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--An Integrated Analysis of the First Marriage and Remarriage Market

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--An Integrated Analysis of the First Marriage and Remarriage Market

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ABSTRACT

In China, strong son preference and discrimination against girls have resulted in male squeeze in the marriage market. Using projection data and marriage information in 2000 census, we devise a series of indexes taking account of both first marriage and remarriage, measure the extent of male squeeze in China's market from 2001 through 2050, and analyze the impact of son preference and remarriage on marriage squeeze. The results show that the index of potential sex ratio of first marriage partners used by Tuljapurkar et al. (1995), without taking account of the relative numbers of males and females in the baseline year, underestimate the male squeeze extent. After adjusting the index, there will be server male squeeze from 2000 onwards in China, and after 2013 annual proportion of excess males hold above 10%, and 15% during 2015 to 2045. Annual excess males are 1.2 million. Still the SRBs of the birth cohorts born after 2000 exert significant influence on the marriage market. To the total marriage market, remarriage (to first married spouse) takes up only a small proportion of the total first marriage market, but it exerts great impact on the numbers and proportions of excess males.

Key words: *son preference, marriage market, marriage squeeze, remarriage*

BACKGROUND

Marriage is the legal union of males and females. When one reaches marriageable ages, he/she, subconsciously or consciously enters the spousal supply and demand system in which comparison, selection, and marriage occur. The overall mate-selecting relationship of males and females eligible to marry is defined as the “marriage market.” It is not a strictly defined market, but the product of the introduction of an economic approach to the analysis of social behavior (Lamanna and Riedmann, 1991; Guo and Deng, 2000). Since marriage includes not only first marriage but also remarriage, the marriage market can also be divided into a first marriage market and a remarriage market, with the latter consisting of divorced and widowed people. If the numbers of marriageable males and females diverge substantially and this relative imbalance in numbers makes it difficult for some people to find or choose spouses from the marriage market according to the currently prevalent criteria, then there is said to be a “marriage squeeze” . If the supply of males exceeds that of females, then there is a male marriage squeeze, and if females outnumber males then there is a female marriage squeeze.

Besides the relative numbers of marriageable males and females there are other factors that may contribute to a marriage squeeze, such as social, economic, cultural, and ethnic considerations as well as individual characteristics. In this paper, we discuss the marriage market and the marriage squeeze from the perspective of the relative supply and demand of males and females without taking account of possible contributions from socioeconomic conditions and individual characteristics. From this viewpoint, the marriage squeeze, in essence, is a population age-sex structure problem (Chen, 2004: P4).

In the absence of large-scale international migration, there are three main factors that account for imbalance in a marriage market, namely SRB (sex ratio at birth), gender differentials in mortality, changes in cohort size over time and age gaps between spouses (Beiles, 1994; Klein, 1995). SRB represents the relative numbers of males and females in the first stage of life, while gender differentials in mortality affect the relative numbers that survive to the marriageable age. If marriages always take place between people of the same age, then the above two factors determine the extent of the marriage squeeze in terms of excess numbers of one or other sex who have difficulty finding suitable spouses. But, in reality, marriageable ages differ and age gaps between spouses vary, so changes in cohort size and the distribution of age gaps between spouses also affect the relative balance between males and females. Generally males are older than their spouses, and this is taken as an indicator of an innate mating preference that is often given as evidence of a biologically-based, sex-specific characteristic in human mating patterns (Davis, 1998). Older males marrying younger females was shown to be the norm in a study of 29 developing countries (Casterline et al., 1986). With older males marrying younger females, an increase in the number of births will lead to a scenario where the size of a male cohort

will be smaller than subsequent female birth cohorts. On the contrary, when the number of births decreases, male birth cohorts will be larger than subsequent female cohorts (Cabr , 2004).

During the 20th century, shortages of females and excess males have produced a marriage squeeze in China. For the time being and in the future, China has been and will be confronted with a severe lack of females, which in turn makes millions of young males unable to find spouses (Coale and Banister, 1994; Tuljapurkar et al., 1995; Das Gupta and Li, 1999; Skinner, 2002; Li et al., 2005; Poston and Glover, 2005). Currently the principal factors that influence China's marriage squeeze include: abnormally high SRB and excess female child mortality, shrinking birth cohort size and the traditional male-older-than-female mating pattern as well as rapidly increasing divorce and remarriage levels. Strong son preference and low social status of females in China give rise to discriminatory practices against girls, and eventually lead to high SRBs and excess female child mortality (Arnold et al., 1998; Arnold et al., 2002; Pander, 2003; Attan , 2004; Das Gupta et al., 2004; Mishra et al., 2004), with the result that males significantly outnumber females when they enter the marriage market. The general age gap between spouses remains 2 to 3 years with males senior to their spouses. The downsizing of subsequent cohort sizes caused by family planning policies leaves fewer females than males of the same age and places males in a marriage squeeze. In recent years with the implementation of economic reform and socioeconomic development, Chinese divorce and remarriage levels have also risen. But divorce is not usually an action taken against marriage itself, but is a confluence of personal, sociocultural, and economic factors, since most divorcees choose to remarry (Ye and Lin, 1998). When males are squeezed, the chance for female divorcees and widows to remarry increases, whereas widowers and male divorcees encounter much more difficulty in remarrying, especially when they seek to marry young unmarried females (Cabr , 1993, 1994). This remarriage of divorcees and widows affects the marriage market. When males are squeezed, an increase in the union of remarried males and first married females loosens the squeeze in the first marriage market, and that of first married males and remarried females exacerbates the male squeeze at first marriage (Deng, 1999: P19). The remarriage market discussed here does not include unions where both spouses remarry.

The first thing to study marriage squeeze is to measure its tightness. Previous literature focused mainly on various sex ratios, and various sex ratios were mostly used indices (Goldberg, 1965; Akers, 1967; Hirschman and Matras, 1971; Goldman et al., 1984; Veerer's, 1988; Lampard, 1993; Guo and Deng, 1998, 2000; Chen, 2004). Schoen (1983, 1988), from another perspective, employed single and double sex marriage life tables to construct two indices—Marriage Squeeze Index and the Proportion of Marriages lost to the Marriage Squeeze. Tuljapurkar et al. (1995) applied the sex ratio of potential first-marriage partners to measure the difference of relative sizes. But these indices, either failed to depict the general supply and demand

in the marriage market by focusing only on the sex ratio and by limiting the marriageable ages to a very small interval, or were not sensitive to the marriage market and couldn't reflect the squeeze duly; or underestimated the squeeze extent due to flawed indices. Moreover, these existing indices concentrated primarily on the squeeze analysis in the current marriage market, and seldom took remarriage into consideration.

When applying the afore-mentioned indices to measuring China's marriage squeeze, most studies have focused on the numbers of males more than females, but few have investigated future marriage markets or explored the effect of rising remarriage levels on the marriage market. In this paper, we adjust the index used by Tuljapurkar et al. (1995), devise related ones to include the effect of remarriage on marriage squeeze, and analyze China's potential marriage squeeze from 2001 to 2050. The paper is divided into three sections. In the first section we introduce, evaluate and adjust the index used by Tuljapurkar et al. (1995) and develop new ones to take account of remarriage, and introduce the data to be used. In the second section we measure China's marriage squeeze with these adjusted and newly developed indices. In conclusion we discuss further work that should be done on this issue.

METHODS AND DATA

Methods

Tuljapurkar et al. (1995) predicted the marriage squeeze in China's first marriage market by employing first marriage frequencies and patterns of the baseline year and by assuming that first marriage frequencies and patterns for the years subsequent to the baseline year remain unchanged. The index they used is the sex ratio of potential first marriage partners, computed as the ratio of male numbers weighted by age-specific first marriage frequencies for males to female numbers weighted by the corresponding frequencies for females. And the sex-specific first marriage frequencies for populations of a specific year are defined as the ratio of the first marriage population with specific age and sex during a certain period to the corresponding total population of the same age and sex (United Nations, 1983). China's pattern of early and nearly universal marriage makes this index appropriate (Coale et al., 1991). The pattern of universal marriage makes it relevant to the absolute majority of the population, and early marriage enables young people around the legal minimum marriageable age to be allocated larger weights in the ratio. The mathematical formulation of the method goes as follows:

Take the year 2000 as the baseline year, and the numbers of males and females aged x in the baseline year are $P_{2000}^{m,x}$ and $P_{2000}^{f,x}$ with first marriage males and females $P_m^{x,1}$ and $P_f^{x,1}$ respectively. Among the remarriages, the number of male

remarriages to first marriage females is $P_m^{x,2}$, first marriage females married to remarriage males $P_f^{x,2}$. First marriage frequencies for males and females are $F_m^{x,1}$ and $F_f^{x,1}$ respectively. In a future year, the numbers of males and females aged x are $P_i^{m,x}$ and $P_i^{f,x}$. Then $F_m^{x,1} = \frac{P_m^{x,1}}{P_{2000}^{m,x}}$, $F_f^{x,1} = \frac{P_f^{x,1}}{P_{2000}^{f,x}}$. The potential first marriage sex ratio is

R_f . According to the definition of R_f by Tuljapurkar et al. (1995) and the 2000 census data, we obtain $R_f = \frac{\sum P_i^{m,x} \times F_m^{x,1}}{\sum P_i^{f,x} \times F_f^{x,1}}$.

One drawback of this index is that the relative numbers of males and females are not taken into consideration when applying first marriage frequencies to measuring the marriage squeeze, which makes the results questionable. We illustrate this point with a simple example. Assume that the number of males of each age in the baseline year is double that of females and that first marriage frequencies for males of each age cover half of those for females. The calculated R_f in the baseline equals 1. But since marriageable males are double the females in total, males are severely squeezed in the marriage market. However, the index used by Tuljapurkar et al. (1995) does not reflect this situation since it neglects the relative numbers of males to females in the baseline year. Since the sex ratios of marriageable males to females are usually larger than 1 in China, the index used by Tuljapurkar et al. (1995) actually underestimates the extent of China's marriage squeeze.

In this paper, we adjust the index used by Tuljapurkar et al. (1995) by taking account of the age-specific sex ratios in the baseline year. Let SR_{2000}^x denote the sex ratio of males to females aged x in 2000. That is, $SR_{2000}^x = \frac{P_{2000}^{m,x}}{P_{2000}^{f,x}}$. Incorporating

these age-specific sex ratios into R_f we obtain the adjusted potential first marriage sex ratio defined as R , then

$$R = \frac{\sum P_i^{m,x} \times SR_{2000}^x \times F_m^{x,1}}{\sum P_i^{f,x} \times F_f^{x,1}} \quad (1)$$

The effect of remarriage on the first marriage market includes the effect both of

male remarriage and of female remarriage. In the 2000 census data, let F_m^x denote the marriage frequency for males age x who are either first married or remarried to first married spouse, and F_f^x denote the marriage frequency for females aged x who are either first married or remarried to first married spouse, then we obtain:

$$F_m^x = \frac{P_m^{x,1} + P_m^{x,2}}{P_{2000}^{m,x}}, \quad F_f^x = \frac{P_f^{x,1} + P_f^{x,2}}{P_{2000}^{f,x}}$$

The union of remarried males and first married females exacerbates the already male squeezed first marriage market. In this paper, we call it the potential sex ratio of males to first married females, and denote it by R^{f1} . Then

$$R^{f1} = \frac{\sum P_i^{m,x} \times SR_{2000}^x \times F_m^x}{\sum P_i^{f,x} \times F_f^{x,1}} \quad (2)$$

The union of remarried females and first married males loosens the male squeeze in the first marriage market. We call it the potential sex ratio of first married males to females, and let R^{m1} denote it, so

$$R^{m1} = \frac{\sum P_i^{m,x} \times SR_{2000}^x \times F_m^{x,1}}{\sum P_i^{f,x} \times F_f^x} \quad (3)$$

Different measures can be derived analogously from the above three indices. In order to calculate the numbers of excess males, we develop another three indices corresponding to R , R^{f1} , and R^{m1} denoted as M , M^{f1} , and M^{m1} , and

$$M = \sum P_i^{m,x} \times SR_{2000}^x \times F_m^{x,f} - \sum P_i^{f,x} \times F_f^{x,f} \quad (4)$$

$$M^{f1} = \sum P_i^{m,x} \times SR_{2000}^x \times F_m^x - \sum P_i^{f,x} \times F_f^{x,1} \quad (5)$$

$$M^{m1} = \sum P_i^{m,x} \times SR_{2000}^x \times F_m^{x,1} - \sum P_i^{f,x} \times F_f^x \quad (6)$$

In order to measure the proportions of the above excess males, we have another three corresponding indices P , P^{f1} and P^{m1} ,

$$P = \frac{\sum P_i^{m,x} \times SR_{2000}^x \times F_m^{x,1} - \sum P_i^{f,x} \times F_f^{x,1}}{\sum P_i^{m,x} \times SR_{2000}^x \times F_m^{x,1}} = \frac{R-1}{R} \quad (7)$$

$$P^{f1} = \frac{\sum P_i^{m,x} \times SR_{2000}^x \times F_m^x - \sum P_i^{f,x} \times F_f^{x,1}}{\sum P_i^{m,x} \times SR_{2000}^x \times F_m^x} = \frac{R^f - 1}{R^f} \quad (8)$$

$$P^{m1} = \frac{\sum P_i^{m,x} \times SR_{2000}^x \times F_m^{x,1} - \sum P_i^{f,x} \times F_f^x}{\sum P_i^{m,x} \times SR_{2000}^x \times F_m^{x,1}} = \frac{R^m - 1}{R^m} \quad (9)$$

Data

The data used in the paper include: age-sex-specific first marriage frequencies in the baseline 2000 year, age-sex-specific marriage frequencies who are first married or married to first married spouse and the projected age-sex-specific population data in 2001-2050.

First marriage frequencies

China's marriage registration is controlled by the Civil Administration Department. But for statistical reasons, the available annual data contain only the total numbers of first marriages, remarriages and divorcees; there is no detailed age-sex-specific marriage registration information. The fifth national census implemented in 2000 includes first marriage information in the long form, and this more detailed information is available.

There is no maximum legal age for marriage. Generally those who are not married and over 50 years old are regarded as life-long unmarried. Tuljapurkar et al. (1995) also fixed the age upper bound at 50. Since we consider remarriage in this paper, we set the age upper limit at 60 years old. The age-sex-specific first marriage frequencies are shown in Figure 1.

Figure 1 here

In China the minimum legal age for marriage is 22 for males and 20 for females according to the 1980 *Marriage Law*, but some people do marry at younger ages, as can be discerned in Figure 1. The first marriage frequencies for females in 2000 rise dramatically at the age of 20 and over, and peak at 23 by 142.7‰, and decline precipitously. Male first marriage frequencies peak at 22 years old by 123.5‰. The average age at first marriage for males is 25.6 years old, and 23.5 for females.

Remarriage

The census data does not include direct remarriage information for the year prior to the standard reference time of the census. But according to the first marriage information, individual marital status and relations of household members to the

household head on the long form, we can derive the numbers of remarriages to first marriage spouses during the previous year before the reference time. These calculations give that the remarried males who are married to first marriage females amount to 1.94% of the sum of first married males and remarried males who are married to first marriage females, and remarried females amount to 2.38% of the sum of first married females and remarried females who are married to first marriage males. But the values of age-specific proportions vary, and roughly increase with increasing ages, as suggested in Figure 2.

Figure 2 here

Projected future population

The population projection for the future involves data from the baseline year and fertility and mortality data in the future. The underreporting rate for the fifth census implemented in 2000 is 1.81% (State Council Census Office, 2002). According to international standards, this rate is reasonable (Walfish, 2001), but there are severe underreporting and over-reporting for cohorts of different ages (Lavelly, 2001). In order to clarify the population size and structure, Li et al. (2005) analyze and adjust the census data. We take these adjusted data as the baseline.

The sex ratio at birth deviates far from normal in 2000, although the Chinese government has taken measures in terms of systems, culture, economics and policies in order to eliminate the context for strong son preference and for SRB to become more normal. In order to investigate the effect of strong son preference, in the form of high SRB and excess female child mortality, on the future marriage market, we examine three scenarios. Scenario A assumes parity-specific SRBs have returned to normal at 106 in 2000. Scenario B assumes the series of measures taken by the government take effect step by step and parity-specific SRBs decline linearly and gradually returning to normal at 106 in 2030 after which they remain normal. This is the scenario that may be closest to reality in the future, and we take it as the principal scenario and mainly discuss the numerical results for this scenario. Scenario C assumes the parity-specific SRBs remain constant at the high levels of 2000 until 2050. The TFR remains at 1.85. The population size changes in the future are indicated in Figure 3.

Figure 3 here

MEASURES OF MARRIAGE SQUEEZE

Figures 4 to 6 represent the potential sex ratios, proportions and numbers of excess males respectively in the marriage market during 2001 to 2050. In figure 4 the first letter of legend BR, namely B, denotes scenario B of the population projection, and the rest of the legend is defined above. Since scenario B is the possible scenario for the future population. We discuss the male squeeze in the marriage market mainly in terms of BR, BP and BM.

Figures 4, 5, and 6 here

Squeeze in the Future Marriage Market

Thanks to the endogenous relations between R , P and M , the corresponding curves of R , P and M in figures 4 to 6 exhibit the same trend. From 2001 onwards, the three indices BR , BP and BM first decline, reach a trough in 2009 and then fluctuate upward, peaking in 2027.

Comparing the trend of BR with that of the curve in Figure 1 in Tuljapurkar et al. (1995), we can see the resemblance of the two trends. Tuljapurkar et al. (1995) gave the cause of the local peak around 2001 as declining fertility. Compared with female birth cohorts, male birth cohorts marry early and so outnumber corresponding female birth cohorts, resulting in the local peak around 2001. Subsequently, since fertility has declined to a relatively lower level and remained there, the driving force of falling fertility, which causes BR to rise, ceases, leading to the decline of BR during this period. In fact, the national crude birth rates (CBRs) and total fertility rates (TFRs) fluctuated, and during 1981 to 1982 and during 1986 to 1987 they fluctuated upward. TFRs, increased to 2.86 in 1982 from 2.24 in 1980, and declined to 2.20 in 1985, then up to 2.59 in 1987 and back to 2.35 in 1989. Due to the mating pattern of males-older-than-females, the rising TFRs, to a certain extent, bring down the BR . Furthermore, both the indices R_f used by Tuljapurkar et al. (1995) and the adjusted index R used here are affected by first marriage frequencies in the baseline year and by other birth cohorts, since the age range includes those under 50 in Tuljapurkar et al. (1995) and under 60 in this paper. So the decline before 2009 is the confluence of many factors. After 2009, the large-scale increase in BR is primarily affected by high SRB.

During the first decade of the 21st century, the adjusted potential first marriage sex ratio of males to females is under 1.1, not very large. In the following decade, it goes up and fluctuates around 1.15 for most of the time, indicating there are around 115 males for every 100 females. The ratio peaks in the late 2020s, with about 125 first married males to 100 first married females. Subsequently the ratio declines and remains stable from the early 2030s to the mid-2040s. After 2013, the proportion of excess males who can not find appropriate first marriage partners among all the males who are to be first married remains above 10%, and above 15% between 2015 to 2045; annual excess males amount to 1.2 million.

The effect of son preference

The strict patrilineality, patriarchy and patrilocality, which have been prevalent throughout Chinese history entail that men are dominant in property inheritance, living arrangement, family lineage, and intra-family power structure. Women have

low social status and are subordinate to and dependent on men (Skinner, 1997; Das Gupta and Li, 1999; Khan and Khanum, 2000; Das Gupta et al., 2004; Attané, 2005). Son preference is cultivated because sons can provide economic and old age support, carry on the family line, bring honors and rights to families and clans and preside over birth and funeral rites. They therefore have more utility than girls. This is fundamentally the product of an ingrained social prejudice that “man is superior to woman” (*zhong nan qing nü*). Girls and women still occupy a marginal position in society, whereas a male heir offers many advantages. Because the family planning policy imposes a prior authorization for each birth, and inflicts administrative, financial, and occupational penalties on non-compliant couples, girls become unwanted simply because they deny their parents the possibility of a son. Beyond compulsory fertility limitation, the recent changes in reproductive behaviour and the generalization of small nuclear families must be noted. In recent years, the continuing fertility decline appears, especially in cities, as the consequence of voluntary choices. In the context of economic reforms, with increasing living costs and the social liberalization, more and more people deliberately choose to strictly limit their family size (Attané, 2004). Strong son preference and low female social status bring about various discriminatory practices against girls including restriction of nutrition, health care, education, resulting in high SRBs and excess female child mortality (Arnold et al., 1998; Arnold et al., 2002; Pander, 2003) and ultimately in the phenomenon of missing females. According to a study by Li et al. (2005), the total missing females in the 20th century are 35.59 million, or 4.65% percent of the investigated birth cohorts. Female shortage and male squeeze have existed in China throughout the 20th century (Coale and Banister, 1994; Das Gupta and Li, 1999).

The SRBs of these cohorts born in the years subsequent to 2000 exercise significant influence on the future marriage market when these cohorts reach marriageable ages. From figure 4 we can tell that during the first two decades of the 21st century, these indices of potential sex ratios, proportions, and numbers of excess males are almost the same because the majority of participants in the marriage market during these years were already born. But after 2020 these three scenarios diverge. Scenario A has the smallest R, P and M because of the assumption of normal SRBs from 2000 onwards. Excess males amount to 400 thousand, and make up 5 percent of potential marriage-age males. Scenario B has gradually declining SRBs and produces larger indices than Scenario A. The annual proportion of excess males fluctuates around 15% and excess males number 1.2 million. Scenario C, with parity-specific SRBs remaining at the high levels for the baseline year 2000, has the largest R, P, and M. During the 2030s, the proportion of excess males to potential marriage males is 20% and peaks at 25% in the 2040s with the annual excess males numbering 1.6 million.

From AR, AP, and AM in figures 4 to 6 respectively, we can see that, because of biomedical influence, there is still 5% male excess in the marriage market even though SRBs are assumed to be normal.

The influence of remarriage

At the end of 2000, the crude divorce rate (CDR) reached 1.8‰, among the highest in Asia (Zhang, 2002). Even though this is not as high as those in western countries, the absolute number of divorces ranks highest in the world due to the huge population size. Judging from the current trend, China's divorce level may approach the levels in western countries (Ye and Lin, 1998). In 2002, 7.788 million couples registered for marriage, among whom 14.403 million people were first married and the other 1.171 million people, or 7.52 percent, were remarried. There were 1.177 million couples divorced. Meanwhile, the age groups with high divorce rates are shifting from old-aged groups to middle-aged groups. In 1990 the age group with the highest proportion of divorced people relative to the total numbers of the group was the 55-59 age group at 10.3‰. But in 2000 the proportions for the age groups of 30 to 34, 35 to 39, 40 to 44 and 45 to 49 were 12.4, 15.4, 15.3, and 11.9‰ respectively. (State Council Census Office, 2002). Surely they will choose to remarry.

From figure 4 we can tell that, using the remarriage level in the baseline 2000 year, remarriages of males to first married females aggravates the male squeeze in the first marriage market, and remarriages of females to first married males loosens the squeeze. But R^{f1} and R^{m1} just fluctuate above and below R within a small range, which indicates that remarriage exerts insignificant influence on the overall marriage market since remarried (to first married spouse) people are only a small proportion of the total of first married people, which may be ascribed to the traditional marriage ideologies. But from figure 4 we can tell that remarriage has great impact on the proportion of excess males. P^{m1} is less than P^{f1} by 3 to 4 percent. The value brings down the 15 percent of excess males by 20 to 25 percent, or about 300 thousand males.

Nevertheless we can see from the trend of curve R that the male squeeze will be quite severe in the future. This will certainly change people's mating ideologies and in turn make remarriage exercise a greater influence on the marriage market.

CONCLUSIONS

In this paper, we integrate the first marriage and remarriage market, devise a series of indices, measure the extent of male squeeze in China's market from 2001 through 2050, and analyze the impact of son preference and remarriage on marriage squeeze. Our main findings are as follows.

First, the index of potential sex ratio of first marriage partners used by Tuljapurkar et al. (1995), without taking account of the relative numbers of males and females in the baseline year, underestimates the male squeeze extent. We adjust the index and devise new indices in order to investigate the impact of remarriage on China's future marriage market.

Second, there will be a severe male squeeze from 2000 onwards in China. After 2013 the annual proportion of excess males will remain above 10%, and reach 15% during 2015 to 2045. Annual excess males are 1.2 million. The male squeeze is more severe than estimated by Tuljapurkar et al. (1995). In any case, it is undeniable that the future decades will be characterized by large numbers of bachelors who remain unmarried against their will.

Third, the SRBs of the birth cohorts born after 2000 exert significant influence on the marriage market. It is urgent to eliminate the son preference context and improve the living environment for girls.

Fourth, of the total marriage market, remarriage (to first married spouse) constitutes only a small proportion of the total first marriage market, but it exerts great impact on the numbers and proportions of excess males.

There are some limitations to our analysis. We concentrate mainly on adjustment and design of indices and on the measurement of the marriage market, but ignore socioeconomic consequences of the male marriage squeeze. In fact, the marriage squeeze has serious social consequences, such as negative effects on the physical and psychological health of single people, stability of marriages and families, births out of wedlock, old age support for singles, erotic industries, and trafficking in women. All these problems will endanger social stability and bring about a large-scale social safety problem (Das Gupta and Li, 1999; Chen, 2004; Attané, 2005; Poston and Glover, 2005).

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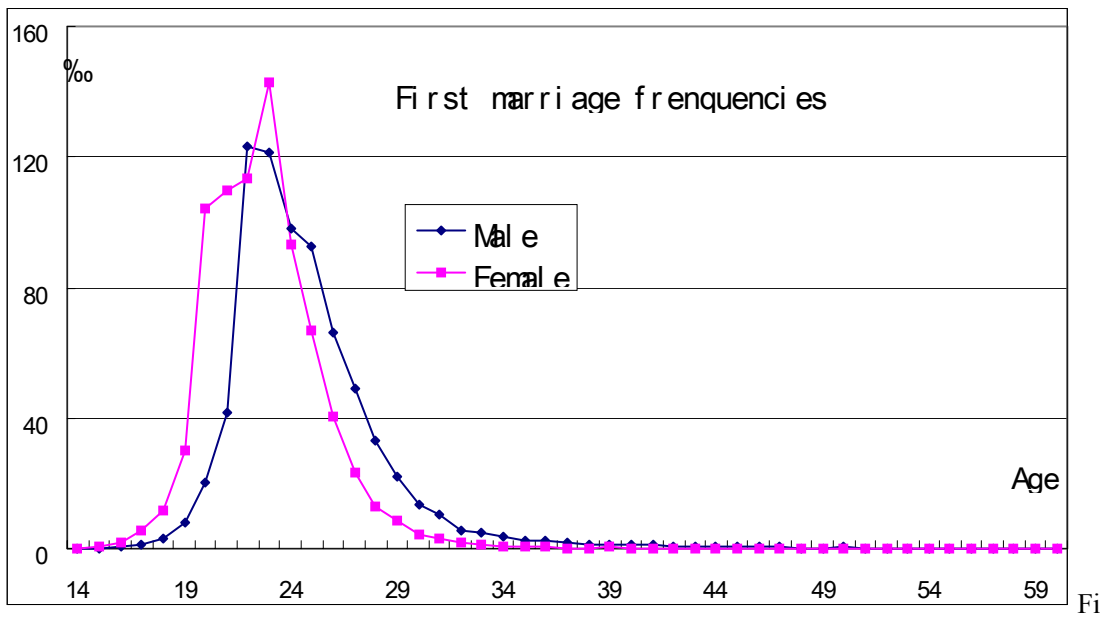


Figure 1 Age-sex-specific first marriage frequencies in 2000
 Source: Calculated from 10 percent of the 2000 census long forms

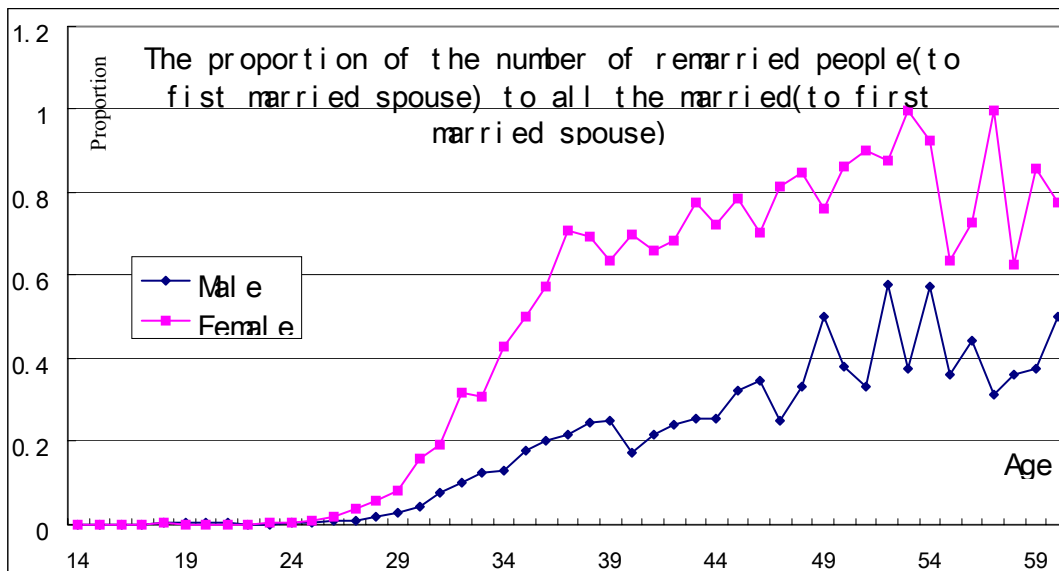


Figure 2 The age-sex-specific proportions of remarriages (to first married spouse) to all marriages (first marriages and those married to first married spouse)
 Source: Calculated from 10 percent of the 2000 census long forms

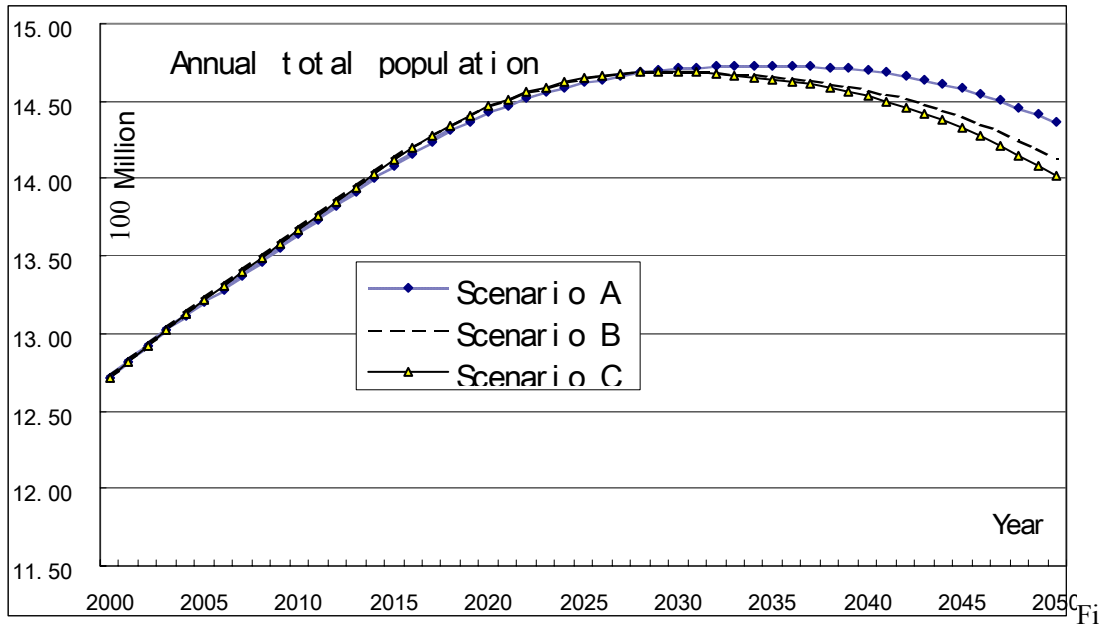


Figure 3 Projected populations during 2001-2050

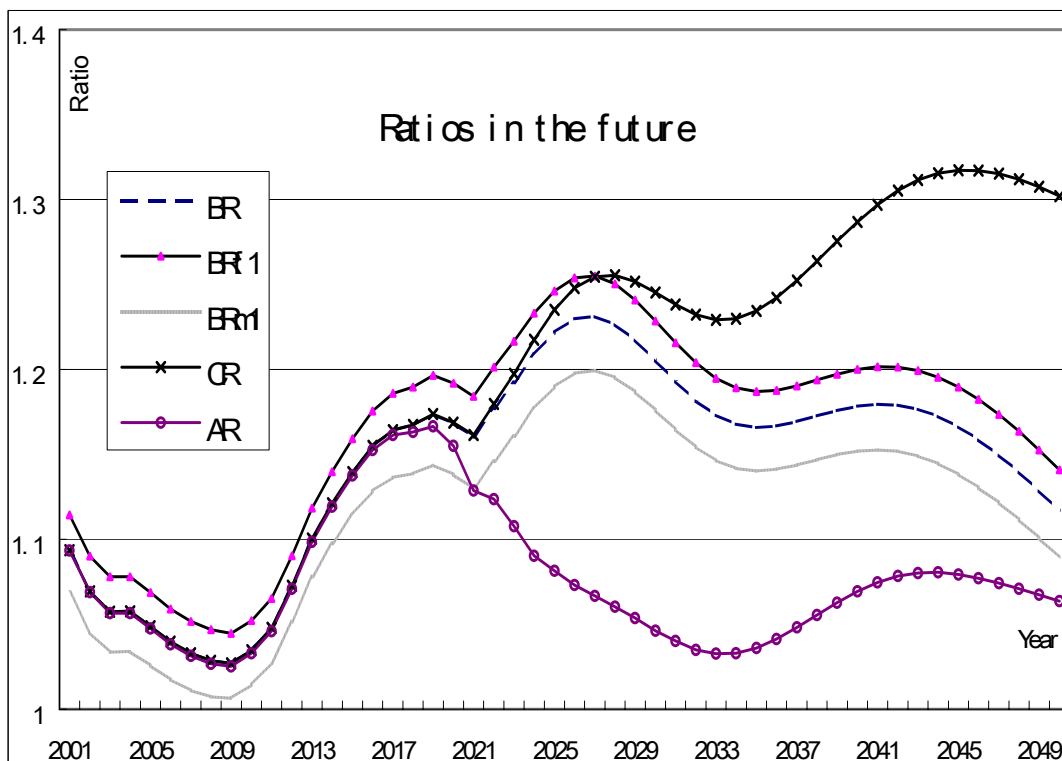


Figure 4 Potential sex ratios in the future marriage market

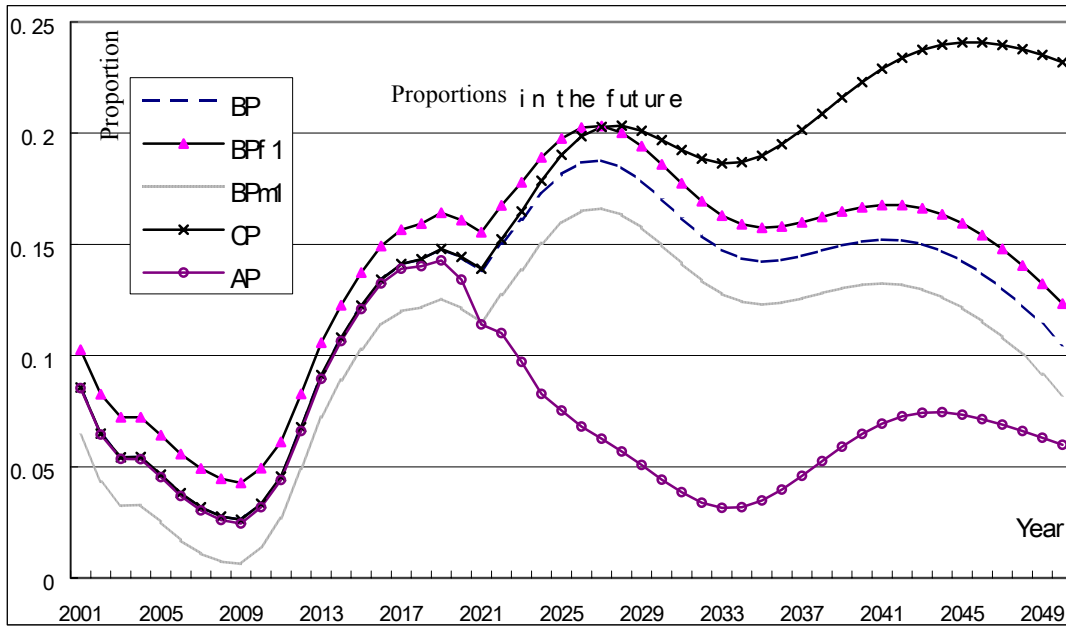


Figure 5 Proportions of excess males in the future marriage market

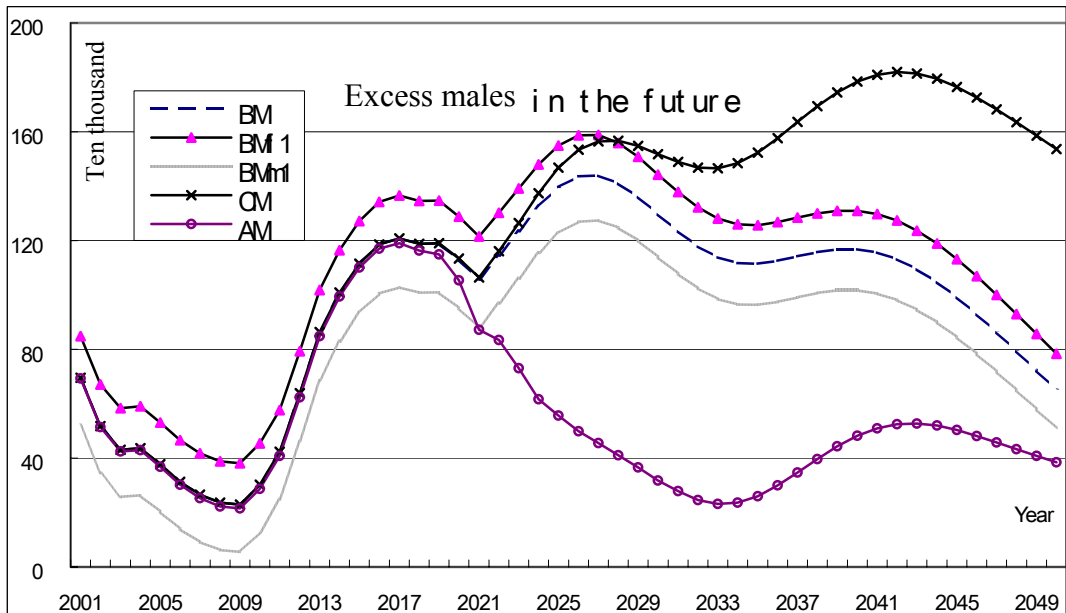


Figure 6 Numbers of excess males in the future marriage market