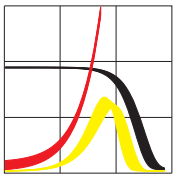

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Leaving the parental home in post-war Japan: Social, economic, and demographic determinants

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Leaving the parental home in post-war Japan: Social, economic, and demographic determinants[1]

Setsuya Fukuda[2]

Abstract

This paper examines the relationship between home-leaving intensities of young adults and the rapid social, economic, and demographic changes that took place in post-World War II Japan. By using event-history modeling, the study shows that the declines in sibling numbers and in rural residence discourage young adults from leaving home before marriage. The practice of stem-family norms helps to explain the delay to some extent. Finally, marriage delay has a substantial impact on later home-leaving as leaving home is closely linked with marriage in Japan.

[1] This chapter is a revise of the paper written by Fukuda (2009). For the full details of the analyses and the discussions, please refer to the original paper.

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1. Introduction

Over the last half of the 20th century, Japan became highly industrialized, and achieved one of the highest living standards in the world. At the same time, Japanese families underwent enormous social and demographic changes during the post-World War II period. Family size became smaller as fertility rapidly declined, the population became more concentrated in urban areas than in rural areas, and the center of gravity of the labor force shifted away from the manufacturing and agricultural sectors, and towards the service industry. As a result, compositions of family characteristics varied significantly by successive cohorts. Furthermore, each cohort faced different macro contexts as a consequence of economic fluctuations, institutional changes, and erosion of the traditional norms regarding family and household formations.

As shown in this paper, these changes in macro contexts facilitated important changes in the transitions to adulthood in post-war Japan. For example, as in other industrialized countries, more young adults enrolled in tertiary education and more single women entered full-time employment, even as the employment of young adults became more insecure, and people began to marry later and less. There is, however, little research into how these social, economic, and demographic changes affected the living arrangements of young adults in post-war Japan.

The goal of this study is to investigate the trends and determinants of leaving home, a dynamic aspect of household changes among young adult ages. Using data from a nationally representative survey, the National Family Research of Japan 1998 (NFRJ-98), this paper addresses the following research questions through multi-variate event-history analysis:

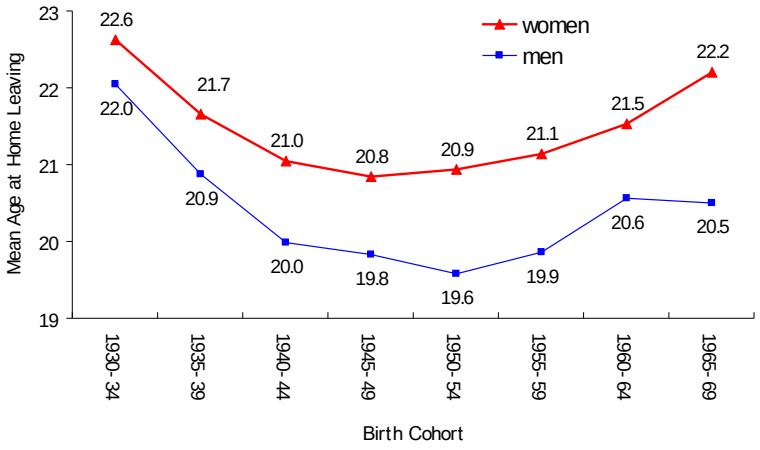
1) Which socio-demographic factors explain nest-leaving behaviors in post-war Japan?
2) Does the norm of the traditional stem-family play a role in nest-leaving behaviors in contemporary Japan?
3) How do proximities of nest-leaving and other life events change by sex and cohort?

Each research question is designed to explain the cohort trends of nest-leaving in post-war Japan in terms of 1) the compositional changes in family characteristics, 2) the historical roots of the stem-family, and 3) the changes in the transition to adulthood. This study includes separate analyses for men and women, followed by a discussion of the distinct sex differentials in leaving home behaviors in Japan. Thus important sex differences in leaving home and household formation will also be revealed.

2. The patterns of leaving home in Japan

The patterns of leaving home in Japan have a number of distinct features that set them apart from those seen in Western countries. One of these features is that men leave the parental home earlier than women (Suzuki 2003). The timing of the departure from the home is displayed in Figure 1. The age at leaving home for men is about one year below that of women in all cohorts. Previous studies of Japanese nest-leaving also confirm the same trend using both mean and median age at leaving home (Suzuki 1997, 2001, 2002, 2007, Ando 2001). In other Western countries, and even in East Asian countries, such as China and Korea, women tend to leave home earlier than men (Zeng et al 1994, Suzuki 2003). In these countries, women leave home earlier because women's ages at either marriage or cohabitation are, on average, younger than those of men (Goldscheider 1997, Suzuki 2001, 2007). Japan, where women also tend to marry at younger ages than men, seems to be the only country where men leave the parental home earlier than women among the contemporary industrialized countries (Suzuki 2002).

Figure 1: Age at leaving the parental home by sex and birth cohort*



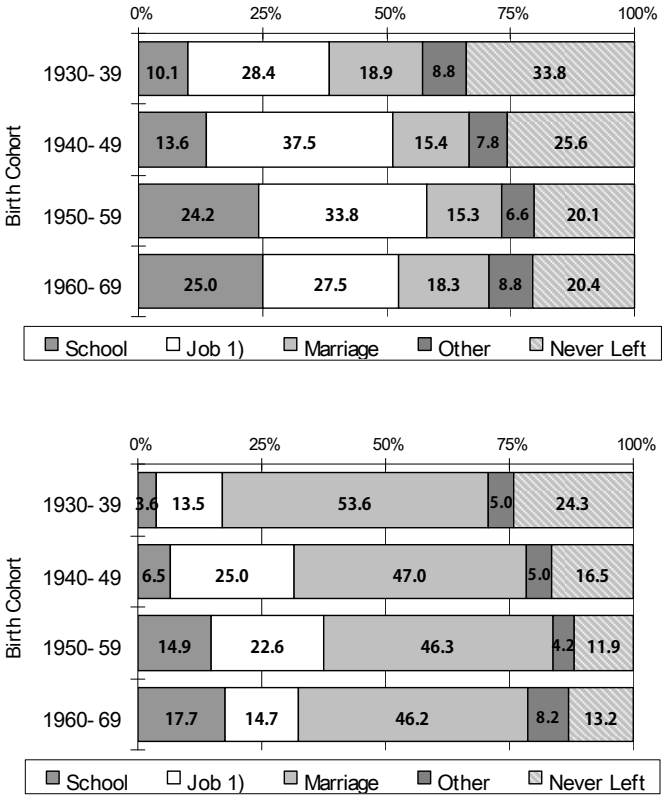
* Calculated from the five-year-old age-specific rates of first home-leaving at ages 15-34.

Sources: Author's analysis of the Fifth National Survey on Household Changes, 2004, NIPSSR.

The seemingly contradictory sex differential in the timing of leaving home is caused by distinct patterns of pre-marital nest-leaving by sex. Figure 2 shows the percentage distributions of the routes out of the parental home. It is clear from the figure that men have a strong tendency to leave home before marriage for reasons of schooling or employment, while women are much more likely to leave home at the time of marriage. As a result, the mean age at leaving the parental home is lower for men than for

women. Note that the figure is based on the first home-leaving. Therefore, the figure also suggests that the majority of Japanese women spend their entire single lives in the parental home. These sex differentials in the routes out of the parental home reflect norms and parental expectations regarding gender roles, and shape the different life course experiences of Japanese men and women. These differences will be discussed in greater detail in the next section.

Figure 2: Reasons for leaving the parental home by sex and birth cohort*



1) Includes any kinds of job-related reasons, such as employment, transfer, job change, job search, retirement and unemployment.

* Based on first home-leaving of all ages.

Sources: Author's re-tabulation of the Fifth National Survey on Household Changes, 2004, NIPSSR.

The reasons for leaving the parental home show another unique feature of Japanese nest-leaving: Japanese young adults leave the parental home mostly for reasons related to the life course. Among both men and women, about 90% of nest-leaving is for schooling, employment-related reasons, or marriage. The Fifth National Survey on Household Changes (NSHC), on which Figure 2 is based, offers a choice of "to be independent from parents" as one of the reasons for leaving home. But only around 5% of the men

and 2% of the women surveyed in each cohort chose this as their reason for leaving home[3]. Thus, in most cases, the decision to leave the parental home is made to pursue one of these life events, and not solely to experience residential autonomy[4]. This is in contrast to the situation in the United States, where pre-marital nest-leaving is a norm (Goldscheider and Goldscheider 1994, Settersten JR. 1998), and young adults are increasingly leaving the parental home to become independent of their parents (Goldscheider and Goldscheider 1994, 1999).

The nest-leaving trends show distinct patterns by birth cohorts as well. For both men and women, the mean age at leaving the parental home shows the U-shaped pattern by birth cohort (see Figure 1). The age at leaving home is lowest among the 1940s and the 1950s cohorts, which experienced a large internal migration from rural towns to urban cities for the purposes of acquiring better education or employment. This large migration flow corresponds with the period of rapid economic growth between 1955 and 1973 (see Figure 6 in section 4). Thus it is not surprising that the shares of both men and women who left home for job-related reasons are the largest among the 1940s and the 1950s cohorts (see Figure 2). Thereafter, the age at nest-leaving shows delays among the 1960s cohorts. The delay is mainly due to a trend towards later marriage, and to the concentration of the youth population in metropolitan areas in the 1960s cohorts (Suzuki 2002). The delay in nest-leaving is especially pronounced among women in the 1960s cohorts. Women's home-leaving directly reflects marriage trends, because their nest-leaving is closely linked to marriage.

Figure 2 also indicates that, for both sexes, leaving the parental home is less common among the 1930s cohorts. Among members of this group, one-third of men and one-quarter of women never left home during their young adulthood. The share of those who never left home gradually decreased and stabilized starting with the 1950s cohorts. In sum, leaving home is delayed among younger cohorts, but the proportion of young adults who eventually leave the parental home is increasing.

Note also that the low incidence of nest-leaving implies that a substantial proportion of young adults, especially in older cohorts, never left home at all, and succeeded the family by forming extended households. Japan has a tradition of the stem-family (for a detailed discussion, see Ochiai (2000)). In a stem-family system, the heir is expected to stay at home and take over the family. As a result, leaving

[3] The proportions are calculated by excluding unknown reasons. Women in the 1960s cohort are the only exception, as they reported that 5% of their home-leaving was to become independent from their parents.

[4] The choice of "being independent from parents" is not mutually exclusive to other reasons. Therefore, one can argue about whether choosing independence as a reason for leaving home is a matter of perception of young adults about their nest-leaving. Also, the nest-leaving experiences of household members are reported by household heads in the NSHC survey. Since it is known that parents and young adults have a different perceptions on the children's living arrangements (Goldscheider 1997), the reasons for nest-leaving shown here may be biased more favorably to parents who have dependent young adults at home. This might serve as a partial explanation for the low percentage of respondents who said they left home to be independent from their parents, especially among younger cohorts in Japan.

home was much more common among non-heirs. Using regional household registration data from the late 19th century Japan, Kurosu (1996b, 2004) confirms that the probability of leaving home at a given age is very low through the life course of heirs, who are either the eldest sons or eldest daughters without male siblings, compared to that of non-heirs. In Figure 2, the proportion of those who never left is higher for men. This is most likely due to the fact that men are, by custom, more likely to be heirs than women. It is worth noting that the tradition of the stem-family norms may continue to influence nest-leaving behaviors in post-war Japan. If it still regulates young adults' household formation patterns, the norm of the stem-family may provide some explanation for the high prevalence of coresidence with parents among single young adults in recent Japan. This study further examines the effects of stem-family norms on the nest-leaving behaviors of recent cohorts, and their implications for the living arrangements of young adults.

As nest-leaving in Japan is highly proximate to life events that typically take place during the transition to adulthood, the trends of home-leaving reflect both the opportunity and constraint structures of the life courses of Japanese young adults. The patterns of nest-leaving also suggest that those structures are specific to gender and cohorts. In the next sections, we will further investigate the effects of several social, economic, and demographic factors on young adults' decisions to leave the parental home, and their relationships to nest-leaving trends in post-war Japan.

3. Determinants of leaving home in Japan

The Japanese family has undergone rapid economic, social, and demographic changes in the post-war period. These changes can be described as follows: fertility transition, urbanization, industrial transformation, economic growth, educational upgrading, and marriage delay. In this section, we review the effects of these social, economic, and demographic changes on leaving the parental home of young adults in post-war Japan.

3.1 Demographic changes

One of the major demographic changes in relation to nest-leaving behaviors is the decline in the number of siblings in each family. The decline in sibling numbers is due to the fertility decline in the post-war period. The large fertility decline, or so-called fertility transition, took place in Japan between 1947 and 1957, with TFR declines from 4.54 to 2.04 in this period. The decline in the period fertility corresponded to the reduction in cohort fertility (Otani 1993). As a result, the average number of siblings declines significantly in successive cohorts.

Previous studies in other countries consistently find that nest-crowding is positively correlated to the risk of nest-leaving, as crowding makes the prospect of privacy and independence from family more

desirable for young adults (Golscheider and DaVanzo 1989, Haurin et. al. 1997, Goldscheider and Goldscheider 1998). The same relationship is also found in nest-leaving in Japan. Having large numbers of sibling is positively correlated to premarital home-leaving (Sawaguchi and Shimazaki 2004), especially leaving home for employment (Fukuda 2003). But sibling numbers negatively correlate to leaving home for schooling, and correlate positively to marriage for women only (Fukuda 2003).

As the number of siblings decreases, the likelihood of being an heir increases inversely (Nishioka 2000). Men are, however, much more likely to be an heir than women, since a woman can be an heir only when she does not have any male siblings in her family. As previously mentioned, in pre-industrial Japan, both heir sons and heir daughters have much lower probabilities of home-leaving than non-heirs, following the traditional household formation patterns of the stem-family (Kurosu 1996b, 2004). In contemporary Japan, the persistence of the stem-family norm provides social justification for both parents and adult children, especially heir child, to stay together, even after the marriage of the child. In fact, Morgan and Hiroshima (1983) pointed out that the extended family still fits well into modern aspects of family life in Japanese society, where housing is expensive and public supports for childcare are scarce. Previous studies found that heirs tend to have lower risks of leaving home than non-heirs (Sawaguchi and Shimazaki 2004), and that these effects persist weakly until the 1960s cohort (Fukuda 2003). Therefore, this study also expects that heirs will have lower risks of leaving home, given that nest-leaving in Japan is affected by the norm of the traditional stem-family.

Urbanization is another important factor affecting nest-leaving behaviors in post-war Japan. In previous studies, young adults living in small towns or in rural areas were found to have distinctively positive effects on nest-leaving risks in Japan (Fukuda 2003, Sawaguchi and Shimazaki 2004). In Japan, where leaving home before marriage is strongly associated with schooling or employment, the size of a city is one of the major factors that affect the likelihood of a young adult leaving the parental home. Urban-rural distributions of pre-leaving young adults are significantly different across cohorts. Census data shows that 35%-40% of young adults in the cohorts born before 1960 grew up in metropolitan areas, while these figures rise to around 50% in the subsequent cohorts (Nakagawa 2001). Therefore, more young adults in the 1960s cohorts and younger have grown up in large cities, and they are less likely to reside in rural areas than those in older cohorts. Therefore, members of the 1960s cohort, many of whom already live in or close to a large city, are expected to have less motivation to leave the parental home before marriage than their preceding cohorts.

3.2 Changes in socio-economic status of family of origin

The socio-economic status (SES) of families has also undergone a substantial transformation. First, as reflected by the industrial transformation that took place during the post-war period, fewer workers are employed in the primary sectors, such as agriculture, fishing and logging since 1950. Instead, we see

strong increases in the numbers of workers in the secondary and tertiary industries. As a result, fewer young adults are from families employed in the primary sectors in successive cohorts. Second, industrial transformation also caused a change in the employment status of the family heads. The number of men who are self-employed or family workers has decreased in recent periods, while the number of men who are employees is increasing. This trend implies that young adults with self-employed fathers are also decreasing in successive cohorts. Finally, the educational backgrounds of fathers also vary across cohorts. The progression to university or junior college education has been increasing during the post-war period. Therefore, the share of fathers with tertiary education rises substantially in successive cohorts.

Parental SES has complex effects on leaving home in Japan. Fukuda (2003) found that a father's high occupational position has a positive effect on leaving home for men, while the likelihood that a woman will leave home is higher when the father's occupational status is low or unknown. The reason-specific analysis of leaving home shows that the father's high education, as well as a high occupational position, positively correlates to leaving home for schooling for both sexes (Fukuda 2003). The father's high occupational position continues to facilitate men's home-leaving for employment, while women's employment-related home-leaving is much more common among daughters with fathers who work in a primary sector, or with fathers whose occupational status is low or unknown (Fukuda 2003). Sawaguchi and Shimazaki (2004) combine the educational levels and occupations of fathers to reflect the social strata of the family of origin, and examine their effects on the risk of premarital and marital home-leaving. Their analysis shows that fathers with higher levels of education slightly facilitate men's premarital home-leaving only.

Family intactness also affects the timing and occurrence of nest-leaving. Parental divorce and remarriage tend to cause conflicts within family relationships, and are thus known to be strong factors that facilitate early nest-leaving or nest-leaving for cohabitation in Western countries (Aquilino 1991, Kiernan 1992, Goldscheider and Goldscheider 1998). Both numbers and rates of divorce have increased significantly since 1960 in Japan. The incidence of divorce in Japan in 2000 was as high as the rates in France, Germany, and Sweden (Council of Europe 2005) but was still significantly lower than the divorce rate in the US (U.S. Department of Health and Human Services 2001). As the divorce rate increases, younger generations are more likely to experience parental divorce. Along with the rise in divorce rates, remarriage has become more common over the past 50 years. Although period trends of remarriage are not monotonic, the remarriage rates of, for example, divorced or widowed women in 2000 aged 25-29, 30-34, and 35-39 are, respectively, two times, three times, and five times higher than corresponding ages-specific rates in 1950 (see Table 1).

The rise in divorce and remarriage in parental generations certainly affects the nest-leaving behaviors of young adults in post-war Japan. There has been no research done, however, to examine the effects of parents' marital dissolution on leaving the parental home in Japan. Unfortunately, our data also does not allow us to investigate the effects of family intactness because of the lack of information on the

marital histories of parents. Instead of parental divorce or remarriage, the effects of parental death before young adults reach the age of 15 will be examined in this study.

Table 1: Remarriage rates in divorced or widowed women by age: 1950-2000

	1950	1960	1970	1980	1990	2000
20 - 24	87.95	144.77	141.00	271.39	193.75	140.49
25 - 29	68.39	96.69	163.72	218.71	185.20	148.50
30 - 34	30.12	38.00	69.93	99.69	114.59	107.17
35 - 39	10.62	14.16	28.07	40.37	49.50	54.66
40 - 44	4.78	4.75	11.11	16.92	23.67	25.67
45 - 49	2.42	2.32	4.63	7.88	13.93	15.52

Sources: Vital Statistics, various years, Ministry of Health, Labour, and Welfare. Population Census of Japan, various years, Statistical Bureau.

3.3 Changing patterns of the transition to adulthood

As shown in Figure 2, schooling, employment, and marriage are major life events corresponding to the occurrences of leaving home in Japan. The timings, occurrences, and proximities of these life events and nest-leaving strongly affect the levels and timing of leaving home within each cohort. Here, I refer to schooling, employment, and marriage as major life events constituting the transition to adulthood, and examine their trends and effects on the occurrences of leaving home in post-war Japan.

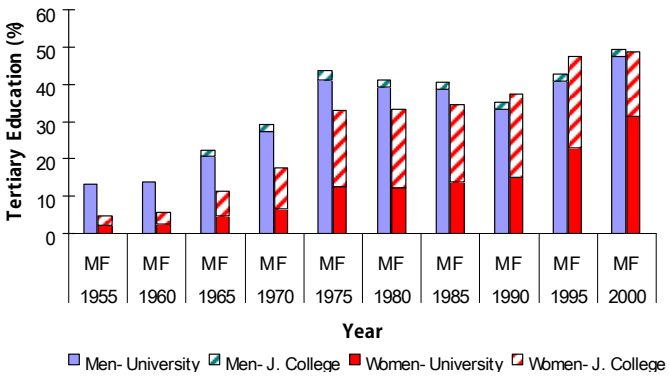
3.3.1 Schooling

Pursuing higher education is seen as one of the most promising strategies for climbing the social ladder in industrialized societies. The level of education is a major determinant of occupation and income opportunities in modern societies (Shavit and Müller 1998). Japan is not an exception. As shown in Figure 3, the proportion of young adults who enrolled in tertiary education, such as two-year junior colleges and four-year universities, increased dramatically by the middle of the 1970s[5]. Along with the increase in enrollment to tertiary education, the share of those leaving home for education among the 1950s and 1960s cohorts doubled from their preceding cohorts for both men and women (see Figure 2).

[5] Among both men and women, high school education has been almost universal since the late 1970s (Ministry of Education, Culture, Sports, Science, and Technology, various years).

The decision to pursue higher education facilitates the departure of young adults from the parental home, especially when the educational institution is not within a commutable distance.

Figure 3: School enrollment rates by sex and type of schools: 1955-2000



Sources: School Basic Survey, various years, Ministry of Education, Culture, Sports, Science, and Technology.

Note, however, that enrollments to tertiary education do not show a monotonic rise in post-war Japan. They stagnated during the 1980s, and started to resume in the 1990s. There is some evidence that progression to higher education is inversely related to the demand for a young labor force in the labor market in developed countries (Whitfield and Wilson 1991, Blanchflower and Freeman 2000, Card and Lemieux 2000). A study shows that the stagnation and resumption in progression to tertiary education in Japan also reflects the economic performance in the post-war period (Ohta 2002). Progression to university and junior college is especially high during a period of recessions, i.e., the oil shock recession in the mid-1970s, and Japan's "lost decade" of the 1990s caused by the bursting of the babble economy in 1991. Therefore, young adults' choices between work and higher education are affected by labor market conditions to some extent.

There is also a strong sex difference in the types of tertiary education pursued in Japan. Throughout the post-war period, women's enrollment in tertiary education showed more stable gains than among men. As a result, enrollment in tertiary education, which includes both two-year junior college and four-year university, was even higher among women than among men in some years after 1990. Women, however, are much more likely to be enrolled in junior colleges than universities, while most of the men in tertiary educations are enrolled in universities. Raymo (1998) made a clear distinction between university and junior college in terms of human capital investments. He refers to Brinton's (1993) work, which found that the curricula of junior colleges have a strong emphasis on such subjects as home economics, education, literature, and foreign languages, or subjects which tend to attract young women whose marriage aspirations are greater than their career aspirations (Raymo 1998). Relative to junior

college graduates and those with lower levels of education, women who have graduated from university generally possess greater labor market skills higher age-wage profiles, and slightly better chances of entry into large firms, which typically offer higher wages (Ishida 1998). Therefore, the sex differentials in progression to university education reflect the gender difference in human capital investment.

Education also has secondary effects on the timing of leaving home by legitimating the choice of occupation, earnings potential, preference for living arrangements, and the timing of marriage. Fukuda (2003) also found that highly educated men tend to leave home for employment more frequently than men with lower levels of education, while the opposite is true among women leaving home for employment. Highly educated men tend to gain entry into large firms (Ishida 1998), which typically have branches all over Japan. Therefore, they have a higher chance of leaving home after employment due to transfers. On the other hand, highly educated women are less likely to be employed by large firms than similarly educated men (Ishida 1998). In addition, women are less likely to work in a position which requires a transfer to other branches, since they tend to be seen as a supplemental labor force within a company (e.g. Ogasawara 1998).

Educational attainment also affects preferences on intergenerational living arrangements in Japan. Extended family living of parents and a married child is formed, in general, to increase economic advantages of the household. Previous studies show that incidence of intergenerational coresidence is high when income or consuming levels of either one of two generations are low (Kojima 1989, Funaoka and Ayusawa 2000, Nishioka 2000). Other studies also found that a highly educated parent is less likely to live with a married child (Ogawa 1997, Tabuchi and Nakazato 2004). Similarly, the highly educated never-married are more likely to be away from parents than their less educated counterparts (Suzuki 2002, 2003). This tendency remains to be statistically significant even after controlling for young adults' own income (Iwakami 1999). Therefore, education facilitates separate livings of two generations by making them favorable to live away from each other.

3.3.2 Employment

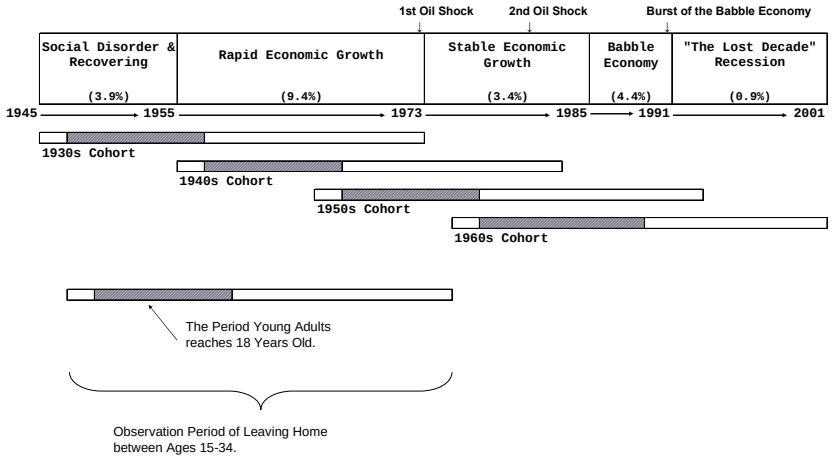
After graduation, the timing of entry into the labor market affects the timing of other life events in the transition to adulthood. In particular, the process by which individuals establish their careers and achieve economic independence has significant effects on family formation among young adults (e.g., Oppenheimer and Lewin 1999). The transition to the labor market is itself much affected by the macroeconomic situation, such as the business cycle or supply and demand in the labor market.

As displayed in Figure 4, the macroeconomic conditions in 1945-2001 can be briefly broken down into five phases: 1) the social disorder and recovery phase in 1945-1955, 2) the period of rapid economic

growth in 1956-1973, 3) the stable economic growth era in 1974-1985, 4) the babble economy in 1986-1991, and 5) the "lost decade" recession in 1992-2001.

For both men and women, employment was a major reason for leaving home among the 1940s and the 1950s cohorts (see Figure 2). The young adults of the 1940s and 1950s cohorts entered the labor market during the period of rapid economic growth era in 1956-73, a time in which labor markets demanded the young labor force to catch up with the rapidly expanding economy. Although they are relatively large cohorts, including the baby boom cohorts of 1947-1949, the rapid economic growth favorably absorbed them into the labor market, since young labor was in such strong demand. In addition, the labor force attachment of single women, which was not common in the 1930s cohort, was largely triggered at this time. As a result, the full-time employment of single women became common and stabilized in subsequent cohorts (Ogawa 1997, Ando 2001).

Figure 4: Macroeconomic conditions in Post-War Japan



* Numbers in parenthesis are average GDP growth rates (Maddison 2003) in respective periods.

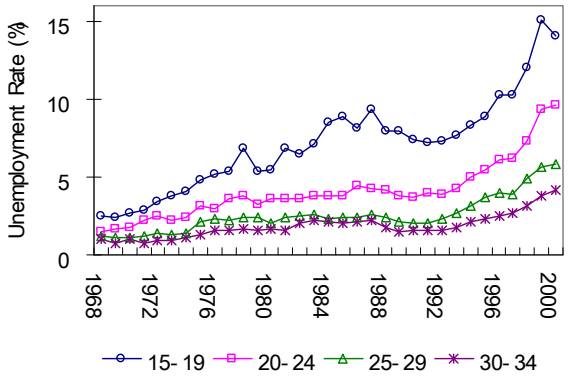
It is, however, a particular phenomenon among the 1940s and the 1950s cohorts that so many young adults left home for employment. As shown in Figure 2, far fewer young adults left home for job-related reasons among the 1930s and 1960s cohorts than among the cohorts of the 1940-1950s. The expansion of tertiary education might partially decrease the proximity of leaving home and employment. Moreover, the labor demand in urban areas declined following the period of stable economic growth in the 1970s, largely due to the slowdown in economic growth after the two oil shocks, and the government's move to localize the manufacturing industry (Tani 2002).

The labor market conditions of young adults turned to be favorable again during the babble economy of the late 1980s. In the babble economy era, private companies employed as many new recruits as possible to increase their productivities to catch up with the rapidly increasing demands. As a result,

the active job openings-to-applicant ratio reached 1.4 in 1991 and it was even recorded as high as at 2.86 for university graduates in the same year (Works Institute 2008). One of the reasons behind these high hiring motivations of private companies is that they generally had a shortage of young labor force in the beginning of the economic boom since they employed fewer young employees during the late 1970s (Japan Institute for Labour Policy and Training 2008). Therefore, in a given expansion of the employment opportunities, young adults in the babble era could easily make a transition from school to work.

On contrary to the babble cohorts of the 1960s cohort, more recent cohorts suffered from the economic recession of the 1990s, which is often called Japan's "lost decade." The employment of young adults became increasingly insecure during the 1990s. As shown in Figure 5, the unemployment rates among young adults rose steeply after the collapse of the babble economy in 1991. The picture was similar for women, although unemployment rates among women aged 15-19 were lower than among men, while unemployment levels among women aged 25-29 and 30-34 were higher than among men. As unemployment rates are higher at younger ages, less-educated young adults who graduated only from junior high school or high school faced more severe labor market conditions than young adults with higher education.

Figure 5: Unemployment rates of men by age: 1968-2000



Sources: Annual Report of the Labor Force Survey, various years, Statistics Bureau.

As we have seen, labor market conditions have been much affected by business cycles in post-war Japan. 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. The proximity between employment and leaving home should also differ between cohorts. In addition, whether or not a young adult is able to get a stable job should certainly affect the individual's values, life style, and economic status, thus affecting the timing and occurrence of other transitions in the life course, such as leaving home and marriage. Our analyses reveal the proximity and duration effects of

employment on leaving home by allowing both effects to be changed by cohorts. Unfortunately, however, I could only partially investigate the recent decline in economic status of young adults and its effects on leaving home since our data does not include the 1970s and younger cohorts, who are directly facing the recent downturn in the Japanese economy.

3.3.3 Marriage

The proportions of the never-married aged 30-34 increased from 11.6% in 1970 to 42.9% in 2000 for men, and from 7.2% in 1970 to 26.6% in 2000 for women. The rapid development of later and less marriage is strongly related to the trends towards educational upgrading and job insecurity among young adults.

In Japan, the prolongation of single adulthood has not led to an obvious rise in the residential independence of young adults (Fukuda 2009). Therefore, continuing delays in marriage also delay the departure of young adults from the parental home. The delaying effects of marriage on home-leaving are stronger for women than for men, since marriage is a major reason for leaving home among women. At the same time, coresidence with parents after marriage is a typical living arrangement for the heir of the traditional stem-family (Kurosu 1996a, 1996b, 2004). A study of post-marital living arrangements indicates, however, that increasing proportions of newlyweds in the 1960s cohort chose to live separately from their parents (Kato 2005). The later but higher prevalence of leaving home in the recent cohorts may suggest that young adults are more likely to leave home late for marriage.

In the following sections, the research questions mentioned here are empirically examined by employing event-history analysis using individual data from a nationally representative survey. The details of data and methodologies are discussed in the next section.

4. Data and variables

4.1 Data

The data is from the survey of the National Family Research of Japan 1998 (NFRJ-98),[6] which was conducted in January and February of 1999. The NFRJ-98 data is a nationally representative survey of men and women aged 28 to 77 at the time of December 1998. The samples are chosen by the stratified

[6] The author gratefully acknowledges the use of the National Family Research of Japan 1998 (NFRJ-98) conducted by the National Family Research committee of Japan Society of Family Sociology. The data was provided by the Social Science Japan Data Archive, Information Center for Social Science Research on Japan, Institute of Social Science, the University of Tokyo.

multi-stage random sampling technique from all over Japan. The survey was carried out with a self-administered questionnaire using a drop-off and pick-up method, which is a standard survey procedure in Japan. Out of 10,500 questionnaires distributed, 6,985 were successfully completed. The respondent rate is, therefore, 66.5%.

The NFRJ-98 survey is especially designed to gather information on the life course and family relationships of individuals in a wide range of cohorts. Respondents were asked retrospective information about the dates of life event experiences, such as graduation/drop-out from the highest level of education pursued, the timing of the first home-leaving, first job, first/current marriages, and the birth of children. The dates of event occurrences are measured by either calendar month or age[7]. This retrospective information made it possible for us to construct event-history models of nest-leaving with time-varying covariates, such as first employment and first marriage. Information on respondents' family backgrounds is also asked retrospectively. It also allows us to use a broader set of covariates on characteristics of respondents' family of origin. These features make data from the NFRJ-98 the most suitable for modeling and examining the transition rates of nest-leaving in Japan.

The birth cohorts of 1930-1970 are chosen for analyzing nest-leaving behaviors from April 1945 to December 1998. The observation period covers the era of substantial changes in social, economic, and demographic structures in post-war Japan. Thus, it is possible to study how determinants of nest-leaving differ across cohorts which have faced different social, demographic, and economic contexts during the transition to adulthood.

The sample size is in total 5,885 (2,830 men and 3,055 women), which includes only samples with no missing values on the date of nest-leaving[8]. After eliminating the samples with left-censoring and with missing values on any of the covariates, the sample size is reduced to 5,297 (2,573 men and 2,724 women). Since men and women have distinct patterns of nest-leaving, models are constructed separately by sex.

4.2 Definitions of event variables

In the NFRJ-98, the question on the nest-leaving experience is formulated as follows: "Have you ever lived away from your parent(s) for one year or more to pursue education, employment, marriage, military service, etc.? If so, please indicate when you left (provide information about your first departure, even if you later returned to your parents' home)". In sum, the definition of the event is given as living apart from parents more than one year for a variety of life course reasons. Note also that only the dates of the initial

[7] Among the valid responses to the dates of each event occurrence, around 90% of answers are given by calendar months, while the remaining 10% are given by either age or year of the events only.

[8] 136 respondents (49 men and 87 women) have missing values on the date of nest-leaving in subjective cohorts.

departure from home are obtained in the survey. Therefore, we cannot treat nest-leaving as a repeatable event in our data. In addition, questions about the occurrences and dates of returning home are not asked at all in this survey.

I defined the risk of nest-leaving as starting from February in the year following the 15th birthday, and ending in the last month of age 34. Young adults are required to attend school until March following their 15th birthday in the post-war educational system. Thus, nest-leaving before the period of compulsory education has been completed is unlikely to be the result of the child's own decision, or may even be due to misreporting[9]. These early nest-leavers make up 4.9% of the cohort of 1930-70. They are treated as left-censoring, and are simply excluded from the analyses. On the other hand, age 34 may be too old to serve as an end point in the transition to adulthood. Japanese young adults in recent cohorts are however, increasingly prolonging their coresidence with parents well beyond their 30s due to the later marriage trend. For these reasons, I set the maximum age of nest-leaving at 34, which also maintains comparability of risk periods across cohorts. In sum, the observation is right-censored whenever the following happens first: deaths of both biological parents, reaching age 35 before leaving the parental home, and the survey date corresponding to the period when the respondents are at risk of nest-leaving[10].

4.3 Definitions of covariates

To operationalize the explanatory variables I have discussed earlier, the following covariates are used in the models: 1) demographic factors, i.e., the number of siblings, heir status, death of one parent before the respondent is aged 15, and the size of the town of origin; 2) socio-economic status of family of origin, i.e., father's education and father's occupation when the respondent is age 15; 3) life event experiences, i.e., schooling to higher education[11], first employment after education, and first marriage; and 4) a macroeconomic variable, i.e., Gross Domestic Product (GDP) growth rates. In addition to these covariates, age is used for calculating baseline hazards in the all models. Dummy variables of 10 year-group birth cohorts are also included in the models to indicate cohort-specific trends of nest-leaving hazards.

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[9] The first half of the 1930s cohorts, however, were under the pre-war educational system and their compulsory education ends at the end of March following the 12th birthday. For this reason, nest-leaving under age 15 is most frequently observed in the 1930s cohort. In our analysis, those early nest-leavers in the 1930s cohort have to be neglected to keep the same criteria across cohorts, although they should not be treated as unusual cases.

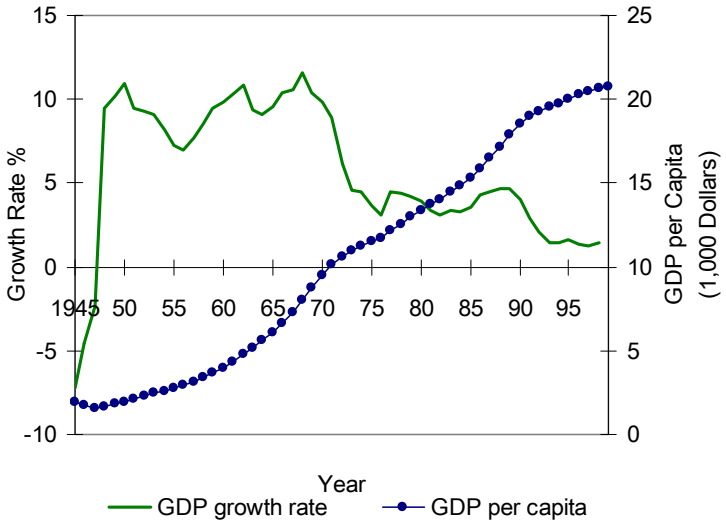
[10] For other details of the specification, see Fukuda (2009).

[11] Higher education consists of two-year junior colleges and four-year universities. Our data show that the percentage of university enrollment in the higher education category is 27.7% for women and 82.8% for men.

Construction and interpretation of these covariates are rather straightforward. Detailed explanation is given in Fukuda (2009). Therefore, only operationalization of GDP growth rates is described here. GDP growth rates are retrieved from the statistics calculated by Maddison (2003) to measure business cycles of the observation period[12]. To capture the substantial economic trends, the yearly rates are smoothed by taking a five-year moving average. Figure 6 displays five-year moving averages of the GDP growth rates. Furthermore, these averaged GDP growth rates are lagged one year backwards. Therefore, the average of GDP growth rates at year t is a moving average of the GDP growth rates between t-3 to t+1 year. The calculated rates are used as a fiscal year base which starts from April and ends in March of the next year. These macro data are merged with individual person-period records corresponding to April of each year. Since both the school calendar and the employment calendar follow the fiscal year in Japan, merging these macro data in a way that changes its value in the cycle of the fiscal year is crucial for measuring the effects of labor market conditions on nest-leaving behaviors.

Finally, life event experiences are operationalized in a form of conditional splines which will be discussed in the next section.

Figure 6: Trends in GDP growth rates and GDP per capita in Japan: 1945-1999*



* Based on the 1990 International Greary-Khamis dollars in five-year moving averages.

Sources: Maddison (2003)

[12] I used Maddison's data instead of the official statistics released by the Japanese government for the following reasons. First, official data have missing values in the war years. Second, official data have a connection problem due to the changes in the methods of calculating GDP. Using Maddison's data, one can avoid these problems with reasonable assumptions which are widely accepted by economists. The correlation coefficient of GDP growth rates from official data and Maddison's data is very high, at 0.993 within the period of 1956 to 2000.

5. Methods and models

5.1 Methods

Among a series of the event-history analysis, the piecewise linear-spline models (PLSM) are used in my analysis. The PLSM is a kind of proportional hazard model which assumes continuous time in the underlying hazard. The mathematical representation of the model is as follows:

$$\ln h(t) = \gamma T(t) + \beta' X(t)$$

where lnh(t) is the log-hazard of the event's occurrences at time t, γT(t) represents a duration pattern of the baseline hazard, and β'X(t) is the proportional effect of covariates on the baseline hazard. In the PLSM, the baseline hazard function, γT(t), is specified as a piecewise-linear spline[13] in which the risk period is divided into several spells by freely chosen nodes. The log-hazard is assumed to increase or decrease linearly in a given spell, and its slopes are allowed to vary between the spells. The PLSM is known to be very flexible to fit several popular duration patterns (Lillard and Panis 2003). Several experimental analyses are conducted to find a suitable number and locations of nodes. As a result, five nodes are chosen to be placed at ages 15.5, 17, 18.5, 21, and 30 to represent age patterns of leaving home. Using these five nodes, risk duration is divided into six spells, namely, ages 15-15.5, 15.5-17, 17-18.5, 18.5-21, 21-30, and 30-34. They basically distinguish in-school ages from graduation ages, and partially represent age patterns of marriage at later ages. Coefficients of each baseline spline indicate linear changes in log-hazard by unit of year in a given spell.

The analyses are carried out by statistical software, aML (Lillard and Panis 2003). The aML has many sophisticated features in various regression models[14]. One of the specialties of aML in hazard models is the PLSM with overlapping splines. In the overlapping spline models, the hazard is expressed as a function of several durations besides the baseline duration. For example, in our analysis, the baseline duration is age by month. By employing overlapping spline models, it is, however, possible to simultaneously model how the risk of nest-leaving changes in the periods after individuals experience various life events, such as schooling to tertiary education, first employment, and first marriage. These duration dependencies are expressed in the forms of splines, and go into effect right after each life event takes place during the risk period. Splines of this kind are called conditional splines (Lillard and Panis 2003).

Since the conditional splines can include an intercept in its function, it is possible to incorporate not only duration dependencies, but also an immediate upward or downward shift in the hazard at the time the

[13] The piecewise-linear spline is also known as generalized Gompertz or piecewise-linear Gompertz (Lillard and Panis 2003).

[14] aML is a freely available online. Details are given by the URL: http://www.applied-ml.com/index.html.

time-varying covariate is in effect. Similar to baseline hazards, conditional splines also need to be specified by number and location of nodes in duration since event occurrences. As a result of several experimental analyses, two nodes with one intercept are chosen for each life event. Nodes are placed after one and five years after event occurrences. Therefore, effects of the life events are expressed by an intercept and three spells of 0-1 year, 1-5 years, and five years and more since event occurrences. The intercept captures an immediate shift in nest-leaving hazards caused by the occurrence of the life event. The value of the intercept indicates the amount of the shift caused in log-hazard by the event occurrence. Coefficients of duration splines are interpreted as linear change in log-hazard by unit of year in the duration.

Typically, nest-leaving occurs in the same month, or even a few months before such life events as schooling, employment, and marriage. This is because people would simply need to move to the place where they experience these life events before they actually happen. This fact contradicts the temporal ordering of nest-leaving and those life events, and makes causal inference difficult. In the causal analysis of interacting processes, Willekens (1991) points out that the temporal ordering of events seemingly conflicts with the fact that human beings can think prospectively. He suggests that causal inference should rely on the causal priority made in the human mind, rather than on the observed temporal sequence of behavior (Willlekens 1991). It is clear from the reasons for nest-leaving in Figure 2 that decisions to leave the parental home are made to pursue other life events, such as schooling, employment, and marriage. Therefore, the causality can be set from these life events to nest-leaving in our analysis. For this reason, in my analyses, it is arbitrarily assumed that the decisions to pursue those life events are made two months before they actually occur. Then, I use the time of decision making as the time of state change in these life event variables. This procedure made it possible for us to retain the temporal ordering of the causal relationship between life events and nest-leaving.

Estimating those conditional splines has been particularly meaningful in my analysis. It allows us to express both the immediate shifts and subsequent duration dependencies in the effects of life events on the hazards of nest-leaving. For example, the effects of schooling should cause the rise and fall in the risk of nest-leaving around the time of schooling, while the effects of being highly educated might become manifest some time after schooling. The same applies to other life event variables, such as first employment and first marriage. Especially while the proximity of marriage and nest-leaving is an important indication of the stem-family system, e.g., incidence of intergenerational coresidence, previous studies have totally neglected to model the duration dependencies of marriage on the hazard of nest-leaving. Therefore, it is not clear that no nest-leaving at the time of marriage suggests permanent coresidence with parents, or only a temporary residential arrangement. Similarly, previous studies failed to answer such a question as why the highly educated never-married tend to live away from parents (Iwakami 1999, Suzuki 2002). Is it because highly educated young adults simply leave home at the time of schooling or because they tend to live away from parents by having more resources, opportunities or

preferences to establish their own household? Although answering these questions is theoretically important, it hardly made any distinctions between the proximity and the duration dependency in the effects of life events on the nest-leaving hazards. Simultaneous estimation of the immediate effects and duration dependencies of life events would be able to answer these questions. By incorporating conditional splines of life events, such as schooling, first employment, and first marriage, I expect to enrich our understanding of the proximities and duration dependencies of life events in nest-leaving behaviors.

5.2 Models

Parameter estimations are conducted separately by sex because of the given distinct patterns of leaving home among men and women in post-war Japan. To address our research questions, I estimated the following series of nested models for the transitions to first nest-leaving. In Model 1 to Model 5, the stepwise modeling is used to clarify the intervention processes of the sets of covariates on hazards of leaving the parental home. Such covariates as 1) cohort, 2) socio-economic status of family of origin, 3) demographic factors, 4) life event experiences, and 5) macro economic variable are sequentially included into the models, and their net effects on hazard of nest-leaving are examined simultaneously. Proximities and duration-dependent effects of life events on leaving the parental home are examined by conditional splines.

$$\text{Model 1: } \ln h(t) = \gamma T(t) + \beta_1 \text{COHORT}$$
$$\text{Model 2: } \ln h(t) = \text{Model1} + \beta_2 \text{SESF}$$
$$\text{Model 3: } \ln h(t) = \text{Model2} + \beta_3 \text{DEMO}$$
$$\text{Model 4: } \ln h(t) = \text{Model3} + \beta_4 \text{MACROECO}$$
$$\text{Model 5: } \ln h(t) = \text{Model4} + \beta_5 \text{LIFE}$$

Note also that coefficients of cohorts can be interpreted as nest-leaving intensities of each cohort, net of other covariates. Thus, a series of the nested models enables us to access how cohort trends of nest-leaving are explained by the sets of covariates mentioned above. By holding socio-demographic and macro-economic factors, as well as the patterns of the transition to adulthood constant across cohorts, the coefficients of cohorts in Model 5 therefore potentially indicate cohort differences in young adults' preferences regarding residential autonomy.

6. Results

The results of nested models from Model 1 to Model 5 are displayed in Table 2 and Table 3 for men and women, respectively. We start to interpret the results of men's nested models.

6.1 Nested models of men's leaving home

In Table 2, the results of Model 1 show that only men in the 1930s cohort have significantly lower risks of nest-leaving relative to those of the 1940s cohort, assuming the same age patterns of nest-leaving across cohorts. Including covariates on the socio-economic status of respondents' family of origin only slightly improves the model fit at 10% levels in Model 2. None of the new covariates has a meaningful effect on the hazards of nest-leaving in Model 2. As a result, the proportional effects of cohort on the baseline hazard are much the same as those of Model 1. Therefore, the transformations of the socio-economic status of family have little explanatory power for the nest-leaving behaviors of men and their cohort changes.

But by adding covariates on demographic factors in Model 3, we have significantly improved the model fit at well below 1%. Respondents with large numbers of siblings, non-heir sons, and who live in a small town, have higher risks of nest-leaving. These results are consistent with previous studies on Japanese nest-leaving (Fukuda 2003, Sawaguchi and Shimazaki 2004). By controlling for demographic factors, the father's education turned out to be positive and statistically significant at a 1% level. The father's education is presumably positively correlated to the son's education. Therefore, if the opportunity to pursue higher education holds equally among siblings and their heir status, a father's higher level of educational attainment would lead to his son pursuing higher education, and thus improves the chances of leaving the parental home among men. To support this interpretation, we have shown that the effect of a father's educational level becomes weaker once we control for respondents' enrollment in higher education in Model 5.

Furthermore, the risk of nest-leaving becomes significantly higher among the 1950s and 1960s cohorts after controlling for demographic factors. Having similar levels of incidence rates of nest-leaving across the cohorts of the 1940s to 1960s actually means that men in the later cohorts have even higher potentials of leaving the parental home, taking the disadvantageous demographic situations for nest-leaving into account. The result indicates that the recent delay in leaving home among men is as much due to the compositional changes in demographic contexts. This finding is quite different from the previous studies emphasizing young adults' reluctance to leave the parental home as the cause of delays in nest-leaving among recent male cohorts in Japan (Yamada 1999). In contrast to the later cohorts, the coefficient of the 1930s cohort becomes larger in the negative direction. This also suggests that the nest-leaving of the 1930s cohort was unexpectedly low in the given demographic situation.

Table 2: Piecewise linear spline models of nest-leaving hazard: Men

		Model 1	Model 2	Model 3	Model 4	Model 5
		b	b	b	b	b
1. Age Spline						
	15-15.5	1.257 ***	1.258 ***	1.275 ***	1.277 ***	2.063 ***
	15.5-17	-0.696 ***	-0.696 ***	-0.693 ***	-0.694 ***	-0.855 ***
	17-18.5	1.664 ***	1.664 ***	1.679 ***	1.679 ***	1.480 ***
	18.5-21	-0.711 ***	-0.709 ***	-0.694 ***	-0.694 ***	-0.472 ***
	21-30	-0.007	-0.006	-0.002	-0.002	0.021
	30-35	-0.191 ***	-0.190 ***	-0.186 ***	-0.186 ***	0.110 *
2. Birth Cohorts (vs 1940-49)						
	1930-39	-0.286 ***	-0.295 ***	-0.431 ***	-0.430 ***	-0.396 ***
	1950-59	0.067	0.062	0.127 **	0.129 *	0.065
	1960-70	0.020	0.006	0.184 ***	0.189 **	0.162 *
3. Life Event Experiences						
Enrollment to High Education						
	intercept	-	-	-	-	1.738 ***
	0-1 year	-	-	-	-	-1.911 ***
	1-5 year	-	-	-	-	0.097 **
	5 years or more	-	-	-	-	0.079 ***
First Employment						
	intercept	-	-	-	-	2.139 ***
	0-1 year	-	-	-	-	-2.272 ***
	1-5 year	-	-	-	-	-0.121 ***
	5 years or more	-	-	-	-	-0.039 *
First Marriage						
	intercept	-	-	-	-	2.997 ***
	0-1 year	-	-	-	-	-2.357 ***
	1-5 year	-	-	-	-	-0.640 ***
	5 years or more	-	-	-	-	-0.091
4. Demographic Factors						
Heir Status (vs Non-Heir)						
	Heir	-	-	-0.425 ***	-0.425 ***	-0.410 ***
	Missing	-	-	-0.321 ***	-0.321 ***	-0.323 ***
Sibling Size		-	-	0.071 ***	0.071 ***	0.084 ***
Death of One Parent						
by Aged 15 (vs No)						
	Yes	-	-	-0.026	-0.032	0.037
	Missing	-	-	0.173 **	0.173 **	0.143 *
Region of Origin						
(vs Town or Small City)						
	Rural Area	-	-	0.157 ***	0.157 ***	0.169 ***
	Large City	-	-	-0.188 ***	-0.186 ***	-0.257 ***
5. Socio-Economic Status of Family of Origin						
Father's Education (vs Low/Middle)						
	High	-	0.126	0.234 ***	0.238 ***	0.128 *
	Unknown	-	0.051	0.052	0.052	0.107
Father's Occupation						
When R was Aged 15						
(vs Non-Managerial Full-Time Employee)						
	Managerial Position	-	0.100	0.111	0.112	0.080
	Agriculture, Forestry, or Fishing Industry	-	0.086	-0.112	-0.112	-0.044
	Self-employed	-	-0.077	-0.122	-0.122	-0.136 *
	Others	-	-0.017	-0.089	-0.087	-0.028
6. Macro Economic Variables						
GDP Growth Rates		-	-	-	0.001	0.001
Constant		-3.210 ***	-3.259 ***	-3.276 ***	-3.285 ***	-3.801 ***
	N	2573	2573	2573	2573	2573
	Events	1909	1909	1909	1909	1909
	Chi2	-	11.80 *	155.46 ***	0.02	1619.44 ***
	d.f.	-	6	7	1	12

Significance:'*'=10%; '**'=5%;'***'=1%.

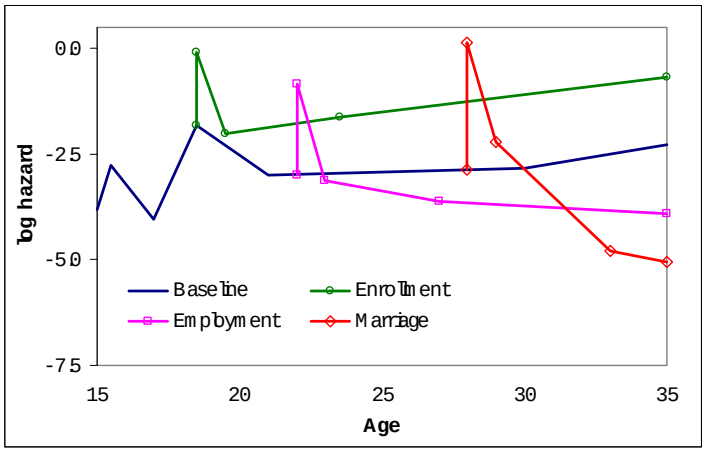
In Model 4, the five-year moving averages of GDP growth rates are included in the model as a measure of the macroeconomic factor in a given period. GDP growth rates have, however, no effects on either the risks of leaving home or the model fit. Possible reasons for this may lie in the inverse relationship between university enrollment and labor market conditions. The business cycle positively affects the employment of young adults, while it negatively correlates to enrollment in tertiary education (Ohta 2002). Therefore, no matter how the economy has performed, pre-marital nest-leaving might occur at certain levels. Similarly, a study of marriage reveals that high GDP growth rates hinder men's early marriage, while it facilitates later marriage in post-war Japan (Kato 2004). The complicated associations between macroeconomic situations and the transitions to other life events may offset each effect, and result in no significant effects on the risks of leaving home. The inclusion of a macroeconomic variable, however, weakens the statistical significance of the coefficients of the 1950s and the 1960s cohorts. Therefore, some cohort variations in the hazards of leaving home are captured by the period variations of business cycles.

Finally, in Model 5, the effects of life event experiences are incorporated as a form of conditional spline into the model. The shapes of conditional splines are graphically displayed in Figure 7 with a baseline hazard spline. As clearly shown in Figure 7, each life event has a strongly positive immediate effect on nest-leaving hazards once they have "kicked in." These immediate effects of schooling, employment, and marriage have multiplicative effects by a factor of 5.7 (=exp(1.738)), 8.5 (=exp(2.139)), and 20.0 (=exp(2.997)), respectively, on hazards of leaving home at a given age. Therefore, the immediate effect is the strongest in marriage, and is the least prominent in schooling to higher education. For all events, the effects of life events quickly drop within one year of their occurrences. The duration effects of employment and marriage turn out to be negative after one year following their occurrences. The result indicates that men who have not left home after one year of marriage become increasingly likely to remain in the parental home afterwards. It is confirmed that they therefore permanently form an extended family by having a wife at home. The effect of schooling, however, turns strongly positive one year after its occurrence. Therefore, highly educated men are more likely to leave the parental home even if they did not leave home at the time of schooling.

Inclusion of the life event splines tremendously increases the explanatory power of the model ($\Delta \chi^2$=1619.44, d.f.=12, p<.001). The result indicates strong influences of the life event variables on nest-leaving hazards as proximate variables. The conditional splines of life events also partially explain the age effects of leaving home. For example, the baseline hazard at age of 18.5 in Model 5 is actually downsized to a halved level from that of Model 4 ($h(18.5)_{\text{Model 3}} = 0.31$, $h(18.5)_{\text{Model 4}} = 0.16$). While baseline hazards of leaving home are partially affected by the occurrences of these life events, age effects remain relatively strong in nest-leaving among men. This relatively strong age pattern of leaving home

suggests that the leaving home process among men is more age-driven than expected from documented reasons for leaving home illustrated in Figure 2.

Figure 7: Overlapping splines of nest-leaving: Men



In spite of the strong effects of life event splines, the effects of demographic factors remained relatively stable. Demographic factors have less effect on the occurrences and timing of the life events, but have independent effects on nest-leaving itself. Of the demographic factors, the effect of being an heir son is one of the strongest among the other covariates. It is a surprising finding that the norm of the traditional stem-family seems to firmly remain in the nest-leaving behavior of the post-war period. The effect of heir status most likely changes, however, by cohort[15].

Life event trajectories also explain some of the differentials in nest-leaving intensities across cohorts. The high nest-leaving intensities of the 1950s cohort disappear in Model 5, most likely due to the relatively high probability of enrollment in higher education within the cohort. Both ends of the cohorts, however, still remain different from the 1940s cohort. In particular, the finding that the 1960s cohort has higher nest-leaving intensities than previous cohorts in Model 4 contradicts the common image of the late leaver in recent cohorts. After controlling for the patterns of transition to adulthood, the 1960s cohort still has a slightly stronger tendency to leave home than other cohorts. The evidence is weak, but the result suggest that leaving home intensities in the latest cohorts are high despite their disadvantageous demographic conditions.

[15] See Fukuda (2009) for the interaction effects of heir status by cohort.

6.2 Nested models of women's leaving home

Next, model estimations from female samples are shown in Table 3. In Model 1, in contrast to men, only the youngest cohort shows a significantly lower risk of nest-leaving compared to other cohorts. The trend of later and less marriage seems to directly affect the cohort trends of women's nest-leaving.

Inclusion of covariates on the socio-economic status of the family of origin improves the model fit at 1% level in Model 2 for women. The covariates show that women from a family of the primary sector have a higher risk of nest-leaving than women with fathers of non-managerial employees. Also, women for whom the father's education is unknown indicate a higher risk of nest-leaving than women whose fathers have low/middle levels of education. Although the interpretation is speculative, a woman who did not answer the question about her father's education might have a problematic relationship with her father, or be unable to identify her father because of parental divorce or remarriage. Previous studies (Aquilino 1991, Kiernan 1992, Goldscheider and Goldscheider 1998) show that family instability is one of the major factors that facilitate early nest-leaving in the US.

In Model 3, demographic factors turn out to be strong predictors of nest-leaving for women as well. As among men, such factors as having a larger number of siblings, being a non-heir, and living in a small town facilitate home-leaving among women. Unlike men, however, the death of one parent by age of 15 has a statistically significant negative effect on women's nest-leaving hazards. Women might show more commitment to the family of origin when one of the parents dies, and thus have lower risks of nest-leaving. This finding contradicts Kurosu's (2004) work on leaving home in two rural villages in 19th century Japan. Note also that the effects of the father's occupation completely disappear in Model 3. Having a father who works in a primary sector should have a strong correlation with factors such as the size of the town of origin.

Once demographic factors are controlled for in Model 3, the nest-leaving intensities of cohorts manifest more distinctively. As shown in the men's models, the log-hazard of the 1930s cohort turned negative and was statistically different from that of the 1940s cohort at the 10% level. By contrast, the log-hazard of nest-leaving in the 1950s cohorts increased substantially. As a result, women in the 1950s cohort were found to have the highest nest-leaving potential, assuming socio-demographic factors remained constant across cohorts. The low hazard of 1960s cohort is also moderated and only slightly lower than that of the 1940s cohort at the 10% level. These changes in cohort intensities of nest-leaving indicate that demographic pressures affect home-leaving among women just as much as among men.

Table 3: Piecewise linear spline models of nest-leaving hazard: Women

		Model 1	Model 2	Model 3	Model 4	Model 5
		b	b	b	b	b
1. Age Spline						
	15-15.5	0.794 *	0.802 *	0.818 *	0.829 *	1.438 ***
	15.5-17	-0.672 ***	-0.670 ***	-0.670 ***	-0.676 ***	-0.872 ***
	17-18.5	1.261 ***	1.266 ***	1.281 ***	1.278 ***	1.142 ***
	18.5-21	-0.137 ***	-0.130 ***	-0.124 ***	-0.121 ***	-0.366 ***
	21-30	0.040 ***	0.039 ***	0.052 ***	0.058 ***	0.074 ***
	30-35	-0.484 ***	-0.488 ***	-0.485 ***	-0.479 ***	0.054
2. Birth Cohorts (vs 1940-49)						
	1930-39	-0.026	-0.072	-0.122 *	-0.092	-0.048
	1950-59	0.026	0.063	0.144 ***	0.245 ***	0.241 ***
	1960-70	-0.330 ***	-0.255 ***	-0.110 *	0.069	0.139 *
3. Life Event Experiences						
Enrollment to High Education						
	intercept	-	-	-	-	2.036 ***
	0-1 year	-	-	-	-	-2.499 ***
	1-5 year	-	-	-	-	0.198 ***
	5 years or more	-	-	-	-	-0.042
First Employment						
	intercept	-	-	-	-	1.823 ***
	0-1 year	-	-	-	-	-1.847 ***
	1-5 year	-	-	-	-	0.087 ***
	5 years or more	-	-	-	-	-0.046 **
First Marriage						
	intercept	-	-	-	-	3.430 ***
	0-1 year	-	-	-	-	-0.985 ***
	1-5 year	-	-	-	-	-1.569 ***
	5 years or more	-	-	-	-	0.160
4. Demographic Factors						
Heir Status (vs Non-Heir)						
	Heir	-	-	-0.465 ***	-0.461 ***	-0.435 ***
	Missing	-	-	-0.069	-0.067	-0.091 *
Sibling Size		-	-	0.059 ***	0.058 ***	0.070 ***
Death of One Parent by Aged 15 (vs No)						
	Yes	-	-	-0.210 **	-0.215 ***	-0.225 ***
	Missing	-	-	-0.148 **	-0.154 **	-0.159 ***
Region of Origin (vs Town or Small City)						
	Rural Area	-	-	0.277 ***	0.277 ***	0.222 ***
	Large City	-	-	-0.253 ***	-0.250 ***	-0.269 ***
5. Socio-Economic Status of Family of Origin						
Father's Education (vs Low/Middle)						
	High	-	-0.062	0.060	0.060	-0.020
	Unknown	-	0.176 ***	0.194 ***	0.193 ***	0.180 ***
Father's Occupation When R was Aged 15 (vs Non-Managerial Full-Time Employee)						
	Managerial Position	-	0.067	0.049	0.048	-0.001
	Agriculture, Forestry, or Fishing Industry	-	0.355 ***	0.086	0.083	0.009
	Self-employed	-	-0.017	-0.064	-0.067	-0.045
	Others	-	0.062	-0.003	-0.008	-0.067
6. Macro Economic Variables						
GDP Growth Rates		-	-	-	0.032 ***	0.028 ***
Constant		-3.013 ***	-3.161 ***	-3.314 ***	-3.616 ***	-3.928 ***
	N	2724	2724	2724	2724	2724
	Events	2376	2376	2376	2376	2376
	Chi2	-	54.96 ***	194.42 ***	11.24 ***	3857.56 ***
	d.f.	-	6	7	1	12

Significance:'*'=10%; '**'=5%;'***'=1%.

Furthermore, GDP growth rates are newly included into Model 4, and their effect is highly statistically significant. Women tend to leave home when the economy is better. The inclusion of the macroeconomic variable eliminated the relative differences in nest-leaving intensities of the 1930s and the 1960s cohorts, compared to those of the 1940s cohort. The result indicates that the high nest-leaving intensities among women in the 1940s cohort can be in large part explained by demanding labor force conditions in the era of rapid economic growth. Previous studies also show that women marry at younger ages in times of good business cycles in post-war Japan (Kato 2004, Higuchi and Abe 1999). Therefore, the effects of GDP growth rates may partly reflect women's marriage timing in the observation period as well. The 1950s cohorts still, however, display unexplained variations in high hazards of leaving home.

In Model 5, conditional splines of life events are included in the model. The model fit dramatically improves at well below 1% level ($\Delta\chi^2$=3857.56, d.f.=12, p<.001). The multiplicative effects of schooling, employment and marriage on nest-leaving hazards in a given age are by a factor of 7.7 (=exp(2.036)), 6.2 (=exp(1.823)), and 30.9 (=exp(3.430)), respectively. The shapes of the conditional splines are shown with the baseline log-hazard of nest-leaving in Figure 8. The immediate effects of life events are the strongest in marriage, as expected. Although the immediate effect of marriage sharply drops within five years, it stays relatively high after one year of marriage. This suggests that women still have a strong tendency to leave home until several months after marriage. However, hazards of leaving home decline so rapidly to the very low levels in the duration of 1-5 years after marriage. The duration effect of marriage becomes positive after five years of marriage, but this repercussion is not statistically significant. Therefore, women who stay at home after one year of marriage permanently form an extended family household by having a husband moving into her family of origin. But coresidence with a wife's parents within one year of marriage may, unlike coresidence with a husband's parents, be a temporary living arrangement.

Figure 8: Overlapping splines of nest-leaving: Women

The duration effects of both tertiary education and employment turn positive in the duration of 1-5 years after their occurrences. Therefore, acquiring a higher education or entering the labor market continuously facilitates home-leaving among women within five years of its occurrence, but generally deters leaving home thereafter. It should also be noted that, unlike among men, the immediate effect of employment is lower than that of schooling in nest-leaving among women. Therefore, among other life events, first employment is the least proximate to the home-leaving of women.

After controlling for effects of life events, the coefficient of the 1960s cohorts becomes moderately positive. The changes in the patterns of transition to adulthood, especially later and less marriage, have a high degree of relevance to the low nest-leaving hazard of the 1960s cohort. The cohort of the 1950s continues to have a high potential for leaving the parental home when all factors are held constant, which may be attributed to their high preference for residential autonomy. Note also that the effects of demographic factors remained relatively unchanged after the inclusion of the life event splines. The same should hold for women as well, as these demographics are closely related to the hazards of nest-leaving, but less so for the occurrences of the life events.

7. Summary

This study examined social, economic, and demographic determinants of home-leaving behaviors among young adults in Japan in 1955-1998. Determinants of leaving home were investigated by using individual-level data of the nationally representative survey of the NFRJ-98. The analysis explained the cohort trends of leaving home among both men and women born in 1930-1970 in relationship to the changes in the transition to adulthood.

The cohort trends in age at leaving home show a U-shaped pattern between the cohorts of 1930-1970 (see Figure 1). This study examined the determinants of leaving home and attempted to explain the cohort trends of leaving home. First, my analyses show that leaving home occurred late among the 1930s cohort because their transition to adulthood was different from other cohorts, possibly due to the social disorder caused by the defeat in World War II. The enrollment in higher education was low in this cohort, and even female employment was not as common as among subsequent cohorts. As a result, the proportions of young adults who stayed at home until marriage were higher than among younger cohorts. Effects of GDP growth rates indicate, however, that women's home-leaving was to a great extent hindered by unfavorable economic situations until the early 1950s. Moreover, traditional norms of the stem-family are supposed to be strongest among the 1930s cohort, which is illustrated by the fact that both male and female heirs in this cohort were the least likely to leave home compared to heirs in other cohorts (Fukuda 2009).

On the other hand, the delay in leaving home by the recent cohorts is a commonly observed pattern in developed countries (Ravanera, Rajulton, and Burch 1995, Goldscheider and Goldscheider 1994, Mayer and Schwarz 1989, Holdsworth 2000, Billari et al. 2001). Our analyses show that the recent delay in leaving home is to a large extent explained by the compositional changes in the demographic characteristics of the cohorts. The younger cohorts have smaller numbers of siblings and more likely to live in cities. As a result, their need to leave the parental home tends to be lower than among preceding cohorts at the time of enrollment in higher education or starting employment.

Moreover, norms of the traditional stem-family strongly persist in the home-leaving behaviors of young adults. Oldest sons and oldest daughters without male siblings have lower risks of home-leaving. By taking heir status into account, the decrease in sibling numbers would affect the nest-leaving of young adults in two distinctive ways: on the one hand, by providing a less-crowded home, and, on the other, by increasing the probability of being an heir among young adults. Although Fukuda's (2009) results imply that the latter effect is losing its power, fertility decline would have strong consequences on the late departure of young adults from the parental home in the stem-family system.

Generally, family characteristics measured by the father's socio-economic status, such as education and occupation, have negligible effects on the risks of leaving home. Only in a small proportion of cohorts does a father's higher education tend to facilitate home-leaving among men. Our nested models revealed that the father's education partially affects men's nest-leaving by increasing the son's opportunities to pursue higher education. This effect did not, however, appear for women. Note, however, that the analysis of reason-specific nest-leaving in Japan shows various significant effects of the father's socio-economic status. For example, both the father's higher education and high occupational status are positively correlated to leaving home for schooling for both men and women (Fukuda 2003). Therefore, the socio-economic status of family of origin may be seen to affect the routes out of the home, but their complex effects are offset in the risks of first leaving home.

Surprisingly, GDP growth rates appear to have a strong positive effect on leaving home only for women. Inclusion of GDP growth rates eliminated the high home-leaving intensities in the 1940s female cohort. This implies that premarital home-leaving among women, which is, to some extent, specific to this cohort, can largely be explained by the expansion of employment opportunities in the rapid economic growth era. However, nest-leaving among men is not affected by economic growth, even though men are more likely to leave home for employment than women. One explanation may be that economic growth has complex effects on men's routes out of the parental home. Previous studies show that economic growth rates positively correlate to men's employment and later marriage, while they negatively correlate to men's enrollment in university education and early marriage (Ohta 2002, Kato 2004). Therefore, the effects of economic growth are offset in the analysis of overall occurrences of leaving home. To clarify the effects of macroeconomic contexts on leaving home behaviors, the route-specific analysis of leaving

home is ideal. It is, however, important to show that GDP growth rates do not affect the levels and timing of home-leaving in general in Japan.

Finally, I examined the effects of life event experiences, such as schooling to tertiary education, first employment, and first marriage, as proximate determinants of leaving home in Japan. These life event variables are included into the model in a form of conditional splines (Lillard and Panis 2003). The conditional splines captured both immediate and duration effects of life event occurrences on the hazard of leaving home. For this flexible feature of conditional splines, inclusion of life event variables dramatically improves the model fit of both sexes. Experience of these life events causes a sharp rise and a dip in the hazards of leaving home. Among all cohorts, marriage has the strongest "kick-in" effects on the risk of leaving home for both sexes. For men and women, the risks of nest-leaving at a given age increase by a factor of 20 and 30, respectively, at the time of marriage. These effects decline sharply, however, within five years of marriage, and are followed by very low overall hazards of leaving home subsequently. Therefore, it is found that young adults who had never left home after five years of marriage are most likely taking over the family by forming an extended family household. Interactions of marriage splines and birth cohorts revealed that proximate effects of marriage increases substantially in the 1960s cohort for both sexes. This finding is consistent with the recent decline in extended households among newly married couples (Tsuya 1990, Kato 2005). As marriage becomes an increasingly common route out of the parental home, recent trends of later and less marriage significantly contribute to the delay in the timing of leaving home in recent cohorts.

In conclusion, the delay in leaving home among recent cohorts is largely caused by compositional changes in demographic factors. Both the decline in sibling numbers and the increase in urban residence discourage young adults from leaving home before marriage. The practice of stem-family norms helps to explain the delay to some extent by showing an increasing share among recent cohorts of heirs displaying slightly lower home-leaving intensities than non-heirs. Another major reason for the delay in leaving home is the close linkage between leaving home and marriage in recent cohorts. Since marriage is strongly associated with the economic independence of young adults, especially for men (Kato 2004), it seems young couples are finally achieving residential autonomy at the time of marriage. In sum, in a given high living cost in Japan, living with parents may be a rational strategy for young adults wishing to save money for marriage when leaving home is not necessary.

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