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Gender Bias in China, the Republic of Korea, and India 1920–90

Effects of War, Famine, and Fertility Decline

Monica Das Gupta
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The proportions of girls "missing" rose sharply in these countries during times of war, famine, and fertility decline Resulting shortages of wives improved the *treatment* of *adult women* without reducing discrimination against *daughters* or increasing women's *autonomy* The latter goals can be reached only with fundamental changes in women's family position — changes that are taking place only slowly

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Summary findings

Kinship systems in China, the Republic of Korea, and North India have similar features that generate discrimination against girls, and these countries have some of the highest proportions of girls "missing" in the world.

Das Gupta and Li document how the excess mortality of girls was increased by war, famine, and fertility decline — all of which constrained household resources — between 1920 and 1990.

Of the three countries, China experienced the most crises during this period (with civil war, invasion, and famine). The resulting excess mortality of girls in China offset the demographic forces making for a surplus of wives as overall mortality rates declined. India had the quietest history during this period, and consequently followed the expected pattern of a growing surplus of available wives.

These changes in sex ratios had substantial social ramifications. The authors hypothesize that these demographic factors:

- Encouraged the continuation of brideprice in China, while in India there was a shift to dowry.
- Influenced the extent and manifestations of violence against women.

An oversupply of women is the worst scenario for women, as there are fewer constraints to domestic violence. A shortage of women leads to better treatment of wives, as people become more careful not to lose a wife. However in situations of shortage, a small proportion of women may be subject to new types of violence such as being kidnapped for marriage. Ironically, then, higher levels of discrimination against girls can help reduce violence against women.

When women are in short supply, their *treatment* improves. But their *autonomy* can increase only with fundamental changes in their family position, changes that are taking place only slowly.

This paper — a product of Poverty and Human Resources, Development Research Group — is part of a larger effort in the group to study social institutions and development outcomes. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Monica Das Gupta, room MC3-579, telephone 202-473-1983, fax 202-522-1153, Internet address mdasgupta@worldbank.org. Policy Research Working Papers are also posted on the Web at http://www.worldbank.org/html/dec/Publications/Workpapers/home.html. June 1999. (34 pages)

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GENDER BIAS IN CHINA, SOUTH KOREA AND INDIA, 1920-90:
effects of war, famine and fertility decline

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GENDER BIAS AND THE "MARRIAGE SQUEEZE" IN CHINA, SOUTH KOREA AND INDIA 1920-1990:
effects of war, famine and fertility decline

Monica Das Gupta and Li Shuzhuo

How has the history of the twentieth century affected the extent of female disadvantage in child survival in China, South Korea and India, and how has this in turn shaped spousal availability and marriage payments? These three countries represent South and East Asia, the parts of the world which show the highest levels of excess female child mortality. This is a longstanding pattern in all three countries, as evidenced by data from the nineteenth and early twentieth centuries (Xin 1989, Kwon 1977, Visaria 1969). We explore how historical events have influenced the extent of excess female child mortality during 1920-90, and some of the substantial social ramifications of changes in the level of gender-based discrimination.

We examine how the level of discrimination has been affected by events in the wider society which place households under severe stress. The focus is on three kinds of resource constraint. The first is the disruption and privation of *war*, which was experienced at the national level by China in the first half of this century and especially during World War II, and by South Korea during the Korean War of 1950-53. The second is *famine*, which was experienced on a large scale in China in 1959-61. The third is the substantial *fertility decline* which has taken place in all three countries in recent decades. Since these societies are characterized by strong son preference, this amounts to another form of resource constraint on the household because reducing the number of births means reducing the number of opportunities to have a son. Empirically, fertility decline in these countries has been accompanied by rising female disadvantage in survival even at low birth orders, and more masculine sex ratios of children (Das Gupta and Bhat 1995).

There seems to be little evidence from South Asia or South Korea that the poor discriminate more against their daughters, the hypothesis being that sharper resource constraints force them to allocate resources to the more valued males[1]. However, resource constraints may affect discrimination in another way: people may increase the level of discrimination when they experience a tightening of circumstances relative to their *own* previous position, as when they are caught up in a war or famine. This is the hypothesis which we examine.

We also explore how the marriage market has been affected by the extent of discrimination, building on Caldwell et al.'s (1983) idea of the "marriage squeeze". The history of these three countries is quite different, and these differences are reflected in the extent of discrimination against girls. We explore how this has affected spousal availability in these three countries, and how the treatment of women is affected by whether they are in surplus or shortage.

We begin by discussing what drives this comparison of three countries which are so disparate in many ways. Despite their very different levels of economic and social development and political systems, they have fundamental similarities in the position of daughters in the family, and in the

[1] Early censuses in India show that in regions with strong son preference, the higher castes had more imbalanced sex ratios than the lower castes (Miller 1981, Das Gupta 1987). Krishnaji (1987) and Murthi et al. (1995) using district-level data from India found that, if anything, the rich discriminate more than the poor. Data from South Korea also suggests this (Das Gupta et al.1997).

nature of marriage. We then examine the historical trends in female disadvantage and how they are related to major resource constraints. Finally, we look at trends in spousal availability and some of the social implications of these historical trends, including the implications for marriage payments, and the situation of poorer people and of women.

I SIMILARITIES IN THE POSITION OF DAUGHTERS IN CHINA, SOUTH KOREA AND INDIA[2]

China and South Korea are culturally fairly homogeneous countries in which the majority of the population belongs to a culture of rigidly patrilineal and patrilocal kinship systems based on a clan system. India is more diverse. The dominant kinship system Northwest India is strikingly similar to that of China and South Korea. Other parts of Northern India have forms of patriarchy which are less rigidly organized. Southern India has elements of a more bilateral kinship system, and also exhibits far less son preference than the North. We therefore compare the three countries and then examine the case of Northwest India, because that is the most directly comparable with China and South Korea in terms of kinship and the potential for gender bias.

In the following brief and broadbrush sketch of how the position of daughters is affected by the system of kinship and marriage, we refer to a "traditional" system. Traditions of course are far from immutable, and here we refer to the social arrangements prevalent in these countries through much of this century. These arrangements persist to a considerable extent today despite much social change. All three countries have experienced considerable socio-economic development, and South Korea in particular is highly developed and urbanized today. However, the kinship system in these societies are especially resilient[3], and values relating to the family and marriage have been much slower to change.

In these rigidly patrilineal and patrilocal kinship systems, lineages are defined in terms of males alone. Lineages are strictly exogamous, so they import brides to produce the next generation of the lineage. Membership of a lineage and one's position in it is conferred by dint of being a particular man's offspring, and the identity of the mother is almost irrelevant to this. Women are thus merely biological reproducers for a lineage other than their lineage of birth, and men are the social reproducers, the ones who confer an identity to the newborn child. Rights to a woman are transferred to the husband's family at the time of marriage. It is understood that the woman's future

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[2] The discussion in this section draws on the voluminous literature on kinship and social organization in these three countries, as well as on our field interviews in these three countries. See for example Chang (1991), Chowdhury (1994), Chung (1977), Cohen (1976), Croll (1983), Das Gupta (1995b), Davis and Harrell (1993), Dyson and Moore (1983), Freedman (1965), Gates (1996), Goody (1990), Greenhalgh (1994), Hershman (1981), Hsu (1948), Hu (1948), Karve (1965), Kendall (1996), Kim (1989), Kolenda (1987), Lee and Campbell (1996), Lee and Wang (1997), Pasternak (1972), Pradhan (1966), Skinner (1997), Stockard (1989), Williamson (1976), Wolf (1968), Wolf and Huang (1980), and Yi (1975).

[3] Other types of family system have shown more rapid change. Some of the most dramatic changes have taken place in matrilineal systems. These typically practice inheritance from mother's brother to sister's son, which means that men pass on their property to their nephews instead of their sons. This generates conflict of interest, especially when resources become scarcer, which encourages a shift to more patrilineal family systems. By contrast, patrilineal systems have much more congruence between the interests of lineage members, and are therefore more robust in the face of other social and economic changes.

productivity and services belong to the husband's family, whatever her parents' needs may be. Consequently, a daughter's birth is far less welcome than that of a son. The kinship system in these settings leads to strong son preference and accompanying discrimination against daughters.

A daughter's marginality to her family of birth also affects the way in which the question of her marriage is perceived. While her brothers are central members of the family and lineage, a daughter's appropriate place is in her father's home only until it is time for her to marry. As an adult she becomes extraneous to her family of birth, her appropriate position being a wife in another family. It is highly unusual for an adult woman to live with her parental family. In short, there is no socially acceptable role for a grown woman in her family of birth, except as a visitor. She must leave and make way for incoming daughters-in-law.

The need to marry off one's daughter is also affected by the fact that premarital sex and especially premarital childbirth bring tremendous dishonor to a family. For many reasons, then, there is much pressure on parents to find a groom for their daughter and give her away in marriage. The norm was for marriages to be arranged: it was the father's duty to see to this, and after the father's death the duty fell to the brother. Parents of grown daughters are reminded of their obligation to marry off their daughter. It is culturally unacceptable to have daughters remaining single, as evidenced by the negligible proportions of women never-marrying in these countries.

Marriages entail some costs for both the groom's as well as the bride's family. Currently in India, the average net expenses of a daughter's marriage are far higher than a son's marriage, because large dowries are paid to the groom's family. In China and South Korea, the average net expenses of a son's marriage are several times higher than that of a daughter's marriage (Bae 1997, Williamson 1976, Xie 1997). Yet even in the latter case, people resent even the relatively small payments they make for their daughters' marriages, because this is viewed as a net loss for the family. Relatively heavy expenses on a son's wedding are less resented because the money is still viewed as remaining within the family.

There are thus some critical points of similarity between these three countries in the nature of marriage, which distinguish them from most other cultures. For example, in large parts of rural Europe it was completely acceptable, and even the norm, for grown daughters to remain single for many years and look after their parents or work on someone else's farm (Sieder and Mitterauer 1983; Arensberg and Kimball 1968). Besides, marriage was a matter of the couple's own choosing, not the responsibility of the parents. In such societies, a shortage of available grooms would be more of a personal problem for a woman, not an intolerable situation for parents to avoid by whatever means possible. This is in sharp contrast with the pressure to find a groom for one's daughter in these East and South Asian societies.

II DATA AND METHODOLOGY

Data:

The data used in this paper are from the national population censuses of China, South Korea and India. Where indicated, we have also used other sources. For China, these include the 1995 One

Percent National Population Survey and the Annual Population Change Surveys for 1989 to 1993. For South Korea, they include the 1995 Korean Population and Housing Census and the Annual Vital Statistics from 1985 to 1992.

The accuracy of age reporting in the censuses is critical to our analysis. In the case of China and South Korea, the accuracy of age reporting is very high (Coale and Banister 1994; Kwon 1977), because almost everybody knows the animal symbol of their birth year, which helps pinpoint the year of birth. Error will thus be small and also not subject to age-heaping. This made our analysis for China and South Korea simple and robust.

By contrast, the quality of age-reporting in the Indian censuses is subject to serious age-heaping, making it impossible to use these data for many purposes. The data are officially smoothed, but the linear assumptions underlying smoothing break down for the youngest and oldest age groups[4]. Therefore we are unable to use these data to analyze sex ratios of annual birth cohorts, since this would require using the youngest age group. We are, however, able to use the smoothed data for the analysis of spousal availability, as the smoothing assumptions have greater validity for the relevant age-groups[5].

Method of calculating the excess sex ratios:

To calculate the proportions of girls missing in each birth cohort in China and South Korea, we use the methodology and the index developed by Coale and Banister (1994) in their study on "missing" females in China. Thus we calculate the observed sex ratio of each single-year birth cohort and compute a five-year moving average of the ratio. We then estimate how excessively masculine this sex ratio is by comparing it to the expected ratio in the West model life tables (Coale and Demeny 1966). This was calculated using the female life expectancy prevailing in the country at the time (see Table 4 in the Appendix), along with the assumption that the normal sex ratio at birth is 1.06. These model sex ratios are based on life tables from a range of countries, and form a useful benchmark of the "normal" sex ratio in the absence of discrimination. The censuses used for this analysis are those conducted between 1953 and 1990 in China, and between 1960 and 1990 in South Korea.

The estimated excess sex ratios for China and South Korea (Figure 1) reflect cumulative loss of females from birth till the time of the census, resulting from sex selective abortion, female infanticide and discrimination against girls and women which reverses their normal biological advantage in survival. To focus more on the discrimination in childhood, we use the most recent census data on each birth cohort. The method is described more fully in the Appendix. The same method is also used for South Korea. For India, we were unable to apply this method because of problems of age-reporting, as mentioned above. Instead, we show the juvenile (aged 0-4) sex ratios of India from 1951 to 1991 to give some idea of missing girls in India.

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[4] Personal communication from Mari Bhat, based on his extensive work on the Indian census data.

[5] Normal smoothing methods do not eliminate systematic age errors which vary by sex. However, unless these systematic errors have changed substantially over time, the trend in spousal availability is more or less correctly reported by the smoothed sex ratios.

Method of estimating spousal availability:

The index used in this paper is the ratio of males to younger females for each five-year birth cohort at census time, using the observed average age gap at first marriage between men and women prevailing at the time in each country (Table 1). For each male birth cohort, we calculate the observed ratio for this cohort when they are aged 20-29 [6]. The exception is the last calculation for each country, which uses males from age 5 in order to look at the future spousal availability[7]. For this last group, we use the current age gap at marriage.

To separate the effect of fertility decline from that of discrimination, we calculate the "normal" ratios of males to younger females which should prevail in the absence of discrimination. For this, we estimate the expected number of females given the observed number of males of the same age and the "normal" sex ratio from the corresponding life tables. The difference between the observed ratio and the normal ratio is the estimated effect of gender bias on spousal availability[8].

There are several demographic models to investigate the marriage market. Park and Cho (1995) and Tuljapurkar et al.(1995) are primarily interested in the future marriage market, and therefore use the current age gap between spouses as the basis for their calculations. Bhat and Halli (1996) focus on the past marriage market, and hold the age gap between spouses constant in order to estimate what would have been spousal availability had the age gap not changed. This approach takes into account the fact that the age gap between spouses is partly influenced by spousal availability. Of course, many other factors also influence the age gap between spouses, including socio-economic factors such as levels of female education, and changes in social norms. In the case of China, the age gap is also influenced by changes in marriage laws. Bhat and Halli's estimates are therefore designed to reflect the full extent of marriage squeeze which would have prevailed had the spousal age gap not changed, but are not designed to reflect actual spousal availability except at the time of the initial equilibrium. Our model has to allow for empirical changes in spousal age gap, as our primary motivation in this paper is to estimate changes over time in actual spousal availability.

There are several aspects of the potentially complex dynamics of "marriage markets" which we cannot take into account. For example, differences in the remarriage rates of widows and widowers influence spousal availability. Bhat and Halli (1996) are able to increase the complexity of the marriage market analysed by using the data from the Indian censuses on remarriage rates by sex.

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[6] In the case of China, the censuses were not carried out every ten years, so the age groups are wider in some cases. In such cases, there is a small difference in exposure to mortality, which will slightly affect our analysis insofar as there is a sex differential in this different exposure.

[7] For the most recent estimates, we had to supplement the census data with data from annual statistics, in which we assumed the normal sex ratio at birth to be 1.06. This is because for China we do not know the inflators to match the 1995 1% census data with the 1990 census, and for South Korea the single-year age-distribution from the 1995 census data is not yet available. Thus for China we used the births from the 1989-93 annual population change surveys, and for South Korea we used the births from the 1985-92 vital statistics. For India no sex-specific data are available beyond the 1991 census, and so we could not extend the calculation beyond the 1980-84 birth cohort.

[8] In the case of India, the data on spousal age gap and life expectancy before 1947 refer to pre-Partition India, including presentday Pakistan and Bangladesh, while those after 1947 refer to presentday India. However, the population base on which the calculations of spousal availability are made are taken from the post-Partition censuses. Thus our estimates of spousal availability, in Tables 2 and 3, reflect the situation in presentday India.

Unfortunately, the Chinese and South Korean data do not include information on remarriage rates, and therefore we have to ignore this potentially important factor. We also do not address the fact that people choose spouses on the basis of matching education, class and other characteristics. In addition, we do not consider the possibility that some people may choose not to marry: this is an important factor in some post-industrial societies, but not in these three countries during the period we are studying. Over 99% of women aged 40-49 were ever-married in the 1990 censuses of China and South Korea. Our method provides an approximate estimate of spousal availability in the first marriage market (Table 1). That is, it gives rough estimates of the historical and present proportions of people never-married given their spousal age gap, and the future trend based on the current spousal age gap.

III CRISES AND THE MANIFESTATION OF GENDER BIAS

In this analysis, it is only possible to examine the effect of major national-level crises. More localized events may have been very significant in themselves, but their impact is likely to be drowned in national-level sex ratios. Therefore our focus here is only on large-scale crises.

China:

Of the three countries studied here, China has had the most eventful history during this century, as least from the point of view of households trying to make their way in life (Chi 1976, Bianco 1967). The briefest sketch of this history makes the vicissitudes of ordinary life apparent. The century began with the Qing dynasty in tenuous control of the country. In 1911 a revolution deposed the Qing dynasty and installed a nationalist government under Sun Yat Sen. The country was not united under one central government, and "warlords" were battling hard for hegemony. Meanwhile, the Communist forces were gradually increasing in strength.

Through the first half of this century, the battles between the warlords, and between the nationalists and the Communists created a situation of continuous uncertainty for people. One of the least manifestations of this was uncertainty about which set of authorities was in charge and had to be dealt with. This was interspersed with periods of chaos when people might face being requisitioned to send family members to join the troops, having food supplies requisitioned, being pillaged by hungry troops, and occasionally having to flee in the face of advancing troops. All this is reflected in fairly high sex ratios of cohorts born during the 1920s and 1930s (Figure 1).

The most dramatic effect on sex ratios is evidenced when the Japanese invaded China during the Second World War. The Japanese had a presence in Manchuria from the early years of the century which they used to build up an agricultural as well as industrial base in this region rich in coal and iron and a thriving armaments industry (Cumings 1981, Chi 1976, McCormack 1977). This was followed by a more formal occupation of Manchuria in 1931. In 1937, Japan launched a massive invasion of the main body of China. This caused havoc, as people fled in the face of the advancing army and also had to deal with the requisitions of their own armies. To add to the people's difficulties, they had two Chinese armies to contend with: the Nationalists and the Communists who, during the Japanese invasion, were at best in an uneasy alliance with each other and at worst in open competition with each other.

As Japanese troops swept through the densely-populated eastern half of China in a blitzkrieg from

1937, the sex ratios shot up (Figure 1). Apparently the disruption was such that people felt they had to make some harsh choices about which family members to sustain. Stories about this period refer to female abandonment and infanticide (Tan 1989). An interview with a woman in her sixties in Zhejiang province gives a firsthand account of such an experience:

> When I was six years old, my mother said that I should be sold. I begged my father not to do this, that I would eat very little if only they would let me stay at home[9].

Increased discrimination against daughters during periods of crisis was also common in nineteenth century China. Using data from local gazeteers from several provinces of China, Xin (1989) describes how levels of female infanticide rose in times of famine, drought, war and other economic stress, with comments such as:

> After the war, the economy was in a slump. The land was deserted so drowning female babies was common[10].

The Japanese invasion would be expected to cause excess mortality of young men, but this is not visible here because they would have been born largely before 1920. During the 1950s, with the establishment of Communist rule, life became much calmer and more predictable for ordinary households. This peace contributed to a lowering of discrimination against daughters, helped by the Communist ideology of gender equality.

During the famine of 1959-61 the sex ratios went up again (Figure 1). Those who were young girls at the time of the famine experienced the maximum excess mortality, so the peak excess ratios are in the cohorts born in 1954-58, a few years before the famine. After the famine and through the 1970s, levels of discrimination remained fairly constant, with about 2% of girls missing. In the early 1980s the sex ratio began to rise once again. Since the mid-1980s, it has been rising at an accelerating rate, probably because the availability of sex-selective abortion makes it easier to discriminate against daughters[11]. Sex ratios rose at a similar time in South Korea and India (Figures 1 and 2), and this is very likely to be for the same reason.

South Korea:

Korea was annexed by Japan in 1910, and remained under Japanese colonial administration until the end of the Second World War. Thus there was no war on Korean territory during the Second World War (Kim 1981, Han 1970). From 1950, however, the country was racked by war, especially in the North. The Korean War caused havoc between June 1950 and March 1951 as the two sides pushed each other up and down the peninsula. After this, till the peace settlement in July 1953, there was continued fighting around the ceasefire line, and heavy bombing of North Korea which was held by Communist forces. Actual fighting never reached the southernmost part of the Korean peninsula (Han 1970, Hastings 1987).

Interviews[12] with older people in South Korea reveal something of the havoc when the Northern troops pushed Southwards at the beginning of the war:

> (old man in a village in Kyungsangpuk Province): When the North Korean troops came near our village, we fled into the hills with our families. Nevertheless, they managed to

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[9] Interview conducted by Monica Das Gupta and Li Bohua in 1996.

[10] The word "common" is ours. The original translation was "very popular".

[11] Zeng et al.(1993) report that the import of ultrasound machines into China rose sharply in the mid-1980s.

[12] Interviews conducted by Monica Das Gupta and Bae Hwa-Ok in 1996.

catch some of our men and forced them to work for their troops. When the South Korean troops recaptured our village, they asked 'Who worked for the North Koreans?' Anyone who admitted to it was shot. We feared both sides.

(old woman in Taegu city): As the North Koreans advanced, we fled our village and headed to the deep South where we had some relatives. On the way there we were able to buy some food because we were fortunate to have some money, but I lost the child I was expecting..."

Equally revealing is the youth of those who died: the sex ratios indicate that substantial numbers of boys as young as fifteen years old were involved in the fighting. The Korean War caused so much mortality among young males that the sex ratios for the cohorts born between 1920-36 are excessively feminine.

The effect of the Korean War on girls is evident in the sex ratios. As in the case of the Chinese famine, the maximum brunt of excess mortality was borne not by those born during the famine but by girls who were young children at the time. These girls appear to have suffered discrimination, whether through neglect or abandonment. Note that the sex ratios reflect only the *excess* mortality of girls over and above the fact that children of both sexes undoubtedly suffered during the war.

After the Korean War, there have been no major crises in South Korea which are likely to impact on sex ratios. This has been a period of peace and rapid economic and social development. During this period, the proportion of females missing in South Korea follows a path very similar to that of China, rising once again in the 1980s.

India:

India has had perhaps the least eventful history during the period we consider here. Improvements in irrigation reduced the likelihood of harvest failure, and the construction of a railway network enabled the transport of grain to avert mortality from local harvest failures. As a result, there has been no major famine since 1920 with the exception of the Bengal Famine of 1943. From the point of view of our analysis, we would not expect to find an impact of this famine because it affected only one part of the country, and half of the affected region is no longer in India but in Bangladesh.

Neither has India experienced a war during this period. Indian soldiers participated in the Second World War in all the theaters where it was fought, but there was little fighting on Indian territory. Towards the end of the war the Japanese pushed briefly into the part of India bordering on Burma, but were quickly pushed back. As it happens, this part of India shows no son preference, so child sex ratios are unlikely to have been affected even if the war there had lasted longer. The Partition of India was obviously a very traumatic event for the country, as it was split into three sections on the basis of religion. Tens of thousands of people were killed, mostly in the months just before Partition and millions became homeless refugees, having fled from riots, arson and looting in their home areas.

For all this, Partition involved riots, not war. For a few months there were serious riots and some administrative disruption in Punjab and Delhi. Yet in the midst of riots and a large movement of population across the borders, the administration managed to set up camps for the refugees. Shortly after Independence, arrangements were made for some rough exchange of property between those leaving India and those leaving Pakistan. Although there was considerable disruption, the situation

during Partition was not comparable to the breakdown (or absence) of State machinery during the Japanese invasion of China or during the Korean War.

Whatever impact Partition may have had on Indian sex ratios is reduced by two factors. One is that Southern India was very little affected by the riots. The second is that, as in the case of the Bengal Famine, only half the affected territory is still in India, reducing further the weight of the affected region in India as a whole. The region where we would expect the maximum impact of Partition is Punjab, because it has strong gender bias and experienced the greatest disruption during Partition. As discussed above, the poor quality of age-reporting in Indian censuses make it difficult to study this. However, the juvenile sex ratio for India in 1951 is higher than that for 1961. This is even sharper in the case of Punjab (Figure 2). This may reflect increased discrimination during Partition, but part of it may be due to ordinary fluctuations.

A number of points emerge from comparing the juvenile sex ratios of India with China and South Korea during recent decades when fertility has declined (Figure 2)[13]. Firstly, the sex ratios for India are low compared with China and South Korea. This is because India is culturally heterogeneous and the South shows relatively balanced sex ratios. This regional pattern is remarkably resilient over time (Visaria 1969; Das Gupta and Bhat 1995). To illustrate excess female mortality in the region with the strongest gender bias, we show the juvenile sex ratio for the Northwestern States of Punjab and Haryana (Figure 2). These are higher even than those of China and South Korea.

The second point which emerges from these data is that the main rise in sex ratios in all three countries is after 1980. This suggests that the impact of fertility decline on sex ratios is substantially raised by the spread of sex-selective technology during the 1980s.

IV SPOUSAL AVAILABILITY AND THE "MARRIAGE SQUEEZE"

Improved child survival earlier in this century led to a growing population in all three countries, as in most of the rest of developing world. Consequently, successive birth cohorts increased in size until fertility decline became well-established, after the 1960s (Figure 3). Given the fact that in these countries men marry women from younger cohorts than their own (Table 1), this means that the three phases of the "demographic transition" are associated with different forms of marriage squeeze. In the pre-transition phase the size of successive cohorts was not growing rapidly and we expect discrimination to generate a surplus of men. With the child mortality decline that all three countries experienced earlier this century, there may be a surplus of *women* because birth cohorts are increasing in size. The extent of this surplus depends on the extent of discrimination. More recently there has been fertility decline, which again makes for a surplus of men, both because younger cohorts will be smaller and because fertility decline can raise the level of discrimination. The period we examine, that is the birth cohorts of 1920-1990, includes the period of mortality decline followed by fertility decline.

Our analysis is intended simply to illustrate changes in spousal availability and how it was affected

[13] Note that the Indian juvenile sex ratios may be underestimated because of age mis-reporting, with boys ages being overstated (Mari Bhat, personal communication).

by excess female mortality. Of course, excess female mortality is just one factor influencing spousal availability. Responses to the marriage squeeze are heavily influenced by cultural norms. For example, if it were more acceptable for women to remain unmarried or to marry men substantially younger than themselves, many of the effects we describe would be greatly mitigated. However, these options have limited cultural acceptability.

The age at marriage influences our illustration considerably. If men and women have the same mean age at marriage, the proportion of "missing girls" would heavily influence the availability of spouses. However when men and women differ in mean age at marriage, the rate of growth of the population and the average age gap between spouses become the main determinants of spousal availability (Caldwell et al.1983). We discuss these dynamics in the context of each of the three countries, and then develop some hypotheses about how spousal availability may have affected marriage payments and the treatment of women.

China:

In the absence of discrimination against girls, China should have had a shortage of marriageable men until 1970, since until then fertility levels were high and the size of successive cohorts was increasing. However, this shortage was largely removed by discrimination, and for most of the period before 1970 there was some surplus of men (Table 2). Even the dramatic rise in discrimination against girls during the Second World War resulted in only a moderate rise in the surplus of men, because its effect on spousal availability was heavily cushioned by population growth. The male surplus rose for the cohorts of men born between 1930-44, but only those born in 1935-39 experienced a substantial rise in the excess of men. This is despite the fact that an estimated 17% of females were "missing" from the birth cohort of 1937-41.

The famine of 1959-61 was accompanied by a slump in fertility, as famines usually are, followed by a brief post-famine recovery in fertility. These fertility fluctuations made for a shortage of spouses followed by a surplus of spouses. The net effect is of a somewhat balanced marriage market for men born in 1955-64.

Although the proportion of missing girls was highest at the time of the Japanese invasion, the problem of spousal availability is worse now because of fertility decline. From 1970-80 fertility declined rapidly in China, falling from 5.8 in 1970 to 3.6 in 1975 and 2.2 in 1980 (Figure 3). Since 1980, fertility levels have fluctuated and shown relatively little overall decline. The effect of the early period of rapid fertility decline was to sharply increase the shortage of marriageable women, as successive cohort size fell sharply. Men born in 1970-74 experienced a substantial rise in shortage of women. This was not offset by a surplus of available wives for subsequent cohorts of men, as these continued to register a smaller but steady surplus of men. This situation was aggravated even further for males born after 1985, when levels of discrimination against girls rose (Figure 1) as new technology made such discrimination easier. The cohort of males born in 1985-89 will suffer from the same shortage of spouses as those born around the time of the Japanese invasion. Their situation is worse, than those born in 1935-39, however, because it is unlikely that the shortage will be reduced in the immediate future, building up an increasing shortage of women.

The effect on spousal availability of fertility decline and of discrimination are distinguished in Table 3. Men born in 1970-74 will experience greater shortage of available wives than any other

cohort of men born during 1920-90. Most of this shortage is caused by fertility decline. For cohorts born after 1975, the effect of fertility decline is diminished, and for men born during 1985-89 most of the shortage of future wives is caused by discrimination against girls.

Men marrying in the late 1990s will experience the maximum shortage of spouses. This shortage will accumulate gradually and then receive another large boost in the second decade of the next century, when males born after 1985 enter marriageable ages. At least 12% of these men will not be able to find wives. Given the continued rise in levels of discrimination against girls between 1990 and 1995 (Figure 2), the shortage of available wives will continue to rise in the foreseeable future, and higher proportions of men will not be able to find wives. Given the small age gap between spouses of around 1.7 years in China in 1990, even the unlikely event of a long-term rise in fertility will not cushion much the shortage of available wives. This shortage will continue to increase unless discrimination ends. Some of the problems associated with this are discussed briefly below.

South Korea:

South Korea also has a history of discrimination against girls. However, because of rapid population growth and the four-year age gap at first marriage, there was actually some surplus of women available for marriage for males born between 1935-49. We do not analyze spousal availability for men born before that, since the heavy casualties associated with the Korean War (Figure 1) affected both single men and those who were already married. The Korean War also caused some fertility fluctuations, with a drop in fertility during the war and a postwar recovery of fertility (Kwon 1977:141). The latter increased the surplus of women available for men born in 1950-54. However, this surplus was followed by the beginning of fertility decline, which caused a shortage of women, so the effect of some of the fluctuations in spousal availability for men born during the 1950s could be reduced by increasing the age range within which spouses are sought.

The fertility decline which began in 1960 changed this to a situation in which there was a shortage of women available for marriage. The increase in discrimination against girls since the mid-1980s has added to the effect of fertility decline (Table 3), such that there were nearly 25% more males born in 1980-84 than females of the appropriate age. The average age gap between spouses was still 3 years in 1990, so shrinking cohort size still affects the availability of women.

As the fertility transition nears its end now, there will be less shortage of women resulting from reductions in the size of successive birth cohorts. Discrimination will now become the main factor creating a shortage of women. So far the trend has been for discrimination to rise (Figure 2), but without the added factor of fertility decline there will be a much smaller shortage of women. Fertility fluctuations will also affect this. For example, there has been a rise in the number of births during 1991-94 compared with 1984-90 (National Statistical Office 1994:20), probably because these are the births of the larger cohort born during the "baby-boom" after the Korean War. Consequently, for males born in 1985-89 there is only a surplus of 7% compared with females three years younger than themselves. This is of course substantial enough to cause a serious problem, but far less than the 25% shortfall experienced by males born in 1980-84. Discrimination accounts for 6% of the shortfall for males born in 1980-84, and all of the 7% shortfall of females for males born in 1985-89.

The worst shortage of potential wives will thus be felt by those marrying in the early decades of the

next century. This will be followed by a continuing shortage of women for the foreseeable future, caused mostly by discrimination against girls. There are already signs of the pressure of spousal availability, and some of this is resolved by importing women from elsewhere: for example, from amongst the ethnic Koreans in Northern China and from the Philippines[14].

India:

India has had a surplus of women throughout the period we study, reversing only for the males born after 1980 (Table 2). The surplus has been substantial: for males born between 1920-59, there was approximately 9% more women than men of marriageable age. Moreover, the female surplus has been steady, unmarked by even brief reversals in spousal availability which could ease the situation. Thus the pressure on women in the "marriage market" has been intense throughout this period.

This consistent pattern of a surplus of women in India is generated by the fact that rapid population growth has created growing cohort sizes. With the steady mortality decline in the country since 1920, child survival increased, increasing the size of successive cohorts. The age gap between spouses has also been wider than in South Korea or China (Table 1), so the impact of growing cohort size on the availability of wives is larger. Another factor is the relative peace of the country's history since 1920, without any countrywide famine or war which might have raised discrimination against girls and reduced the surplus of women. Discrimination against girls is also lower on aggregate in India than in these two countries, since only Northern India shows strong discrimination against girls. Northwest India had a shortage of women at the turn of the century, but we cannot analyse spousal availability there in the same way because it is not a closed population: they could and did import women on a regular basis.

Fertility decline has taken place at a much slower pace in India than in South Korea or China (Figure 3), such that the size of successive cohorts has only recently begun to shrink. Combined with a larger age gap between spouses and less discrimination on aggregate than these countries, fertility decline did not quickly generate a surplus of men. Instead, it made for a balanced "marriage market" (Table 2) for men born between 1965 and 1979. The next cohort (born 1980-84) will experience a surplus of men. Given the trend of continuing fertility decline, this surplus will increase, augmented by rising discrimination against girls (Figure 2).

V SOCIAL IMPLICATIONS OF HISTORICAL TRENDS IN GENDER BIAS

Implications for marriage costs and age gap between spouses:

China and India provide an interesting contrast in their history of spousal availability during this century. Both countries experienced mortality decline and increasing size of successive cohorts until their recent fertility decline. However, there was a *surplus* of men to marriageable women throughout this period in China, while in India the opposite was the case. This is partly because China has higher levels of discrimination against girls than India has on aggregate. Moreover, levels of discrimination were raised in China by national-scale wars and famines, which India was spared

[14] Based on field interviews in South Korea by Monica Das Gupta and Bae Hwa-Ok. The marriage of women from the Philippines was also reported in the New York Times in winter 1996-97.

during this period. Another factor is some differences in the cultural constraints on marriage choices: the average age gap between spouses was smaller in China than in India. These factors have several implications for marriage arrangements.

We calculate that there was a balance in spousal availability in India at the turn of the century, which changed from 1921 to a substantial surplus (around 9%) of women. The sex ratio of males aged 17-26 to females 6-7[15] years younger than them was 1.02 (1881), .98 (1891), .90 (1901, following a decade of severe famines with excess male mortality), .97 (1911), .91 (1921), .92 (1931), and .92 (1951). This corroborates the view in several studies on India that there has been a surplus of women generated by improving child survival during this century, and that this has contributed to a shift from brideprice to dowry and dowry inflation. Caldwell et al.(1983) were the first to argue this, and other studies have concurred (Rao 1993, Billig 1992, Bhat and Halli 1996). It is interesting to note that in field interviews people themselves attribute the rise in dowries to the surplus of women (Epstein 1973, Caldwell et al.1983).

We extend Caldwell et al.'s (1983) argument by hypothesizing that brideprice has continued to be practiced in China because of a surplus of men through this century. Accounts suggest that there has also been inflation in brideprice, especially in poorer regions, because of the increasing difficulty of finding a wife (Zhu 1992). In the case of India, the surplus of men that we can expect for birth cohorts after 1980 means that there is hope that dowry inflation will taper off. Using survey data from South-central India, Rao[16] has shown that there is indeed some sign of dowry inflation tapering off in recent years. However, the social arrangements surrounding marriage payments acquire some normative content, so marriage payments may not respond very quickly to this demographic shift. Another factor which may slow down this response is the consistent pattern of trying to marry girls into families of higher socio-economic status, since these transactions are smoothed by financial incentives.

Of course, some part of dowry inflation in India is due to efforts to be hypergamous: payments have to be higher the greater the gap in status between the households, and the more qualified the groom[17]. It is important, however, to clarify that the need for higher payments from the bride's family is analytically distinct from a rise in the *net* payments from her family. Marriage typically entails some costs for both the bride's and the groom's family. For example, with growing incomes and desire to find qualified grooms in China and South Korea, brides' families have been paying more for marriages (Kim 1995, Xie 1997), but the major share of marriage costs continue to be borne by the groom's family in line with earlier practices.

Studies in India have also drawn attention to the fact that the marriage squeeze put pressure to reduce the age gap between spouses, in order to reduce the extent of the squeeze (Caldwell 1983, Rao 1993, Bhat and Halli 1996). This argument can also be extended to China and South Korea, which have also experienced a marriage squeeze and a reduction in the average age gap between spouses (Table 1). However, increasing the age gap between spouses will not be an effective strategy for reducing the coming marriage squeeze in the next century, because with advanced fertility transition the size of successive cohorts will not increase steadily as during this century.

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[15] The average age gap between spouses used in these computations was 7 years for 1881-1921, and 6 years for 1931 and 1951.

[16] Vijayendra Rao, personal communication. Unfortunately, no hard data are yet available on these trends in other parts of India.

[17] Caldwell (1983), Rao (1993), Billig (1992) and Kapadia (1993).

Does a shortage of available wives improve women's situation?

These three countries present an interesting comparison of how the "marriage squeeze" affects the situation of women. The comparison is of interest because, as described above, they show much commonality in kinship and marriage patterns, and in the position of young women within the family. This sharpens the comparison of outcomes when they show very different patterns of spousal availability. The contrast is especially sharp between China and India, because the first shows a long-term shortage of women while India shows a long-term surplus of them.

The situation of women in India has been negatively affected in several ways by the shortage of grooms. The fact of having to pay large dowries to marry off daughters puts enormous financial stress on families. In the parts of the country where the culture made girls undesirable, this financial stress adds to the problem. In the South, where there was little gender bias in the past, there is evidence of some now. However, the persistence of cultural differences is notable: as compared with the South, Northern India has not only higher levels of discrimination against girls, but also a higher pace of increase in this discrimination as fertility has declined (Das Gupta and Bhat 1995). This is despite the fact that the South has had more rapid fertility decline than the North and also experienced a shift from bridewealth to dowry and dowry inflation[18].

Another negative consequence of this marriage squeeze for Indian women is that they are likely to be less valued because substitute wives are easily available. One aspect of this is the dowry-related violence which is widely reported, with husbands' families abusing women in order to extract more dowry from their parents. In extreme cases women are killed, for example by engineering an "accident" in which the woman is reportedly burnt while cooking. The surplus of women increases the likelihood of being ill-treated in other ways too, by worsening the imbalance of power between men and women. It makes it easier for the man to be abusive and more compelling for the woman to accept abuse: if one woman does not seem desirable, she can be abused or cast off and another obtained if necessary.

We hypothesize that the marriage squeeze has led to a rise in dowry-related violence during this century. In the absence of time-trend data on dowry violence, this cannot be proved quantitatively, but there is considerable qualitative evidence on this. Field interviews stress that such violence was rare in the past, and archival data indicate that brideprice was widespread (see also Natarajan (1995) and Kumari (1989)). This is logically consistent with the increasing surplus of available women. Perhaps the most compelling evidence that dowry violence has grown substantially during this century derives from the writings of social reformers around the turn of the century, who were deeply engaged in reforming the status of women. They discussed in detail various aspects of women's subordination and social practices which required reform. If dowry violence were prevalent at the time as it is today, it is difficult to believe that this would not have figured prominently in their writings.

China's experience is in sharp contrast to that of India. Through most of this century, there was some surplus of men. The surplus was very small amongst those marrying before 1950. We have little hard information on how women were treated at the time. However, literary sources (Lu 1980,

[18] Caldwell (1983), Epstein (1973), Rao (1993), Heyer (1992) and Kapadia (1993).

1990, Buck 1931) suggest that although women had very low status in the household people were not resorting to desperate and violent means to obtain wives: they saved up for a wife and married when they could. People reportedly felt themselves lucky to obtain a wife, especially if they were not rich. The demand for wives was enough that a widow might be sold by the husband's family into marriage elsewhere. It also meant that during famine women could (and did) leave their husbands to live with another man elsewhere temporarily or permanently. Heightened discrimination during the Japanese invasion generated a substantial surplus of men born during the war years. However, these men would have married when there was strict Communist control at the community level, so there would be little question of resorting to desperate and violent means of obtaining wives.

In recent years the shortage of women in China has become more serious and sustained, and women are being subjected to violence because of the difficulty of obtaining wives. The fertility decline of the early 1970s generated a substantial shortage of women for men marrying in the 1990s. The shortage of women in China now is even larger than the surplus of women in India in earlier decades. People have even resorted to buying brides who have been kidnapped. There are many reports of women being kidnapped or lured by job offers and sold into marriage in distant provinces, and of the operation of criminal gangs in this kidnapping. The situation is serious enough for the Chinese government to pass an edict in 1992 to crack down on these criminals[19], and for a women's magazine to publish advice on how to avoid being kidnapped or lured (Lu 1994). Other means are also being used to secure wives, such as resurrecting the old custom of adopting and raising a little girl as a future bride for one's son, and families engaging their infants to each other (Zhu 1992).

A kidnapped woman is largely powerless to recover her freedom if she does not like her situation. The husband's community overwhelmingly supports the man, feeling that since he paid for the woman his rights should be protected. Even the local police have in some cases taken this position, sometimes out of fear of retribution by local people. The community protects its men by refusing to divulge information on the location of kidnapped women, and even by cooperating to spirit them away during a police search (Zhang and Li 1993).

Nor is it necessarily easy for women if they are rescued and returned home. The first problem is that she has been with a man. If she was already married, her erstwhile husband may not accept her. If she was single, she is likely to make a poor match, reducing her chances of a good life. Whether or not a kidnapped woman succeeds in escaping, her powerlessness subjects her to pressures which can even result in suicide. A case study of a suicide in China illustrates this point:

> A married woman in Shandong province was kidnapped and sold as a bride. Six months later, she succeeded in escaping and managed to return to her family. However, her husband said she slept with another man, and everyone in the community knew that she had done so. On the second day after she finally got home, she killed herself[20].

The second problem arises because her home village needs to balance its land resources. An adult woman's place is supposed to be with her husband, not her father. Consequently the village is under

[19] *Min Zhu Yu Fa Zhi* May 1992:41 (in Chinese).

[20] Account of case study conducted by Michael Philips, and reported by him to a correspondent for the Economist. We are very grateful to Emily MacFarquhar for this information.

pressure to strike women off their father's record in order to be able to allocate land to incoming brides, as indicated by the following case:

> Fen-er was abducted and sold in marriage to a man in Shanxi province. After a couple of months she succeeded in tricking her husband to accompany her to her home area, where she reported him to the police as having bought her from her abductor. The police dissolved their marriage and sent her back to her parents. The following day the village head came to her father and said that since she had been married, her land had to be returned to the village at the end of the accounting year. Her mother argued that her marriage had been annulled, but a village meeting supported the head's position[21].

Given the community-based allocation of land, the problem is one of the village, but in India the same problem applies to households, where daughters must move out to make room for the daughters-in-law.

In Northwest India too, there has been a shortage of women in the past. As in the wealthier parts of China today, part of this was resolved by importing women from elsewhere (Census of Punjab 1868, Hershman 1981). However, this did not substantially increase women's control over their lives. They still became part of the husband's lineage property. A widow would be re-married within the lineage and would have little option but to accept whatever arrangements her husband's family made for her. A similar picture of being lineage property emerges from accounts of China, despite the shortage of women there[22].

South Korea's pattern is similar to that which might have obtained in China if the level of discrimination in the latter had not been raised so much by decades of war till 1949. South Korea had some surplus of women for men born in 1935-59, though the surplus is very small compared to India. The costs of marriage seem to have been quite low. As one woman put it, exaggerating a little to make her point:

> "All we took with us to our husband's home was our bodies[23]"

There was no shift towards the bride's family making larger net payments for marriage than the groom's family, which is consistent with the fact that spousal availability was not strongly imbalanced. In interviews, it was widely reported that it was common in the past for men to take a mistress if their wife did not have a son. This may have been made easier by having some surplus of women. The numbers of potential mistresses would also be increased by the ranks of abandoned wives, and by the fact that a woman could have more than one "master" sequentially. In China adoption (preferably within the lineage) was the usual solution to this problem, not concubinage, and this may well be related to the shortage of women there.

We have yet to see what will happen in South Korea with the large shortage of women they are about to experience. The country is now rich enough to be able to resolve some of this problem by importing wives from Manchuria and overseas. Being a relatively small country makes this easier to do: a country the size of China could never hope to emulate this example. Besides, it is now a highly urbanized country in which law enforcement is centralized. This is in contrast to the decentralized administration of largely rural China, where there is vast potential for hiding women

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[21] *Zhung Guo Fu Nu* August 1995 (in Chinese). The article mentions that since this particular case was publicized by some journalists, county-level officials took an interest in the case and saw to it that she could keep her land.

[22] Zhang and Yin (1994), and Arthur Wolf (personal communication).

[23] Interview conducted by Monica Das Gupta and Bae Hwa-Ok in 1996.

away in tightly-knit rural communities. Thus it is unlikely that the shortage of women in South Korea will lead to obtaining women by violent means.

Being in short supply does not seem to alter women's status and autonomy. These are determined by her position within the family and society, and can only be altered by efforts to alter the position of women in the family and society. China and North India are characterized by especially low autonomy of young women (Das Gupta 1995b). However, it is likely that women are more subject to general abuse when it is easy to obtain another wife: this supply factor adds to the existing imbalance of power between husband and wife. This intuitively plausible statement is consistent with widespread perception in India that dowry violence is rising, but there is no hard data on trends in such stress. The logic of our hypothesis, however, is consistent with the argument that a scarcity of women will raise their value but not their status in societies characterized by strong gender inequality in power (Pisani and Zaba 1995, Guttentag and Secord 1983). Their value may rise when they are in short supply because families may make more effort to ensure that they do not lose a wife, but this may not be accompanied by a rise in women's status as reflected in greater decision-making power within the household.

Who is squeezed?: poverty and the marriage squeeze:

It is largely the poor who suffer from the shortage of spouses. When there is a surplus of women, poor families are hardest pressed to find the wherewithal to marry off their daughters. Sometimes their daughters are forced to marry men who may be disabled or older widowers. When there is a shortage of women, it is poor men who are unable to find spouses. Wealthier men make more attractive partners, and manage to obtain wives one way or another. A saying in China refers to the marriage migration of women from poorer hill areas to richer plains areas:

"Women, like water, flow down the hill"

In families with more than one son, the eldest son has a very high probability of being married, but if the family is under economic stress it is less likely to marry off younger sons. In fact, not letting some sons marry was one strategy for less affluent households to reduce subdivision of property and preserve resources for the following generation of the household (Das Gupta 1995a).

That the burden of the shortage falls on the poor and on younger sons is evident from genealogical data collected in Northwest India (Das Gupta 1995a) and in Northeast China (Lee and Campbell 1997). It is also apparent in survey data collected in 1933 in Jiangsu, China (Li and Lavely 1995). Across North India it was common for poorer men of the Rajput caste not to marry, since they practise strong discrimination against girls (Census of India 1931), and this helped households maintain a balance between their numbers and their resources. In China today the shortage of women has become unusually acute because of the combined pressure of declining cohort size and discrimination. It is especially difficult for men in poorer areas of China to find wives because even if they are able to put together a large sum for buying a bride, local women prefer to marry into a richer region. The desperation to find wives in China has already led to a situation in which people resort to buying women from kidnappers.

VI CONCLUSIONS

China, South Korea and Northern India have commonalities in their kinship systems, which make

for discrimination against female children. The extent to which this discrimination is manifested increased during periods of war, famine and fertility decline. Of the three countries, India has had the quietest history during the period we consider. South Korea is next, with one period of massive disruption during the Korean War, which led to a rise in discrimination. China has experienced the most crises: during the first half of this century, civil war and invasion in China led to an enormous amount of disruption, followed more recently by the famine of 1959-61. These events are reflected in sharp rises in the proportion of girls "missing" in China.

As a result, there is a sharp contrast between China and India in the history of spousal availability. In China there has been a surplus of men in the marriage market throughout this period. The extent of discrimination offsets the expected tendency to have a surplus of women when men are marrying into younger cohorts which are larger than their own because of improvements in child survival. With its quieter history, India has conformed more to the expected pattern, shifting from a surplus of men to a surplus of women with the advent of steady mortality decline. These demographic shifts seem to have affected marriage payments in these countries.

Our findings are consistent with Caldwell et al.'s (1983) hypothesis that there has been a shiftover from brideprice to dowry in India because of a shift to a surplus of women. Alternative ways of resolving this imbalance, for example by having women remain unmarried or marry significantly younger men, were not culturally acceptable. We extend this argument to hypothesize that brideprice continues to be practised in China because of the continuing shortage of women.

There are a number of other social implications of demographic shifts during this century. It is likely that the reduction in the average age gap between spouses in all three countries during this period is at least partly a response to the marriage squeeze, as this reduces imbalances in spousal availability. Ceteris paribus, this should make for greater equality of power between spouses in these societies. There are also implications for the survival of different strata of the population: when there is a shortage of women, it is typically the poor who do not marry, as richer men make more attractive spouses. To some extent, this arises out of conscious household strategy: when times are hard for a household, younger sons may be required to remain single in order to conserve family resources.

In the societies we have examined here, which are characterized by strong son preference, fertility decline has made for a surplus of men not only because it leads to shrinking cohort sizes but also because it has led to increased discrimination against girls. China and South Korea will soon experience the maximum shortage of women in the marriage market, with substantial proportions of men unable to find a wife. In the case of India, the surplus of women will soon be replaced by a surplus of men. We hypothesize that as a consequence dowry inflation will taper off, along with dowry violence and some other aspects of ill-treatment of women. It is ironic that an increase of discrimination against girls may help reduce dowry pressures and thereby indirectly reduce the extent of violence against women.

One interesting question is whether the situation of women is improved when they are in short supply. Clearly being in substantial surplus is the worst scenario for women, in terms of the suffering of the great majority of women. Having to pay dowries makes parents less willing to have daughters, and husbands more prone to dowry-related harassment and violence. Moreover, the

power imbalance between the sexes is worsened by the fact that it is easy for men to find another woman if necessary. When there was a small surplus of women in South Korea, women who were unable to fulfil obligations such as bearing sons were harassed by the possibility of their husbands taking concubines.

When women are in short supply, the daily lives of the majority of women are considerably improved because men are inclined to be more careful not to lose their wife. At the same time, a small proportion of women may be subject to new types of violence related to shortage of wives. For example in China, some women are kidnapped and sold into marriage to men desperate to obtain a wife. Even if these women succeed in escaping and returning home, there are serious obstacles to their re-integration in their earlier life whether in their husband's home or their parents' home. It seems that although the *treatment* of women improves when they are in shortage, their *autonomy* can only be increased by fundamental changes in their position in the family and society. Fortunately, such changes are taking place in these societies, albeit slowly.

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APPENDIX ON METHODOLOGY

The Chinese censuses pose two potential problems for our analysis. The first relates to the ages of military personnel. These are not reported in the 1953 and 1964 censuses, and are listed in five-year age groups in the 1982 census and in single-year age groups in the 1990 census. This affects our analysis because most of the military personnel are male and so the estimated sex ratios are affected. Coale and Banister (1994) found a way of resolving this problem, and we have used the same approach, which we describe below. The second is the possible underreporting of female births and very young girls in the 1982 and 1990 censuses. However, there is far less underreporting of very young girls than of female births (Zeng et al.1993). Since our analysis focuses on young surviving children, it may not be affected much by under-reporting.

Method of estimating proportions of girls missing:

To illustrate how we used Coale and Banister's (1994) methodology to estimate the proportion of girls missing for each five-year birth cohort at census time, we show how we applied it to the data from China. First we calculated the sex ratios of each birth cohort, as they were recorded at each census (1953, 1964, 1982 and 1990). Then, following Coale and Banister's method, we adjusted for the omission of military personnel by using for cohorts aged 16-34 the highest ratio recorded in any census. The logic of this is that the sex ratios of these ages would be more accurately captured by the previous census, when these people would have been too young to join the army, or the following census, when they left the army. Differential mortality at these young ages is very low, and will have little effect on the analysis.

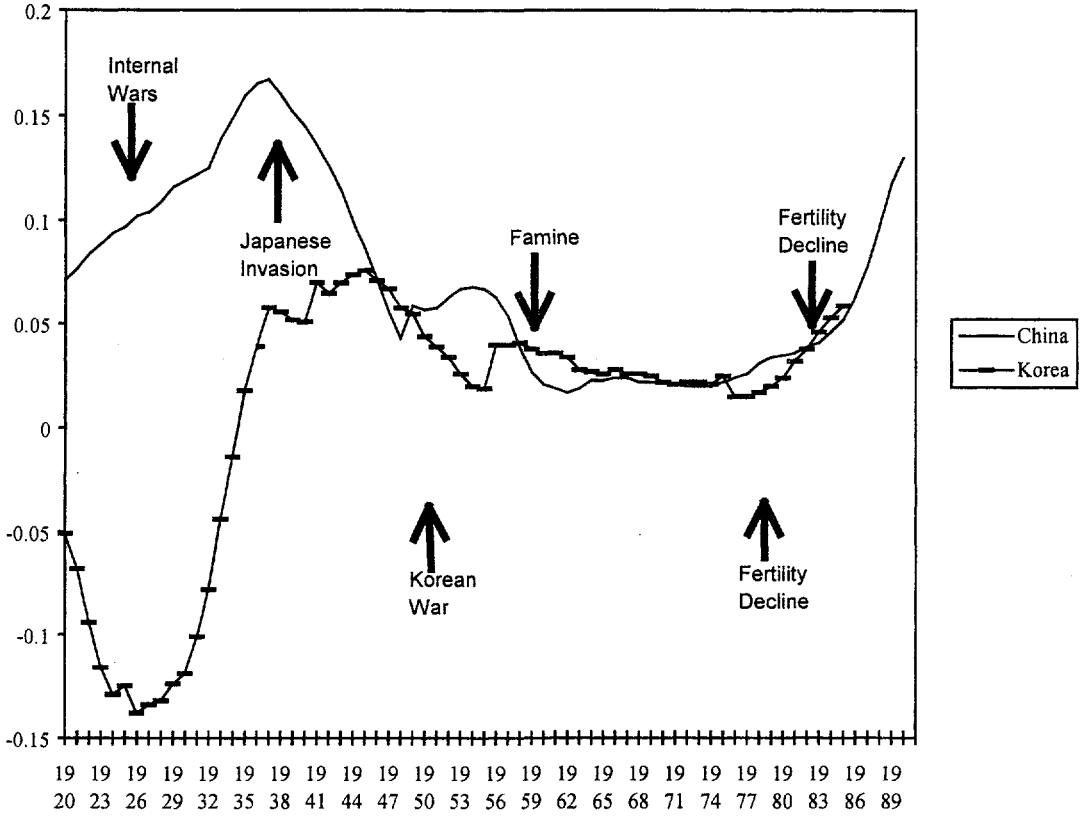
Thus, corresponding to each of the four censuses, we obtained sex ratio curves for each birth cohort (Figure 4). The female life expectancy used to fit the model life tables are shown in Table 4. The four curves are quite consistent because the high quality of age-reporting. The only exception are the early birth cohorts, which show a difference in different censuses. This reflects the natural biological female advantage in survival, as these early birth cohorts are exposed to mortality over a long duration, so the later the census is taken, the more feminine the observed sex ratio.

In our final analysis, we use the most recent data on each birth cohort, to obtain one combined observed sex ratio curve from the four censuses. Thus the 1953 census data are used for the period 1920-24 to 1948-52, the 1964 data for the period 1949-53 to 1959-63, and so on. This is easily done since the four curves are so consistent. This makes it possible to focus more on the impact of historical events on discrimination in childhood. It also minimizes the problem of model assumptions about the sex differentials in mortality over the life span.

We derive the curve of the model sex ratios in the same way, combining curves into one combined model sex ratio curve for the most recent cohorts for each five-year birth cohort at census time (Figure 4). The excess sex ratio for each five-year birth cohort at census time is derived by comparing the observed sex ratio to the model one, minus 1.0.

To estimate the excess sex ratios for the 1986-90 to 1990-94 birth cohorts in China, we use data from the 1995 One Percent National Population Survey. Since the model sex ratios are not very sensitive to small changes in life expectancy and life expectancy was already very high in China by 1990, the model sex ratios for 1986-90 to 1990-94 birth cohorts are assumed to be the same for the 1980-84 to 1985-89 birth cohorts in the 1990 census.

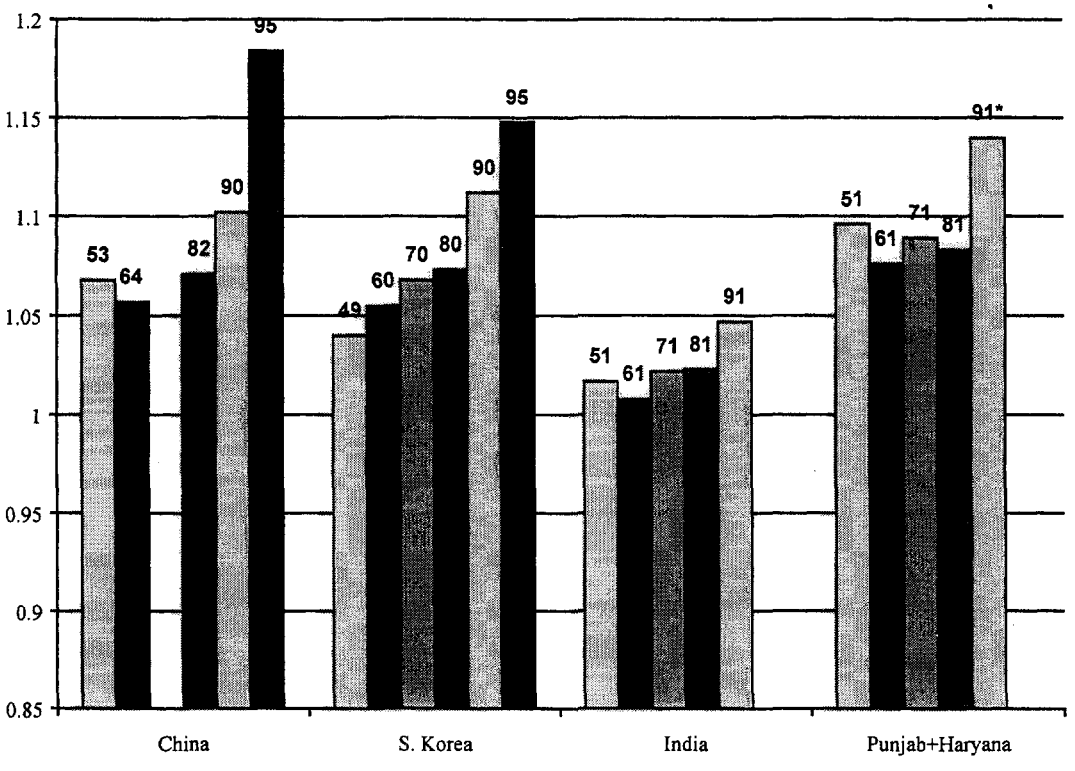
Figure 1 Excess sex ratios at census time by 5 year birth cohorts, 1920-1995, China and South Korea



Note: The excess ratios peak amongst cohorts born just before a war or famine, because those who were young girls at the time of the crisis experienced the maximum excess mortality.

Sources: China, calculation based on data from 1953, 1964, 1982 and 1990 Population Censuses of China. See Department of Population Statistics, SSB, 1988, China Population Yearbook 1988; 1985, 1982 Population Census of China; 1993, Tabulation of the 1990 Population Census of China; 1997, Tabulation of the 1995 National One Percent Sample Survey.
S. Korea, calculation based on data from 1960, 1970, 1980 and 1990 Population Censuses of Korea. See Economic Planning Board, Population and Housing Census, 1960, 1970; National Bureau of Statistics and Economic Planning Board, Population and Housing Census, 1980, 1990.

Figure 2 Juvenile (0-4 year) sex ratios in China, South Korea, India and Punjab, 1950s-90s

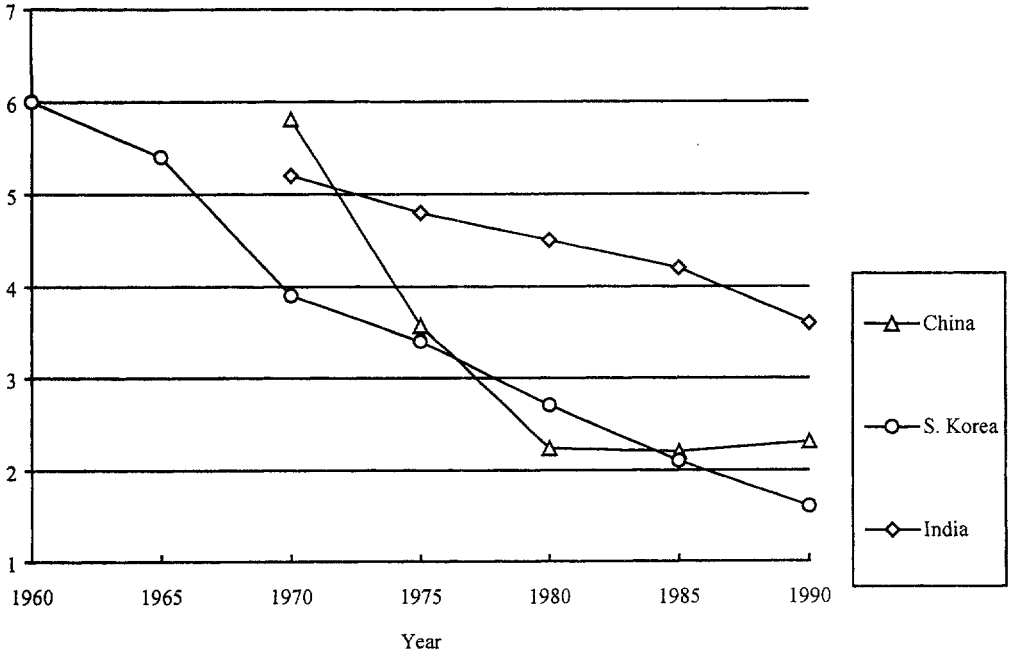


Sources: China, computed from 1953, 1964, 1982 and 1990 Population Censuses of China, and 1995 National 1% Population Sample Survey of China (see notes to Figure 1).
S. Korea, computed from 1949, 1960, 1970, 1980 , 1990 and 1995 Population and Housing Censuses of Korea (see notes to Figure 1).
India and Punjab, computed from 1951, 1961, 1971, 1981 and 1991 Population Censuses of India. See Registrar General and Census Commissioner, Census of India, 1951-1991.

*: The 1991 figure is the sex ratio of 0-6.

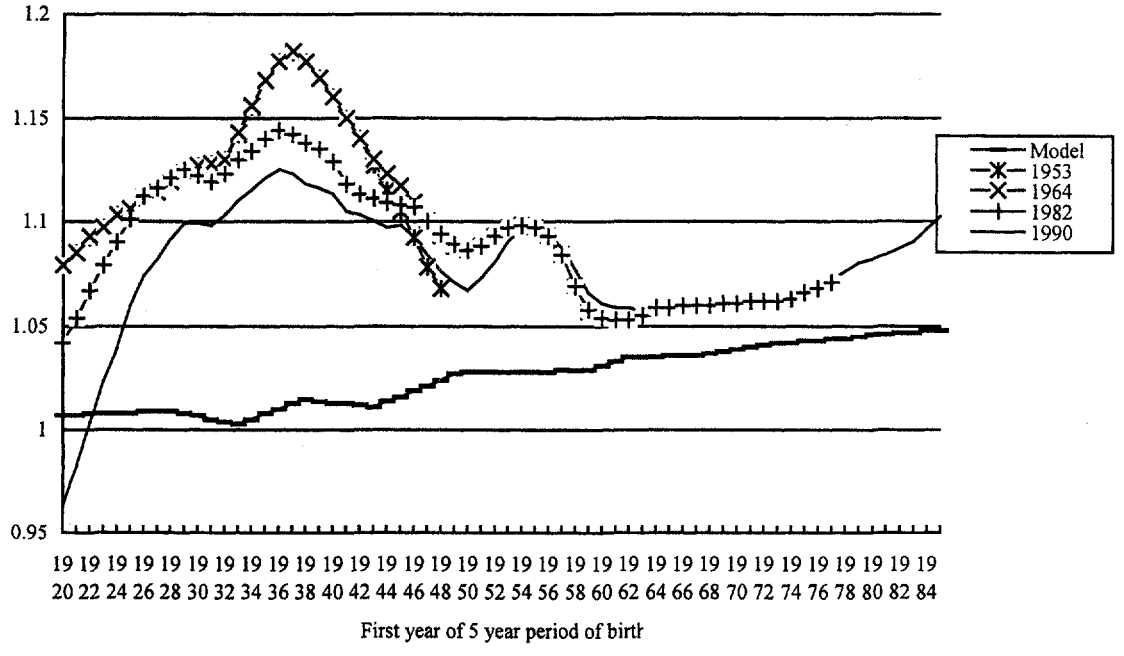
Note: The census year is indicated above each bar.

Figure 3 Total fertility rate of China, South Korea and India, 1960-1990



Source: China, Yao Xinwu and Yin Hua, 1994, Basic Data of China's Population, p. 144.
S. Korea, Hung-Tak Lee and Nam-Hoon Cho, 1992.
India, Sample registration system, 1970-1990.

Figure 4 Estimated and model sex ratios at census time by 5 year birth cohorts, 1920-1995, China



Sources:

Estimated sex ratios: Calculation based on data from 1953, 1964, 1982 and 1990 Population Censuses of China, and 1995 National One Percent Sample Survey of China. See notes to Figure 1.

Model sex ratios: Coale and Banister (1994).

Table 1 Singulate mean age at first marriage in population censuses in China, South Korea and India, 1910s-90s

China				S. Korea				India			
Year	Male	Female	Gap	Year	Male	Female	Gap	Year	Male	Female	Gap
				1911	19.8	12.9	6.9				
				1925	21.1	16.6	4.5	1921	20.2	13.3	6.9
				1930	21.2	16.8	4.4	1931	19.0	12.9	6.1
				1935	21.4	17.1	4.3				
				1940	21.8	17.8	4.0				
1953			3.4*	1955	24.7	20.5	4.2	1951	20.6	15.2	5.4
				1960	25.4	21.5	3.9	1961	21.6	15.9	5.7
1964			3.1*	1966	26.7	22.9	3.8				
1970	23.1	20.4	2.7	1970	27.2	23.3	3.9	1971	22.4	17.2	5.2
1975	24.4	22.0	2.4	1975	27.4	23.6	3.8				
1980	25.0	22.9	2.1	1980	27.3	24.1	3.2	1981	23.3	18.3	5.0
1982	25.1	22.4	2.7								
1985	23.6	21.8	1.8	1985	27.8	24.8	3.0				
1990	23.8	22.1	1.7	1990	28.6	25.5	3.1	1991	24.2	20.0	4.2

Source: For China, estimates for 1953, 1964 and 1990 are based on the 1990 Population Census, for 1982 based on the 1982 Population Census, for 1970, 75, 80 and 85 based on the 1988 National 2 Per Thousand Fertility and Contraceptive Survey;
For Korea, from 1925-1970 based on Kwon et al.(1975), from 1975-1990 based on National Statistics Office of Korea(1993);
For India, based on Mari Bhat and Halli (1997).

*: Figures for 1953 and 1964 of China are respectively estimated from the age gap of currently married couples for cohorts born in 1925-29 and 1940-44 in the 1990 census of China. Because of the data tabulation feature, the numbers are somewhat underestimated due to the data tabulation feature.

Table 2 Observed ratios of males to younger females by five year male birth cohort, China, South Korea, India, 1920-1989

Male birth cohorts	China	S. Korea	India
1920-24	1.01		0.87
1925-29	1.00		0.91
1930-34	1.07		0.93
1935-39	1.15	0.99	0.92
1940-44	1.05	0.92	0.89
1945-49	0.97	0.96	0.88
1950-54	1.03	0.79	0.91
1955-59	1.23	1.01	0.91
1960-64	0.89	1.05	0.94
1965-69	1.04	1.03	0.98
1970-74	1.17	1.16	0.97
1975-79	1.07	1.02	0.99
1980-84	1.03	1.25	1.06
1985-89	1.12*	1.07**	

Source: Computed from Population Censuses of China, S. Korea, and India.

*: Calculation based on data from the 1990 Population Census and Annual Population Change Surveys in China.

**: Calculation based on Vital Statistics in South Korea.

Table 3 The breakdown of the ratios of males to younger females by five year male birth cohort, China, South Korea, India, 1960-1989

Male Birth Cohorts	China			S. Korea			India		
	Obser.	Normal	Dif.	Obser.	Normal	Dif.	Obser.	Normal	Dif.
1960-64	0.89	0.86	0.03	1.05	1.05	0.01	0.94	0.95	0.00
1965-69	1.04	1.02	0.02	1.03	1.01	0.02	0.98	0.93	0.05
1970-74	1.17	1.14	0.03	1.16	1.15	0.01	0.97	0.90	0.08
1975-79	1.07	1.04	0.03	1.02	1.00	0.02	0.99	0.94	0.05
1980-84	1.03	0.99	0.04	1.25	1.19	0.06	1.06	1.05	0.01
1985-89*	1.12	1.05	0.07	1.07	1.00	0.07			

Source: Computed from Population Censuses of China and S. Korea, and India.
Note: Figures for 1985-89 are based on data from the 1990 Population Census and Annul Population Change Surveys in China and Vital Statistics in South Korea.

Table 4 Estimated female life expectancy at birth in China, South Korea and India

Year	China	S. Korea	India
1900s	25.0	25.0*	25.0*
1910s	25.0	30.0*	25.0*
1920s	25.0	35.0	30.0
1930s	25.0	40.0	30.0
1940s	32.5	45.0	32.0
1950s	45.0	50.0	37.0
1960s	52.5	55.0	45.3
1970s	62.5	68.0	52.0
1980s	70.0	72.0	57.0

Sources: For China, Coale and Banister (1994);
For South Korea, Kwon (1977), National Statistics Office of Korea (1993);
For India, Mari Bhat (1989), Registrar General of India (1985, 1995).
*: Since the estimates are not available for South Korea and India before 1920, we assume these figures for these two decades.

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