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Marriage Squeeze in China:
Historical Legacies, Surprising Findings

By

Daniel Goodkind

Eurasia Branch
International Programs Center
Population Division
U.S. Census Bureau

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Abstract

Since the late 1980s, the proliferation of prenatal sex testing in China has led increasingly to selective abortion of female fetuses. Yet these sex-distorted birth cohorts are still too young to marry. In 2000, a notable shortage of brides at peak marital ages was due to age structure – grooms tend to be older than brides, and the age structure at 20-29 resembled an inverse pyramid. By 2010, a temporary shift to a traditional pyramid should lead to a slight shortage of husbands. From 2015 to 2025, the cohorts affected by prenatal sex selection are projected to experience a severe deficit of brides, yet that deficit should still be due primarily to age structure. The accordion-like fluctuations in China's age structure result not only from fertility decline following the population policies established in the 1970s – they can also be traced back to the Great Leap Forward (1958-1961).

Introduction

Recent discussions of sex imbalances in China have focused on its sex ratio at birth, which became increasingly masculine over the last two decades of the 20th century. This phenomenon resulted from the increasing availability and use of prenatal sex-detection technologies, which allow parents to abort fetuses of an unwanted sex (Hull, 1990; Coale and Banister, 1994; Gu and Roy, 1995; Park and Cho, 1995; Banister, 2004; Cai and Lavely, 2004; Yuan and Tu, 2004). Falling family sizes have led parents to consider the sex composition of their children ever more carefully, and given a persistent preference for sons in China, selective abortion has typically targeted female fetuses.

These sex imbalances will eventually contribute to a shortage of brides in China. Indeed, marriage squeeze has become the most widely discussed implication of sex selection, not only in scholarly literature (Coale and Banister, 1994; Park and Cho, 1995; Gu and Roy, 1995; Tuljapurkar et al., 1995; Hudson and den Boer, 2004) but in popular media as well (Baculino, 2004; Marquand, 2004; Poston and Morrison, 2005; Yardley, 2005). Most observers emphasize that sex imbalances in the marriage market will become most severe after 2010, when the first cohorts to be affected by sex selection begin to reach marriageable ages. Yet there was already a notable shortage of brides in China as of the year 2000 (Tuljapurkar et al., 1995; Beech, 2002). How can this be, if sex selection did not become widespread in China until after the late 1980s?

The answer, of course, is age structure. Rapid changes in the size of successive birth cohorts affect future marriage markets due to enduring social norms that husbands be older than their brides. Population growth (progressively increasing birth cohorts)

tends to favor men in the marriage market, as it yields a larger pool of younger potential brides, while population decline tends to favor women, who view a larger pool of older potential husbands. Indeed, age structure is the primary causal factor in early classic treatments of marriage squeeze (e.g., Akers, 1967; Hirschman and Matras, 1971; Musham, 1974; Heer and Grossbard-Schectman, 1981; Schoen, 1983), and researchers have shown its relevance in marriage markets of China's past (Tien, 1992; Guo and Deng, 1993; Das Gupta and Li, 1997). However, perhaps because of the growing interest in prenatal sex selection, the role of age structure in China's current and future marriage markets has been neglected.

This paper begins by identifying a succession of three historical eras that are key to understanding age structure patterns in China: the Great Leap Forward (1958-1961), the subsequent fertility surge in the 1960s, and the severe fertility restrictions beginning in the 1970s. The echos of these demographic events will continue even as China's population ages in the 21st century. We then estimate sex imbalances from 1990 to 2050 at peak marital ages, separating the roles of age structure and prenatal sex selection. We also identify the distinct role of postnatal discrimination – excess female infant and child mortality as well as excess female international out-adoption – which also contributes somewhat to adult sex imbalances. Even from 2015 to 2025, when the birth cohorts most severely affected by sex selection reach maturity, we expect age structure to be the primary cause of bride shortages.

China's Age-Sex Structure and Recent Demographic History

The contribution of age structure to sex imbalances in the marriage market is clear when we examine China's age pyramid in 2000 (Figure 1), which shows a variety of peaks and valleys below age 50. The reason for these fluctuations can be traced back to a series of historical events. First, the social dislocation during China's Great Leap Forward (1958-1961) resulted in reduced fertility and increased mortality of young children (Peng, 1987) – both of which reduced the cohort of surviving children. After fertility rebounded in the 1960s, China then began to restrict fertility in the 1970s with its later-longer-fewer policy, which was replaced by the one-child policy in 1979. The reduced cohort of children born around the Great Leap Forward era were among the first to be subjected to China's most severe fertility restrictions (Tien, 1992).

The shortfall of individuals at ages 20-24 compared to those at ages 25-29 in 2000 (see Figure 1) was thus an echo of the baby bust of the Great Leap Forward era, compounded by the rapid decline in fertility of this adult cohort in the 1970s.[1] Given the typical age differential between husbands and brides, there was a severe shortage of brides in 2000, as noted in Beech (2002).

A Simple Measure of Marriage Squeeze Based on Married Proportions and SMAM Under Age 30

There is ongoing debate in the literature about what a marriage squeeze is and how best to measure it. Some of the proposed measurements and methods are fairly

[1] Figure 1 represents a projection to the year 2000 based on the 1990 census count, which was adjusted for undercounts prior to the projection. Thus, the notch of young adults is not due to underreporting at these ages. In fact, intercensal analysis implies that the reporting of adults in China's 2000 census was quite good.

sophisticated, particularly those addressing the supply of potential mates in the general population (Schoen, 1983; Goldman et al., 1984; Bhrolcain and Sigle-Rushton, 2005) and among particular racial or educational groups (Lichter et al., 1992; Qian and Preston, 1993; Raley, 1996). A persistent question is the extent to which changes in marital ages by sex reflect the relative supply of potential husbands and wives (under *ceteris paribus* conditions and preferences) versus other factors that differentially change marital ages for men or women or the preferences to have mates of a particular age, factors which may in and of themselves alter the pool of potential spouses.

More sophisticated approaches to recent dynamics in China's marriage market require data unavailable to us at the moment, and we leave the important questions requiring such data to future studies. Our goal was to find a simple and intuitive indicator to measure sex imbalances in the marriage markets of China's past, present, and future, and in so doing identify the contributions of age structure versus sex discrimination. The simplest measurements are often based on imbalanced sex ratios (typically at peak marital ages), imbalances that *can potentially* affect marital chances. Most of the literature that describes future bride shortages in China relies on this concept. In contrast, other measurements determine whether marital rates by sex actually *have* changed differentially in the historical past, a phenomenon perhaps linked to sex ratio imbalances. One often finds a combination of both types of measurements, potential and actualized, in the same study. Given the goals in this paper, we focus on the former kind of measurement.

We project sex imbalances at peak marital ages in the future based on the assumption of no change in the age gap between the sexes or in marital ages overall. We

avoid any other assumptions about changes (or, for that matter, constancy) in age- and sex-specific marital rates, assumptions required for more refined projections of marriage squeeze conditions (e.g., Tuljapurkar et al., 1995). Marital rates may be affected not only by future sex imbalances but also by factors having nothing to do with sex imbalances. Evidence from China between 1990 and 2000, a period of rapidly rising marriage squeeze against men, suggests both the reasonableness of our basic assumption (little change in the sex gap of marital ages overall) as well as the dangers of making more specific assumptions about future marital rates – to be discussed shortly.

We begin with a widely used measure of marital conditions – the singulate mean age at marriage (SMAM) – a measure based on the proportions married at successive ages. SMAM represents the number of years one can expect to remain never married – a "life expectancy" at birth of remaining single based on current proportions married. Table 1a shows SMAM in China as measured in its 1990 and 2000 censuses, as well as the 1995 1 percent sample census (data all collected by the Population Census Office under China's National Bureau of Statistics). The overall SMAM in 2000 was 26.3 and 23.4 for males and females, respectively, an almost three-year gap.

Table 1a also shows SMAM by age 30 (the "life expectancy" of singlehood as of age 30). This measure is more useful for our purposes, since our squeeze indicator will be based on those in their 20s – the peak ages of marriage. In 2000, only seven percent of men and one percent of women remained unmarried at ages 30-34. Thus, the effect of sex imbalances on the overall marriage market will be concentrated among those at primary marital ages. SMAM for those marrying by age 30 in 2000 was 25.2 and 23.2 for males and females, respectively, a two-year gap. An almost two-year sex gap in

SMAM under 30 was also observed in 1990 and 1995 (1.9 and 1.8 years, respectively), despite a rise in SMAM under 30 by over 1.2 years between 1990 and 2000 (Table 1b) as well as a rapidly increasing shortage of brides over the interval (to be discussed shortly). The consistency of these findings over the decade suggests an enduring social norm in China that husbands be about two years older than their brides. We thus assume a two-year gap to measure sex imbalances at peak marital ages in China.

Having just specified the marital age gap between men and women, we need to specify the width of the pool of potential mates. The width should be wide enough to incorporate the ages at which most people marry, yet narrow enough to reflect the actual dynamics of mate selection. For instance, given a two-year gap in marital ages, it would be unreasonable to measure marriage squeeze by comparing a cohort of men at ages 20-29 to women 18-27 because mate selection is not random within these age groupings – a 22-year-old male is far less likely to marry a 27-year-old woman than a 20-year-old woman. Moreover, broadening the age range so wide would bias downwards the impact of age structure – in the above example, birth cohorts would overlap for eight years out of the ten for each sex (20-27), so the influence of age structure would only be observed if there were differences in cohort sizes in the remaining two years (18-19 for women vs. 28-29 for men). At the other extreme, if the width of our age range is too narrow, say 22-23 for women versus 24-25 for men, that might bias upwards our assessment of age-structure effects, since there would be no overlap at all in the age of potential grooms and brides. A large fertility swing between two adjacent birth cohorts would thus exaggerate the effects of age structure on the marriage market.

We compromised by choosing a width of five years, comparing males at ages 23-27 to females at ages 21-25. These intervals imply a two-year sex gap in marital ages and straddle the ages during which most marriages occur. If marital proportions in Table 2 were fixed, the proportion of married men would rise 60 percentage points from ages 22 to 27 (0.83 minus 0.23), whereas the proportion of married women would rise 68 percentage points from ages 20 to 25 (0.86 minus 0.18). In addition, these intervals will lead to fairly conservative estimates of the effects of age structure on sex imbalances, as there is a three-year overlap (ages 23-25) between each five-year interval (60 percent).

Moreover, coincidentally or not, this age grouping for men (23-27) nearly matches the ages at which men seemed caught in a marriage squeeze in the late 1990s. Table 1b (bottom panel) shows a particularly large excess increase in the proportion of unmarried males compared to females between 1995 and 2000 at ages 25-29 (0.33 years versus 0.16 years). Figure 2 illustrates the same finding by single years of age and relates it to sex imbalances in the population. In 2000, there was a notable relationship between the excess of males at ages 24-28 (compared to women 2 years younger than them) and the excess decline in marital proportions experienced by men at those same ages – over 4 percent more than for women. Aside from sex imbalances, it seems unlikely that other social forces could be the primary reason for the differential change in marital proportions at these ages.

Of course, sex imbalances are not the only factors that affect the likelihood of marriage. A variety of social forces could have unique effects on marital chances for men or women, especially at the youngest ages (Qian and Preston, 1993). For instance, from 1990 to 2000, there was an excess increase in the number of years expected to be

single at ages 15-19 for women (0.17 years versus 0.08 years for males; Table 1b), with the bulk of the excess increase occurring between 1990 and 1995. That female excess increase could reflect improvements in women's educational opportunities or employment options, not to mention the decline in fertility over the decade. It could also reflect the perception (based on the cohorts in their 20s just ahead of them) that they could delay marriage until a later age because the future supply of husbands might remain plentiful. Such perceptions evidently affected the overseas Vietnamese marriage market in the 1980s, when men married at later ages because they had no choice, and young females did so in part because they did have that choice (Goodkind, 1997).

We acknowledge that the indicator we have developed for use in our projections is quite crude. The true population "at risk" for marriage should be single, yet our measure does not consider marital status. To determine the future pool of singles would require us to predict marriage patterns, which we are not prepared to do at this juncture. In addition, the actual pool of potential mates for each spouse may range beyond the age intervals chosen. Regarding the latter, more refined measures of marriage squeeze are available which cover the entire marriage market, but they require assumptions about marital rates at each age – assumptions that will almost certainly be violated due to sex imbalances rippling through the population (as well as other forces). Moreover, even if one fixes marital rates as constant (Tuljapurkar et al., 1995) the resulting indicator of marriage squeeze will be biased according to the squeeze conditions in the base year of the projection.[2] It is not clear, therefore, that more refined indicators provide a more

[2] Tuljapurkar et al. (1995), use a standard (and more refined) indicator of imbalances in partner supply (R_f) which compares Chinese males (weighted by male first marital rates at each age) to females (weighted by female first marital rates at each age). This method provides a better summary indicator of squeeze conditions across the age spectrum in the base year of their

objective measurement of future squeeze conditions than our crude indicator based on peak marital ages.

Projections of Sex Imbalances at Peak Marital Ages

Measurements of sex imbalances as described above are drawn from population projections based on the 1990 census (single years of age for each sex), which was modified slightly in light of 2000 census results and other findings. We age the population forward year by year based on our estimates and projections of age- and sex-specific mortality and net international migration. Births are generated each year based on specified levels of fertility (age-specific birth rates multiplied by corresponding age cohorts of women). Birth cohorts are divided between males and females according to the specified sex ratios at birth.

Based on an extensive review of census, survey, and other data, we conclude that China's true sex ratio at birth rose from about 108 in 1989 to 114 by 2000 (Goodkind and West, 2005). Both of these estimates are about 3 per 100 below the figures reported in the 1990 and 2000 censuses, the difference reflecting a tendency to underreport female infants more than male infants. We assume a plateau at 114 from 2000-2005, followed by a projected decline to 109 by 2015, a decline less than half as fast as occurred in South Korea following a similar plateau around 114 in the early 1990s. We then project the sex ratio at birth to fall very gradually to 106, a biologically "normal" level, by 2050. We

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projection (1990). Yet by freezing age-specific marital rates at 1990 levels (fertility and mortality are also frozen), projections of the resulting indicator (R_f) are biased by the initial set of age- and sex-specific marital rates in 1990. Moreover, such rates will almost certainly change in response to sex imbalances (Figure 2). In contrast, the ceteris paribus assumptions in our projections are limited to overall SMAM differences, assumptions that seem more defensible based on the temporal consistency shown on Table 1a.

will revisit this and other underlying assumptions following our discussion of the results of our projections.

In addition to prenatal sex selection, two forms of postnatal discrimination may also contribute to sex imbalances among adults. The first concerns practices of female neglect or infanticide that may lead to aberrant patterns of infant and child mortality. In most societies in the world, male infant mortality exceeds that of females by 15 to 40 percent. Yet based on our analysis of available data, our projections assume that infant mortality ($_1q_0$) in China for females (45.9) exceeded that of males (39.7) by nearly 16 percent in 1990, and by 50 percent (females 36.8 and males 24.6) in 2000. The sex differential is projected to return to more typical levels by 2020, with an infant mortality of 13.7 for males and 11.4 for females and levels thereafter declining gradually for both sexes. The second form of postnatal discrimination concerns the greater likelihood of international out-adoption of daughters compared to sons. Our projection incorporates such adoptions within age and sex patterns of net migration. We assume that the number of out-adoptees among net migrants at ages 0-4 rose from zero in 1989 to 10,000 by 2000, with 95 percent of those out-adopted presumed to be daughters. The sex differential (as well as net number of children emigrating due to out-adoption) is projected to disappear by 2020.

Figure 3 shows the extent of sex imbalances in China from 1990-2050, based on the assumptions just outlined. The relative influences of age structure, prenatal discrimination, and postnatal discrimination were determined by running three separate projections. The first projection used the parameters described above to determine the overall sex imbalance due to all factors combined. The second projection isolated the

role of prenatal sex selection by rerunning the projection assuming a constant sex ratio at birth of 106 throughout the projection period. To partition the remaining imbalance, the role of postnatal discrimination was isolated by running a third projection removing sex discrimination in infant mortality, child mortality, and international out-migration/adoption of children as follows: 1) female infant mortality was reset to remain 17 percent lower than that of males, 2) female child mortality was reset to be no higher than that of males at the exact same age, and 3) the excess of females among international out-adoptees was eliminated. By removing both these postnatal and prenatal influences, we determined the residual role of age structure in adult sex imbalances.[3]

The overall sex imbalances measured by our projection (Figure 3) tend to mirror the fluctuations in China's age pyramid. The shortage of brides at peak marital ages more than doubled from about 7 percent in 1990 to 15 percent in 2000, consistent with the unusually sharp drop of those in their early twenties compared to those in their late twenties (Figure 1). By 2005, the severe shortage of females begins to disappear as the slope of the age pyramid becomes more vertical at these ages. In fact, by 2010, we project a net surplus of females at peak marital ages due to a temporary return of the traditional pyramidal slope among young adults in their 20s, which outweighs the combined influence of prenatal and postnatal discrimination. Based on recent discussions of gender imbalance in China, one would not expect a bride surplus in the near future.

[3]Since we began our projection using China's 1990 census, the relative roles of prenatal and postnatal discrimination could be formally partitioned for those reaching marital ages after 2010 – more than twenty years later. Yet for those below marital age in the 1990 base year, prenatal and postnatal discrimination was "built in" to the age structure of the base year counts. For 2010 and before, we partitioned those "built in" effects manually based on our best estimates of China's past sex ratio at birth (Goodkind and West, 2004), as well as recent historical estimates of infant mortality by sex (Banister and Hill, 2004).

Of course, this female surplus will be temporary. By 2015, age-structure effects are projected to work against men once again, and this imbalance will be compounded by increasing distortions due to the rise in sex selection after 1990. The percent shortage of brides due to these forces combined is projected to be 15-20 percent from 2015 to 2025. The bride shortage is projected to lessen in the 2030s and then increase again in the 2040s, due primarily to the echos of age structure.

In fact, the most important finding on Figure 3 concerns the relative roles of age structure versus sex discrimination in causing bride shortages. During the peak squeeze expected from 2015-2025, when the cohorts notably affected by sex selection begin to enter the marriage market, age structure is projected to account for about half or more of the bride shortage. And we project that even the *peak* shortfall attributable to prenatal and postnatal discrimination combined (about 10 percent in 2025) will be matched or exceeded by the shortfall due to age structure alone in many years over the interval (1995, 2000, 2015, 2025, 2045, and 2050). Whether one considers China's past, present, or future, sex imbalances at peak marital ages are caused primarily by age structure, not prenatal or postnatal discrimination.

Are Our Projection Assumptions Reasonable?

Below, we consider further three critical assumptions made in the foregoing projection. First, we posited that China's future sex ratio at birth would decline from 114 to 109 in eleven years (2005-2015), compared to the four years in which a similar decline occurred in South Korea (Figure 4). It is possible that China's sex ratio at birth will follow a different path. Yet our presumed pace of decline may turn out to be quite

conservative. In March of 2004, China's President Hu Jintao called for lowering the sex ratio to normal levels by 2010, a call reiterated by many officials, including the Vice Minister of the National Population and Family Planning Commission (*Mail and Guardian*, 2004). In the wake of this call, an experimental "care for girls" program (*China Daily*, 2004) has been enacted in a pilot county in each of 24 provinces to enforce the anti-sex selection edicts that have already been on the books for many years (Xinhua, 2005). If China pursues such enforcement with the same determination as it did with its fertility restrictions in recent decades, China's sex ratio at birth could indeed decline as fast, if not faster, than it did in South Korea. Moreover, even if we are wrong, and China's sex ratios at birth were to remain constant at 114 after 2005, our estimate of bride shortages from 2015-2025 would not be affected. And by 2045-2050, even with a constant sex ratio at birth of 114, age structure would contribute about as much to bride shortages as sex selection (see Figure 5).

Second, we posited that the two-year gap between SMAM under age 30 for men and women will not change in the future. Since the future marital age gap between the sexes should, if anything, increase (due to a shortfall of brides), our assumption of constancy biases downwards the future role of age structure. For instance, as mentioned earlier, the increase in unmarried proportions between 1995 and 2000 for men was more than double that of women at ages 25-29 (Table 1b, bottom panel), the same ages at which sex imbalances were greatest (Figure 2). An increase in the sex gap of marital ages should increase the potential role of age structure versus sex selection in the marriage squeezes of China's future (compare Figure 6, which raises the peak ages of marriage for males from 23-27 to 24-28, to Figure 3).

Last, we acknowledge that our projection assumed no change in marital ages for men or women. That assumption was made largely for simplicity as well as our preference to avoid making predictions of changes in marital patterns. Yet age at marriage likely will rise for both men and women in China, just as it has in many other rapidly developing countries. To the extent that it does, the projected imbalances in the marriage market would shift by a year or two, but the general pattern of change depicted on Figure 3 should remain the same.

Conclusion

This paper examined the extent to which sex imbalances in China's marriage markets may be due to age structure, the classic concern in marriage squeeze literature. The indicator used in our projection is admittedly crude and limited to peak marital ages, yet compared to more refined measures spanning the full marriage market, it is more comprehensible for many observers, rooted in patterns observed in China's marriage market between 1990 and 2000, and avoids other biases introduced when assuming future marital rates by age and sex. The findings may come as a surprise. Age structure accounts not only for marriage squeeze conditions in China's past and present; age structure is also projected to play the dominant role in future years when sex imbalances are most severe, even from 2015-2025 when the cohorts first affected by fetal sex selection reach young adulthood.

The limitations in the measures used in this study point to avenues for future investigations. These include the dynamics of sex imbalances and marital rates as age structure undulations ripple through China's population. In particular, it would be helpful

to separate sex differences in marital chances in China into components due directly to sex imbalances in the marriage market, as opposed to changing policies, social conditions, or preferences – some changes which themselves may emerge, in part, as a response to those imbalances. Replications of studies and methods applied to other contexts (for example, Qian and Preston, 1993) could yield valuable information about mate selection in China across age, educational strata, and other social characteristics, amidst rapid socio-economic change.

Of course, no matter what such future research finds, prenatal and postnatal sex discrimination will undoubtedly contribute to future sex imbalances in the marriage market. Nevertheless, if sex imbalances truly have negative social consequences (Guttentag and Secord, 1983; Hudson and den Boer, 2004), we need to consider the origins of these imbalances more carefully. Many countries in the world have experienced sharp declines in fertility, which portend imbalances in marriage markets. The case of China illustrates quite clearly that, even with very high levels of sex selection and postnatal discrimination, age structure may be primarily responsible for sex imbalances. We should also balance our assessments by considering some of the likely social implications of the imbalances that many observers would welcome. For instance, the surplus of potential husbands in China's marriage market may provide better options for women, who may rest assured that they can pursue higher education or work opportunities and still have the option of finding a desirable mate at a later age.

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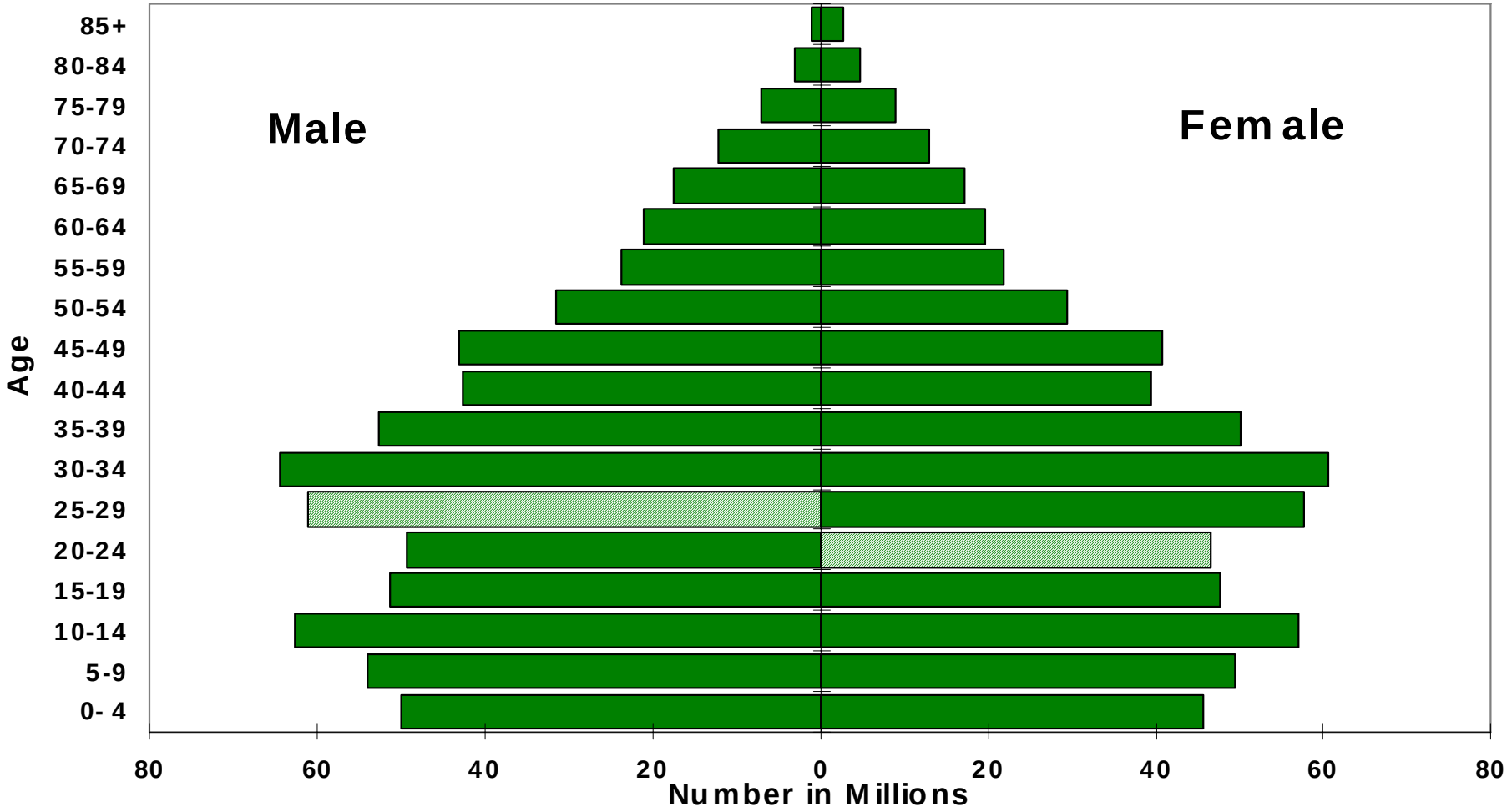
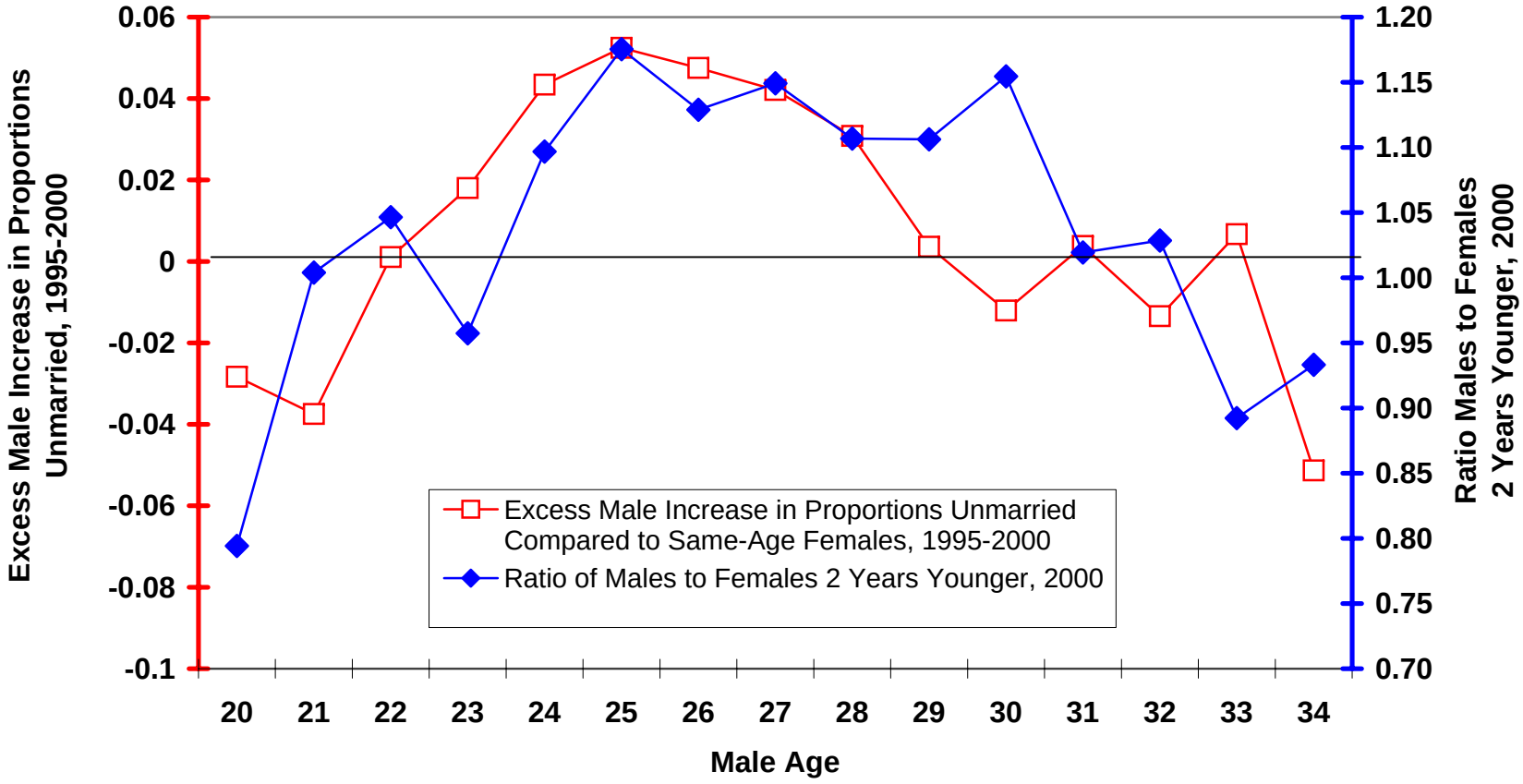
Figure 1.
Population of China by Age and Sex: 2000



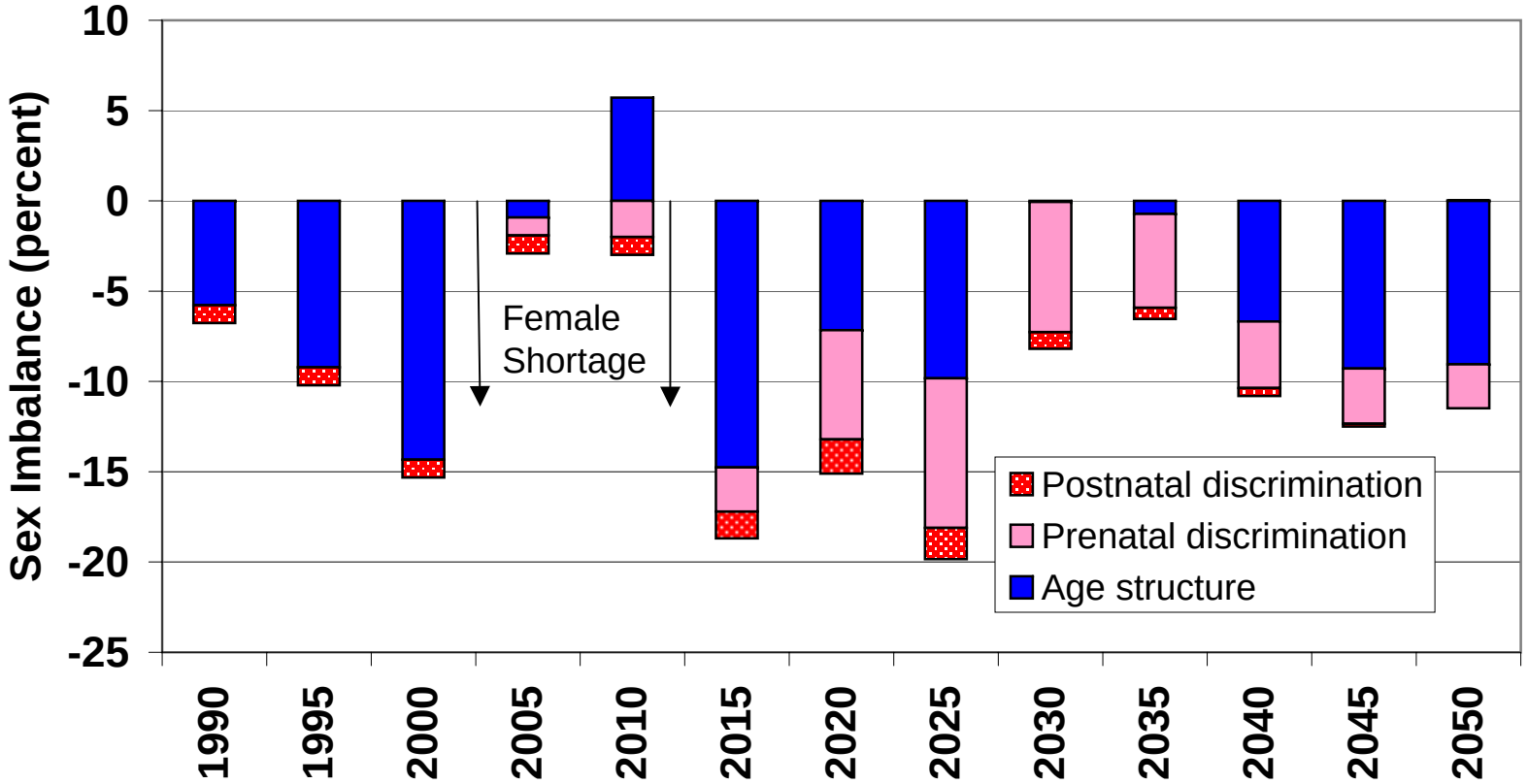
Source: U.S. Census Bureau, International Programs Center, International Data Base, (http://www.census.gov/ipc/www/idbnew.html).

Figure 2. Ratio of Males Age X to Females Age X-2 in 2000 and Excess Increase in Proportions Unmarried for Males vs. Females (1995-2000) at Ages 20-34



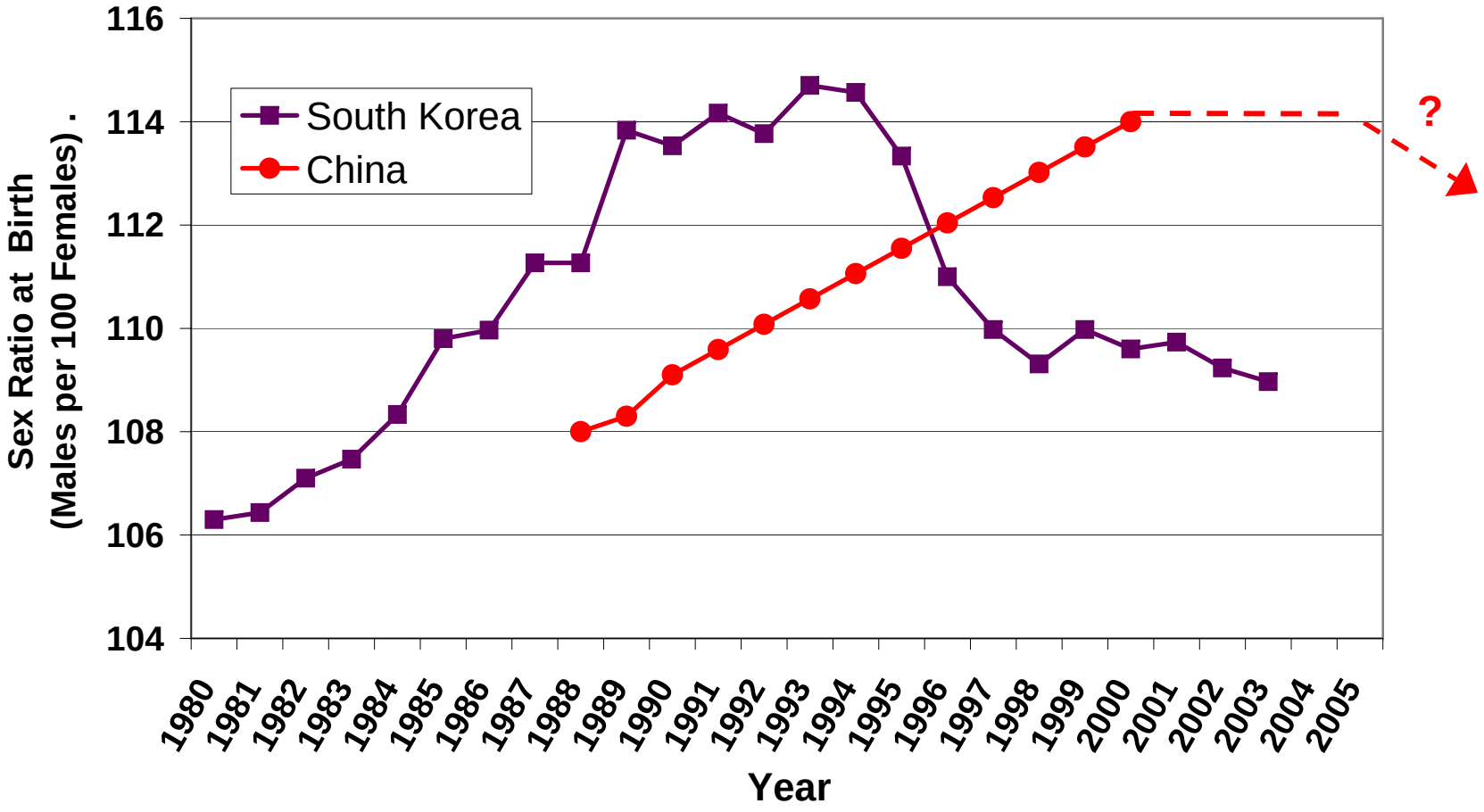
Source: Population Census Office (1997, 2002)

Figure 3. China's Percent Shortage of Females at Ages 21-25 versus Males at Ages 23-27 by Reason, 1990-2050



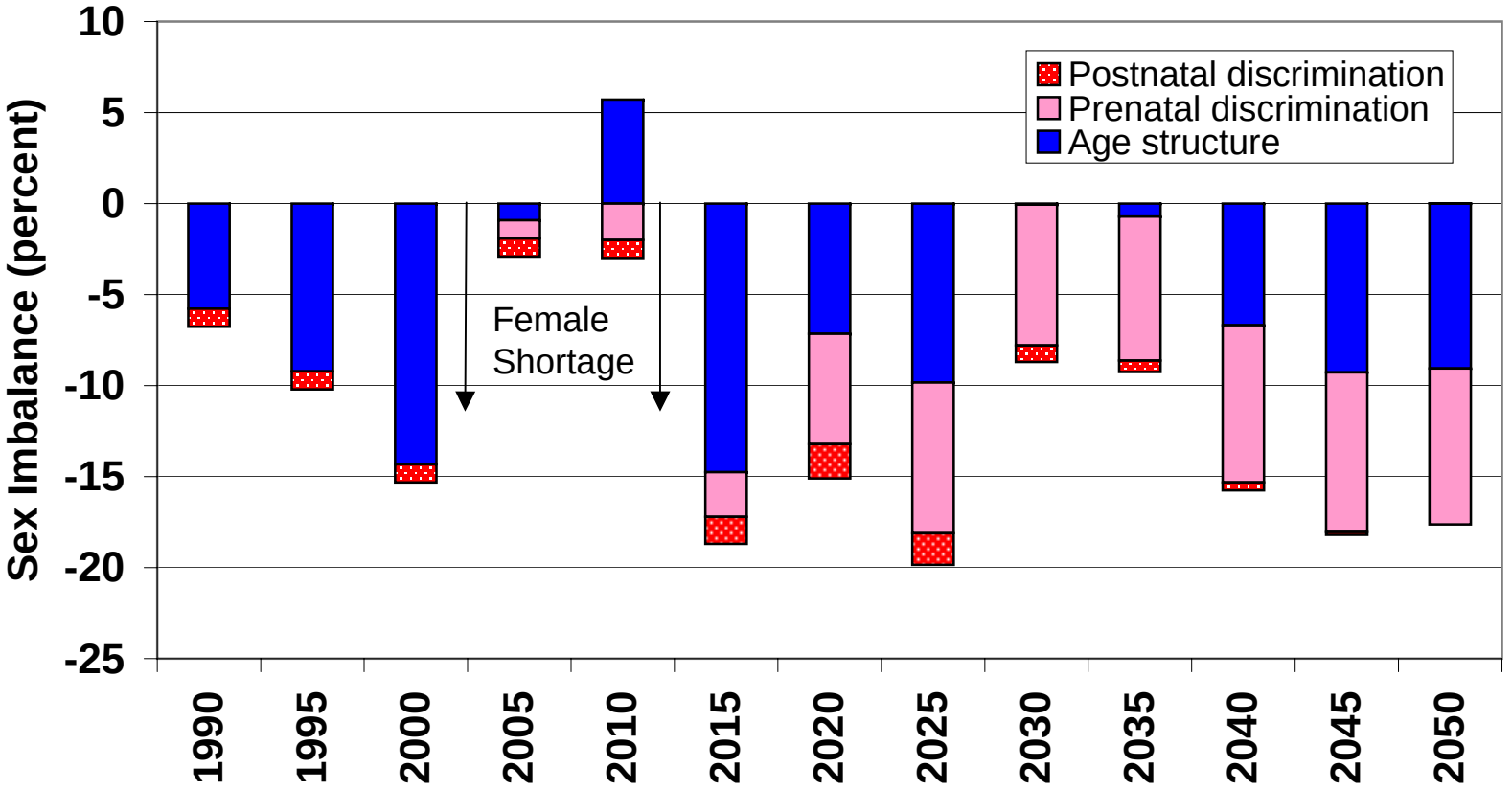
Source: Estimates and projections by U.S. Census Bureau, Intenational Programs Center. See text for assumptions.

Figure 4. Sex Ratios at Birth in South Korea (Three-Year Averages), 1980-2003 and China, 1988-2000



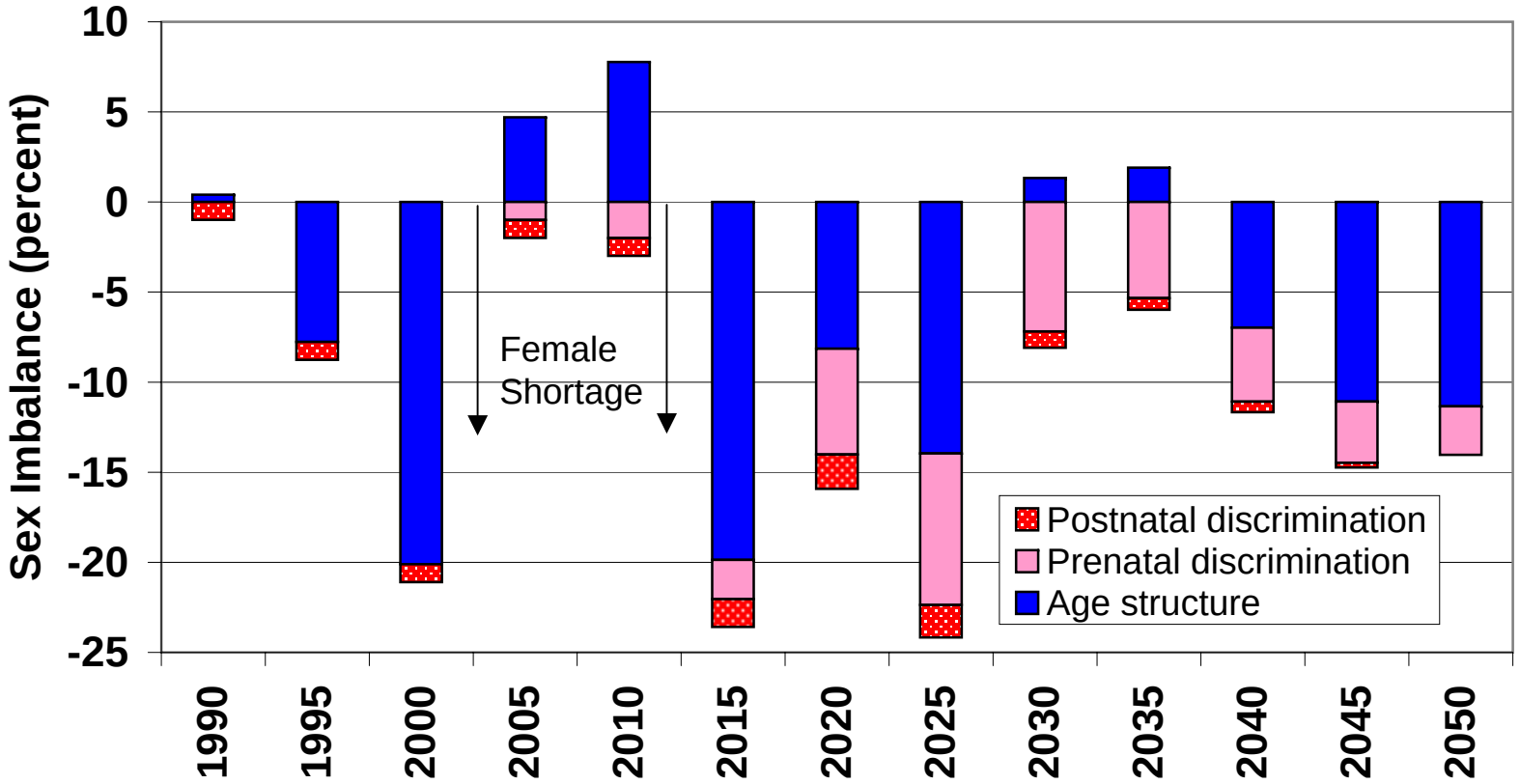
*Sources:
South Korea - National Statistical Office, http://www.nso.go.kr/eng/index.html.
China - Goodkind and West (2005).

Figure 5. China's Percent Shortage of Females at Ages 21-25 versus Males at Ages 23-27 by Reason, 1990-2050 (High Sustained Sex Ratio at Birth)



Source: Estimates and projections by U.S. Census Bureau, Intenational Programs Center. See text for assumptions, which are the same as in Figure 3, except for the assumption here of a constant sex ratio at birth of 114 from 2000 to 2050.

Figure 6. China's Percent Shortage of Females at Ages 21-25 versus Males at Ages 24-28 by Reason, 1990-2050



Source: Estimates and projections by U.S. Census Bureau, Intenational Programs Center. See text for assumptions, which are the same as in Figure 3, except that the males age interval is raised here by one year.

Table 1a. Proportions Unmarried by Age and Sex, With Calculations of Singulate Mean Age at Marriage (SMAM) in China, 1990, 1995, and 2000

1990 Census

	Population			Proportion Unmarried			Years Expected in Singlehood	
Age	Total	Male	Female	Male	Female		Male	Female
15-19	120,158,421	61,650,589	58,507,832	0.98	0.95		4.9	4.8
20-24	125,761,174	64,233,023	61,528,151	0.62	0.41		3.1	2.1
25-29	104,267,525	53,512,983	50,754,542	0.17	0.04		0.8	0.2
30-34	83,875,707	43,706,133	40,169,574	0.07	0.01		0.4	0.0
35-39	86,351,812	44,568,847	41,782,965	0.06	0.00		0.3	0.0
40-44	63,707,664	33,335,977	30,371,687	0.05	0.00		0.3	0.0
45-49	49,087,941	25,855,900	23,232,041	0.05	0.00		0.3	0.0
50-54	45,619,559	24,110,355	21,509,204	0.04	0.00		0.2	0.0
						SMAM	25.2	22.1
						SMAM<30	23.9	22.0

1995 1% Sample Census (unweighted)

	Population			Proportion Unmarried			Years Expected in Singlehood	
Age	Total	Male	Female	Male	Female		Male	Female
15-19	912,735	469,838	442,897	0.99	0.98		5.0	4.9
20-24	1,080,611	535,303	545,308	0.69	0.47		3.4	2.4
25-29	1,257,801	626,178	631,623	0.18	0.06		0.9	0.3
30-34	1,090,886	546,708	544,178	0.06	0.01		0.3	0.0
35-39	859,347	439,151	420,196	0.05	0.00		0.2	0.0
40-44	916,950	465,030	451,920	0.04	0.00		0.2	0.0
45-49	685,194	350,151	335,043	0.04	0.00		0.2	0.0
50-54	524,123	269,428	254,695	0.04	0.00		0.2	0.0
						SMAM	25.5	22.6
						SMAM<30	24.3	22.5

2000 Census (long form)

	Population			Proportion Unmarried			Years Expected in Singlehood	
Age	Total	Male	Female	Male	Female		Male	Female
15-19	9,386,103	4,849,390	4,536,713	1.00	0.99		5.0	4.9
20-24	8,273,394	4,137,717	4,135,677	0.79	0.57		3.9	2.9
25-29	10,591,466	5,321,530	5,269,936	0.25	0.09		1.2	0.4
30-34	11,826,354	5,970,285	5,856,069	0.07	0.01		0.4	0.1
35-39	10,387,211	5,263,432	5,123,779	0.04	0.01		0.2	0.0
40-44	7,869,404	4,044,735	3,824,669	0.04	0.00		0.2	0.0
45-49	8,378,990	4,272,751	4,106,239	0.04	0.00		0.2	0.0
50-54	6,207,936	3,200,020	3,007,916	0.04	0.00		0.2	0.0
						SMAM	26.3	23.4
						SMAM<30	25.2	23.2

Source: Population Census Office (1993, 1997, 2002). The 1995 1% Sample Census covered more than 10 million people, although there is still a small amount of statistical uncertainty surrounding the estimates

Table 1b. Comparison of Increase in Proportions Unmarried and SMAM in China by Age and Sex between 1990, 1995 and 2000

2000 versus 1990

	Increase in Proportion Unmarried			Increase in Years of Expected Singlehood	
Age	Male	Female		Male	Female
15-19	0.02	0.03		0.08	0.17
20-24	0.16	0.16		0.81	0.81
25-29	0.08	0.04		0.40	0.22
30-34	0.00	0.01		0.01	0.04
35-39	-0.02	0.00		-0.08	0.01
40-44	-0.01	0.00		-0.07	0.00
45-49	-0.01	0.00		-0.06	0.00
50-54	0.00	0.00		-0.02	0.00
		Increase in	SMAM	1.07	1.25
			SMAM<30	1.28	1.20

1995 versus 1990

	Increase in Proportion Unmarried			Increase in Years of Expected Singlehood	
Age	Male	Female		Male	Female
15-19	0.01	0.03		0.06	0.13
20-24	0.06	0.06		0.31	0.30
25-29	0.01	0.01		0.07	0.06
30-34	-0.01	0.00		-0.05	0.01
35-39	-0.01	0.00		-0.05	0.00
40-44	-0.01	0.00		-0.04	0.00
45-49	-0.01	0.00		-0.04	0.00
50-54	0.00	0.00		-0.01	0.00
		Increase in	SMAM	0.25	0.51
			SMAM<30	0.44	0.50

2000 versus 1995

	Increase in Proportion Unmarried			Increase in Years of Expected Singlehood	
Age	Male	Female		Male	Female
15-19	0.00	0.01		0.02	0.04
20-24	0.10	0.10		0.50	0.50
25-29	0.07	0.03		0.33	0.16
30-34	0.01	0.01		0.06	0.03
35-39	-0.01	0.00		-0.03	0.01
40-44	-0.01	0.00		-0.03	0.00
45-49	0.00	0.00		-0.02	0.00
50-54	0.00	0.00		-0.01	0.00
		Increase in	SMAM	0.82	0.74
			SMAM<30	0.84	0.70

Source: Population Census Office (1993, 1997, 2002).

Table 2. Proportions Married at Ages 18-34 by Sex in China, 2000

2000 Census (long form)

	Population (long form)			Unmarried			Proportion Unmarried	
Age	Total	Male	Female	Total	Male	Female	Male	Female
18	2,053,484	1,054,905	998,579	2,033,239	1,051,464	981,775	1.00	0.98
19	1,675,595	854,347	821,248	1,633,206	845,638	787,568	0.99	0.96
20	1,577,583	793,101	784,482	1,447,058	769,704	677,354	0.97	**0.86**
21	1,653,694	824,478	829,216	1,388,467	771,391	617,076	0.94	0.74
22	1,646,384	820,908	825,476	1,167,746	682,833	484,913	**0.83**	0.59
23	1,585,598	793,871	791,727	876,347	538,998	337,349	0.68	0.43
24	1,810,135	905,359	904,776	750,766	491,266	259,500	0.54	0.29
25	1,862,322	930,557	931,765	565,016	392,870	172,146	0.42	**0.18**
26	2,041,424	1,021,449	1,019,975	436,720	319,967	116,753	0.31	0.11
27	2,128,239	1,070,841	1,057,398	327,790	249,809	77,981	**0.23**	0.07
28	2,241,851	1,128,908	1,112,943	250,020	197,067	52,953	0.17	0.05
29	2,317,630	1,169,775	1,147,855	190,636	153,690	36,946	0.13	0.03
30	2,550,109	1,284,992	1,265,117	161,591	133,503	28,088	0.10	0.02
31	2,320,512	1,170,089	1,150,423	115,349	97,148	18,201	0.08	0.02
32	2,573,754	1,301,217	1,272,537	106,052	90,591	15,461	0.07	0.01
33	2,035,766	1,026,502	1,009,264	70,803	61,712	9,091	0.06	0.01
34	2,346,213	1,187,485	1,158,728	70,253	62,124	8,129	0.05	0.01

Source: Population Census Office (2002).