Divorce and Stem Family Household Organization in Early Modern Japan

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INTRODUCTION

Marriage in rural communities in pre-industrial Japan tended to be early and universal. Divorce and remarriage were common, suggesting that there were few stigmata attached to divorce, and that the institution of marriage was extremely flexible. Despite this obvious prevalence of divorce, there are only few demographic studies that have dealt with the detailed patterns and mechanisms governing divorce in early modern Japan.

The study of divorce and remarriage, or consequences of the first marriage, is also an underdeveloped area in historical demography in general, compared to the attention paid to the age at first marriage and celibacy. This is considered to be due to limited data (Saito and Hamano 1999). For many European countries, divorce did not become a social issue until the end of the nineteenth centuries (Phillips 1988; van Poppel 1997). An influential framework of marriage patterns proposed by Hajnal focuses solely on the initial stage of marriage. At a glance, early and universal patterns of marriage found in rural Japan fit well to the non-western European model described by Hajnal. However, we need to consider the consequences of first marriage, including marital dissolution and remarriage, to fully appreciate the institution of marriage and to further our understanding of the logics of the stem family system, a type of household organization not addressed in Hajnal's (1982) classification of "simple" or "conjugal" versus "joint" household. The present study attempts to transcend the conceptual preoccupation with the "European patterns of marriage" as postulated by Hajnal (1965) and the narrow methodological focus that depends on mean age at marriage and proportion never-married.

This study examines the patterns of and factors associated with divorce in eighteenth and nineteenth century Japan drawing data from the local population registers in two northeastern agricultural villages, during the period of 1716-1870. Families and households in these villages were characterized by the stem family system with strong normative orientations toward inheritance and succession by the eldest child. In considering divorce or any family relationship that results from marriage, it is therefore important to distinguish who came to live with the inheriting child---wife (virilocal marriage) or husband (uxorilocal marriage). Those who came to live at their spouse's parental household were subjected to leave the household upon divorce. This pattern exemplifies the fact that the analysis has to consider different mechanisms for virilocal and uxorilocal marriages.

In determining factors associated with divorce in the historical period under investigation, we also have to consider certain ideas or normative rules about marriage and about how the household should be organized. Marriage in early modern Japan was not recognized primarily as a union of two individuals nor did it mean the formation of a new household. Marriage was crucial as a means of procreation, to ensure an heir, and as a way to secure a source of labor supply in family farming. Given the high mortality of the times, marriage offered a safer and less expensive means to achieve the optimal household size and the gender balance of labor for family farming (Smith 1977; Tsuya and Kurosu 2000a). Divorce and remarriage can also be considered in this light. Thus, this paper considers three complimentary approaches to uncover the prevalent practice of divorce: Socially accepted attitude toward "trial marriage," divorce as adjustment to economic hardship, and divorce in the logic of stem family organization.

Discrete-time event history analysis is applied to demonstrate how economic condition, domestic organization and individual position in households influenced the likelihood of divorce for females. This will be the first study of the determinants of divorce in pre-modern Japan. The models applied in this study are modifications of those used in the EurAsia project for examining demographic events---mortality, fertility, nuptiality and children leaving home (Tsuya and Kurosu 1999, 2000a, 2000b, 2002, 2004; Kurosu 2004). Although the number of villages is limited, the approach of this study will help to advance our knowledge about the marriage system and organization of rural households.

DIVORCE AMONG PEASANTS IN 18TH-19TH CENTURIES
Breaking up is "not" so hard to do

Among scholars of the Japanese family, it is a common understanding that divorce was prevalent among peasants in early modern Japan. Some researchers believe that it was even considered a welcomed experience at the time of remarriage (Tsubouchi and Tsubouchi 1970: 176). This attitude has drastically changed at the turn of the nineteenth century, when the government legally enforced a rigid rule against divorce as an effort to "modernize" the country, considering the high divorce rates as cultural backwardness.[1] Macro statistics on divorce rates are available since 1882. The crude divorce rates were very high: during 1882-1897, it varied between 2.62 and 3.39 per thousand. This was followed by a sharp drop to 1.50 in 1899, a year after the promulgation of the new civil code (Meiji Civil Code), and then continued to decline to 0.74 until 1964 (Kumagai 1983). This pattern was thought to challenge the common understanding about the positive relationship between industrial development and the rise of divorce rates, and urges us to consider a mechanism of "high divorce" system (Goode 1963, 1993).

Studies on divorce in pre-industrial Japan tend to focus on the causes of dramatic change from high to low divorce rates at the turn of the century. Only a handful of demographic studies pay attention to the period when the high divorce system was fully at work. This is inevitable, as there are no macro statistics on divorce available prior to 1882. Research on divorce in pre-modern Japan is thus based on the population registers from various villages across Japan. These studies found the prevalence of divorce and remarriages but with large regional variation, and suggested that divorce did not necessarily mean an economic disadvantage for women (Kito 1988; Narimatsu 1985, 1992; Cornell 1990; Kurosu 1998a; Kurosu, Tsuya and Hamano 1999).

Numerous studies on divorce in Tokugawa period (1600-1868) are based on the legal and customary practices of divorce. According to these studies (e.g. Ishii 1965; Otake 1977; Takagi 1987, 1992), the procedure for divorce was not difficult. Divorce of peasants required a divorce writ to be handed from husband to wife (known as "three and a half lines" as it usually was a short note).[2] One could not remarry without this note.

The seven Confucian grounds for divorcing wives (disobedience to her father-in-law or mother-in-law, infertility, lewdness, jealousy, leprosy or any foul disease, garrulity, stealing) cited in a famous text for female moral instruction do not accurately reflect divorce practices (Tsubouchi and Tsubouchi 1970: 216; Fuess 2004: 19-20). Divorce writs did not require any particular format or clear statement of grounds. Often writs simply stated, "I divorce you. I have no objection to whoever you marry from now on."

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1 Fuess describes the surprises and disapprovals of foreign visitors faced with a high divorce society in traditional Japan (2004: 1-5).

2 Another possibility open to women was to run into temples (or sometimes Samurai residences or an official's home) as asylum where they were legally protected and their divorce being granted after a few years of service. This practice was more common in the early part of Tokugawa, and only two temples (Tokei-ji and Mantoku-ji) in the surrounding areas of contemporary Tokyo could perform this rite (Ishii 1965; Takagi 1987; Wright 1997).

Wright (1997) notices a characteristic usage of religious terminology ("karmic ties"[3] *shukuen*) in the letters found in Mantoku-ji, and suggests that such a vague reason for the dissolution of marriage was to alleviate any communal tensions that might have developed from acrimonious conflict between the two families. According to Ishii (1965) and Takagi (1987, 1992), documented grounds in writs included personal immaturity, incompatibility of an individual to family status/character and insufficient adaptation. Still other writs pointed out specific reasons including adultery and family conflicts. Misbehaviors of husbands, including adultery and husband bringing the wife's dowry to pawn without her consent, were also documented in the written exchanges (negotiations) between the partners (or their kin or village officers).

Although the content and form of writs varied, they had to be always handed from husband to wife. Because of this unilateral procedure, divorce was often considered as a patriarchal consequence meeting the image of the wife being expelled from the household (Ishii 1965).[4] This also relates to the commonly emphasized Japanese family ideology placing supreme importance on lineage rather than individual marriage (Kawashima and Steiner 1960).[5] Another study, however, emphasizes a mutual agreement or more egalitarian nature of divorce among commoners, pointing out the evidence of the wife's family or village officials being instrumental in the process of divorce (Otake 1977: 151). One study of divorce documents even goes further to interpret women's stronger position or right to impose on the husband to write the "three and a half lines" to be free from the marriage or to be ready for remarriage (Takagi 1992).

While the interpretations of divorce letters and documents vary, these studies point to several important factors relevant to this study. First, as commonly entertained by sociologists whose studies are based on macro statistics or anthropological anecdotes (e.g. Arichi 1977; Yasuzawa 1979), the procedure for divorce was easy. The letter of divorce was written rather casually, often without any specification of the reasons. Thus, Confucian moral code cherished by Samurai households probably had different meaning and function for rural households, where women's labor force was important, and the priority was placed to meet the economic conditions (Tsubouchi and Tsubouchi 1970: 186; Otake 1972: 129-32). Second, in case of uxorilocal marriage, the contract of adoption (wife's father adopting the husband as his son---*muko-yoshi*) took place simultaneously. Therefore, divorce of uxorilocal marriage usually involved the disowning of the adopted son by the wife's father (Takagi 1992: 116) and, as a consequence, the divorced husband had to leave the wife's household, just like in a virilocal marriage the divorced wife had to leave the husband's home. This leads to the third point, that divorce did not involve just two individuals but also in-laws (including wife's parents), relatives and village communities who were influential in the negotiation process.

These studies on legal and customary cases are suggestive of the reasons for divorce. However, the actual divorce cases cannot tell us the underlying dynamics of the high divorce system. Certainly, divorce did not occur arbitrary or based solely on individual reasons. Not by looking only at the events (numerator), but by looking at population at risk (denominator) will we be able to identify circumstances and characteristics of couples that promoted or suppressed the likelihood of divorce. The next section, therefore, discusses three complimentary approaches that might help uncovering the factors related to marital dissolution.

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3 "Our karmic ties have weakened, and so should you someday remarry, I will not utter a single word in protest." (translated by Wright 1997)

4 Early sociological studies also take this approach for the reasons of high divorce rate attributing them to the then existing custom of expelling the wife from the traditional Japanese family (Kuwahata 1956: 26; Ohshio 1956: 61-69).

5 Kawashima and Steiner (1960) argue that divorce declined in modern Japan because the marriage finally became an individual affair, rather than for the purpose of family lineage, and the conjugal tie between husband and wife increased.

CONCEPTUAL FRAMEWORK

The following three approaches to divorce are considered here: cultural, economic and family system. Cultural approach refers to socially accepted attitude toward "trial marriage" which enhanced divorce in early modern Japan and is believed to affect prevalence and speed of divorce. The economic approach focuses on economic hardship that led to an enhanced risk of marriage breakdown. The family system approach considers the logic of divorce in the stem family that was at work in early modern marriage systems. These three hypotheses are complementary and highly inter-related.

(1) Trial marriage

"What humans had voluntarily united, humans could voluntarily dissolve (Fuess 2004: 98)." Harald Fuess maintains that it was this prevalent belief that sustained the popular divorce culture transcending gender differences. Based on the evidence found in Meiji statistics, he argues that frequent and early divorce should be considered in the context of the process of spousal selection and was facilitated by the notion that the beginning of marriage or living together was a period of probation (2004: 73).

This hypothesis seems applicable to societies of early marriage and frequent divorce where divorce did not mean family breakdown but went hand in hand with family stability (e.g. traditional Japan and Malaysia: Goode 1993; Jones 1981). Finding a compatible spouse after all was "to assure optimal marital fertility and household survival in an age of near universal marriage (Fuess 2004: 74)." In order to test this hypothesis for the two northeastern villages, the following analysis examines the speed of marital disruption and also compares subgroups of women who were at initial stage of their marriage, and those who were married more than three years. Factors related to the risk of divorce are considered different between marriages at the testing phase and after surviving the first few years (Morgan and Rindfuss 1985 call the latter a "stronger marriage").

(2) Economic hardship

In the rural agricultural society, households were unit of production as well as consumption. The small-scale family farming of the period of this study was characterized by the intensive use of human labor (Saito 1998). In such an intensive family farming, all members were required to be united and cooperate to make a living (Tsuya and Kurosu 2002: 266). Thus a recruitment of a new member, an able bodied and cooperative adult, to a household via marriage was crucial to the survival of household. I suspect that the tension of the new member (bride or groom) and household members were greatest among household in lower economic status, as they were in need of making ends meet.

At the same time, peasants of lower economic status might have had an even easier attitude about marriage thus having frequent divorce. Goode (1963) claimed that in a system which permits rather free divorce, the lower strata will have a higher divorce rate than the upper strata. This was generally accepted as the majority of divorces at the turn of the nineteenth century occurred among the common people (farmers, fisherman, and merchants), in contrast to the upper strata members, *i.e.*, the samurai warriors, landowners, and noblemen (Kumagai 1983). This hypothesis can be stretched even within the strata of peasants.

Also, marital stability in pre-industrial populations might have been responsive to changes in local economic conditions, as it was the case for marriages observed at aggregate level (Galloway 1988; Hanley and Yamamura 1977; Lee 1981). Economic hardship of the community restricted sons and daughters to marry in the villages of this study (Tsuya and Kurosu 2000a). The same factor might have triggered

marriage to breakdown.

(3) Stem family logic

In early modern Japan, the stem family, in which one offspring continues to live with his/her parents after marriage was thought to be ideal although large regional variation existed in practice. It is a family formation rule which was not clearly specified in Hajnal's influential article "Two kinds of pre-industrial household formation system (1982)." In contrast to the simple or joint household formation system described by Hajnal, Cornell clarified the rule of the Japanese stem family, that the household could contain any number of married couples, but it could have only one in each generation (1987). Adjustment of household size and composition was key to the integrity and survival of the households and to achieve the overriding aim of family continuity. The survivorship of households was of direct concern for the village organization where lives were structured around farming and where the burden of tax was shared. Recent studies reveal strategies taken by the farm households for its survival upon economic and demographic constraints---by controlling number and composition of children (Skinner 1988; Tsuya and Kurosu 1999); adopting sons (Kurosu and Ochiai 1995); allowing female headship (Okada and Kurosu 1998); and controlling the timing of siblings' departure in relation to heirs' marriage and first birth (Smith 1977: 140-45; Kurosu 1996, 2004). The crucial factor of being head or immediate members of the stem family was also found important in explaining the mortality risk of individuals (Tsuya and Kurosu 2000b; 2004). Thus individual life course was tightly bound to (Saito 2000) and stratified by the stem family rules (Kurosu 2004).

The propensity and timing of divorce is likely to have been at work also within this stem family logic. Whether women got married uxorilocally (at her native household) or virilocally (at husband's household), whom they were living with, or in what stage of family life cycle they were ---more precisely, whether they were wives of heads and whether they had children--should make a considerable difference in their marital stability.

SOURCE AND MEASUREMENTS

(1) Source and Setting

This study draws its data from the local population registers called ninbetsu-aratame-cho (NAC) in Shimomoriya and Niita, two farming villages in the present Fukushima prefecture in northeastern Japan. These NAC records extend over a period of about 150 years, 1716-1869 for Shimomoriya and 1720-1870 for Niita, with only a small number of intermittent years missing. The registers were compiled annually based on the principle of current domicile, *i.e.*, they are all de facto. Besides marriage and divorce, registers annotated all major demographic events, including birth, death, and migration for all individuals residing in the villages. In addition, exits from and entry to the villages (including movements within and outside the village) were recorded in detail, allowing this study to examine different types of marriage. Exits for unknown reasons were extremely rare, accounting for less than one percent of all recorded exits in the NAC registers in both villages. Thus, these NAC's quality and length make these registers some of the best documentation for historical population in Japan.[6]

<Map about here>

The two villages were almost exclusively agricultural. Because of under-developed agricultural technologies at that time, the circumstances of the two villages were often at the mercy of fluctuations in

6 The history of population registers, their reliability, their compilation and computerization of the data sets are described in detail elsewhere (Hayami 1979; Cornell and Hayami 1986; Ono 1993).

agricultural output, driving their living standards near or below subsistence levels at times of crop failure. The population trends of the two villages reflect the economic hardships of peasant life. The populations of the two villages at the beginning of their registers were 538 for Niita and 419 for Shimomoriya. The population sizes of both villages were in overall decline, being disturbed particularly by famines. The populations started a gradual upturn only after the 1840s, with the general improvement of climate resulting in less frequent famines, and the development of agricultural techniques that improved the living standards in the two villages.

<Figure 1 about here>

(2) Definition and measurements of divorce

Marriage and its registration in pre-industrial Japan were largely contextual, being influenced by local customs and socioeconomic developments (Tsuya and Kurosu 2000a). In this study, the timing of marriage and its dissolution is measured solely in terms of records in the NAC registers. Population registers in many other Tokugawa villages did not record the date (month and year) of marriage and marital dissolution. The two villages of this study are no exception. Therefore, following the previous study on marriage (Tsuya and Kurosu 2000a), the timing (year) of marriage is inferred from an entry of a new household member between two consecutive registration and concomitant changes in relationships of household members to the head. The timing (year) of dissolution is inferred from a departure of a partner from the marriage household. In the population register, divorce is clearly determined by the annotation "*modori*" (return) or "*huen*" (no bond).[7] Customary law of this region held that if a husband absconded without returning for five years, his wife was legally allowed to re-marry (Nihonmatsu-han-shi 1973:572). Marital dissolution due to absconding then can be seen as a variation of divorce. However, in this study, I will treat them separately since the patterns and timing of absconding differ from those of divorce, and therefore requires a separate explanation.

A difficulty of the study of the consequences of marriage lies in defining the risk population. If we stick to individuals who were under constant observation from birth, our data will be too small and selective. However, a problem arises for individuals who had already been married when the records began, or for those who migrated into the villages via marriage. Therefore, I use a less conservative definition for the first marriage and call it the first "observed" marriage[8]: (1) women whose marriages were observed for the first time and who first appeared in the population registers under age 50 with no spouse and no children[9]; (2) women who were under age 50 and were already married at the start of the register, and there was no indication of previous marriage. Thus the following analysis looks at females who were married and aged 50 and below, excluding obvious cases of second and higher order marriages. The higher order marriage is usually thought to have different social processes from the first marriage. In fact, there was a considerable number of females (and males) who repeated marriage, divorce and remarriage. The highest order marriage found was four. This group of people deserves separate investigation in a future study.

Since the youngest recorded age at marriage was 3 for females, the analysis includes females aged 4-50.[10]

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7 Nagata (2003) discusses the vocabulary of divorcing and disowning.

8 It should be noted that although the marriage was the observed first for the group of women defined above, it was not necessarily so for their spouses. I will examine the spouse information in the event history analysis.

9 This is the definition of "first marriage" used in recent studies on marriage (Tsuya and Kurosu 2000; Kurosu, Tsuya and Hamano 1999).

10 The 'age' refers to the age measured in terms of the timing of NAC registration rather than chronological age. Provided that information used to construct the covariates for multivariate analysis are all organized in terms of the timing of annual population registration, it is appropriate to use NAC age, rather than chronological age. Tsuya and Kurosu (2000b) discuss the specifics of the procedures for the construction of the machine-readable data files used in the analysis.

With these criteria, the analysis includes 1693 women (976 for Niita and 717 for Shimomoriya) or, put differently, 1693 female first "observed" marriages which were at risk of divorce, with 400 recorded divorces in the entire 154 years of observation. Among those, 324 women were already married at the start of the records. Unless noted in the register, their age at marriage and type of marriage cannot be identified. I will include these cases in the event history analysis specifying their age at marriage, marital duration, and type of marriage as unknown.

The analysis distinguishes types of marriage by the difference of post nuptial residence. Marriage in these villages meant a newly wed couple to stay at one of their parents' households. This was supported by a governmental encouragement of keeping the number of households per village stable, as well as by the ideal of the stem family rule. Two major types of marriage can be distinguished depending on the residence pattern of a newly wed couple---virilocal marriages and uxorilocal marriages. In virilocal marriages, women leave their natal households to live with their husbands' (or husbands' parents') household. In uxorilocal marriages, on the other hand, it is the men who leave their natal households to live with their wives' (or wives' parents') household. These post-natal residential pattern is recognized by the annotations of the wives being 'called in' (*yobitori* or *enzuke*) and men being 'adopted as a son-in-law' (*muko-tori*). There is yet another type where both men and women marry and move into a household of neither of their parents. It is a form of adopting a couple (*fufu-yoshi*) and was not very common. Thus, marriage in these villages did not mean the formation of a new household by the newly wed couple. If they did, it was a form of "branching-out," and usually occurred a few years after a couple moved into the main household. All these types of marriage took place within the villages under study.

OUTCOMES OF FIRST OBSERVED MARRIAGE

First, I will look at the outcome of the observed first marriages by marriage type. Table 1 presents the percentage distribution of consequences of observed first marriages in the two villages. Here the analysis is limited to those individuals whose timing of first marriage is recognized in the register (excluding 324 women who were already married at the start of register). I then divide women's first marriages into two groups: completed first marriages (first marriage in which wife survived until the end of the reproductive span, reaching age 50) and uncompleted first marriage. For uncompleted first marriages, I look at the reasons of marital disruption. Completed and uncompleted marriages are further compared between uxorilocal and virilocal marriages.

<Tables 1A and 1B about here>

As shown in Table 1A, altogether only 31% of first marriages were completed in Niita and Shimomoriya. This low rate of completion is at the lower end, compared to the rates of other Tokugawa Japanese villages. For example, 44-50% were completed in Nishijo (1773-1869) in central and Nomo (cohorts 1802-1821) in southwestern Japan (Kurosu, Tsuya and Hamano 1999). In the village of Yokouchi in Suwa Province, around one-third of first marriage in 1601-1871 remained intact when the women reached age 50 (Hayami 1997: 209).

Divorce was the most common reason for marital dissolution in Niita and Shimomoriya. 43% of the first marriages among peasants dissolved in divorce before the individuals reached age 50, surpassing the proportion becoming widows and widowers. It is striking that more than half (55%) of uxorilocal marriage ended in divorce. Contrary to the common belief that divorce tended to be advantageous for the man/husband, more men in uxorilocal marriage than women in virilocal marriage experienced departure from the household of marriage.

Table 1B focuses on the uncompleted marriages of Table 1A. The upper panel of Table 1B presents the mean duration of first marriage before its dissolution. The bottom panel of Table 1B shows the mean age at first marital dissolution. Both of them are again contrasted for the two types of marriage. There were large differences in the longevity of first marriages according to the reasons of marital dissolution. The mean duration of first marriage for women whose marriage ended by divorce was extremely short, less than 5 years, while those ended by other reasons are between 12 and 16 years. This pattern is similar for both types of marriage. However, the mean duration of uxorilocal marriages ending in divorce is 1.3 years shorter than that of virilocal marriages. This point is further examined in the following life table analysis.

The mean duration of first marriage was much shorter for women whose first marriage ended in divorce, compared to women whose marriage was ended by the death of the spouse. Accordingly, the mean age at first marital dissolution was much lower for divorced women than for widowed women. In particular, the mean age of women in uxorilocal marriage was only 17.2, almost the same with the mean age at marriage of all women (Table 1A).

A short remark on remarriage is necessary here. According to studies based on the same data set, the proportion remarried (by age 50) among women who 'survived' for at least 5 years after their first marital dissolution was extremely high in Shimomoriya and Niita: around 70% (Kurosu, Tsuya, and Hamano 1999). This proportion was found much higher than those in southwestern village, Nomo (55%), and central village, Nishijo (25%). In the two villages, it was also found that remarriage took place quickly. Among women born and experienced marital dissolution in the two villages (432 observations), almost 50% of them remarried within three years after marital dissolution (Kurosu 1998a). The remarriage seems to have taken place quick and at young ages. The likelihood of women's remarriage is negatively associated with their age at first marital dissolution (Saito and Hamano 1999; Kurosu 1998a). In the village of Yubunezawa (central-east Japan), Kito found that almost 80% of women and men who experienced marital dissolution remarried before reaching age 30 and 45, respectively. After these respective ages, the rate of remarriage for both women and men drastically reduced (Kito 1988). Although, we have to wait for more detailed studies on remarriage in Niita and Shimomoriya, the early age at marital dissolution (see bottom of Table 1B) is suggestive for high remarriage rates particularly among women who experienced divorce, and those who were married uxorilocally.

DIVORCE AND TYPES OF MARRIAGE: LIFE TABLE METHOD

It was found in the previous analysis that the mean marriage duration of women who experience divorce was quite short. This was particularly so among those in uxorilocal marriage. To chart the dynamic process of divorce patterns, the life table analysis is used here. It allows us to understand the process of divorce by incorporating all individuals who were at risk (Blossfeld, *et al*. 1989: 122). Figure 2 shows the plots of the proportion remaining married, contrasting two types of marriage. Divorce starts as early as the first year of marriage. By the third year of marriage, 25% of women in uxorilocal marriage and 14% of women in virilocal marriage have experienced divorce. For both types of marriages, the first three years seem to be crucial in determining the likelihood of continuation of marriage. By the eighth year of marriage, almost 40% of women in uxorilocal and 25% of women in virilocal marriages experienced divorce. After that, both lines taper off.

<Figure 2 about here>

It is interesting to note that according to the fertility schedule, women with children exceed the number of those without children only in the sixth or seventh year of marriage (Kurosu 1998a). The rapid process of divorce we learned from life table analysis points to the fact that having no child, a reason commonly emphasized, is not the sole reason for divorce. Lee and Wang Feng (1999: 98-99) discussed that,

because of the Chinese preoccupation with biological perpetuation, scholars often mistakenly assume that the only purpose of marriage in China is procreation. In fact the immediate concern for all parties is to integrate the spouse into the family for both consumption and production rather than for reproduction. The same line of arguments may hold true for the population of Japan. In order to examine these points, we now move on to multivariate analysis.

EVENT HISTORY ANALYSIS

(1) Definitions and Measurements of the Covariates

Although divorce was prevalent, it did not occur randomly. The previous section revealed that chances and patterns of divorce differed among women at different stages of marital duration as well as by type of marriage. To reveal the mechanism leading to divorce, I conduct discrete-time event history analysis, using a series of logistic regression models which relate the probability of divorce in the next one year to economic and household circumstances of individual men and women. The models are a modification of the series of analyses in the EurAasia project of family and population history (for the specifics of the model, see Tsuya and Kurosu 2000b).

The dependent variable in the analysis is a dichotomous variable measuring whether or not a married woman had divorce within one year from one NAC registration to the immediately succeeding NAC registration. The population at risk includes females aged 50 and below who were married (observed first marriage) and resided in the two villages prior to their marital dissolution.[11]

Considering the possible difference in the causal structure examined above, the separate analyses are also conducted for (i) marital duration of 1-3 years and 4 and more years; and (ii) females in uxorilocal and virilocal marriages. In the analysis of divorce, those whose marital dissolution occurred for reasons other than divorce, namely, death of husband, death of oneself, and absconding, are removed from the population at risk. Because married females are exposed to the 'competing risks' (Allison 1984) of different types of marital dissolution, the occurrence of one type of marital dissolution simultaneously removes those individuals from the risk of divorce.

There are six groups of covariates. The first group consists of three control variables—age at marriage, time period and residing village. They are always included in the model. In the general model, types of marriage and marital duration are also controlled. The second group consists of logged rice prices in the local market of Aizu to measure annual variations in local economic conditions. Third, household socioeconomic status was measured by the size of land household cultivated (in *koku*).[12] Forth, household contexts of women include the presence of parents in household, and their relationship to household head. Fifth, sex and composition of children are entered. Sixth, information about husband, whether or not it is the first marriage for him, whether or not he lives in the same household, and age difference, are included. These covariates are all time-dependent, *i.e.*, measured as of the beginning of current NAC year.

Age at marriage, duration of marriage, marriage cohort, and sequence of events (marriage, conception and

11 Because the data for the analysis are constructed with a person year as the unit of observation, individuals are likely to contribute more than one observation. In order to take the effects of inter-correlation among observations into account, the logistic regression is estimated with robust standard errors using Huber's formula (Huber 1967; see Tsuya and Kurosu 2000 for details on methodology).

12 One *koku* is equivalent to around 5 bushels, or 180 liters. One *koku* is often considered as the average consumption per capita year.

birth) are important to consider in the model for marital disruption (e.g. Teachman 1982; Morgan and Rindfuss 1985; South and Spitze 1986). In considering the model for the population of two villages for 154 years, time period, rather than marriage cohort, is chosen to account for the social and economic changes. The sequence of events in terms of the timing of conception is not considered in this study since there is no observed premarital birth in these villages. Tsuya and Kurosu (1999) estimated that it took women in complete marriages around 4 and half years on average, to start family building. The couples in Shimomoriya and Niita delayed their family building until well after their marriage.

Control variables: age at marriage, time period, and village

Among contemporary populations, early age at marriage is often considered the most important factor leading to divorce since it suggests emotional and social immaturity (Morgan and Rindfuss 1985; South and Spitze 1986, etc.). Given the early and universal marriage in Niita and Shimomoriya, the same argument may not hold. This covariate is specified as a categorical variable consisting of 6 age groups—under 12, 13-14, 15-16, 17-19, 20 and above, and age at marriage unknown (those women who were already married at the start of the record). The reference category is age 15-16 when first marriage was most frequent.

Time period consists of 4 periods: 1716-1759, 1760-1799, 1800-1839, and 1840-1870. Using the earliest period of 1716-1759 as the reference, three dummy variables were constructed. Because the records from the two villages are pooled for this analysis, a dichotomous variable is also included to control for the possible village effect. If an individual was residing in Shimomoriya, the value of the covariate is 1; 0 if he/she was a resident of Niita.

Local economic condition: Rice price

Variations in the local economic condition are measured by logged rice price in the local market of Aizu that indicate annual fluctuations in agricultural output in the local area. Although they may not be the most accurate indicator of local economic conditions, annual variations in rice price in local Aizu were found to reflect fairly well crop failures in the area (Tsuya and Kurosu 2000b). The findings from previous studies regarding the relationship between local economic conditions and demographic outcomes are not straightforward (Tsuya and Kurosu 1999, 2000a, 2004). As discussed earlier in the economic hardship hypothesis, economic stress of the community is thought to enhance the likelihood of divorce. Facing economic hardship, brides and grooms may be the first one to be gotten rid of in order to keep a healthy economic balance of the household. Alternatively, brides and grooms may leave the household by way of divorce seeking for better opportunities.

Household economic condition: Landholding

Landholding here refers to actual size of land (in *koku*) the household is cultivating---excluding land loaned or pawned to other peasants and including land borrowed from peasants. The NAC data of this region is rare in keeping detailed records for the transaction of lands (borrowing, loaning and pawning) among peasants (Narimatsu 1992). In the previous analyses using the same data set, household landholding (yield of rice on which tax was based) was used as an indicator of household socioeconomic status. While both actual landholding and landholding for tax base are highly correlated (.81), I chose the former indicator for this study since it depicts well the current economic condition of the household. For example, non-entitled peasants without any landholding (no responsibility of tax) could borrow land from peasants who had trouble maintaining their economic responsibilities. In this case, the landholding they owned was zero *koku* but their actual landholding is the amount (area) they cultivated. Smaller size of actual landholding can be expected to be related to higher risk of divorce. Those households who cultivated less than 5 *koku* are considered low, 5 or more but less than 12 *koku* lower middle, 12 or more but less than 15 *koku* upper middle, and 15 *koku* or more upper socioeconomic group. The lower middle group is used as reference.

Household context

Presence of parents in household consists of four categories: both parents present; only father present; only mother present; and no parent present (reference). Previous studies on divorce in Japan emphasize the pressure of kin members as cause of high rates of divorce (Arichi 1977; Fuess 2004). Among Southeast Asian Muslim societies whose age at marriage is also early, the pressure of in-laws are pointed out as well (Tsubouchi and Tsubouchi 1970; Jones 1981). Early age at marriage and kin pressure seem to go hand in hand with high incidences of divorce. However, findings from Niita and Shimomoriya are contradictory to the thesis of kin pressure. Parents facilitated a child's marriage by helping/encouraging him/her to recruit a spouse into their household (Tsuya and Kurosu 2000a), and children were less likely to leave home for service when both parents were present (Kurosu 2003). This suggests that the presence of parents was a proxy for a stable household in these villages and may have protected young couples from various causes of marital disruptions.

The model also includes a dummy variable indicating whether or not women are head or wives of heads. Household relationships are extremely important in determining individual life courses. In the study of mortality using the same data, Tsuya and Kurosu (2004) found that compared to those who were heads' spouses, women who were spouses of stem-kin had significantly higher mortality. Servants and non-kin members were also somewhat likely to die. They interpret the higher mortality of women who were wives of sons or non-kin members to imply powerlessness and structural vulnerability of those women in agrarian households in pre-industrial Japan. With the same token, I expect that heads and wife of heads, who have already attained power, authority, and responsibility for the household, are less likely to resort to marital dissolution than other members of the household.

Children

Two types of variables are used to examine the effect of children. First, size and sex composition of surviving children consist of four categories: no child alive; no son, only daughter(s) alive; no daughter, only son(s) alive; and at least one son and one daughter alive. Using the sex-balanced offspring set (the last category) as the reference, three dummy variables are entered. Second, for the analysis of subgroups (marital duration 1-3 years and uxorilocal marriage), a dichotomous variable of having at least one child or not (regardless of sex) was used instead. As mentioned above, the average interval between marriage and first child bearing was long in these two villages. Therefore, it is not plausible or possible to differentiate the sex composition of children for the women who were married for 1-3 years. As for the subgroups of women in uxorilocal marriage, the dichotomous variable is also used since the sample is relatively small. Since infant mortality was high in these two villages, "surviving children" rather than "children ever born" are used in the analysis. Having "surviving" children was crucial in ensuring the family line in the stem family system. It also meant ensuring the bride a position in the household. Thus, the divorce effect of children is considered strong and negative. Since the sex balance of children was important in family building of the couples in the two villages (Tsuya and Kurosu 1999), the composition of children is also examined in the model.

Husband information

Finally, information on husbands is included: husband residing at home, husband's history of marriage, and age difference. Separation should not be considered in a contemporary sense of alternative to divorce. Husbands and wives in these villages often lived separate when one of them (or both of them) went on service (*hoko*) ---all forms of contract labor lasting any duration of time longer than six month within and outside the village. They were likely to engage in service when households needed extra income or to pay back rents. Having the husband living in the same household therefore meant a luxury and probably a stable conjugal relationship and, in turn, suppressed marital dissolution.

Age difference between spouses is included as a proxy for 'conjugal power', relative power between a woman and her husband in the conjugal relationship as proposed by Skinner (1993). Since a large majority

of women in the two villages married at very young ages (in their teens), the older husband meant his greater conjugal power (Tsuya and Kurosu 1999). Such power might be exerted positively in virilocal marriage by "expelling" young brides from the household, meeting the typical image of patriarchal family in the past. However, if the age difference between spouses was close, or if women were older, they might have been easier to resort to divorce upon unfavorable circumstances. This meets the image of wives "running away." I test these competing hypotheses in a multivariate context. In the model, age difference between spouses consists of three categories: wife is older than husband; husband is of same age or at most 5 years older than wife (reference); husband is older by six or more years.[13]
The model also includes a dichotomous variable indicating whether a husband is in first "observed" marriage or remarriage. Since the disruption of first marriages were prevalent in the two villages, and since there is a study which suggest that divorce was a welcomed experience at the time of remarriage (Tsubouchi and Tsubouchi 1970: 176), I expect the less experienced (first marriage) husbands meant more risk of divorce.

To discern the specific causal mechanism of the probability of divorce, the analysis takes three steps. I first estimate the nested models for all women by adding the other covariates into the model. Second, to reveal the different mechanism I estimate separately the model for women married for 1-3 years and those for 4 years and more. Lastly, I estimate the model by type of first marriage: virilocal and uxorilocal marriages.

(2) Results of the Discrete-Time Event-History Analysis

Table 2 shows the means of the independent and control variables used in the analysis for all women, and subgroups by marital duration and marriage type. In the sample, 65% of women had virilocal and 17% uxorilocal marriage. There are several notable differences among the subgroups. At earlier stage of marriage (marital duration 1-3 years), more women lived with both parents (in-laws or one's own). The majority of the women in this group did not yet have surviving children. The proportion without any children reduced from 84% to 20% among women who were married for four years or more. The age at marriage of women in uxorilocal marriage was earlier than their counterpart in virilocal marriage. Almost 70% of them were married before reaching age 15. More women in uxorilocal marriage were residing with both parents. Thus, the proportion of women who have attained headship (becoming head or head's wife) was lower in uxorilocal than in virilocal marriage.

<Table 2 about here>

(2A) Observed First Marriage of All Women

The base model (Model 1 in Table 3) included women's age at marriage, rice price and landholding. Household context, sex composition of children, and husband information are added in Models 2-4, respectively. Even after the other covariates are introduced in the model, the effects of price fluctuations remain highly significant and strongly positive for divorce. The effect of household landholding is also strong throughout the models. The risk of divorce among women, who were in the household landholding below 5 *koku*, was twice as high for those in household with landholding 5-12 *koku*. However, marriage of women who were in household above average (12 *koku* or more) were 30 to 40% less likely to experience divorce compared to the reference group. Economic resource of the household significantly affected the stability of marriage.

<Table 3 about here>

13 I follow the previous study of fertility (Tsuya and Kurosu 1999) in choosing the cut-off point (6 years) which was found to have the largest and most significant fertility effect through trying various age differences.

Not only the economic resource but also the context of household affected the likelihood of divorce (Model 2). The log-likelihood drastically reduced with the inclusion of the variables on household context. Relative to women with no parents present, women with at least one parent were significantly less likely to divorce. This finding is consistent with previous findings on marriage and leaving home using the same data (Tsuya and Kurosu 2000a; Kurosu 2003). Presence of parents meant economic and social stability of the household and, in turn, support for young couple's marital stability. To add, having only one parent might have meant a household necessity of replacing the loss/absence of one parent.

As for household relationship, being wife of head significantly reduced the risk of divorce. An heir succeeded to headship either by retirement or death of the former household head (*i.e.*, father). Once the young couples attained headship, their divorce risk reduced by half compared to that of other members of the household (*i.e.*, stem-kin, non-kin).

Inclusion of the sex composition of children further reduced the log-likelihood dramatically in Model 3. In the fertility analysis using the same data (Tsuya and Kurosu 1999), the factor that had the strongest and most significant fertility effect was number and sex composition of surviving children. The same variable exerts power on divorce risk as well. Relative to women who had no children, women with either a son or daughter were almost 64% less likely to experience divorce. Further, once women had a son and daughter, her marriage was greatly secured. Their divorce risk is 85% less of those without any children. Since couples' fertility behavior in these villages was found to opt for a sex-balanced offspring set, their marriage was probably insured after having obtained this goal.

Finally in Model 4, husband information is included. There is an inclination for higher risk of divorce when women are older than their husbands or when the marriage was the first one for their husbands. However, these variables were not statistically significant. Husbands residing in the same household significantly reduced the risk of divorce. Since the absence of husbands often meant that husbands lived elsewhere for service, it relates to some extent to household economic condition. Separate living might also have meant or caused problems which were not present when they were living together.

It is important to note that younger age at marriage and divorce was not associated straightforwardly. In fact, women who were married at the popular age of marriage, age 15-16, seem to have had the highest risk of divorce. Immaturity of women who married before 15 might have been supported and/or covered by kin members.

Uxorilocal marriage compared to virilocal marriage was always significantly and positively related to divorce. Marriage which lasted longer than 6 years was significantly less inclined to marital dissolution. Controlling for other factors, the affect of duration observed in the above life table analysis still holds. Finally, there are significant temporal differentials in divorce. Compared to the earliest period of 1716-1759, risk of divorce was much higher after 1759. This might suggest that marriage pattern with frequent divorce and remarriage came about coinciding with the rise of small scale family farming in the latter part of the eighteenth century.

(2B) Marital Duration

The above analysis treated all women together. In this section, I estimated the models for two separate groups: women married for 1-3 years and those married 4 and more years. As Table 4 demonstrates, there appears to be a clear difference in the mechanism of divorce between these two groups. Economic condition of the community, measured by rice price, was highly significant and strongly positive for divorce among those who survived the first three years of marriage. Being in the lowest economic status (less than 5 *koku*) also exerted a strongly positive effect on divorce among women who were married

longer than 3 years. However, these economic conditions of the community and household did not matter for women who were just married or married for less than 3 years. While presence of parents and children significantly reduced the probability of divorce for both groups, household relationship and husband information seems to be important only for those who were married long enough.

<Table 4 about here>

It is interesting to note that age at marriage mattered more at the initial stage of marriage. Those married extremely young and those married after the average age of marriage in the two villages were considerably less likely to divorce compared to those married at ages 15-16. The effect of early age at marriage disappeared among those who were married long. Still, if women got married older (20 and above), they were significantly less likely to resort to divorce.

(2C) Uxorilocal vs. virilocal marriage

The patterns and covariates of divorce for women become even clearer when I estimate the final model for the two types of marriage (Table 5). Rice price fluctuations were positively and strongly associated with virilocal marriage but not at all with uxorilocal marriage. The effects of household-level factors also differ depending on marriage type. First, landholding mattered to both groups but statistical significance appeared in a different manner. Women in the highest landholding group were significantly less likely to experience divorce when they were in uxorilocal marriage. However, those in the lowest group were significantly more prone to divorce when they were in virilocal marriage.

<Table 5 about here>

Presence of parents suppressed to a large extent the probability of divorce among women in virilocal marriage. However, it did not show any significant effect for women in uxorilocal marriage. Being head's wife and having at least one child (either sex) greatly reduced the probability of divorce among women in both types of marriage. Also for both types, having at least one son and daughter meant an assurance to the continuation of marriage.

Husband information mattered in a different manner as well. For women in virilocal marriage, as we have seen in the general model (Table 3), residing with the husband significantly reduced the risk of divorce while the probability of divorce was enhanced when her husband had never been married before. Both of these factors were not important for women in uxorilocal marriage. What mattered for women in uxorilocal marriage was the age difference with the husband. When they were older than the husband, they were twice as likely to divorce as having a husband of same age or older by 5 or less years. Since these women were daughters of the household, being older probably meant more autonomy in having divorce or selecting husbands.

SUMARRY AND DISCUSSION

Marriage was early and universal in these two northeastern villages but it was not stable. More than two-thirds of the first marriages dissolved in divorce before the individuals reached age 50, surpassing the proportion becoming widows and widowers. The life table analysis demonstrated that the first three years and up to 8 years were crucial in determining whether the marriage would continue.

Given the frequency and speed of divorce, it now becomes clear why siblings of the heirs were kept home even after the marriage of heirs. The finding that siblings of the heirs in the two villages did not leave home even after the heir's marriage (Kurosu 2004) was contradictory to the findings in other villages in central Japan

where an heir's marriage precipitated the departure of non-heirs (Smith 1977; Kurosu 1996). Considering the size and gender balance of labor for family farming, it was important for households to keep non-heirs until the heir's marriage became stable, *i.e.*, until about three yeas of marriage.

According to the multivariate analysis, divorce took place regardless of economic conditions and household characteristics during the first three years of marriage. These results support the trial marriage hypothesis that "spousal testing" took the form of official marriages in eastern Japan (Fuess 2004: 47). The results also show that such testing was particularly important in uxorilocal marriage. The selection of groom (sons-in-law) was important not only for adding labor in agricultural households but also in determining an heir to the household as well as one to represent the household in village organizations.

Only after passing the "testing" phase, economic conditions and household characteristics as well as husband information exert power in explaining how even the "stronger marriages" to breakdown. The theories of economic hardship and stem family logic were well at work: Propensity of divorce increased upon economic stress in the community and in the household; wives of heads and those having children were extremely less likely to experience divorce.

The two types of marriage, uxorilocal and virilocal, had different patterns and mechanism to marital dissolution. The life table analysis showed that divorce took place much faster in uxorilocal than virilocal marriage. The multivariate analysis revealed that having a child, or having obtained household headship, significantly reduced the risk of divorce in both types of marriage. However, risk of divorce among females in virilocal marriage increased at economically hard times and when the household had zero or only small (5 *koku*) landholding. The risk was greatly reduced when women either lived with at least one parent or with their husbands. These economic factors and living arrangements did not matter for females in uxorilocal marriage. Rather, what mattered for these females appears to have been the share of conjugal power, measured by the age difference between the spouses: Women older than their husbands were more likely to experience divorce.

The findings of this study are consistent with previous studies on mortality and nuptiality using the same data (Tsuya and Kurosu 2000a, 2000b, 2003, 2004; Kurosu 2004). This study adds to the understanding of the intricacies and complexities associated with people's lifecourses in pre-industrial agrarian villages in northeastern Japan. People were vulnerable to economic stress caused by fluctuations in agricultural output. When the local economic condition was not favorable, people were faced with higher risk of death (although the story is not so straightforward depending on gender, age, and status in household) and absconding (departure from the village without informing the local authorities). Service migration and marriages were postponed. In such circumstances, virilocal marriages were highly likely to breakdown. It is not too difficult to imagine young brides running away from the harsh conditions for better opportunities elsewhere. Or it could have been the households which tried to get rid of the newest and least powerful member for the sake of the survival of other members. Economically strong households had better bargaining power in the marriage market, and therefore were more likely to recruit brides and grooms. The finding of this study shows that they were also more successful in keeping them. Marriages in households with small landholdings were highly likely to result in divorce.

However, living in a wealthy household promised neither survival nor marriage. Being related in the family line (as opposed to being outside the family line) was no protection either.[14] The success of an individual's life course depended highly on access to household resources in the stem family organization. It was clearly the heads and spouses of heads who were able to mobilize household wealth and resources, and thus had higher chances of survival compared to stem-kin and non-kin members. The higher mortality of women who were wives of heirs or non-kin members was considered to signify their powerlessness and

14 This point is considered a crucial distinction for stem family household (Aruga 1943).

structural vulnerability in agrarian households in pre-industrial Japan (Tsuya and Kurosu 2004). This structural vulnerability is confirmed by the present study. Only when the women became wives of heads did their marriage become stable.

Having surviving children also secured the status of women (or men in uxorilocal marriage) in the household and was a strong incentive for the continuation of marriage. However, having no children (infertility) was not a cause of divorce. Some women had children after they remarried (Kurosu 1998a), and peasants often adopted children when there were no sons and daughters (Kurosu and Ochiai 1995; Kurosu 1998b). The evidence of this study suggests that having children strengthened both uxorilocal and virilocal marriages. This is an important point since scholars tend to see “infertility” as the driving force of high divorce rates in early modern Japan. Here, the point made by Lee and Wang Feng (1999: 98-99) for marriage in China can also be made for Japan: The immediate concern for all parties was to integrate the spouse into the family for consumption and production rather than for reproduction.

Thus while the contemporary increase of divorce is often attributed in parts to family stability becoming less important, this paper suggests that it was, in fact, the importance placed on a stable family that led to the prevalence of divorce in early modern Japan. Clearly, more study is needed to fully account for the specific causal mechanisms of divorce in Japan in past times. Regional differences should also be tested with the method used in this study. In order to understand the life course of individuals and the marriage system in pre-industrial societies, studies should go beyond the conceptual preoccupation of initial stage of marriage, and integrate consequences of marriage, including divorce and remarriage.

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Table 1A. The Percentage distribution of Outcome of Women's Observed First Marriages and the Mean Duration (in years) of Uncompleted First Marriage by Reason of Marital Disruption: Shimomoriya and Niita 1716-1870

	All women	Uxorilocal	Virilocal
Mean age at marriage	17.1	14.1	18.0
(s.d.)	(7.3)	(3.8)	(8.0)
%Completed first observed marriage	31.2	32.7	44.0
%Uncompleted due to:	68.8	67.3	56.0
Death of spouse	20.9	15.2	22.2
Own death	26.8	20.5	28.3
Divorce	42.8	55.2	41.6
Absconding	6.9	9.1	7.5
Other reason	0.2	-	0.4
Unknown	2.4	-	-
Total (%)	100	100	100
N	1369	312	996

Notes: Tables 1-2 exclude 324 women whose start of marriage cannot be identified.
All women include 88 whose marriage type are neither matrilocal nor patrilocal.

Table 1B. The Mean Duration (in years) and Age at Marital Dissolution of Uncompleted First Marriage by Reason of Marital Disruption: Shimomoriya and Niita 1716-1870

Mean duration (in years) of first marriage:	All women	(s.d.)	Uxorilocal	(s.d.)	Virilocal	(s.d.)
All uncompleted marriages	10.4	9.5	9.5	9.4	11.3	9.7
Uncompleted due to:						
Death of spouse	16.3	10.6	19.3	10.5	17.2	10.6
Own death	13.6	9.2	13.3	9.3	14.3	9.5
Divorce	4.4	4.5	3.6	3.1	4.9	4.9
Absconding	12.1	9.1	11.2	10.8	12.7	8.6

Table 2. Means of the Covariates Used for the Discrete-Time Event History Analysis of Divorce in the Villages of Shimomoriya and Niita 1716-1870

	All women	Marital Duration		Uxorilocal Marriage	Virilocal Marriage
		1-3 years	4+ years		
Logged rice price in Aizu	-0.244	-0.240	-0.227	-0.212	-0.233
Household Landholding					
less than 5 koku	0.071	0.062	0.058	0.025	0.067
5-12 koku (reference)	0.291	0.300	0.287	0.289	0.290
12-15 koku	0.247	0.261	0.276	0.277	0.270
15 and more koku	0.242	0.263	0.268	0.254	0.271
unknown	0.150	0.115	0.112	0.154	0.102
Presence of Parents					
Both parents present	0.369	0.626	0.356	0.476	0.387
Only father	0.084	0.078	0.087	0.063	0.090
Only mother	0.142	0.125	0.151	0.122	0.153
No parents (reference)	0.405	0.171	0.406	0.340	0.370
Household Relationship					
Head's wife	0.626	--	0.672	0.475	0.629
Sex composition of children					
No son, only daughter(s)	0.193	--	0.218	--	0.182
No daughter, only son(s)	0.227	--	0.240	--	0.212
At least one son and daughter	0.295	--	0.346	--	0.294
No children (reference)	0.285	0.839	0.196	0.317	0.312
At least one child	--	0.161	--	0.683	--
Husband Information					
Husband resides at home	0.889	--	0.874	--	0.892
Husband 1st observed marriage	0.487	--	0.406	--	0.516
Age difference					
Wife if older than husband	0.031	--	--	0.023	--
Husband older by 6+ years	0.428	--	--	0.490	--
Husband same age or <6 yrs older than wife (ref)	0.542	--	--	0.487	--
Age at marriage					
under 12	0.202	0.198	0.247	0.345	0.212
13-14	0.253	0.276	0.293	0.342	0.278
15-16 (reference)	0.147	0.203	0.168	0.160	0.177
17-19	0.110	0.122	0.132	0.089	0.138
20 and above	0.138	0.201	0.160	0.064	0.194
age unknown	0.150	--	--	--	--
Marriage type					
Virilocal (reference)	0.654	0.766	0.799	--	--
Uxorilocal	0.166	0.227	0.196	--	--
other	0.180	0.008	0.005	--	--
Marriage duration					
1-3 years (reference)	0.150	--	--	0.205	0.176
4-6 years	0.114	--	--	0.137	0.138
7 and more years	0.561	--	--	0.658	0.687
unknown	0.175	--	--	--	--
Time Period					
1716-59 (reference)	0.369	0.333	0.268	0.325	0.271
1760-99	0.269	0.272	0.311	0.226	0.325
1800-39	0.225	0.249	0.255	0.242	0.256
1840-70	0.137	0.146	0.165	0.208	0.149
Village (Shimomoriya=1)	0.428	0.445	0.436	0.541	0.410

Notes: The unit of observation is person year.

Table 3. Estimated Odds Ratios of the Covariates from the Discrete-Time Event History Analysis of the Probability of Divorce in Next Year: Villages of Shimomoriya and Niita 1716-1870

	Model 1 exp(b)		Model 2 exp(b)		Model 3 exp(b)		Model 4 exp(b)	
Logged rice price in Aizu	1.630	**	1.547	**	1.559	**	1.536	**
Household Landholding (ref: 5-12 koku)								
less than 5 koku	2.127	**	2.133	**	2.100	**	2.012	**
12-15 koku	0.680	**	0.680	**	0.709	*	0.711	*
15 and more koku	0.650	**	0.617	**	0.660	**	0.667	**
unknown	0.591	*	0.419	**	0.430	**	0.393	**
Presence of Parents (ref: no parents)								
Both parents present			0.527	**	0.494	**	0.498	**
Only father			0.374	**	0.360	**	0.360	**
Only mother			0.461	**	0.465	**	0.458	**
Household Relationship								
Head's wife			0.412	**	0.490	**	0.530	**
Sex composition of children (ref: no children)								
No son, only daughter(s)					0.339	**	0.332	**
No daughter, only son(s)					0.374	**	0.364	**
At least one son and daughter					0.142	**	0.138	**
Husband information								
Husband resides at home							0.616	**
Husband 1st observed marriage							1.257	
Age difference (ref: husband same age or <6 yrs older than wife)								
Wife if older than husband							1.281	
Husband older by 6+ years							0.847	
Age at marriage (ref: age 15-16)								
under 12	0.952		0.923		0.747		0.747	
13-14	0.786		0.747		0.681	**	0.679	**
17-19	0.363	**	0.364	**	0.410	**	0.427	**
20 and above	0.415	**	0.443	**	0.412	**	0.428	**
age unknown	4.148		3.470		3.257		3.233	
Marriage type (ref: Virilocal marriage)								
Uxorilocal	1.746	**	1.597	**	1.679	**	1.993	**
other	1.463		1.643		1.656		1.686	
Marriage duration (ref: 1-3 years)								
4-6 years	0.732	*	0.779		1.030		1.007	
7 and more years	0.079	**	0.098	**	0.242	**	0.236	**
unknown	0.042	**	0.048	**	0.088	**	0.099	**
Time Period (ref: 1716-59)								
1760-99	2.363	**	2.241	**	2.012	**	1.906	**
1800-39	2.040	**	1.998	**	1.891	**	1.769	**
1840-70	1.833	**	1.746	**	1.731	**	1.638	*
Village (Shimomoriya=1)	1.137		1.146		1.125		1.117	
Log-likelihood	-1604.04		-1578.48		-1540.18		-1534.13	
Chi2	434.65		503.86		569.93		587.73	
(d.f.)	19		23		26		30	
Prob>chi2	0.000		0.000		0.000		0.000	
Number of Observations	21114		21114		21114		21114	
Number of Events	372		372		372		372	

**Significant at 0.01 level; * at 0.05 level

Note: Odds ratios are estimated by the logistic regression with robust standard errors.

Table 4. Estimated Odds Ratios of the Covariates from the Discrete-Time Event History Analysis of the Probability of Divorce in Next Year by duration: Villages of Shimomoriya and Niita 1716-1870

		Marital Duration	
	All women exp(b)	1-3 years exp(b)	4+years exp(b)
Logged rice price in Aizu	1.536 **	1.109	2.387 **
Household Landholding (ref: 5-12 koku)			
less than 5 koku	2.012 **	1.329	2.853 **
12-15 koku	0.711 *	0.842	0.667
15 and more koku	0.667 **	0.735	0.694
unknown	0.393 **	0.320 **	0.475 *
Presence of Parents (ref: no parents)			
Both parents present	0.498 **	0.443 **	0.508 **
Only father	0.360 **	0.359 **	0.302 **
Only mother	0.458 **	0.263 **	0.618
Household Relationship			
Head's wife	0.530 **	--	0.412 **
Sex composition of children (ref: no children)			
No son, only daughter(s)	0.332 **	--	0.232 **
No daughter, only son(s)	0.364 **	--	0.243 **
At least one son and daughter	0.138 **	--	0.056 **
At least one child	--	0.493 **	--
Husband information			
Husband resides at home	0.616 **	--	0.525 **
Husband 1st observed marriage	1.257	--	1.758 *
Age at marriage (ref: age 15-16)			
under 12	0.747	0.588 *	0.794
13-14	0.679 **	0.587 **	0.825
17-19	0.427 **	0.258 **	0.677
20 and above	0.428 **	0.369 **	0.374 **
Marriage type (ref: Virilocal marriage)			
Uxorilocal	1.993 **	2.375 **	1.771 *
other	1.686	1.034	2.977
Marriage duration 4-6 years	--	--	3.203 **
Time Period (ref: 1716-59)			
1760-99	1.906 **	1.500	1.626 *
1800-39	1.769 **	1.054	2.311 **
1840-70	1.638 *	1.283	1.378
Village (Shimomoriya=1)	1.117	1.030	1.335
Log-likelihood	-1534.27	-631.97	-668.31
Chi2	586.51	101.8	334.9
(d.f.)	30	19	25
Prob>chi2	0.000	0.000	0.000
Number of Observations	21114	3177	14200
Number of Events	372	177	150

**Significant at 0.01 level; * at 0.05 level

Notes: The model for all women controls for marital duration and age difference between wife and husband.
Odds ratios are estimated by the logistic regression with robust standard errors.

Table 5. Estimated Odds Ratios of the Covariates from the Discrete-Time Event History Analysis of the Probability of Divorce in Next Year by Type of Marriage: Villages of Shimomoriya and Niita 171

	All women		Marriage Type		
			Uxorilocal		Virilocal
	exp(b)		exp(b)		exp(b)
Logged rice price in Aizu	1.536	**	0.860		2.366
Household Landholding (ref: 5-12 koku)					
less than 5 koku	2.012	**	1.540		2.015
12-15 koku	0.711	*	0.676		0.774
15 and more koku	0.667	**	0.542	*	0.811
unknown	0.393	**	0.401	**	0.478
Presence of Parents (ref: no parents)					
Both parents present	0.498	**	0.877		0.366
Only father	0.360	**	0.528		0.245
Only mother	0.458	**	0.766		0.352
Household Relationship					
Head's wife	0.530	**	0.376	*	0.575
Sex composition of children (ref: no children)					
No son, only daughter(s)	0.332	**	--		0.310
No daughter, only son(s)	0.364	**	--		0.391
At least one son and daughter	0.138	**	--		0.089
At least one child			0.229	**	--
Husband information					
Husband reside at home	0.616	**	--		0.512
Husband 1st observed marriage	1.257		--		1.604
Age difference (ref: husband same age or <6)					
Wife if older than husband	1.281		2.019	*	--
Husband older by 6+ years	0.847		1.019		--
Age at marriage (ref: age 15-16)					
under 12	0.747		0.543	*	0.669
13-14	0.679	**	0.643		0.671
17-19	0.427	**	0.360	*	0.482
20 and above	0.428	**	0.186		0.457
Marriage duration (ref: 1-3 years)					
4-6 years	1.007		0.897		1.077
7 and more years	0.236	**	0.246	**	0.261
unknown	0.099	**	--		--
Time Period (ref: 1716-59)					
1760-99	1.906	**	2.221	**	1.386
1800-39	1.769	**	1.283		1.516
1840-70	1.638	*	0.974		1.511
Village (Shimomoriya=1)	1.117		1.006		1.354
Log-likelihood	-1534.27		-370.75		-922.7
Chi2	586.51		196.13		335.89
(d.f.)	30		22		24
Prob>chi2	0.000		0.000		0.000
Number of Observations	21114		3481		13795
Number of Events	372		107		217

**Significant at 0.01 level; * at 0.05 level

Notes: The model for all women controls for marriage type.

Odds ratios are estimated by the logistic regression with robust standard errors.

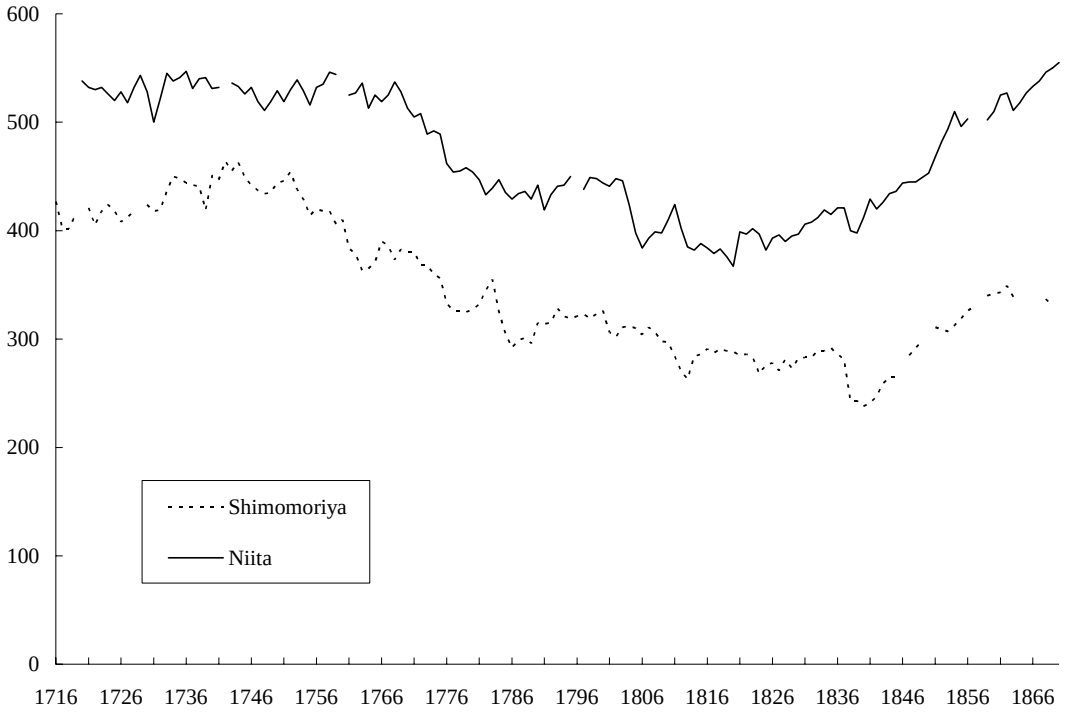
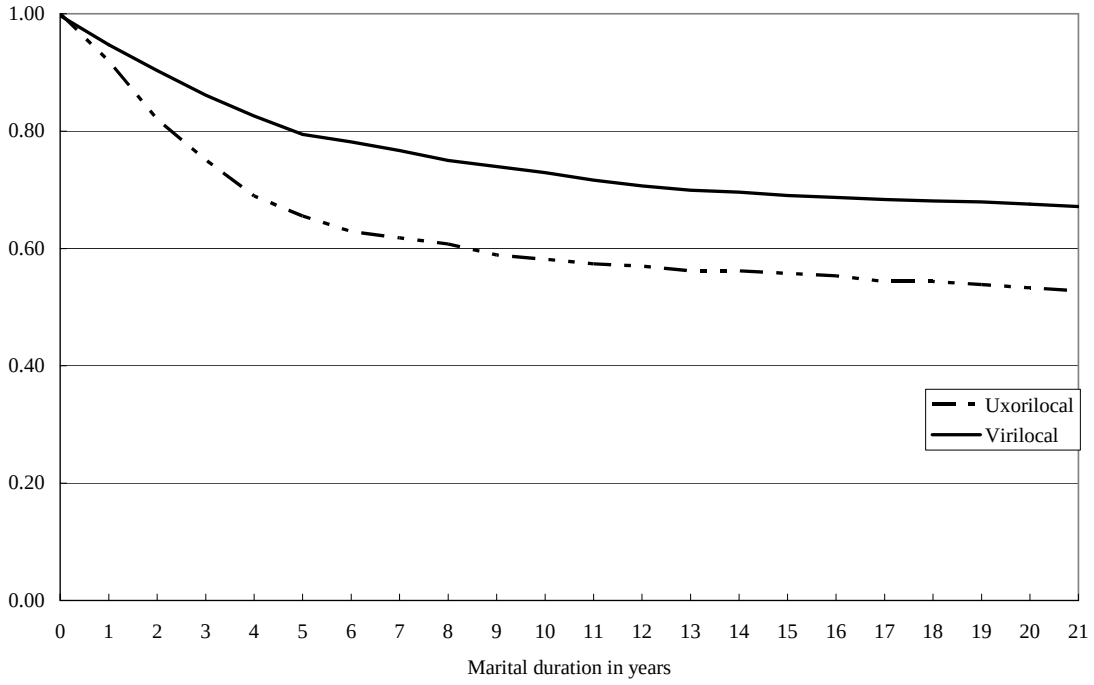
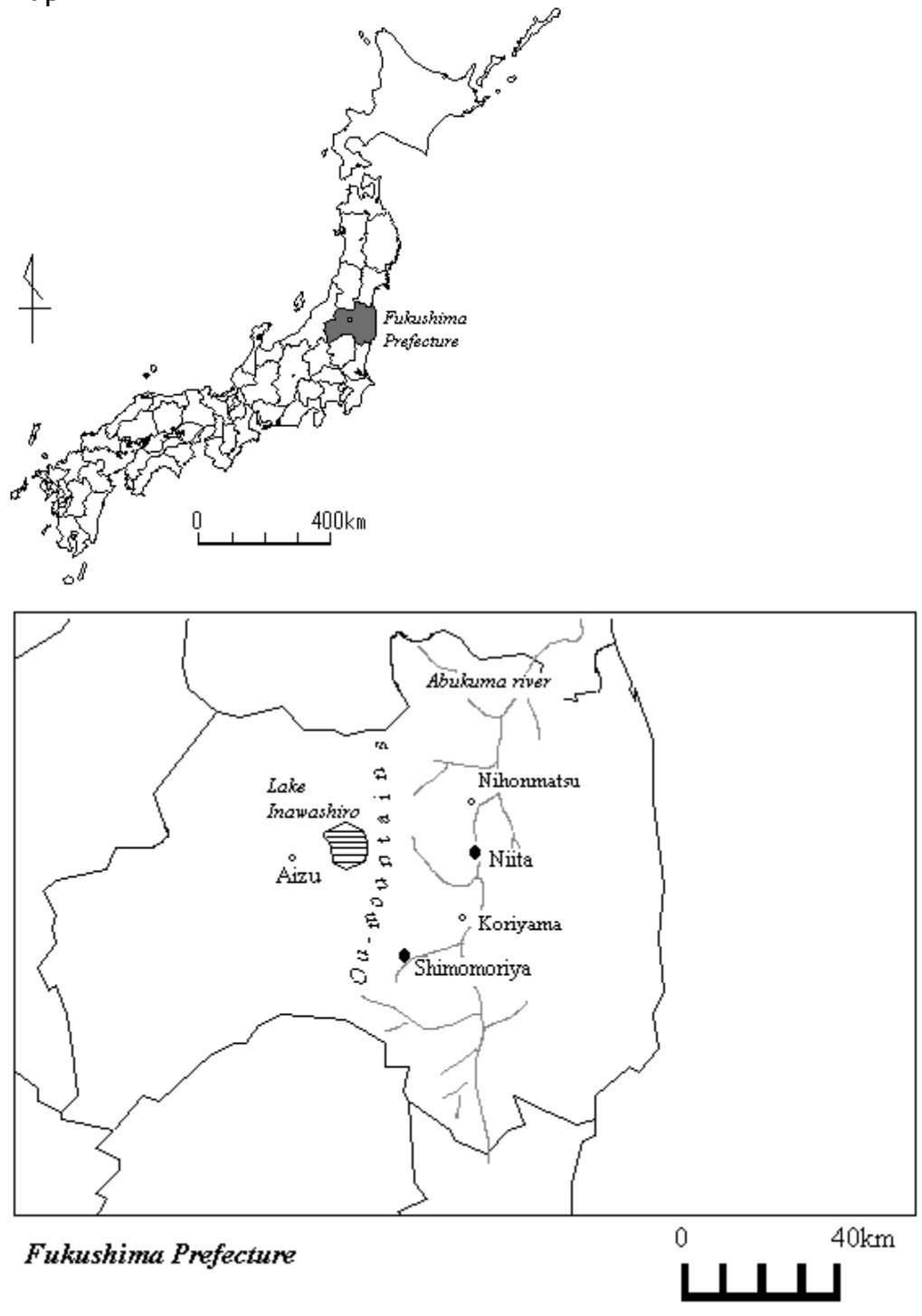


Figure 1 Population size of the villages of Niita and Shimomoriya, 1716-1870



Firuger 2. Proportion of women not experiencing divorce (by marriage type)

Map 1


Fukushima Prefecture
0
400km
Abukuma river
Ou-mountains
Lake Inawashiro
Aizu
Nihonmatsu
Niita
Koriyama
Shimomoriya
0
40km
Fukushima Prefecture