

Kin Networks, Marriage and Social Mobility in Late Imperial China

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2/24/2003

Prepared for presentation at the ISA RC28 meeting, Tokyo, March 1-3, 2003. Comments welcome. Please do not cite or circulate without contacting one of the authors for the latest version.

Social science has long assumed that kin networks influences demographic and social outcomes. This is especially true for China, where the high fertility of the East has long been assumed to be a product of a kinship system that encouraged early and universal marriage and redistributed resources to do so (Davis 1955; Malthus 1826/1986). Many historical social scientists have claimed to find patterns of demographic behavior consistent with such principles in China and indeed in all societies where complex extended families were common (Das Gupta 1997, 1998; Huang 1990; Skinner 1997; Wolf forthcoming). According to these scholars, resources were produced and shared collectively in particular by residential households, but among other kin as well. While the power vested in household heads by the state and in local descent group heads by customary rules meant that patriarchy and hierarchy were at the heart of collective production and consumption, custom also dictated that the prosperous assist less fortunate kin (Lang 1946, 181-189). These contrary tendencies towards protectionism and particularism therefore underlie current social theory about the relationship between domestic organization and demographic behavior in Eurasia in general and China in particular (Freedman 1958, 1966; Szonyi 2002; Zheng 2001).

This paper examines the influence of kinship on social and demographic outcomes in Liaoning Province in Northeast China during the late imperial period as an empirical test of these contradictory claims. We make use of one of the largest, longest, and most detailed panel data sets for an historical population: 161,000 individuals who lived in 500 village communities from 1749 to 1909, examining how kinship networks and household contexts influenced such social demographic outcomes as employment, marriage, and reproduction. Moreover, we contrast the pre 1860 Liaoning ‘natural’ economy with the post 1860 Liaoning ‘treaty port’ economy to test the common assertion and important assumption that kinship becomes less influential with the rise of commercialization, market penetration, and an increasingly open society.

China and Liaoning are especially appropriate places to study the influence of kinship on demographic behavior. Chinese kin groups not only influence demographic decisions, in many cases they actually make such decisions. Kin within and even without the household influence marriage, reproduction, education, employment, and even survivorship. Many Chinese kin groups had formal rules in imperial times to transmit family customs and strategies and to define the jurisdiction of kin authority by residence, family relationships, and gender (Ebrey 1984, 1991; Liu 1959).

Liaoning is one of the provinces where kin organization has been particularly well studied (Ding, Guo, Lee, and Campbell 2003). Liaoning is also ideal for a study of economic effects because of the previous simplicity of the Liaoning economy. As a frontier province, Liaoning only began to experience economic growth and subsequent commercialization with the arrival of the first settlers in the late seventeenth and early eighteenth century. In 1700, Liaoning was largely empty land. By 1930, Liaoning was already the most industrialized provincial economy. While the provincial population rose at the same time from several hundred thousand to several million people, a significant

proportion of these people farmed imperial estates and as royal peasants were unusually well documented.

Our research examines how kin proximity to people of power and property conditioned social and demographic outcomes. Specifically we study the internal organization of kin groups, and analyze how the numbers and presence or absence of specific kin, and numbers and presence or absence of specific kin with official positions, influenced demographic and social outcomes. We divide our paper into four parts. We begin in part one with some background on the subject and previous research. Then we turn in parts two and three to introduce the data and methods used in the analysis. Finally in part four we present our results.

Background

The Malthusian Paradigm remains influential in contemporary scholarship beginning with sociologists such as Davis (1948, 1955), historians such as Hajnal (1982), Laslett (1977, 1983, 1988), Macfarlane (1978, 1986, 1987, 1997), Schofield (1989), and Wrigley (1978), and most recently anthropologists such as Das Gupta (1997, 1998) and Skinner (1997). These scholars distinguish between two ideal model family systems: a relatively simple conjugal family system characteristic of Western, particularly northwestern Europe, and a comparatively more extended family system characteristic of a much wider geographic area stretching from East Asia and South Asia to Eastern and Southern Europe. Demographic historians have focused on describing the European conjugal family system and the preventive population check that characterized its demographic behavior. Their general conclusion is that while the social organization of such societies was relatively simple, their demography, and particularly their nuptiality, were sensitive to economic circumstances (Goldstone 1986; Levine 1987; Schofield 1985; Weir 1984; Wrigley and Schofield 1981). By contrast, the importance of kinship in the East shielded individual behavior from short-term economic fluctuations but rendered them vulnerable to social circumstances (Lee and Campbell 1997).

International comparisons of the influence of kin within the household on individual outcomes have confirmed the validity of such geographic comparisons, but have challenged our understanding of the links between kinship systems and demographic behavior. They have, for example, discovered little historical support for the long-held assertion that larger, more complex households better insulated members from economic pressure. Moreover they have not been able to substantiate many of the claimed behaviors above. Mortality rates from a comparison of eighteenth and nineteenth century rural communities were equally sensitive to short-term economic stress in southern Sweden, eastern Belgium, and northern Italy where households were relatively simple as in northeastern China and northeastern Japan where households were both larger and more complex. These same comparisons of mortality rates also demonstrate that widows, orphans, and motherless and fatherless children were actually more vulnerable to food price fluctuations in the joint Northeastern Chinese family than in the nuclear West European household (Bengtsson, Campbell, and Lee, et. al. 2003; Campbell and Lee 2002a).

A more complete understanding of the role of kinship systems in shaping demographic and social outcomes requires moving beyond the household to consider kin living elsewhere. The need for such analyses has long been recognized, but data limitations have hitherto precluded such research (Plakans 1984). Kin who lived apart interacted with each other in a variety of ways, sharing information as well as social, political, and economic resources. The genealogies that have been used in previous studies of kinship networks document kin ties, but do not provide information on residence, thus it is impossible to compare effects of kin according to whether or not they lived in the same household or village. Household registers document residence, but usually do not have adequate generational depth to reconstruct pedigrees and identify kin who lived outside the household.

This analysis is accordingly a substantial advance over previous efforts to study associations between kinship and social and demographic behavior. By longitudinally linking individuals for whom we have historical household registers over as many as seven generations, we can trace a subset of our population from the middle of the eighteenth century to the beginning of the twentieth, and reconstruct their kin networks. From 1789 onward, the registers organize individuals by household, thus we can identify which kin lived in the same household and which lived elsewhere, and compare their effects. In the future, with the additional collection of corollary auxiliary information on local economic, institutional, and social conditions we expect to relate behavior not just to kinship, but also to environmental circumstances, including economic circumstances and occupational history.

Data

The data we use are derived from 'Household and Population Registers of the Eight Banner Han Army' (*Hanjun baqi rending hukou ce*). These household registers were compiled on a triennial basis for a number of Han banner populations in northeast China and certain other locations from the early eighteenth century until 1909. The Qing relied heavily on these registers for civilian and military administration of these populations. They accordingly devised a system of internal cross-checks to ensure consistency and accuracy. First, they assigned every person in the banner population to a residential household (*linghu*) and registered them on a household certificate (*menpai*). Then they organized households into clans (*zu*), and compiled annually updated clan genealogies (*zupu*). Finally, every three years they compared these genealogies and household certificates with the previous household register to compile a new register. They deleted and added people who had exited or entered in the last three years and updated the ages, relationships, and official positions of those people who remained as well as any changes in their given names. Each register, in other words, completely superseded its predecessor.

The banner registers provide far more comprehensive and accurate demographic and sociological data than the household registers and lineage genealogies common elsewhere in China (Harrell 1987, Jiang 1993, Skinner 1987, Telford 1990). This is

because the Northeast, which was the Qing homeland, was under special state jurisdiction, distinct from the provincial administration elsewhere. Regimentation of the population actually began as early as 1625, when the Manchus made Shenyang their capital and incorporated the surrounding communities into the banner system (Ding 1992, Elliott 2001). By 1752, with the establishment of the General Office of the Three Banner Commandry, not only was the population registered in remarkable precision and detail, migration was strictly controlled, not just between Northeast China and China Proper, but between communities within Northeast China as well. Government control over the population was tighter than in almost any other part of China (Tong and Guan 1994, 1999). Indeed, individuals who departed from the area without permission were actually identified in the registers as ‘escapees’ (*taoding*). As a result, the Eight Banner household registers are the most extensive and detailed records of a rural Chinese population in the late imperial period (Lee and Campbell 1997, 223-237).

The registers record at three year intervals for each person in the target population the following information in order of appearance: relationship to their household head; name(s) and name changes; adult banner status; age; animal birth year; lunar birth month, birth day, and birth hour; marriage, death, or emigration, if any during the intercensal period; physical disabilities, if any and if the person is an adult male; name of their household group head; banner affiliation; and village of residence. Individuals are listed one to a column in order of their relationship to the head, with his children and grandchildren listed first, followed by coresident siblings and their descendants, and uncles, aunts, and cousins. Wives are always listed immediately after their husbands, unless a widowed mother-in-law supercedes them.

In addition to such social demographic data, the registers also record official positions. There are altogether five types of official positions: banner, civil service, examination, honorary, and household group leader. In our analysis of attainment we consider the first four of these categories. The first three are formal governmental offices and often included a salary and other perquisites. The fourth, honorary, were typically purchased and indicate personal resources or access to resources through the family. The fifth category, household group leader, or *zuzhang*, refers to the lowest level of local banner administration. We do not consider it in the analysis here. It was by far the most common position, with one for every few households, and did not include a salary.

The data we analyze here are from a sample of registers we have compiled that describes more than 100,000 individuals who lived in twenty separately registered populations in Liaoning province from the middle of the eighteenth century to the beginning of the twentieth century. Table 1 lists these populations and identifies the total number of available observations. Figure 1 summarizes the temporal distribution of the observations. The apparent increases in the numbers of available observation in the last half of the eighteenth century mostly reflects that relatively few registers from the middle of the eighteenth century survive, so that registers only become available in larger numbers at the end of the eighteenth century. The spectacular growth in the numbers of observations in the late nineteenth century reflects a combination of rapid natural increase in the population and the inclusion of new individuals or families in the register

population.

Table 1 and Figure 1 here

The registers are distinguished by the possibilities for record linkage across time and between kin. Individuals can be followed from one register to the next because they appear in almost the same order in successive registers. Accordingly, it is relatively straightforward to reconstruct life histories and generate variables describing such past characteristics as whether or not an individual had previously held official positions. Perhaps more importantly, by comparison of observations for the same individual in successive registers, we can construct outcome measures indicating whether or not particular events took place in the time interval between two successive registers. For this analysis, we construct indicators of whether or not men who without an official position attains one by the next register, whether or not men who have not yet married do so by the next register, and how many children a married man will father by the next register.

The extensive detail on household relationship, meanwhile, allows for reconstruction of genealogies and identification of kin living in the same or different households. Our basic procedure is to chain together the links between fathers and sons to identify grandfathers, great-grandfathers, and more distant male ancestors. Many of the men who appear in the later registers, for example, can have their ancestry traced back six or seven generations. Figure 2 summarizes time trends in the proportions of men for whom we identify fathers, grandfathers, and great-grandfathers. Once we have constructed genealogies, it is a straightforward matter of data processing to identify brothers, cousins, first cousins, second cousins, and other kin and measure their characteristics, regardless of whether they are in the same household or not. At present we can only do this for paternal kin, not maternal kin, because we have not yet traced the wives recorded in the registers back to their natal households.

Figure 2 here

The data have some additional limitations relevant to the analysis. First, they do not record any employment other than official employment. If any family members had occupations other than as employees of the state, there would be no record. If the commercialization of the late nineteenth century created new opportunities for employment outside the state bureaucracy, the registers do not record it. Second, the data do not record income or assets, thus it is impossible to consider effects of family landholding or wealth. Third, they fail to record children who died in the first few years of life, before they were old enough for their parents to register them. Outcome measures for an analysis of reproduction does not include these births, and is based solely on children who survived long enough to be registered. Differences in reproduction apparent in the analysis may reflect differences in both fertility and infant and early childhood mortality. Fourth, the registers may omit a very small number of marriages in which a woman joined her husband's family after one register and died before the next.

The requirements of the analysis and the limitations of the data allow us to make use of only a subset of these observations. First, we restrict to our analysis to males. Only males were eligible for official positions. An analysis of female first marriage was impractical because the registers omitted many daughters and recorded women only when they were wives in their husband's household. Second, we restrict to registers from 1789 or later years, because the earlier registers did not distinguish individuals by household. Third, our discrete-time event history approach limits us to registers for which the one immediately succeeding or the one after it were also available. Fourth, we only include observations of men for whom a father could be identified. For each analysis, of course, we apply additional restrictions, as described later in the section on methods.

Methods

To investigate how kin networks shaped social and demographic outcomes, we apply discrete-time event-history methods. For the analyses of attainment of position and first marriage, we estimate logistic regressions. The outcome measure in the analysis of the attainment of position is a dichotomous indicator of whether or not a man acquires a position by the next available register. We restrict the analysis to men who have not yet acquired a position. The outcome measure in the analysis of first marriage, meanwhile, is a dichotomous indicator of whether or not a man marries for the first time by the next available register. We restrict the analysis to men who have not yet married. For the study of reproduction, we use Poisson regression. The outcome measure is a count of the number of males recorded as born to the individual by the next available register. We restrict to observations of ever-married men. In all of these analyses, we only use observations where either the immediately succeeding register or the one after it is available.

We examine attainment, marriage, and reproduction because of their sensitivity to allocations of economic, social, and political resources makes them ideal for reconstructing the internal dynamics of the kin group. Official positions were ostensibly awarded accorded to merit. The more prestigious and lucrative ones required skills that would have required investments in education. To the extent that the bureaucratic allocation of positions made the process vulnerable to particularism, families had to mobilize social and political resources to acquire them for specific members. Marriage, meanwhile, not only reflects a decision by the groom's family to allocate the resources for the acquisition of a spouse, it also reflects an explicit assessment on the part of the bride's family of the groom's kin group, and his standing within that group. Reproduction was also subject to the control of couples and the larger family (Lee and Wang 1999). Not only was fertility itself subject to control, but the chances that a child would survive long enough to appear in the registers used here depended on additional resource allocation by parents and children. We do not examine mortality here because our previous analyses have shown that its relationship with well being and access to resources was complex (Campbell and Lee 1996, Campbell and Lee 2000b). For example, possession of a position actually seems to have been associated with higher mortality for some males because the benefits associated with increased consumption

were more than offset by a higher risk of exposure to infection.

We compare four concentric circles of kin. The innermost circle comprises the father-son dyad. Next come brothers. After that come men who are also descended from the index individual's grandfather, that is, cousins and uncles. Finally we consider men who are descended from the index individual's great-grandfather. These include second cousins and father's cousins. Our expectation is that characteristics of more distant kin will be less important for outcomes. The precise pattern of effects according to distance, of course, will provide insight into kin group organization. While there are obvious reasons to expect father's characteristics to be very important, and brother's characteristics to be somewhat important, expectations for more distant kin are unclear. The ideology of solidarity within the larger kin group conflicted with the difficulties and even drawbacks of sustaining ties with distant relatives.

We focus on three aspects of the kin network: positions held by kin, numbers of kin, and individual seniority within the kin network. Table 2 summarizes the variables of substantive interest. The measures of positions held by kin are dichotomous, indicating whether or not the index individual has any kin of the specified type who holds a position. Comparison of effects of positions held by kin according to their proximity identifies the boundaries of the kin group and map flows of social, political, and economic resources.¹ Positive effects of having a relative with a position, for example, indicate that the relationship carried with it access to social, political, or economic resources. Adverse effects, meanwhile, reveal contention within the kin group. Lack of an effect, meanwhile, indicates that the specified relationship was not part of the kin group that determined the outcome of interest.

Table 2 here

We also examine the effects of numbers of kin. In nineteenth-century rural Liaoning, most people were not fortunate enough to have a relative who held a position. For such people, the most important feature of the kin network was its size. Larger kin networks had more options for sharing economic, social, and political resources, whether by cooperating in agricultural work, sharing information, personal connections, and economic resources, or taking advantage of their size and solidarity in disputes with other families. By comparing the effects of numbers of kin of different types, we identify the boundaries that constrained such interactions. Relatives whose numbers did not affect demographic and social outcomes were not part of the locus in which the decisions that affected such outcomes were made.

Comparisons of the effects of seniority among brothers, cousins, second cousins,

¹ For father and grandfather, the indicator measured whether or not they had ever held a position in their lifetime. For uncles, father's cousins in the same household, and father's cousin in the same household, the indicator measured whether or not any of the specified kin who were alive at the time the index individual was first observed had held a position by that time. For brothers, the indicator measured whether or not currently living brothers held a position or had held one in the past.

and household members identify the locus within which family members collectively set priorities. For example, to the extent that parents were largely responsible for decisions about the marriage of their sons, only seniority among brothers should have affected marriage chances. To the extent that marriages were decided on by the larger household, seniority within the household should have been more important than seniority among brothers. To the extent that the kin group beyond the household was the relevant locus, seniority among second cousins should have been important. Similarly, examination of the role of seniority in determining attainment chances identifies the locus within which decisions about the allocation of resources and use of connections that affected the chances of obtaining a position were made.

To assess the role of the household as a unit of organization distinct from the larger kin group, we compare the effects of characteristics of distant kin by whether or not they lived in the same household. To the extent that the interactions that governed demographic and social outcomes took place largely within households, and ties between kin living in separate households were weak, the characteristics of kin who lived outside the household should not have influenced these outcomes. Conversely, if the boundaries between households were porous, and kin who lived apart shared economic, social, or political resources, then the characteristics of kin beyond the household should have mattered.

To account for secular changes in attainment, marriage, and reproduction, we include an indicator of whether or not the individual concerned was born after 1840. Individuals born after 1840 spent their entire adulthood after in the period of increasing commercialization, rapidly rising population, and decreasing opportunities for attainment of official position that began around 1860.² Results from previous analyses suggest that overall, the last half of the nineteenth century was nevertheless a period of rising living standards (Campbell and Lee 2000a).³ Trends in attainment, marriage chances, and fertility, summarized in Figures 3 through 5, are broadly but not perfectly consistent with this characterization. Because the population grew in size while the number of official positions remained constant and eventually fell, individual chances of obtaining a position in Figure 3 declined. According to Figure 4, marriage rates declined until the 1860s, then began rising. According to Figure 5, fertility peaked in the 1870s and 1880s. The chances that men would marry early increased, though the proportion of men who ever married remained stable. Reproduction increased, though given the limitations in the recording of children who died early noted earlier, this could also have reflected reductions in infant and early child mortality.

² We also estimated models that compared all observations of men after 1860 with those before. The results were more ambiguous, we believe because observations of men after 1860 include a substantial proportion of men who had the opportunity to marry or attain a position as adults before 1860, but had failed.

³ For example, mortality and fertility became less sensitive to economic fluctuations, suggesting that families were no longer living as close to the margin as in the eighteenth and early nineteenth centuries (Campbell and Lee 2000a).

Figures 3 through 5 here

We also include a variety of control variables to ensure that coefficients do not reflect compositional differences between subpopulations. We account for age effects with dichotomous indicator variables for five-year age groups. We account for geographic variation with set of dichotomous indicator variables for each state farm population. We also include separate dichotomous indicator variables to identify the observations of men who could not be linked to their grandfathers or great-grandfathers and for whom the relevant measures of kin could not be constructed. For these observations, the affected kin measures are all set to zero.⁴ Finally, in the analyses of attainment and marriage, we included indicators for whether or not the next available register was six years away.

For each of the three outcomes of interest, we estimate a basic model, a model with a fixed effect of kin group, and a model with cohort interactions. The first is a basic model that assumes independence among the observations, in the sense that related individuals do not share unobserved characteristics that affect both the outcomes of interest and explanatory variables. Such a model, while adequate to describe associations, cannot rule out the possibility that they reflect influence of such unobserved characteristics. For example, a positive effect of father's position on the chances of marriage might simply reflect a tendency for certain kin groups to be especially successful at obtaining both positions and spouses for their members.

To account for unobserved characteristics of kin groups that may affect both outcomes and explanatory variables, we estimate models in which we include a fixed effect of kin group and time. Specifically, we assume that at each point in time, men who have a great-grandfather in common share a higher or lower propensity for each of the outcomes as a result of their membership in a kin group. Estimated coefficients in this model reflect associations between outcomes and explanatory variables *among* members of the same kin group, net of differences between kin groups. For the examinations of attainment and marriage, we estimate a conditional logit, in which the underlying assumption is that one member of the kin group will experience the outcome of interest by the next register, and the coefficients reflect effects on chances of being that one member. Similarly, for the examination of fertility, we estimate a fixed effect Poisson regression.

To assess the implications for kinship of the changes that took place in the last half of the nineteenth century, we estimate a third model that includes interactions the indicator for birth after 1840 and the measures of kin network. For attainment, we examine whether the reduction in the chances of obtaining a position in the last half of the nineteenth led to an increase or a decrease in the role of the family characteristics in securing such positions. Reduced chances of attaining a position may have reduced the importance of family characteristics by increasing competition and increasing the relative importance of merit in the recruitment process. Conversely, reduced chances of

⁴ We also estimated models restricting to observations of men for whom grandfathers and great-grandfather could be identified. Results for the relevant kin variables were the same.

attainment may have had the opposite effect, with increased competition giving a greater advantage to the families that already had position. For marriage and reproduction, we examine whether the earlier marriage and higher fertility of the last half of the nineteenth century was associated with a reduction in the importance of family background to differences between individuals.

Results

Kin influence on attainment, marriage, and reproduction varied by relationship as well as by residential arrangements. We conceive of kin networks as a series of concentric loci from close to increasingly remote relatives with decreasing interest in and influence on individual behavior. We therefore organize our discussion of the influence of kin on individual outcomes according to their proximity to each individual. We define the center of each individual's social world to be his relationship with his father, which is the father-son dyad.⁵ Next closest were brothers, since sibling relationships differed from parental relationships, followed next by uncles and cousins, that is the kin connected to ego through his grandfather, followed by father's cousins and second cousins, that is the kin connected to ego through his great grandfather. These loci correspond roughly, but not exactly, to the first three of the traditional Chinese 'five degrees of mourning' which delineate mourning rituals and responsibilities (Feng 1937).

Tables 3-5 here

Fathers and Sons

According to our analyses, the father-son dyad was the most important locus for the determination of such outcomes as marriage and attainment in particular. Thus according to the analysis for Model I in Table 3, men whose fathers hold or held a position were 7.58 times more likely than other men to obtain a position by the next register. Results from Model II that included a fixed-effect for common great-grandfather underscore the importance of the patriline. Holding father's status constant, men whose grandfather had held a position were 31 percent more likely to attain one than members of their kin group whose grandfathers had not held a position.⁶

⁵ See Hsiung 1994 for a vivid description of the influence of mothers on marriage, education, and other attainment.

⁶ Turnover among the elites of Liaoning was nevertheless similar to that in the limited number of historical North American and European populations for which relevant studies have been carried out. A previous examination showed that only about one-third of the sons of men with position in Liaoning would attain positions of their own, and that between half and two-thirds of the men with position in each generation were 'new' in the sense that no one in their extended family held position (Campbell and Lee 2003, 19-20). In the European and North American populations for which results were available, between one-half and two-thirds of the sons of men in the highest occupational classes ended up in those classes themselves. Typically, one-third to one-half of the men in these classes were 'new' in the sense that their fathers had not been in the same occupational class.

The father-son dyad was also an important determinant of marriage chances. Father's and own possession of a position were both important determinants of marriage chances. According to results for Model I in table 4, father's and own possession of a position both increased the chances of marrying. Own position had the most powerful effect: men who held a position were 71 percent more likely to marry by the next register. Having a father who held a position had the next strongest effect, raising marriage chances by 44 percent. These effects all persisted in the face of an introduction of a fixed effect of kin group in Model II, confirming that the measures of position are not simply capturing the otherwise unobservable status of the larger kin group. Differences in the marriage chances between paternal cousins according to the possession of position by their fathers or selves were almost as pronounced as differences between unrelated men.

Surprisingly, however, father's and own position had little measurable influence on reproduction.⁷ In particular, once we control for kin group membership, men who held position, or whose fathers or grandfathers held position, were no more likely to have sons than other members of their families. Even though the results for Model I in Table 5 suggest that men were more likely to have sons if they, their father, or grandfather held a position, the results from the inclusion of a fixed effect of kin group membership in Model II suggest that this association was spurious. Once kin group membership is accounted for, the coefficients for own, father's and grandfather's position all declined in magnitude and ceased to be statistically significant. While the men who held position, or whose father or grandfather held position tended to be members of kin groups with higher fertility, their fertility was no higher than that of other members of the group.

Brothers

Brothers were the next most important determinant of attainment and marriage chances. Effects of brothers' characteristics on attainment were strongest. According to Table 3, not only did having a brother with a position triple the chances of acquiring a position, the number of brothers mattered as well. Each additional brother raised the chances of acquisition by another ten percent. According to the results for Model I in Table 4, having at least one brother with a position raised the chances of marrying by about 25 percent. The number of brothers mattered as well. Each additional brother raised the chances of marrying by 8 percent. According to Model II in Tables 3 and 4, these effects persist after the introduction of a fixed effect of kin group. Accordingly, measured effects of brothers' characteristics do not reflect persistent but unobservable differences between kin groups in terms of their ability to secure both positions and spouses for their members.

Seniority among brothers mattered, however. According to the results for Model I in Table 3, eldest brothers were nearly 1.5 times more likely than their younger siblings to obtain a position by the next register. Results for Model I in Table 4 show that families also married sons in order of seniority. At any point in time, the eldest

⁷ Surprising especially given our earlier understanding based largely on bivariate measures that father's and own position did influence reproduction (Lee and Campbell 1997).

unmarried brother was 20 percent more likely to marry than his younger, unmarried brothers. According to a calculation not shown here, the beneficial effects of seniority did not vary by whether or not the father was still alive, suggesting that this reflected decisions by brothers themselves or the larger kin group, not a preference exercised by the father.⁸ That eldest surviving sons were so advantaged is hardly a surprise in light of their importance in traditional Chinese kinship.

Uncles and Cousins

Whereas relationships between fathers and sons as well as between brothers were characterized by solidarity, in the sense that outcomes were positively correlated, the picture for uncles and cousins hints at contention. While the Qing state appears to have in its allocation of positions for vertical transmission from fathers to sons, a contradictory desire to spread positions around led the competition among cousins to be zero-sum. Even though being the son of a man with a position improved attainment chances, being his nephew lowered them. Thus according to the results for Model I in table 3, the possession of a position by an uncle actually reduced the chances that his nephew would obtain one by about one-third.⁹

Cousins could nevertheless be of some benefit. According to Model I in Table 4, men with more cousins were more likely to marry. In particular, each additional cousin increased the chances of marrying by five percent. This was not because members of the kin groups that were more successful at securing brides and expanding through reproduction were more likely to have cousins. According to the results for Model II, differences in marriage chances between members of the same kin group according to the number of their cousins were as pronounced as those between unrelated men.

More Distant Kin

More distant kin still affected attainment chances, even when they lived in other households. According to Model I in Table 3, a man whose father's cousin held a position was about one-quarter to one-third more likely to acquire one by the next register. Whether or not the father's cousin with position actually lived in the same household was unimportant. Introduction of a fixed effect of kin group had little influence on the magnitudes of the effects, confirming that in a kin group in which a member of a senior generation held a position, the most advantaged members of the next generation were his sons, followed by his cousins' sons, followed by his unfortunate nephews.

⁸ For attainment, in a version of Model I that included an indicator variable for the presence of the father and an interaction between it and the indicator for being eldest brother, the odds ratio for the interaction term was 0.84, with a p-value of 0.25. The direct effect of present of father was strong, with an odds ratio of 1.53 and a p-value of 0.002. For marriage, the odds ratio for the interaction was 1.04, with a p-value of

⁹ Introduction of a fixed effect of kin group in Model II leaves the magnitude of this effect unchanged, confirming that it reflected pronounced differences within kin groups, and was not an artifact of differences between them.

Effects on marriage chances of the characteristics of more distant kin, however, depended on whether or not they lived in the same household. According to the results from Model I in table 4, a father's cousin who held position increased the chances of marriage by 17 percent if he lived in the same household. Men with more second cousins were also more likely to marry. Each second cousin raised the chances of marrying by 5 percent. When these distant kin lived outside the household, however, effects of their characteristics were very different. A father's cousin who held a position and lived outside the household lowered marriage chances. Additional second cousins living outside the household had no effects on marriage chances.

Seniority was important as well, but the relevant kin group differed for attainment and marriage. For attainment, seniority among kin in the same and other households was important. According to Model I in Table 3, the eldest male among a set of paternal second cousins was 1.25 times more likely to obtain a position by the next register than his younger relatives. Seniority among males in the household was relatively unimportant for attainment, especially after the inclusion of a fixed effect of the kin group in Model II. For marriage, seniority within the household was much more important than seniority in the larger kin group. According to Table 4, the eldest never-married male in the household was 70 percent more likely to marry by the next register than his younger never-married kin. The eldest never-married male in a kin group, however, had no advantage over his younger cousins and second cousins after a fixed effect of having a common great-grandfather was introduced.

Secular change

In spite of the economic and other changes that took place after 1860, kin networks actually became more important for attainment. Family background, in particular fathers' and brothers' position, became much more important for obtaining the official positions that were available. Results from model III in table 3 indicate that for men born after 1840, the advantage associated with having a father who held a position nearly doubled. For men born before 1840, having a father who held a position multiplied the chances of obtaining one by 6.52. For men born after 1840 it multiplied the chances of obtaining one by 12.13. The advantage associated with having a brother who held a position also seems to have increased, by a factor of about 1.5. The increase, however, is not statistically significant except by a very liberal criterion.

Conversely, kin networks seem to have become less important for marriage. According to Model III in Table 4, the advantage associated with having a father who held a position declined by about one-quarter. The benefits associated with additional brothers also declined somewhat. Similarly, disadvantages associated with having a grandfather or uncle who held position that were apparent for men born before 1840 were less pronounced for men born afterward.

Conclusion

In Qing Liaoning, kin networks beyond the nuclear family influenced the demographic and social outcomes of their members. In this analysis, we have demonstrated that the configuration of the kin network around the individual affected their chances of attaining official position and marrying. First, senior kin mattered. As was the case in almost all societies for which studies have been carried out, parental characteristics affected attainment outcomes. By taking advantage of the possibilities for record linkage and identification of distant kin, we have also shown that positions held by other senior kin influenced attainment and marriage chances, and that numbers of distant kin of the same generation influenced marriage chances.

Apparently, most sharing of the political, social, economic or other resources needed to marry or acquire a job appears to have been ‘vertical’ or ‘horizontal.’ Characteristics of members of the patriline such as the father and grandfather were important, as were characteristics of members of the same generation, including brothers, cousins, and second cousins. ‘Diagonally’ related kin appear to have been less important. Father’s cousins were less important than fathers, though positions held by them did positively affect attainment and marriage chances. Positions held by uncles actually reduced attainment chances, and had no effect on marriage chances.

These results also begin to delineate the different roles played by the household and the larger kin group in shaping social and demographic outcomes. For attainment, social and political resources available through the larger kin group were more important. Positions held by father’s cousins improved attainment chances, even if they lived in another household. Seniority among second cousins was a more important determinant of attainment than seniority within the household. The situation for marriage was reversed. The social, political, and economic resources available through the household appear to have been more important. Thus positions held by father’s cousins were only beneficial if they lived in the same household. Seniority among the unmarried males within the household was far more important than seniority among second cousins.

The effects we observe, moreover, are clearly not artifacts of a tendency for some kin groups to be more successful than others at acquiring both positions and spouses for their members. In an analysis that failed to account for unobservable characteristics of kin groups, such as their status in local society, their wealth, or conditions in the village in which they lived, apparent effects of characteristics of specific kin on demographic and social outcomes might simply reflect the tendency of all the members of better-off kin groups to share an increased propensity to attain a position or marry. By estimating models that included a fixed effect of the kin group and thereby accounted for unobservable characteristics that its members had in common, we ensure that effects reflect differences within kin groups, not between them. In the case of attainment and marriage, effects of characteristics of specific kin almost all persisted, reflecting the importance of location within the kin network. In the case of reproduction, effects of kin largely disappeared, suggesting that measured associations in the model without a fixed stemmed from the tendency of members of better-off kin groups to all have elevated fertility.

While our work is by no means done, such findings demonstrate the potential for the use of quantitative approaches in to investigate a topic that has been previously been amenable only to qualitative approaches. While the data have been able for some time to allow systematic investigation of the influence of characteristics of close kin on demographic and social outcomes, until now assessments of the organization and implications of larger kin network beyond the nuclear family have relied almost exclusively on qualitative evidence. As a result, discussions of the role of the larger kin network in shaping individual outcomes have relied heavily on deduction, not induction. Assumed properties of the extended family are treated as first principles and predictions for demographic and social outcomes derived, for example, in Skinner (1997). Through analyses like the ones here, we intend to test the claims about the properties and implications of the extended family that have accumulated in the literature.

We expect the view of the kin network that emerges to be much more nuanced than would be expected from the existing literature. Rather than there being one identifiable kin group with fixed boundaries that affected outcomes, the work results here suggest that the importance of particular kin varied according to the outcome under consideration. For some outcomes, the nuclear family may have predominated. For others, for example marriage, the household appeared to be the most important actor. For still others, the larger kin group was important. For fertility, kin group membership mattered, but position within the kin group appeared not to.

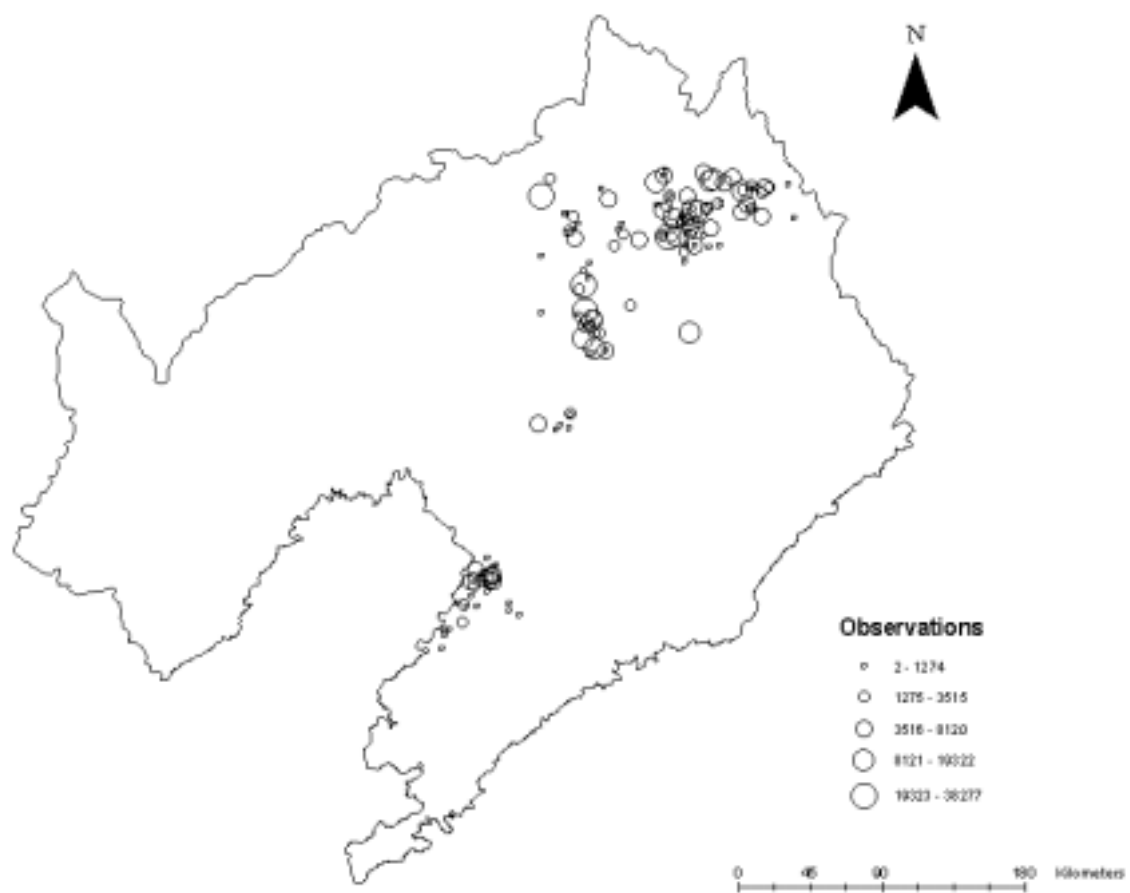
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Map 1 Geographic Distribution of Observations, Liaoning, 1749-1909

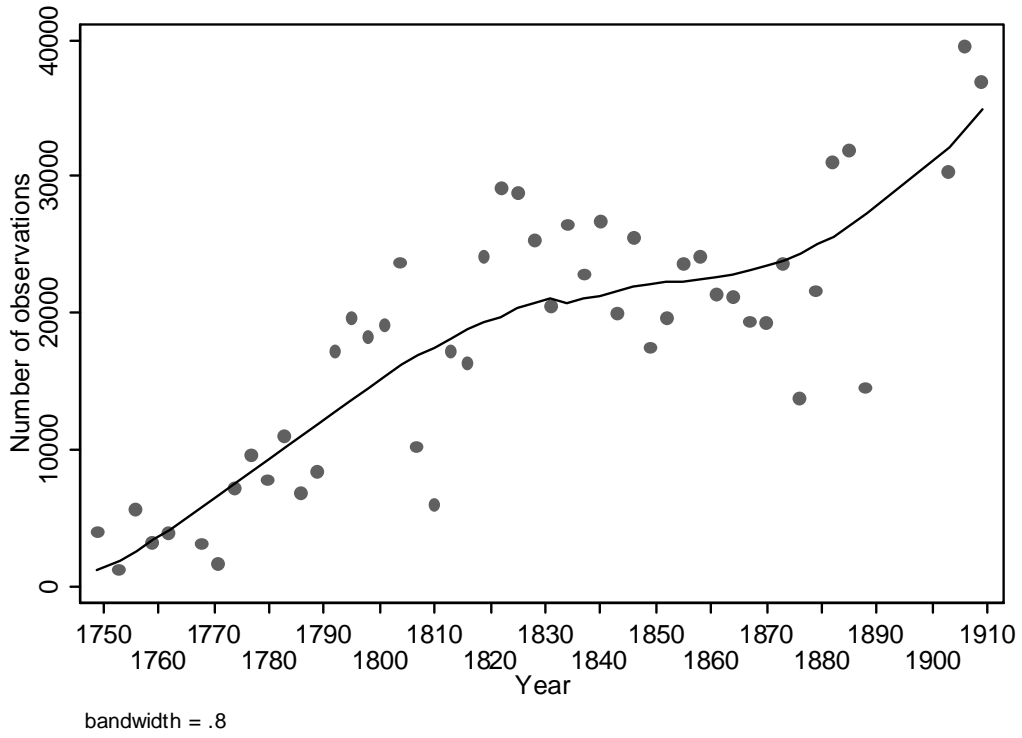


Figure 1 Numbers of Observations by Year, Liaoning, 1749-1909

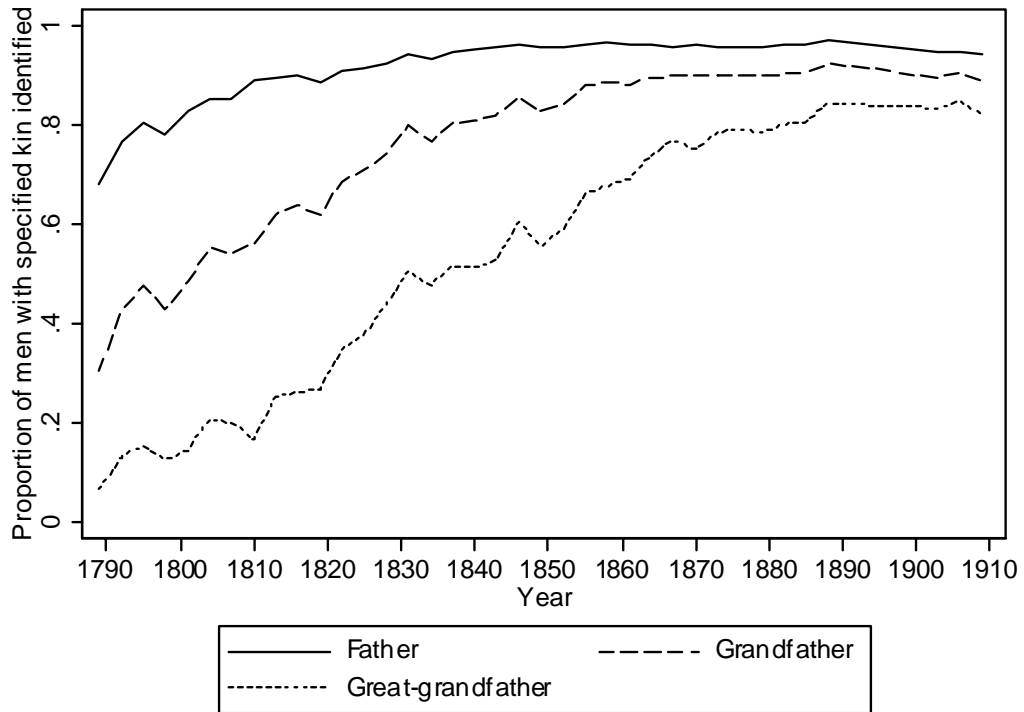


Figure 2 Proportions of Male Observations for Whom Fathers, Grandfathers, and Great-Grandfathers Were Identified, Liaoning, 1789-1909

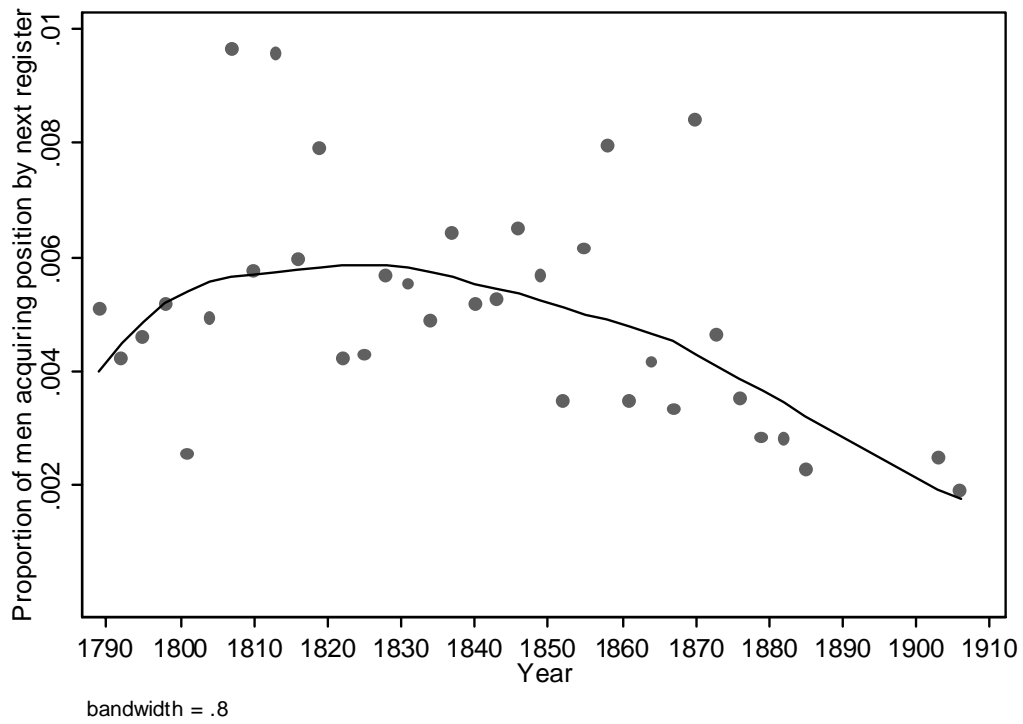


Figure 3 Proportion of adult males acquiring an official position by next register, Liaoning, 1789-1909

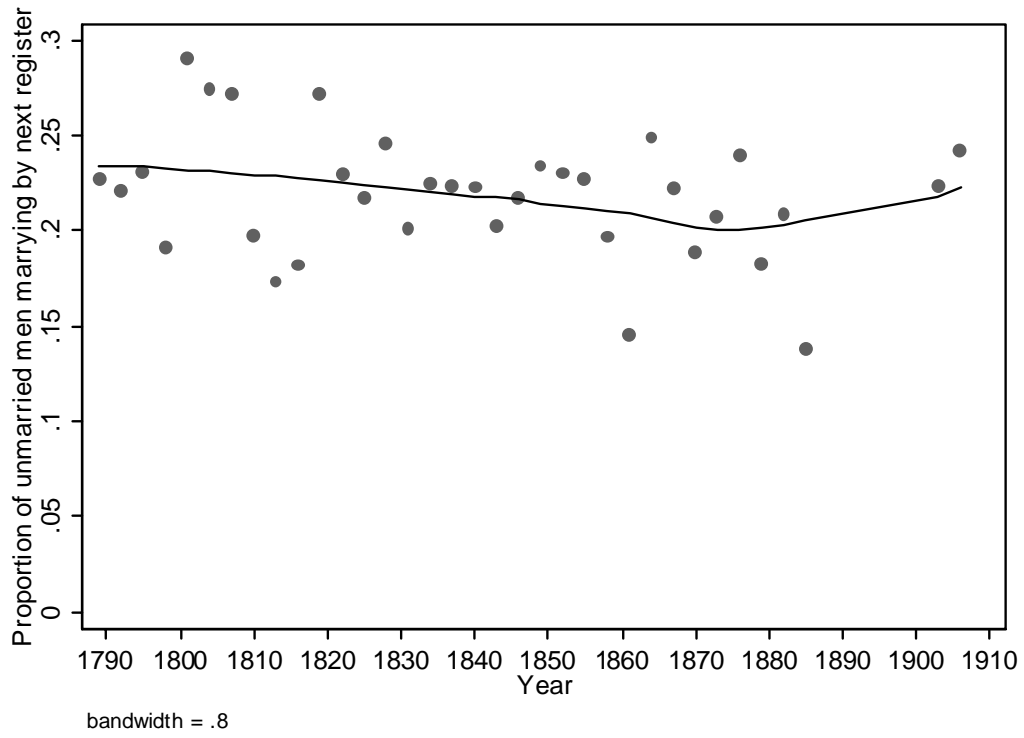


Figure 4 Proportion of unmarried men marrying by next register, Liaoning, 1789-1909

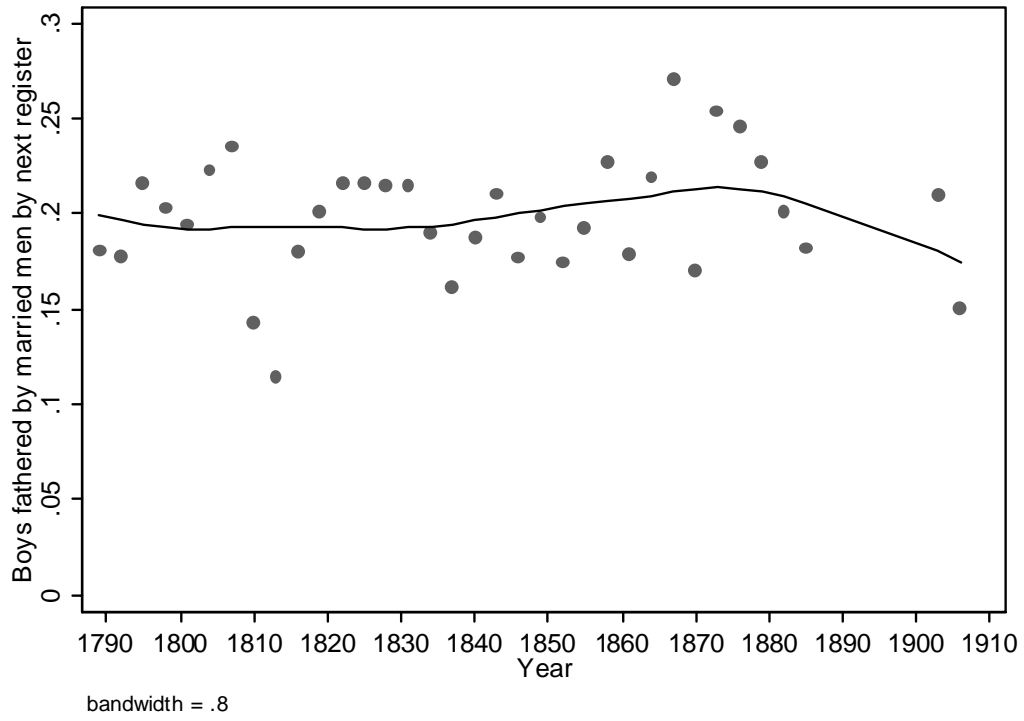


Figure 5 Numbers of boys fathered by married males by next register, Liaoning, 1789-1909

Table 1. Available Household Register Data, by State Farm Population

State Farm Population	Coverage	Household Registers	Observations
Bakeshu	1759-1909	30	40267
Changzhaizi	1768-1909	25	38795
Chengnei	1765-1861	15	29578
Dadianzi	1756-1909	27	64938
Dami	1759-1909	31	25379
Daoyitun	1774-1909	35	118633
Daxintun	1750-1909	27	77694
Diaopitun	1768-1909	26	70153
Feicheng	1756-1909	39	58859
Gaizhou Manhan	1753-1909	20	45043
Gaizhou Mianding	1789-1909	17	22558
Gaizhou	1769-1909	29	42834
Guosantun	1778-1909	32	35073
Langjiabao	1766-1909	25	47340
Nianmadahaizhai	1750-1909	31	52130
Niuzhuang Liuerbao	1777-1906	25	50256
Zhaohuatun	1774-1909	26	50865
Total		534	870,395

Table 2. Means of the variables included in the analysis

Variable	Attainment of position	First marriage	Reproduction
Outcome	0.006	0.221	0.201
Born 1840 or later	0.25	0.35	0.23
Position held by			
Father	0.11	0.11	0.14
Grandfather	0.10	0.11	0.11
Self		0.01	0.05
Brother	0.03	0.02	0.09
Uncle	0.08	0.08	0.11
Non-coresident father's cousin	0.02	0.03	0.03
Coresident father's cousin	0.02	0.02	0.02
Number of kin			
Brothers	1.03	1.01	1.05
Paternal cousins	1.08	1.02	1.15
Coresident paternal second cousins	0.34	0.45	0.33
Non-coresident paternal second cousins	0.67	0.57	0.69
Eldest among			
Brothers	0.66	0.59	0.67
Male paternal cousins	0.41	0.37	0.41
Male paternal second cousins	0.22	0.21	0.22
Males in household	0.28	0.56	0.31
Grandfather not identified	0.16	0.12	0.17
Great-grandfather not identified	0.42	0.34	0.44
Next register 6 years away	0.19	0.19	
Observations	165665	84040	112654

Table 3. Logistic regression of attainment of position by next register, Liaoning males, 1789-1909

Variable ^a	Model I		Model II w/ fixed effect of kin group ^b		Model III w/ interactions for birth in or after 1840	
	Odds ratio	p-value	Odds ratio	p-value	Odds ratio	p-value
Born 1840 or later	0.73	0.00			0.65	0.10
Position held by						
Father	7.58	0.00	7.05	0.00	6.52	0.00
Grandfather	1.01	0.95	1.31	0.04	0.98	0.86
Brother	3.19	0.00	2.97	0.00	2.99	0.00
Uncle	0.64	0.00	0.66	0.01	0.63	0.00
Non-coresident father's cousin	1.34	0.08	1.27	0.22	1.45	0.07
Coresident father's cousin	1.23	0.22	1.26	0.24	1.28	0.27
Number of kin						
Brothers	1.10	0.00	1.09	0.06	1.14	0.00
Paternal cousins	1.01	0.71	0.98	0.53	1.02	0.25
Coresident paternal second cousins	0.96	0.19	0.98	0.57	0.96	0.41
Non-coresident paternal second cousins	1.00	0.94	1.04	0.11	0.99	0.53
Eldest among						
Brothers	1.47	0.00	1.51	0.00	1.51	0.00
Male paternal cousins	1.12	0.31	0.97	0.87	1.11	0.42
Male paternal second cousins	1.25	0.06	1.32	0.08	1.26	0.10
Males in household	0.85	0.09	0.91	0.57	0.80	0.04
Born 1840 or later *						
Position held by						
Father					1.86	0.01
Grandfather					1.08	0.71
Brother					1.49	0.15
Uncle					1.01	0.96
Non-coresident father's cousin					0.70	0.31
Coresident father's cousin					0.83	0.60
Number of kin						
Brothers					0.88	0.09
Paternal cousins					0.93	0.16
Coresident paternal second cousins					1.01	0.86
Non-coresident paternal second cousins					1.04	0.26
Eldest among						
Brothers					0.97	0.90
Male paternal cousins					1.03	0.93
Male paternal second cousins					0.95	0.85
Males in household					1.41	0.18
Observations	165665		12507		165665	
Log-likelihood	-5534.40		-1465.36		-5521.38	
Degrees of freedom	40		23		56	

a Dummies for state farm population, five-year age group, next register six years away, grandfather unidentified, and great-grandfather unidentified were also included. To save space, the results are not presented here. See text for details on the definition of each variable.

b The kin group here is defined as consisting of males who have a common paternal great-grandfather.

Table 4. Logistic regression of first marriage by next register, never-married Liaoning males, 1789-1909

Variable ^a	Model I		Model II w/ fixed effect of kin group ^b		Model III w/ interactions for birth in or after 1840	
	Odds ratio	p-value	Odds ratio	p-value	Odds ratio	p-value
Born 1840 or later	1.07	0.00			1.11	0.07
Position held by						
Father	1.44	0.00	1.33	0.00	1.58	0.00
Grandfather	0.95	0.11	0.97	0.49	0.88	0.00
Self	1.71	0.00	1.91	0.00	1.78	0.00
Brother	1.25	0.00	1.28	0.03	1.18	0.03
Uncle	0.95	0.39	1.08	0.37	0.88	0.09
Non-coresident father's paternal cousin	0.90	0.07	0.88	0.09	0.91	0.21
Coresident father's paternal cousin	1.17	0.01	1.26	0.00	1.11	0.23
Numbers of kin						
Brothers	1.08	0.00	1.08	0.00	1.10	0.00
Paternal cousins	1.05	0.00	1.05	0.00	1.06	0.00
Coresident paternal second cousins	1.05	0.00	1.05	0.00	1.06	0.00
Non-coresident paternal second cousins	1.00	0.48	0.99	0.44	1.00	0.53
Eldest among						
Unmarried brothers	1.20	0.00	1.35	0.00	1.15	0.00
Unmarried paternal cousins	0.87	0.00	0.85	0.00	0.91	0.01
Unmarried paternal second cousins	1.07	0.04	1.04	0.40	1.08	0.06
Unmarried males in household	1.70	0.00	1.71	0.00	1.73	0.00
Born 1840 or later *						
Position held by						
Father					0.73	0.01
Grandfather					1.26	0.00
Self					0.87	0.57
Brother					1.19	0.29
Uncle					1.27	0.07
Non-coresident father's paternal cousin					0.98	0.86
Coresident father's paternal cousin					1.08	0.50
Numbers of kin						
Brothers					0.97	0.19
Paternal cousins					0.98	0.05
Coresident paternal second cousins					0.99	0.71
Non-coresident paternal second cousins					1.00	0.84
Eldest among						
Unmarried brothers					1.15	0.02
Unmarried male paternal cousins					0.90	0.12
Unmarried male paternal second cousins					0.97	0.69
Unmarried males in household					0.96	0.27
Observations		84040		41239		84040
Log-likelihood		-41251.90		-15575.12		-41231.33
Degrees of freedom		42		23		59.00

a Dummies for state farm population, five-year age group, next register six years away, grandfather unidentified, and great-grandfather unidentified were also included. To save space, the results are not presented here. See text for details on the definition of each variable.

b The kin group here is defined as consisting of males who have a common paternal great-grandfather.

Table 5. Poisson regression of number of sons born by next register, married Liaoning males, 1789-1909

	Model I		Model II w/ fixed effect of kin group		Model III w/ interactions for birth in or after 1840	
	Incident Rate Ratio	p-value	Incident Rate Ratio	p-value	Incident Rate Ratio	p-value
Born 1840 or later	1.05	0.01			1.12	0.01
Position held by kin						
Father	1.07	0.06	1.03	0.52	1.07	0.11
Grandfather	1.05	0.03	1.00	0.90	1.07	0.02
Self	1.13	0.01	1.06	0.37	1.16	0.00
Brother	1.01	0.81	0.94	0.28	0.99	0.82
Uncle	1.01	0.76	1.05	0.40	1.00	0.97
Non-coresident father's cousin	1.00	0.96	1.02	0.69	1.02	0.71
Coresident father's cousin	1.04	0.31	1.06	0.24	1.11	0.07
Numbers of kin						
Brothers	1.02	0.01	1.00	0.72	1.03	0.00
Paternal cousins	1.00	0.83	1.00	0.74	1.00	0.59
Coresident paternal second cousins	1.01	0.23	1.00	0.67	1.00	0.69
Non-coresident paternal second cousins	1.00	0.83	1.00	0.99	1.00	0.36
Eldest among						
Brothers	1.02	0.44	1.00	0.91	1.02	0.40
Male paternal cousins	1.03	0.24	1.05	0.17	1.02	0.56
Male paternal second cousins	1.00	0.97	0.97	0.42	1.01	0.76
Males in household	0.92	0.00	0.93	0.01	0.92	0.00
Born 1840 or later *						
Father					0.99	0.94
Grandfather					0.95	0.32
Self					0.83	0.12
Brother					1.06	0.51
Uncle					1.07	0.49
Non-coresident father's cousin					0.96	0.65
Coresident father's cousin					0.89	0.18
Numbers of kin						
Brothers					0.97	0.02
Paternal cousins					0.99	0.56
Coresident paternal second cousins					1.01	0.18
Non-coresident paternal second cousins					0.99	0.24
Eldest among						
Brothers					0.99	0.82
Male paternal cousins					1.05	0.36
Male paternal second cousins					0.96	0.41
Males in household					0.99	0.83
Observations		112654		49566		112654
Log-likelihood		-57929.89		-22079.00		-57917.53
Degrees of freedom		41		23		58

a Dummies for state farm population, five-year age group, next register six years away, grandfather unidentified, and great-grandfather unidentified were also included. To save space, the results are not presented here. See text for details on the definition of each variable.

b The kin group here is defined as consisting of males who have a common paternal great-grandfather.

