–723. doi:10.1111/1467-9248.00279
- Houseman SN, & Osawa M (1995, 10). Part-time and temporary employment in Japan. *Monthly Labor Review*, 10–18.
- Inui A (2003). Restructuring youth: Recent problems of Japanese youth and its contextual origin. *Journal of Youth Studies*, 6, 219–233. doi:10.1080/1367626032000110327
- Ishida H (1998). Educational credentials and labour-market entry outcomes in Japan In Shavit Y & Muller W (Eds.), *From school to work: A comparative study of educational qualifications and occupational destinations* (pp. 287–309). New York, NY: Clarendon Press.
- Japan’s demography: The incredible shrinking country. (2014, 3 25). *The Economist*. Retrieved from <http://www.economist.com/blogs/banyan/2014/03/japans-demography>
- Jones G (2007). Delayed marriage and very low fertility in Pacific Asia. *Population and Development Review*, 33, 453–478. doi:10.1111/j.1728-4457.2007.00180.x
- Jones G, & Gubhaju B (2009). Factors influencing changes in mean age at first marriage and proportions never marrying in the low-fertility countries of east and southeast Asia. *Asian Population Studies*, 5, 237–259.
- Kalleberg AL (2009). Precarious work, insecure workers: Employment relations in transition. *American Sociological Review*, 74, 1–22. doi:10.1177/000312240907400101
- Kalleberg AL (2011). *Good jobs, bad jobs: The rise of polarized and precarious employment systems in the United States, 1970s to 2000s*. New York, NY: Russell Sage Foundation.
- Kalleberg AL, & Hewison K (2013). The challenge of precarious work for east Asia. *American Behavioral Scientist*, 57, 271–288. doi:10.1177/0002764212466238
- Keizer AB (2009). Transformations in- and outside the internal labour market: Institutional change and continuity in Japanese employment practices. *The International Journal of Human Resource Management*, 20, 1521–1535.

- Kerckhoff AC (1995). Institutional arrangements and stratification processes in industrial societies. *Annual Review of Sociology*, 15, 323–347.
- Luo L (2013). Assessing validity and application scope of the intrinsic estimator approach to the age–period–cohort problem. *Demography*, 50, 1945–1967. doi:10.1007/s13524-013-0243-z [PubMed: 24072610]
- Marriages and divorce. (2014). In *Statistical handbook of Japan*. Retrieved from <http://www.stat.go.jp/english/data/handbook/c0117.htm>
- Modena F, & Sabatini F (2012). I would if I could: Precarious employment and childbearing intentions in Italy. *Review of Economic Households*, 10, 77–97. DOI 10.1007/s11150-010-9117-y
- Oppenheimer VK (1988). A theory of marriage timing. *American Journal of Sociology*, 94, 563–591.
- Osawa M, Kim MJ, & Kingston J (2013). Precarious work in Japan. *American Behavioral Scientist*, 57, 309–334. doi:10.1177/0002764212466240
- Raymo JM, Iwasawa M, & Bumpass L (2009). Cohabitation and first marriage in Japan. *Demography*, 46, 785–803. doi:10.1353/dem.0.0075 [PubMed: 20084829]
- Raymo JM, & Lim S (2011). A new look at married women’s labor force transitions in Japan. *Social Science Research*, 40, 460–472. doi:10.1016/j.ssresearch.2010.10.005
- Rindfuss RR (2004). The family in comparative perspective In Tsuya NO & Bumpass LL (Eds.), *Marriage, work, and family life in comparative perspective: Japan, South Korea, and the United States* (pp. 134–144). Honolulu: University of Hawaii Press.
- Rindfuss RR, Choe MK, Midea M, Kabamalan M, Tsuya NO, & Bumpass LL (2010). Order amidst change: Work and family trajectories in Japan. *Advances in Life Course Research*, 15, 76–88. [PubMed: 21547009]
- Shikata M (2012). Is temporary work “dead end” in Japan? Labor market regulation and transition to regular employment. *Japan Labour Review*, 9, 59–79.
- Snijders TAB (2005). Fixed and random effects In Everitt BS & Howell DC (Eds.), *Encyclopedia of statistics in behavioral science: Vol. 2* (pp. 664–665) Chichester, UK: Wiley.
- Standing G (2011). *The precariat: The new dangerous class*. New York, NY: Bloomsbury.
- Teachman J (1982). Methodological issues in the analysis of family formation and dissolution. *Journal of Marriage and the Family*, 44, 1037–1053. doi:10.2307/351462
- Teachman J (2008). Complex life course patterns and the risk of divorce in second marriages. *Journal of Marriage and Family*, 70, 294–305. doi:10.1111/j.1741-3737.2008.00482.x
- Tsuya NO (in press). Below replacement fertility in Japan: Patterns, factors and policy implications In Rindfuss RR & Choe MK (Eds.), *The low fertility paradox*. New York, NY: Springer.
- Tsuya NO, Bumpass LL, Choe MK, Rindfuss RR (2012). Employment and household tasks of Japanese couples, 1994–2009. *Demographic Research*, 27, 705–718. [PubMed: 24031165]
- Tsuya NO, Bumpass LL, Choe MK, & Rindfuss RR (2013). Employment and household tasks of Japanese couples, 1994–2009. *Demographic Research*, 27, 705–718. doi:10.4054/DemRes.2012.27.24
- Tsuya NO, & Choe MK (2004). Investments in children’s education, desired fertility, and women’s employment In Tsuya NO & Bumpass LL (Eds.), *Marriage, work, and family life in comparative perspective: Japan, South Korea, and the United States* (pp. 76–94). Honolulu: University of Hawaii Press.
- Vosko L (2010). *Managing the margins: Gender, citizenship, and the international regulation of precarious employment*. Oxford, UK: Oxford University Press.
- Webster E, Lambert R, & Bezuidenhout A (2008). *Grounding globalization: Labour in the age of insecurity*. Oxford, UK: Blackwell.
- White H (1980). A heteroskedasticity-consistent covariance matrix estimator and a direct test for heteroskedasticity. *Econometrica*, 48, 817–838. doi:10.2307/1912934
- Wooldridge JM (2010). *Econometric analysis of cross section and panel data*. Cambridge, MA: MIT Press.
- World Bank. (2014). Fertility rate, total (births per women). Retrieved from <http://data.worldbank.org/indicator/SP.DYN.TFRT.IN>

- Yamada S, & Synodinos NE (1994). Public opinion surveys in Japan. *International Journal of Public Opinion Research*, 6, 118–138. doi:10.1093/ijpor/6.2.118
- Yang Y, & Land KC (2006). A mixed model approach to the age–period–cohort analysis of repeated cross-section surveys, with an application to data on trends in verbal test scores. *Sociological Methodology*, 36, 75–97. doi:10.1111/j.1467-9531.2006.00175.x
- Yoshida A (2010). Cultural lag, anomie, and single women in Japan (Unpublished doctoral dissertation). University of Oklahoma.
- Yu W (2002). Married women’s labor force reentry and part-time, temporary employment in Japan. *Sociological Forum*, 17, 493–523. doi:10.1023/A:1019635208595
- Yu W (2012). Better off jobless? Scarring effects of contingent employment in Japan. *Social Forces*, 90, 735–768. doi:10.1093/sf/sor031

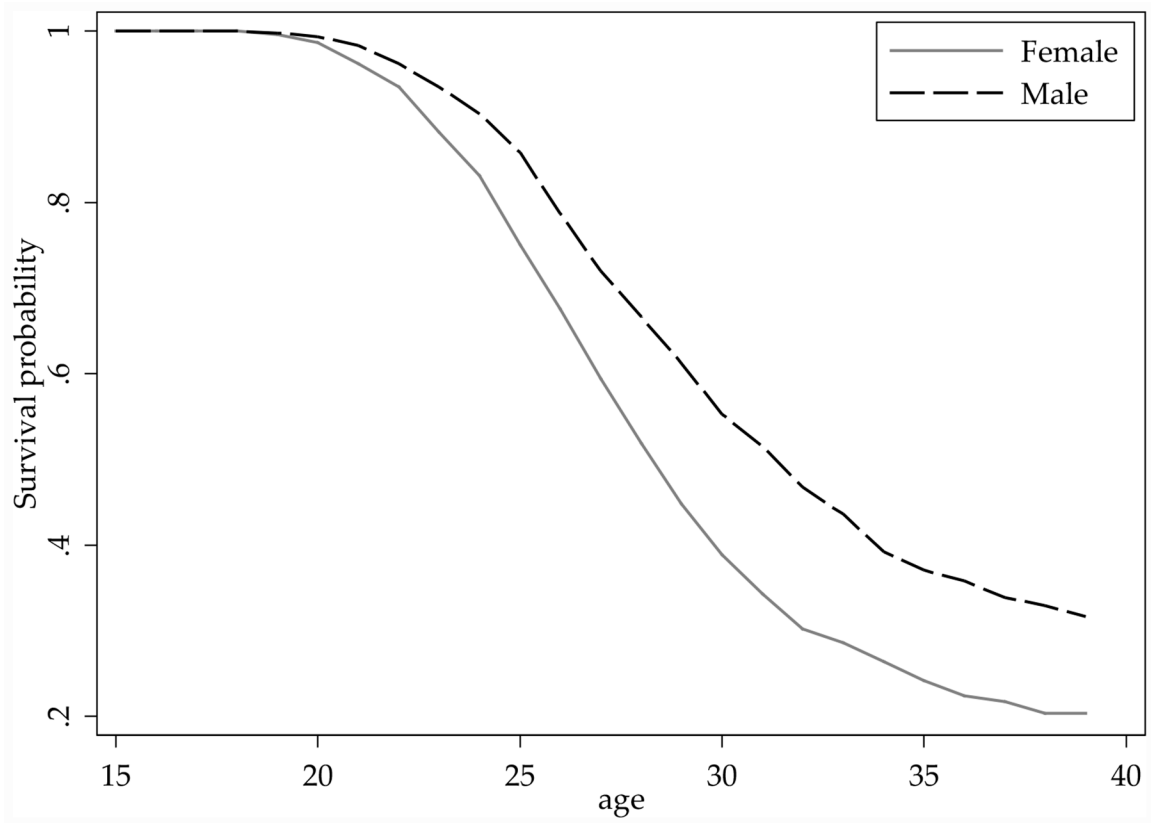


Figure 1.
Survival Curves for First Marriage, by Sex.
Note. $N = 472$ men and 517 women.

Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript

Table 1.

Descriptive Statistics, 1970–1973 Cohorts

Variable	Females ^a (<i>n</i> = 504)		Males ^b (<i>n</i> = 462)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Work/school status (2-year lag)				
Not working or in school	.04	.19	.04	.20
Regular work	.62	.48	.66	.47
Non-regular work	.11	.32	.07	.25
School enrollment	.23	.42	.23	.42
School attainment				
Junior high school	.03	.18	.07	.25
Senior high school	.37	.48	.38	.49
Technical training school	.14	.34	.16	.37
Junior college/adv. technical	.28	.45	.05	.22
University or higher	.18	.39	.34	.47
Age	25.91	4.79	26.74	5.02
Cohabited	.04	.20	.04	.20
Birth cohort				
1970	.25	.43	.25	.43
1971	.25	.43	.28	.45
1972	.26	.44	.22	.41
1973	.24	.43	.25	.43
Sample (2009 cross-section = 1)	.63	.48	.66	.47

Note. adv. = advanced.

^aNumber of person-years = 4,924.

^bNumber of person-years = 5,485.

Table 2.

Discrete Time Probit Estimates of Hazard of First Marriage, by Sex

Variable	Females ^a (n = 504)		Males ^b (n = 462)	
	B	SE	B	SE
Intercept	-2.82***	0.29	-2.73***	0.33
Work/school status (2-year lag; ref.: regular work)				
Not working or in school	-0.23	0.16	-0.62**	0.21
Non-regular work	-0.20*	0.088	-0.56***	0.15
School enrollment	-0.52***	0.11	-0.80***	0.13
School attainment (ref.: senior high school)				
Junior high school	-0.32	0.19	-0.27*	0.13
Technical training school	-0.12	0.087	-0.12	0.089
Junior college/adv. technical	-0.15*	0.069	0.073	0.13
University or higher	-0.1	0.083	0.036	0.073
Age	0.064***	0.011	0.051***	0.012
Age squared	-0.0097***	0.0014	-0.0066***	0.0014
Cohabited	0.49***	0.12	0.63***	0.11
Birth cohort (ref.: 1970)				
1971	-0.058	0.078	0.05	0.078
1972	0.0044	0.075	-0.12	0.086
1973	0.024	0.077	-0.02	0.083
Sample (2009 cross-section = 1)	0.17**	0.059	0.11	0.063
-2LL	2,630.8		2,243.6	

Note. ref. = reference category; adv. = advanced; LL = log likelihood.

^aNumber of person-years = 4,924.

^bNumber of person-years = 5,485.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

Table 3. Work Status Coefficients From Discrete-Time Probit Estimates of the Hazard of First Marriage, by Sex, Lags of 0–5 Years

Lag (years)	Females ^a (n = 512)			Males ^b (n = 466)		
	Not working or in school	Non-regular work	School enrollment	Not working or in school	Non-regular work	School enrollment
0	0.59*** (0.11)	-0.05 (0.08)	0.01 (0.24)	-0.65** (0.21)	-0.91*** (0.20)	-0.74** (0.28)
1	-0.18 (0.15)	-0.22* (0.09)	-0.25 (0.20)	-0.74** (0.24)	-0.75*** (0.17)	-0.73*** (0.21)
2	-0.39* (0.18)	-0.19* (0.09)	-0.35* (0.16)	-0.73** (0.24)	-0.58*** (0.15)	-0.73*** (0.16)
3	-0.50*** (0.19)	-0.22* (0.10)	-0.36** (0.13)	-0.73** (0.24)	-0.58*** (0.15)	-0.48*** (0.12)
4	-0.30 (0.18)	-0.23* (0.10)	-0.30** (0.11)	-0.58** (0.22)	-0.61*** (0.16)	-0.33** (0.10)
5	-0.17 (0.18)	-0.25* (0.11)	-0.20* (0.10)	-0.69** (0.24)	-0.66*** (0.17)	-0.22* (0.10)

Note. Regular work is the omitted category. Numbers in parentheses are standard errors.

^aNumber of person-years = 3,452.

^bNumber of person-years = 4,117.

* $p < .05$.

** $p < .01$.

*** $p < .001$.